**Codelists and derivation of variables**

### Derivation of COVID-19, influenza, and pneumonia variables in the SAIL Databank TRE.

|  |  |  |  |
| --- | --- | --- | --- |
| **Variable** | **Data Sources**  **(SAIL Databank)** | **Description** | **Variable name in analysis code** |
| **Exposure** |  |  |  |
| COVID-19 diagnosis date | PATD (Pillar 1 & 2), PEDW, WLGP, ICNC | Minimum date of confirmed COVID-19 event post index date. A record of a positive COVID-19 PCR antigen test or a record of confirmed diagnosis in primary care primary care or secondary care hospital admission or intensive care records. | exp\_confirmed\_covid19\_date |
| COVID-19 infection severity | PATD (Pillar 1 & 2), PEDW, WLGP, ICNC | COVID-19 infection with hospitalisation was defined as a hospital admission record with confirmed COVID-19 diagnosis in the primary position within 28 days of first COVID-19 infection. | exp\_confirmed\_covid\_phenotype |
| ICU admission or respiratory support for COVID-19 infection | PEDW, ICNC, CCDS | ICU admission or respiratory support for COVID-19 infection was defined as any critical care admission or a record of ventilation/ECMO within 28 days of the first infection | exp\_covid\_icu\_or\_resp\_support |
| Influenza or pneumonia diagnosis date | WRRS, WLGP, PEDW, ICNC | Minimum date of confirmed Influenza or pneumonia event post index date. A record of a positive PCR test for influenza or pneumonia, or a record of confirmed diagnosis in primary care primary care or secondary care hospital admission or intensive care records. | exp\_confirmed\_flu\_pneumonia\_date |
| Influenza or pneumonia infection severity | WRRS, WLGP, PEDW, ICNC | Influenza or pneumonia infection with hospitalisation was defined as a hospital admission record with confirmed influenza or pneumonia diagnosis in the primary position within 28 days of first influenza or pneumonia infection. | exp\_confirmed\_flu\_pneumonia\_phenotype |
| ICU admission or respiratory support for influenza or pneumonia infection | PEDW, ICNC, CCDS | ICU admission or respiratory support for influenza or pneumonia infection was defined as any critical care admission or a record of ventilation/ECMO within 28 days of the first infection | exp\_flu\_icu\_or\_resp\_support |

PEDW (Patient Episode Dataset for Wales), WLGP (Welsh Longitudinal GP Dataset - Welsh Primary Care), PATD (COVID-19 Test Results), ICNC (ICNARC – Intensive Care National Audit & Research Centre), WRRS (Wales Results Reporting Service), CCDS (Critical Care Data Set).

**List of ICD-10 and Read codes used to define COVID-19, viral influenza and viral/bacterial pneumonia infections.**

|  |  |  |
| --- | --- | --- |
| **COVIDCOVID-19 infection** | | |
| **Coding system** | **Code** | **Description** |
| ICD-10 | U071 | Confirmed COVID-19 |
| Read V2 (5-character level) | 4J3R1 | 2019-nCoV (novel coronavirus) detected |
|  | 4J3R. | 2019-nCoV (novel coronavirus) serology |
|  | A7953A7953 | COVID-19 confirmed using clinical diagnostic criteria |
|  | A7952A7952 | COVID-19 confirmed by laboratory test |
|  | A7951A7951 | Disease caused by 2019-nCoV (novel coronavirus) |
| **Viral influenza and viral/bacterial pneumonia infections** | |  |
| **Coding system** | **Code** | **Description** |
| ICD-10 | J09 | Influenza due to identified zoonotic or pandemic influenza virus |
| J10 | Influenza due to identified seasonal influenza virus |
| B012 | Varicella pneumonia |
| B250 | Cytomegaloviral pneumonitis |
| J110 | Influenza with pneumonia, virus not identified |
| J12 | Viral pneumonia |
| J171 | Pneumonia in viral diseases classified elsewhere |
|  | J13 | Pneumonia due to Streptococcus pneumonia |
|  | J14 | Pneumonia due to Haemophilus influenza |
|  | J15 | Bacterial pneumonia |
|  | J851 | Abscess of lung with pneumonia |
|  | J200 | Acute bronchitis due to Mycoplasma pneumoniae |
|  | J170 | Pneumonia in bacterial diseases classified elsewhere |
|  | J180 | Bronchopneumonia, unspecified |
|  | J181 | Lobar pneumonia |
|  | J178 | Pneumonia in other diseases classified elsewhere |
| Read V2 (5-character level) | 43w6. | Influenza A nucleic acid detection |
|  | 43w9. | parainfluenza type 4 nucleic acid detection |
|  | 43wD. | Influenza B nucleic acid detection |
|  | 4J3L. | Influenza A virus H1N1 subtype detected |
|  | 4JDe. | Influenza A virus subtype H1N1 serology |
|  | 4JU0. | Influenza H1 virus detected |
|  | 4JU1. | Influenza H2 virus detected |
|  | 4JU2. | Influenza H3 virus detected |
|  | 4JU3. | Influenza H5 virus detected |
|  | 4JU4. | Influenza A virus, other or untyped strain detected |
|  | 4JU5. | Influenza B virus detected |
|  | 4JU6. | Oseltamivir resistant virus detected |
|  | 4JU7. | Zanamivir resistant virus detected |
|  | 4JU8. | Amantadine resistant virus detected |
|  | 4JUF. | Human parainfluenza virus detected |
|  | F030A | Encephalitis due to influenza-virus identified |
|  | H060C | Acute parainfluenza virus bronchitis |
|  | H2... | Pneumonia and influenza |
|  | H202. | Parainfluenzal pneumonia |
|  | H27.. | Influenza |
|  | H270. | Influenzal pneumonia |
|  | H2700 | Influenza with bronchopneumonia |
|  | H2701 | Influenza with pneumonia, influenza virus identified |
|  | H270z | Influenza with pneumonia NOS |
|  | H271. | Influenza with other respiratory manifestation |
|  | H2710 | Influenza with laryngitis |
|  | H2711 | Influenza with pharyngitis |
|  | H271z | Influenza with respiratory manifestations NOS |
|  | H27y. | Influenza with other manifestations |
|  | H27y0 | Influenza with encephalopathy |
|  | H27y1 | Influenza with gastrointestinal tract involvement |
|  | H27yz | Influenza with other manifestations NOS |
|  | H27z. | (Influenza like illness) or (influenza NOS) |
|  | H29.. | Avian influenza |
|  | H2A.. | Influenza due to Influenza A virus subtype H1N1 |
|  | H2y.. | Other specified pneumonia or influenza\* |
|  | H2z.. | Pneumonia or influenza NOS\* |
|  | Hyu04 | [X]Flu+oth respiratory manifestations,'flu virus identified |
|  | Hyu05 | [X]Influenza+other manifestations,influenza virus identified |
|  | 4JUK. | Mycoplasma pneumoniae detected |
|  | A0222 | salmonella pneumonia |
|  | A116. | Tuberculous pneumonia |
|  | A3803 | Septicaemia due to streptococcus pneumoniae |
|  | A3BXA | Mycoplasma pneumoniae [PPLO] cause/dis classifd/oth chaptr |
|  | A3BXB | Klebsiella pneumoniae/cause/disease classifd/oth chapters |
|  | A521. | varicella pneumonitis |
|  | A551. | postmeasles pneumonia |
|  | AyuK9 | [X]Mycoplasma pneumoniae [PPLO]cause/dis classifd/oth chaptr |
|  | AyuKA | [X]Klebsiella pneumoniae/cause/disease classifd/oth chapters |
|  | H20.. | Viral pneumonia |
|  | H200. | Adenoviral pneumonia |
|  | H201. | Pneumonia due to respiratory syncytial virus |
|  | H202. | Pneumonia due to parainfluenza virus |
|  | H203. | pneumonia due to human metapneumovirus |
|  | H20y. | Viral pneumonia NEC |
|  | H20z. | Viral pneumonia NOS |
|  | H21.. | Lobar (pneumococcal) pneumonia |
|  | H22.. | Other bacterial pneumonia |
|  | H220. | Pneumonia due to klebsiella pneumoniae |
|  | H221. | Pneumonia due to pseudomonas |
|  | H222. | Haemophilus influenzae pneumonia |
|  | H223. | Pneumonia due to streptococcus |
|  | H224. | Pneumonia due to staphylococcus |
|  | H22y. | Pneumonia due to other specified bacteria |
|  | H22y0 | Pneumonia due to escherichia coli |
|  | H22y1 | Pneumonia due to proteus |
|  | H22y2 | Pneumonia - Legionella |
|  | H22yX | Pneumonia due to other aerobic gram-negative bacteria |
|  | H22yz | Pneumonia due to bacteria NOS |
|  | H22z. | Bacterial pneumonia NOS |
|  | H23.. | Pneumonia due to other specified organisms |
|  | H230. | Pneumonia due to Eaton's agent |
|  | H231. | Pneumonia due to mycoplasma pneumoniae |
|  | H232. | Pneumonia due to pleuropneumonia like organisms |
|  | H23z. | Pneumonia due to specified organism NOS |
|  | H24.. | Pneumonia with infectious diseases EC |
|  | H240. | pneumonia with measles |
|  | H241. | pneumonia with cytomegalic inclusion disease |
|  | H242. | pneumonia with ornithosis |
|  | H243. | Pertussis pneumonia |
|  | H244. | pneumonia with tularaemia |
|  | H246. | Pneumonia with aspergillosis |
|  | H247. | pneumonia with other systemic mycoses |
|  | H2470 | pneumonia with candidiasis |
|  | H2471 | pneumonia with coccidioidomycosis |
|  | H247z | pneumonia with systemic mycosis nos |
|  | H24y. | pneumonia with other infectious diseases ec |
|  | H24y0 | pneumonia with actinomycosis |
|  | H24y1 | pneumonia with nocardiasis |
|  | H24y3 | pneumonia with q-fever |
|  | H24y4 | pneumonia with salmonellosis |
|  | H24y5 | pneumonia with toxoplasmosis |
|  | H24y6 | pneumonia with typhoid fever |
|  | H24y7 | pneumonia with varicella |
|  | H24yz | Pneumonia with other infectious diseases EC NOS |
|  | H24z. | Pneumonia with infectious diseases EC NOS |
|  | H25.. | Bronchopneumonia due to unspecified organism |
|  | H26.. | Pneumonia due to unspecified organism |
|  | H260. | Lobar pneumonia due to unspecified organism |
|  | H2600 | Lung consolidation |
|  | H261. | Basal pneumonia due to unspecified organism |
|  | H262. | Postoperative pneumonia |
|  | H270. | Influenza with pneumonia |
|  | H2700 | Influenza with bronchopneumonia |
|  | H2701 | Influenza with pneumonia, influenza virus identified |
|  | H270z | Other specified pneumonia or influenza |
|  | H28.. | Atypical pneumonia |
|  | H2B.. | community acquired pneumonia |
|  | H2C.. | hospital acquired pneumonia |
|  | H2y.. | Other specified pneumonia or influenza |
|  | H2z.. | Pneumonia or influenza NOS |
|  | H5303 | Abscess of lung with pneumonia |
|  | H56y1 | Interstitial pneumonia |
|  | H571. | Rheumatic pneumonia |
|  | Hyu08 | [X]Other viral pneumonia |
|  | Hyu09 | [X]Pneumonia due to other aerobic gram-negative bacteria |
|  | Hyu0A | [X]Other bacterial pneumonia |
|  | Hyu0B | [X]Pneumonia due to other specified infectious organisms |
|  | Hyu0C | [X]Pneumonia in bacterial diseases classified elsewhere |
|  | Hyu0D | [X]Pneumonia in viral diseases classified elsewhere |
|  | Hyu0E | [X]Pneumonia in mycoses classified elsewhere |
|  | Hyu0F | [X]Pneumonia in parasitic diseases classified elsewhere |
|  | Hyu0H | [X]Other pneumonia, organism unspecified |
|  | 43D3. | legionella antibody positive |
|  | 43wE. | bordetella pertussis deoxyribonucleic acid detection |
|  | A203. | primary pneumonic plague |
|  | A205. | pneumonic plague, unspecified |
|  | A3B5. | Haemophilus influenzae infection |
|  | A3BX4 | Streptococ pneumon/cause/disease classified/oth chapters |
|  | A3BXA | Mycoplasma pneumoniae [PPLO] cause/dis classifd/oth chaptr |
|  | A3BXB | Klebsiella pneumoniae/cause/disease classifd/oth chapters |
|  | A3By1 | eaton's agent infection |
|  | A3By4 | Pleuropneumonia-like organism (PPLO) infection |
|  | A730. | ornithosis with pneumonia |
|  | A7850 | cytomegaloviral pneumonitis |
|  | AB24. | pneumonia - candidal |
|  | AB405 | histoplasma capsulatum with pneumonia |
|  | AB415 | histoplasma duboisii with pneumonia |
|  | AD04. | toxoplasma pneumonitis |
|  | AyuK9 | [x]mycoplasma pneumoniae [pplo]cause/dis classifd/oth chaptr |
|  | H0606 | acute pneumococcal bronchitis |
|  | H0608 | Acute haemophilus influenzae bronchitis |
|  | H060A | Acute bronchitis due to mycoplasma pneumoniae |
|  | H5109 | pneumococcal pleurisy |
|  | H5110 | pneumococcal pleurisy with effusion |
|  | SP131 | Other aspiration pneumonia as a complication of care |

### Derivation of major outcomes in the SAIL Databank TRE.

|  |  |  |  |
| --- | --- | --- | --- |
| **Outcome** | **Data Sources (SAIL Databank)** | **Description** | **Variable name in analysis code** |
| **Arterial thromboses** | | |  |
| Myocardial infarction | WLGP, PEDW, ADDE | Earliest recorded date of primary care event or consultation, admission to hospital (coded as primary cause), or death (coded as underlying cause). | out\_AMI |
| Ischaemic stroke, stroke of unknown type, retinal infarction, spinal stroke or transient ischaemic attack | WLGP, PEDW, ADDE | Earliest recorded date of primary care event or consultation, admission to hospital (coded as primary cause), or death (coded as underlying cause). | out\_stroke\_isch |
| Other arterial thromboembolism | WLGP, PEDW, ADDE | Earliest recorded date of primary care event or consultation, admission to hospital (coded as primary cause), or death (coded as underlying cause). | out\_other\_arterial\_embolism |
| **Venous thromboembolic events** | | | |
| Pulmonary embolism | PEDW, ADDE | Earliest recorded date of admission to hospital (coded as primary cause of the care episode), or death (coded as underlying cause). | out\_PE |
| Lower limb deep vein thrombosis | PEDW, ADDE | Earliest recorded date of admission to hospital (coded as primary cause of the care episode), or death (coded as underlying cause). | out\_DVT\_DVT, out\_DVT\_pregnancy |
| Other deep vein thrombosis | PEDW, ADDE | Earliest recorded date of admission to hospital (coded as primary cause of the care episode), or death (coded as underlying cause). | out\_other\_DVT |
| Portal vein thrombosis | PEDW, ADDE | Earliest recorded date of admission to hospital (coded as primary cause of the care episode), or death (coded as underlying cause). | out\_portal\_vein\_thrombosis |
| Intracranial venous thrombosis | PEDW, ADDE | Earliest recorded date of admission to hospital (coded as primary cause of the care episode), or death (coded as underlying cause). | out\_DVT\_ICVT, out\_ICVT\_pregnancy |
| **Other vascular events** | | | |
| Intracranial or subarachnoid haemorrhage | WLGP, PEDW, ADDE | Earliest recorded date of primary care event or consultation, admission to hospital (coded as primary cause), or death (coded as underlying cause). | out\_stroke\_SAH\_HS |
| Heart failure | PEDW, ADDE | Earliest recorded date of admission to hospital (coded as primary cause of the care episode), or death (coded as underlying cause). | out\_HF |
| **Control** |  |  |  |
| Lower limb fracture | PEDW, ADDE, EDDS | Earliest recorded date of admission to hospital (coded as primary cause of the care episode), admission to A & E, or death (coded as underlying cause). | out\_fracture |

PEDW (Patient Episode Dataset for Wales), WLGP (Welsh Longitudinal GP Dataset - Welsh Primary Care), ADDE (Annual District Death Extract), EDDS (Emergency Department Data Set).

|  |  |  |  |
| --- | --- | --- | --- |
| **List of ICD-10 and Read codes used to define vascular outcomes.** | | | |
| Phenotype | Coding system | Code | Description |
|  |  |  |  |
| **ARTERIAL** | | | |
| Myocardial infarction | ICD-10 | I21 | Acute myocardial infarction |
|  | ICD-10 | I22 | Subsequent myocardial infarction |
|  | ICD-10 | I23 | Certain current complications following acute myocardial infarction |
|  | Read | 323.. | ECG: myocardial infarction |
|  | Read | 3233. | ECG: antero-septal infarct. |
|  | Read | 3234. | ECG:posterior/inferior infarct |
|  | Read | 3235. | ECG: subendocardial infarct |
|  | Read | 3236. | ECG: lateral infarction |
|  | Read | 323Z. | ECG: myocardial infarct NOS |
|  | Read | G30.. | Acute myocardial infarction |
|  | Read | G300. | Acute anterolateral infarction |
|  | Read | G301. | Other specified anterior myocardial infarction |
|  | Read | G3010 | Acute anteroapical infarction |
|  | Read | G3011 | Acute anteroseptal infarction |
|  | Read | G301z | Anterior myocardial infarction NOS |
|  | Read | G302. | Acute inferolateral infarction |
|  | Read | G303. | Acute inferoposterior infarction |
|  | Read | G304. | Posterior myocardial infarction NOS |
|  | Read | G305. | Lateral myocardial infarction NOS |
|  | Read | G306. | True posterior myocardial infarction |
|  | Read | G307. | Acute subendocardial infarction |
|  | Read | G3070 | Acute non-Q wave infarction |
|  | Read | G3071 | Acute non-ST segment elevation myocardial infarction |
|  | Read | G308. | Inferior myocardial infarction NOS |
|  | Read | G309. | Acute Q-wave infarct |
|  | Read | G30A. | Mural thrombosis |
|  | Read | G30B. | Acute posterolateral myocardial infarction |
|  | Read | G30X. | Acute transmural myocardial infarction of unspecif site |
|  | Read | G30X0 | Acute ST segment elevation myocardial infarction |
|  | Read | G30y. | Other acute myocardial infarction |
|  | Read | G30y0 | Acute atrial infarction |
|  | Read | G30y1 | Acute papillary muscle infarction |
|  | Read | G30y2 | Acute septal infarction |
|  | Read | G30yz | Other acute myocardial infarction NOS |
|  | Read | G30z. | Acute myocardial infarction NOS |
|  | Read | G31y1 | Microinfarction of heart |
|  | Read | G35.. | Subsequent myocardial infarction |
|  | Read | G350. | Subsequent myocardial infarction of anterior wall |
|  | Read | G351. | Subsequent myocardial infarction of inferior wall |
|  | Read | G353. | Subsequent myocardial infarction of other sites |
|  | Read | G35X. | Subsequent myocardial infarction of unspecified site |
|  | Read | G36.. | Certain current complication follow acute myocardial infarct |
|  | Read | G360. | Haemopericardium/current comp folow acut myocard infarct |
|  | Read | G361. | Atrial septal defect/curr comp folow acut myocardal infarct |
|  | Read | G362. | Ventric septal defect/curr comp fol acut myocardal infarctn |
|  | Read | G363. | Ruptur cardiac wall w'out haemopericard/cur comp fol ac MI |
|  | Read | G364. | Ruptur chordae tendinae/curr comp fol acute myocard infarct |
|  | Read | G365. | Rupture papillary muscle/curr comp fol acute myocard infarct |
|  | Read | G366. | Thrombosis atrium,auric append&vent/curr comp foll acute MI |
|  | Read | G501. | Post infarction pericarditis |
|  | Read | Gyu34 | [X]Acute transmural myocardial infarction of unspecif site |
|  |  |  |  |
| Ischaemic stroke | ICD-10 | I630 | Cerebral infarction |
|  | ICD-10 | I631 | Cerebral infarction |
|  | ICD-10 | I632 | Cerebral infarction |
|  | ICD-10 | I633 | Cerebral infarction |
|  | ICD-10 | I634 | Cerebral infarction |
|  | ICD-10 | I635 | Cerebral infarction |
|  | ICD-10 | I638 | Cerebral infarction |
|  | ICD-10 | I639 | Cerebral infarction |
|  | Read | G63.. | Infarction - precerebral |
|  | Read | G63y0 | Cerebral infarct due to thrombosis of precerebral arteries |
|  | Read | G63y1 | Cerebral infarction due to embolism of precerebral arteries |
|  | Read | G64.. | Cerebral arterial occlusion |
|  | Read | G640. | Cerebral thrombosis |
|  | Read | G6400 | Cerebral infarction due to thrombosis of cerebral arteries |
|  | Read | G641. | Cerebral embolism |
|  | Read | G6410 | Cerebral infarction due to embolism of cerebral arteries |
|  | Read | G64z. | Cerebral infarction NOS |
|  | Read | G64z0 | Brainstem infarction |
|  | Read | G64z1 | Wallenberg syndrome |
|  | Read | G64z2 | Left sided cerebral infarction |
|  | Read | G64z3 | Right sided cerebral infarction |
|  | Read | G64z4 | Infarction of basal ganglia |
|  | Read | G683. | Sequelae of cerebral infarction |
|  | Read | G6W.. | Cereb infarct due unsp occlus/stenos precerebr arteries |
|  | Read | G6X.. | Cerebrl infarctn due/unspcf occlusn or sten/cerebrl artrs |
|  | Read | Gyu63 | [X]Cerebrl infarctn due/unspcf occlusn or sten/cerebrl artrs |
|  | Read | Gyu64 | [X]Other cerebral infarction |
|  | Read | Gyu6G | [X]Cereb infarct due unsp occlus/stenos precerebr arteries |
|  |  |  |  |
| Spinal stroke | ICD-10 | G951 | vascular myelopathies (arterial or venous) |
|  |  |  |  |
| Stroke of unknown type | ICD-10 | I64 | Stroke, not specified as haemorrhage or infarction |
|  | Read | 1M4.. | Central post-stroke pain |
|  | Read | 661M7 | Stroke self-management plan agreed |
|  | Read | 661N7 | Stroke self-management plan review |
|  | Read | 662M. | Stroke monitoring |
|  | Read | 662M1 | Stroke 6 month review |
|  | Read | 662M2 | Stroke initial post discharge review |
|  | Read | 662e. | Stroke/CVA annual review |
|  | Read | 7P242 | Delivery of rehabilitation for stroke |
|  | Read | 8HHM. | Ref to multidisciplinary stroke function improvement service |
|  | Read | 8IEC. | Ref multidisciplinary stroke function improvement declined |
|  | Read | 9h2.. | Exception reporting: stroke quality indicators |
|  | Read | 9h21. | Excepted from stroke quality indicators: Patient unsuitable |
|  | Read | 9h22. | Excepted from stroke quality indicators: Informed dissent |
|  | Read | Fyu56 | [X]Other lacunar syndromes |
|  | Read | G66.. | Stroke and cerebrovascular accident unspecified |
|  | Read | G663. | Brain stem stroke syndrome |
|  | Read | G664. | Cerebellar stroke syndrome |
|  | Read | G665. | Pure motor lacunar syndrome |
|  | Read | G666. | Pure sensory lacunar syndrome |
|  | Read | G667. | Left sided CVA |
|  | Read | G668. | Right sided CVA |
|  | Read | G68X. | Sequelae of stroke,not specfd as h'morrhage or infarction |
|  | Read | Gyu6C | [X]Sequelae of stroke,not specfd as h'morrhage or infarction |
|  | Read | L440. | CVA - cerebrovascular accident in the puerperium |
|  |  |  |  |
| Retinal infarction | ICD-10 | H34 | Retinal vascular occlusions |
|  | Read | 2BB5. | O/E - retinal haemorrhages |
|  | Read | F42y1 | Superficial retinal haemorrhage |
|  | Read | F4243 | Retinal pigment epithelium haemorrhagic detachment |
|  | Read | F42y5 | Retinal haemorrhage NOS |
|  | Read | F42y4 | Subretinal haemorrhage |
|  | Read | F42y3 | Deep retinal haemorrhage |
|  | Read | F42y. | Haemorrhage - retinal |
|  | Read | F4Ey0 | Haemorrhage of eyelid |
|  |  |  |  |
| Transient ischemic attack | ICD-10 | G45 | Transient cerebral ischaemic attacks and related syndromes |
|  | Read | G65.. | Transient cerebral ischaemia |
|  | Read | G65y. | Other transient cerebral ischaemia |
|  | Read | G65z. | Transient cerebral ischaemia NOS |
|  | Read | G65zz | Transient cerebral ischaemia NOS |
|  |  |  |  |
| Other arterial thromboembolism | ICD-10 | I74 | Arterial embolism and thrombosis |
|  | Read | G74.. | Arterial embolism and thrombosis |
|  | Read | G7424 | Embolism and thrombosis of the femoral artery |
|  | Read | G7425 | Embolism and thrombosis of the popliteal artery |
|  | Read | G7426 | Embolism and thrombosis of the anterior tibial artery |
|  | Read | G7427 | Embolism and thrombosis of the dorsalis pedis artery |
|  | Read | G7428 | Embolism and thrombosis of the posterior tibial artery |
|  | Read | G7429 | Embolism and thrombosis of a leg artery NOS |
|  | Read | G742z | Peripheral arterial embolism and thrombosis NOS |
|  | Read | G74y0 | Embolism and/or thrombosis of the common iliac artery |
|  | Read | G74y1 | Embolism and/or thrombosis of the internal iliac artery |
|  | Read | G74y2 | Embolism and/or thrombosis of the external iliac artery |
|  | Read | G74y3 | Embolism and thrombosis of the iliac artery unspecified |
|  | Read | G74z. | Arterial embolism and thrombosis NOS |
|  | Read | G76z0 | Iliac artery occlusion |
|  | Read | G76z1 | Femoral artery occlusion |
|  | Read | G76z2 | Popliteal artery occlusion |
| **VENOUS** | | | |
|  |  |  |  |
| Pulmonary embolism | ICD-10 | I260 | Pulmonary embolism without mention of acute cor pulmonale |
|  | ICD-10 | I269 | Pulmonary embolism with mention of acute cor pulmonale |
|  |  |  |  |
| Lower limb deep vein thrombosis | ICD-10 | I80 | Phlebitis and thrombophlebitis |
|  | ICD-10 | O223 | Deep phlebothrombosis in pregnancy |
|  | ICD-10 | O871 | Deep phlebothrombosis in the puerperium |
|  | ICD-10 | O879 | Venous complication in the puerperium, unspecified |
|  | ICD-10 | O882 | Obstetric blood-clot embolism |
|  |  |  |  |
| Other deep vein thrombosis | ICD-10 | I828 | Embolism and thrombosis of other specified veins |
|  | ICD-10 | I829 | Embolism and thrombosis of unspecified vein |
|  | ICD-10 | I820 | Budd Chiari Syndrome |
|  | ICD-10 | I823 | Embolism and thrombosis of renal vein |
|  | ICD-10 | I822 | Embolism and thrombosis of vena cava |
|  |  |  |  |
| Portal vein thrombosis | ICD-10 | I81 | Portal vein thrombosis |
|  |  |  |  |
| Intracranial venous thrombosis | ICD-10 | G08 | Intracranial and intraspinal phlebitis and thrombophlebitis |
|  | ICD-10 | I676 | Nonpyogenic thrombosis of intracranial venous system |
|  | ICD-10 | I636 | Cerebral infarction due to cerebral venous thrombosis, nonpyogenic |
|  | ICD-10 | O225 | Cerebral venous thrombosis in pregnancy |
|  | ICD-10 | O873 | Cerebral venous thrombosis in the puerperium |
| **OTHER** | | | |
|  |  |  |  |
| Intracranial or subarachnoid haemorrhage | ICD-10 | I60 | Nontraumatic subarachnoid haemorrhage |
|  | ICD-10 | I61 | Intracerebral haemorrhage |
|  | Read | G60.. | Subarachnoid haemorrhage |
|  | Read | G600. | Ruptured berry aneurysm |
|  | Read | G601. | Subarachnoid haemorrhage from carotid siphon and bifurcation |
|  | Read | G602. | Subarachnoid haemorrhage from middle cerebral artery |
|  | Read | G603. | Subarachnoid haemorrhage from anterior communicating artery |
|  | Read | G604. | Subarachnoid haemorrhage from posterior communicating artery |
|  | Read | G605. | Subarachnoid haemorrhage from basilar artery |
|  | Read | G606. | Subarachnoid haemorrhage from vertebral artery |
|  | Read | G60X. | Subarachnoid haemorrh from intracranial artery, unspecif |
|  | Read | G60z. | Subarachnoid haemorrhage NOS |
|  | Read | G680. | Sequelae of subarachnoid haemorrhage |
|  | Read | Gyu60 | [X]Subarachnoid haemorrhage from other intracranial arteries |
|  | Read | Gyu61 | [X]Other subarachnoid haemorrhage |
|  | Read | Gyu6E | [X]Subarachnoid haemorrh from intracranial artery, unspecif |
|  |  |  |  |
| Heart failure | ICD-10 | I50 | Heart failure |
|  | ICD-10 | I110 | Hypertensive heart disease with (congestive) heart failure |
|  | ICD-10 | I130 | Hypertensive heart and renal disease with (congestive) heart failure |
|  | ICD-10 | I132 | Hypertensive heart and renal disease with both (congestive) heart failure and renal failure |
| **CONTROL** | | | |
|  |  |  |  |
| Lower limb fracture | ICD-10 | S720 | Upper leg fracture |
|  | ICD-10 | S721 | Upper leg fracture |
|  | ICD-10 | S723 | Upper leg fracture |
|  | ICD-10 | S724 | Upper leg fracture |
|  | ICD-10 | S727 | Upper leg fracture |
|  | ICD-10 | S728 | Upper leg fracture |
|  | ICD-10 | S729 | Upper leg fracture |
|  | ICD-10 | S820 | Lower leg fracture |
|  | ICD-10 | S821 | Lower leg fracture |
|  | ICD-10 | S822 | Lower leg fracture |
|  | ICD-10 | S823 | Lower leg fracture |
|  | ICD-10 | S824 | Lower leg fracture |
|  | ICD-10 | S825 | Lower leg fracture |
|  | ICD-10 | S826 | Lower leg fracture |
|  | ICD-10 | S827 | Lower leg fracture |
|  | ICD-10 | S828 | Lower leg fracture |
|  | ICD-10 | S829 | Lower leg fracture |
|  | ICD-10 | S920 | Foot fracture |
|  | ICD-10 | S921 | Foot fracture |
|  | ICD-10 | S922 | Foot fracture |
|  | ICD-10 | S923 | Foot fracture |
|  | ICD-10 | S927 | Foot fracture |
|  | ICD-10 | S929 | Foot fracture |
|  | ICD-10 | T12 | Fracture of lower limb |
|  | ICD-10 | T025 | Fractures involving multiple regions of both lower limbs |
|  | ICD-10 | T023 | Fractures involving multiple regions of both lower limbs |

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### Derivation of covariates in the SAIL Databank TRE.

|  |  |  |  |
| --- | --- | --- | --- |
| **Variable** | **Data Sources**  **(SAIL Databank)** | **Description** | **Variable name in analysis code** |
| **Demographic characteristics** | | | |
| Patient pseudoidentifier | All | Patient pseudoidentifier | alf\_e |
| Death date | Both cohorts | Earliest date of death recorded in specified data sources | death\_date |
| Sex | Both cohorts | Binary indicator for male or female | cov\_sex |
| Age | Both cohorts | Age in years calculated on index date | cov\_age |
| Ethnic group | National ethnicity spine for the population of Wales | Used a national ethnicity spine for the population of Wales which is extracted using longitudinal records spanning since the 1st January 2000 from 26 health and administrative data sources 32.Patient ethnicity (most recent record prior to index date from primary care – White, Black or Black British, Asian or Asian British, Other, Mixed, Missing) | cov\_ethncity |
| Smoking status | WLGP | Smoking status was defined based on latest related record before index date in primary care data. Most recent smoking status (Smoker, Ex-smoker, Never-smoker) prior to index date. Smoking status had missing categories and these were all treated as separate categories in the regression models (i.e. the missing categories had regression coefficients). | cov\_smoking\_status |
| Deprivation | Both cohorts (WDSD, PEDW) | Welsh Index of Multiple Deprivation (WIMD) 2019 version quintile, relating to most recent of Lower Layer Super Output Area (LSOA) prior to index date. Quintiles defined based on individual’s residential area on 1st January 2016 for influenza/pneumonia cohort and 1st January 2020 for COVID-19 cohort, available in 18. Deprivation had missing categories and these were all treated as separate categories in the regression models (i.e. the missing categories had regression coefficients). | cov\_deprivation |
| Rural or Urban setting | Both cohorts | Binary indicator showing if an individual was a resident in a rural or urban environment on 1st January 2016 for C16 cohort and on 1s January 2020 for C20 cohort. | rural\_urban |
| Care home | Both cohorts | Binary indicator showing if an individual was a resident in a care home on 1st January 2016 for C16 cohort and on 1s January 2020 for C20 cohort. | cov\_carehome |
| **Medications** | | | |
| Antiplatelet | WDDS, WLGP | Binary indicator for antiplatelet medication with at least one prescription within 3 months prior to index date, defined using drug use | cov\_antiplatelet\_meds |
| Lipid lowering | WDDS, WLGP | Binary indicator for lipid lowering medication with at least one prescription within 3 months prior to index date, defined using drug use | cov\_lipid\_meds |
| Anticoagulation | WDDS, WLGP | Binary indicator for anticoagulation medication with at least one prescription within 3 months prior to index date, defined using drug use | cov\_anticoagulation\_meds |
| Blood pressure lowering | WDDS, WLGP | Binary indicator for blood pressure lowering medication with at least one prescription within 3 months prior to index date, defined using drug use | cov\_BP\_lowering\_meds |
| **Past history of disease** | | | |
| Dementia | WLGP, PEDW | Binary indicator for dementia prior to index date, defined using condition diagnosis code only | cov\_ever\_dementia |
| Chronic kidney disease | WLGP, PEDW | Binary indicator for chronic kidney disease prior to index date, defined using condition diagnosis code only | cov\_ever\_CKD |
| Cancer | WLGP, PEDW | Binary indicator for cancer prior to index date, defined using condition diagnosis code only | cov\_ever\_cancer |
| Hypertension | WLGP, PEDW, WDDS | Binary indicator for hypertension prior to index date, defined using either condition diagnosis code or drug use | cov\_ever\_hypertension |
| Diabetes | WLGP, PEDW, WDDS | Binary indicator for diabetes prior to index date, defined using either condition diagnosis code or drug use | cov\_ever\_diabetes |
| Obesity | WLGP, PEDW | Binary indicator for obesity prior to index date, defined using either condition diagnosis code or measurement | cov\_ever\_obesity |
| Depression | WLGP, PEDW | Binary indicator for depression prior to index date, defined using condition diagnosis code only | cov\_ever\_depression |
| Chronic obstructive pulmonary disease | WLGP, PEDW | Binary indicator for chronic obstructive pulmonary disease prior to index date, defined using condition diagnosis code only | cov\_ever\_COPD |
| Number of unique disorders | WLGP | Number of disorders recorded in WLGP within 3 months prior to index date, using Read codes for Charlson comorbidity index | cov\_n\_disorder |
| Elixhauser comorbidity index | PEDW | Elixhauser comorbidity index based on comorbidities diagnosis code recorded prior to index date | cov\_elixhauser\_score |
| Acute myocardial infection | WLGP, PEDW | Binary indicator for acute myocardial infarction prior to index date, defined using condition diagnosis code only | cov\_AMI |
| Heart failure | PEDW | Binary indicator for heart failure prior to index date, defined using condition diagnosis code only | cov\_ever\_HF |
| Pulmonary embolism | PEDW | Binary indicator for pulmonary embolism prior to index date, defined using condition diagnosis code only | cov\_ever\_PE |
| Ischaemic stroke, stroke of unknown type, retinal infarction, spinal stroke or transient ischaemic attack | WLGP, PEDW | Binary indicator for ischaemic stroke, stroke of unknown type, retinal infarction, spinal stroke or transient ischaemic attack prior to index date, defined using condition diagnosis code only | cov\_ever\_stroke\_ISCH |
| Intracranial or subarachnoid haemorrhage | WLGP, PEDW | Binary indicator for intracranial or subarachnoid haemorrhage prior to index date, defined using condition diagnosis code only | cov\_ever\_stroke\_SAH\_HS |
| Any stroke | WLGP, PEDW | Binary indicator for stroke (‘cov\_ever\_stroke\_ISCH’, ‘cov\_ever\_stroke\_SAH\_HS’) prior to index date, defined using condition diagnosis code only | cov\_ever\_any\_stroke |
| Non-stroke non-MI arterial embolism | WLGP, PEDW | Binary indicator for non-stroke non-MI arterial embolism prior to index date, defined using condition diagnosis code only | cov\_ever\_other\_arterial\_embolism |
| Major surgery in the last year | PEDW | Binary indicator for major surgery within a year prior to index date, defined using condition diagnosis code only | cov\_surgery\_lastyr |

PEDW (Patient Episode Dataset for Wales), WLGP (Welsh Longitudinal GP Dataset - Welsh Primary Care), WDDS (Welsh Dispensing Dataset), ICNC (Intensive Care National Audit and Research Centre), WRRS (Wales Results Reporting Service).

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