**Appendix**

**The explanation for Read codes**

NHS website: <https://digital.nhs.uk/services/terminology-and-classifications/read-codes>

“Read Codes are a coded thesaurus of clinical terms. They have been used in the NHS since 1985. There are two versions: version 2 (v2) and version 3 (CTV3 or v3). Both versions provide a standard vocabulary for clinicians to record patient findings and procedures, in health and social care IT systems across primary and secondary care.”

**Appendix 1: Read codes of Type 1 diabetes used in data extraction**

|  |  |
| --- | --- |
| Read code | Description |
| C100011 | Insulin dependent diabetes mellitus |
| C10E.00 | Type 1 diabetes mellitus |
| C108.00 | Insulin dependent diabetes mellitus |
| C108700 | Insulin dependent diabetes mellitus with retinopathy |
| C108800 | Insulin dependent diabetes mellitus - poor control |
| C10ED00 | Type 1 diabetes mellitus with nephropathy |
| C10EM00 | Type 1 diabetes mellitus with ketoacidosis |
| C10E.11 | Type I diabetes mellitus |
| C108F11 | Type I diabetes mellitus with diabetic cataract |
| C108.12 | Type 1 diabetes mellitus |
| C108J12 | Type 1 diabetes mellitus with neuropathic arthropathy |
| C10E700 | Type 1 diabetes mellitus with retinopathy |
| C108.11 | IDDM-Insulin dependent diabetes mellitus |
| C10EH00 | Type 1 diabetes mellitus with arthropathy |
| C10E500 | Type 1 diabetes mellitus with ulcer |
| C108012 | Type 1 diabetes mellitus with renal complications |
| C10EP00 | Type 1 diabetes mellitus with exudative maculopathy |
| C108.13 | Type I diabetes mellitus |
| C108B00 | Insulin dependent diabetes mellitus with mononeuropathy |
| C108400 | Unstable insulin dependent diabetes mellitus |
| C10EL00 | Type 1 diabetes mellitus with persistent microalbuminuria |
| C10EK00 | Type 1 diabetes mellitus with persistent proteinuria |
| C108900 | Insulin dependent diabetes maturity onset |
| C10E800 | Type 1 diabetes mellitus - poor control |
| C108711 | Type I diabetes mellitus with retinopathy |
| C10EE00 | Type 1 diabetes mellitus with hypoglycaemic coma |
| C108J00 | Insulin dependent diab mell with neuropathic arthropathy |
| C10E900 | Type 1 diabetes mellitus maturity onset |
| C10EN00 | Type 1 diabetes mellitus with ketoacidotic coma |
| C108712 | Type 1 diabetes mellitus with retinopathy |
| C108C00 | Insulin dependent diabetes mellitus with polyneuropathy |
| C108E11 | Type I diabetes mellitus with hypoglycaemic coma |
| C10E200 | Type 1 diabetes mellitus with neurological complications |
| C10E400 | Unstable type 1 diabetes mellitus |
| C108F00 | Insulin dependent diabetes mellitus with diabetic cataract |
| C108E00 | Insulin dependent diabetes mellitus with hypoglycaemic coma |
| C108500 | Insulin dependent diabetes mellitus with ulcer |
| C10E312 | Insulin dependent diabetes mellitus with multiple complicat |
| C108812 | Type 1 diabetes mellitus - poor control |
| C10EC00 | Type 1 diabetes mellitus with polyneuropathy |
| C108811 | Type I diabetes mellitus - poor control |
| C10E000 | Type 1 diabetes mellitus with renal complications |
| C10E100 | Type 1 diabetes mellitus with ophthalmic complications |
| C10E300 | Type 1 diabetes mellitus with multiple complications |
| C108211 | Type I diabetes mellitus with neurological complications |
| C10EF00 | Type 1 diabetes mellitus with diabetic cataract |
| C10E411 | Unstable type I diabetes mellitus |
| C10E.12 | Insulin dependent diabetes mellitus |
| C108511 | Type I diabetes mellitus with ulcer |
| C108300 | Insulin dependent diabetes mellitus with multiple complicatn |
| C10EJ00 | Type 1 diabetes mellitus with neuropathic arthropathy |
| C10E412 | Unstable insulin dependent diabetes mellitus |
| C10EQ00 | Type 1 diabetes mellitus with gastroparesis |
| C108D00 | Insulin dependent diabetes mellitus with nephropathy |
| C108411 | Unstable type I diabetes mellitus |
| C108J11 | Type I diabetes mellitus with neuropathic arthropathy |
| C108600 | Insulin dependent diabetes mellitus with gangrene |
| C108011 | Type I diabetes mellitus with renal complications |
| C108212 | Type 1 diabetes mellitus with neurological complications |
| C10EM11 | Type I diabetes mellitus with ketoacidosis |
| C108H11 | Type I diabetes mellitus with arthropathy |
| C10EA11 | Type I diabetes mellitus without complication |
| C108911 | Type I diabetes mellitus maturity onset |
| C108G00 | Insulin dependent diab mell with peripheral angiopathy |
| C108H00 | Insulin dependent diabetes mellitus with arthropathy |
| C10EN11 | Type I diabetes mellitus with ketoacidotic coma |
| C108D11 | Type I diabetes mellitus with nephropathy |
| C10EB00 | Type 1 diabetes mellitus with mononeuropathy |
| C108512 | Type 1 diabetes mellitus with ulcer |
| ZC2C900 | Dietary advice for type I diabetes |
| C10EA00 | Type 1 diabetes mellitus without complication |
| C10E600 | Type 1 diabetes mellitus with gangrene |
| C108E12 | Type 1 diabetes mellitus with hypoglycaemic coma |
| C10E812 | Insulin dependent diabetes mellitus - poor control |
| C10E311 | Type I diabetes mellitus with multiple complications |
| C10EC11 | Type I diabetes mellitus with polyneuropathy |
| C10EG00 | Type 1 diabetes mellitus with peripheral angiopathy |
| C10E712 | Insulin dependent diabetes mellitus with retinopathy |
| C10E511 | Type I diabetes mellitus with ulcer |
| C10E711 | Type I diabetes mellitus with retinopathy |
| C108A11 | Type I diabetes mellitus without complication |
| C10E911 | Type I diabetes mellitus maturity onset |
| C108912 | Type 1 diabetes mellitus maturity onset |
| C108412 | Unstable type 1 diabetes mellitus |
| C10E912 | Insulin dependent diabetes maturity onset |
| C10EP11 | Type I diabetes mellitus with exudative maculopathy |
| C10E512 | Insulin dependent diabetes mellitus with ulcer |
| C108B11 | Type I diabetes mellitus with mononeuropathy |
| C10E111 | Type I diabetes mellitus with ophthalmic complications |
| C10EE12 | Insulin dependent diabetes mellitus with hypoglycaemic coma |
| C10EF12 | Insulin dependent diabetes mellitus with diabetic cataract |
| C10EC12 | Insulin dependent diabetes mellitus with polyneuropathy |
| C10E611 | Type I diabetes mellitus with gangrene |
| C10ED12 | Insulin dependent diabetes mellitus with nephropathy |
| C10EL11 | Type I diabetes mellitus with persistent microalbuminuria |
| C108112 | Type 1 diabetes mellitus with ophthalmic complications |
| 66At011 | Type 1 diabetic dietary review |
| C10E811 | Type I diabetes mellitus - poor control |
| C108311 | Type I diabetes mellitus with multiple complications |
| C10P000 | Type I diabetes mellitus in remission |
| C10EQ11 | Type I diabetes mellitus with gastroparesis |
| C10E612 | Insulin dependent diabetes mellitus with gangrene |
| C10P011 | Type 1 diabetes mellitus in remission |
| C10E011 | Type I diabetes mellitus with renal complications |
| C108F12 | Type 1 diabetes mellitus with diabetic cataract |
| C108A12 | Type 1 diabetes mellitus without complication |
| C108D12 | Type 1 diabetes mellitus with nephropathy |
| C10ED11 | Type I diabetes mellitus with nephropathy |
| C108C11 | Type I diabetes mellitus with polyneuropathy |
| C108612 | Type 1 diabetes mellitus with gangrene |
| C100011 | Insulin dependent diabetes mellitus |

**Appendix 2:** **Read codes of Type 2 diabetes used in data extraction**

|  |  |
| --- | --- |
| **Read code** | **Description** |
| C100112 | Non-insulin dependent diabetes mellitus |
| C10F.00 | Type 2 diabetes mellitus |
| C10FJ00 | Insulin treated Type 2 diabetes mellitus |
| 66A4.00 | Diabetic on oral treatment |
| C109.00 | Non-insulin dependent diabetes mellitus |
| C109.11 | NIDDM - Non-insulin dependent diabetes mellitus |
| 66A3.00 | Diabetic on diet only |
| C109700 | Non-insulin dependent diabetes mellitus - poor control |
| C10FC00 | Type 2 diabetes mellitus with nephropathy |
| C10F500 | Type 2 diabetes mellitus with gangrene |
| C109600 | Non-insulin-dependent diabetes mellitus with retinopathy |
| C109.12 | Type 2 diabetes mellitus |
| C109G11 | Type II diabetes mellitus with arthropathy |
| C109012 | Type 2 diabetes mellitus with renal complications |
| C109.13 | Type II diabetes mellitus |
| C109J12 | Insulin treated Type II diabetes mellitus |
| C109J00 | Insulin treated Type 2 diabetes mellitus |
| C10FM00 | Type 2 diabetes mellitus with persistent microalbuminuria |
| C10FB00 | Type 2 diabetes mellitus with polyneuropathy |
| C10F600 | Type 2 diabetes mellitus with retinopathy |
| C10F000 | Type 2 diabetes mellitus with renal complications |
| C10F.11 | Type II diabetes mellitus |
| C109711 | Type II diabetes mellitus - poor control |
| C109G00 | Non-insulin dependent diabetes mellitus with arthropathy |
| C109C12 | Type 2 diabetes mellitus with nephropathy |
| ZC2CA00 | Dietary advice for type II diabetes |
| C10FQ00 | Type 2 diabetes mellitus with exudative maculopathy |
| C10F700 | Type 2 diabetes mellitus - poor control |
| C10FL00 | Type 2 diabetes mellitus with persistent proteinuria |
| C109900 | Non-insulin-dependent diabetes mellitus without complication |
| C10FN00 | Type 2 diabetes mellitus with ketoacidosis |
| C10F200 | Type 2 diabetes mellitus with neurological complications |
| C10FK00 | Hyperosmolar non-ketotic state in type 2 diabetes mellitus |
| C109400 | Non-insulin dependent diabetes mellitus with ulcer |
| C10FH00 | Type 2 diabetes mellitus with neuropathic arthropathy |
| C109K00 | Hyperosmolar non-ketotic state in type 2 diabetes mellitus |
| C109J11 | Insulin treated non-insulin dependent diabetes mellitus |
| C10FF00 | Type 2 diabetes mellitus with peripheral angiopathy |
| C109500 | Non-insulin dependent diabetes mellitus with gangrene |
| C109H00 | Non-insulin dependent d m with neuropathic arthropathy |
| C109612 | Type 2 diabetes mellitus with retinopathy |
| C10F311 | Type II diabetes mellitus with multiple complications |
| C109D00 | Non-insulin dependent diabetes mellitus with hypoglyca coma |
| C109E12 | Type 2 diabetes mellitus with diabetic cataract |
| C10FE00 | Type 2 diabetes mellitus with diabetic cataract |
| C109B00 | Non-insulin dependent diabetes mellitus with polyneuropathy |
| C109712 | Type 2 diabetes mellitus - poor control |
| C109212 | Type 2 diabetes mellitus with neurological complications |
| C109512 | Type 2 diabetes mellitus with gangrene |
| C10FD00 | Type 2 diabetes mellitus with hypoglycaemic coma |
| C10F711 | Type II diabetes mellitus - poor control |
| C10F100 | Type 2 diabetes mellitus with ophthalmic complications |
| C109B11 | Type II diabetes mellitus with polyneuropathy |
| C109H11 | Type II diabetes mellitus with neuropathic arthropathy |
| C10F900 | Type 2 diabetes mellitus without complication |
| C109E11 | Type II diabetes mellitus with diabetic cataract |
| C10F400 | Type 2 diabetes mellitus with ulcer |
| C10F611 | Type II diabetes mellitus with retinopathy |
| C109G12 | Type 2 diabetes mellitus with arthropathy |
| C109011 | Type II diabetes mellitus with renal complications |
| C109100 | Non-insulin-dependent diabetes mellitus with ophthalm comps |
| C10FB11 | Type II diabetes mellitus with polyneuropathy |
| L180600 | Pre-existing diabetes mellitus, non-insulin-dependent |
| C109A11 | Type II diabetes mellitus with mononeuropathy |
| C10FP00 | Type 2 diabetes mellitus with ketoacidotic coma |
| C109000 | Non-insulin-dependent diabetes mellitus with renal comps |
| C10F911 | Type II diabetes mellitus without complication |
| C109F00 | Non-insulin-dependent d m with peripheral angiopath |
| C109F11 | Type II diabetes mellitus with peripheral angiopathy |
| C109411 | Type II diabetes mellitus with ulcer |
| C109200 | Non-insulin-dependent diabetes mellitus with neuro comps |
| C109D11 | Type II diabetes mellitus with hypoglycaemic coma |
| C107400 | NIDDM with peripheral circulatory disorder |
| C10F011 | Type II diabetes mellitus with renal complications |
| C109611 | Type II diabetes mellitus with retinopathy |
| C10FG00 | Type 2 diabetes mellitus with arthropathy |
| C109C00 | Non-insulin dependent diabetes mellitus with nephropathy |
| C109111 | Type II diabetes mellitus with ophthalmic complications |
| C109F12 | Type 2 diabetes mellitus with peripheral angiopathy |
| C10FL11 | Type II diabetes mellitus with persistent proteinuria |
| C109D12 | Type 2 diabetes mellitus with hypoglycaemic coma |
| C109511 | Type II diabetes mellitus with gangrene |
| C109300 | Non-insulin-dependent diabetes mellitus with multiple comps |
| C10FA00 | Type 2 diabetes mellitus with mononeuropathy |
| C10FR00 | Type 2 diabetes mellitus with gastroparesis |
| C109C11 | Type II diabetes mellitus with nephropathy |
| C10FJ11 | Insulin treated Type II diabetes mellitus |
| C10F300 | Type 2 diabetes mellitus with multiple complications |
| C109412 | Type 2 diabetes mellitus with ulcer |
| C109H12 | Type 2 diabetes mellitus with neuropathic arthropathy |
| C109211 | Type II diabetes mellitus with neurological complications |
| C109E00 | Non-insulin depend diabetes mellitus with diabetic cataract |
| C109112 | Type 2 diabetes mellitus with ophthalmic complications |
| C109A00 | Non-insulin dependent diabetes mellitus with mononeuropathy |
| C10FM11 | Type II diabetes mellitus with persistent microalbuminuria |
| C10F411 | Type II diabetes mellitus with ulcer |
| C10FE11 | Type II diabetes mellitus with diabetic cataract |
| C10FA11 | Type II diabetes mellitus with mononeuropathy |
| C10F211 | Type II diabetes mellitus with neurological complications |
| C10FD11 | Type II diabetes mellitus with hypoglycaemic coma |
| C10F111 | Type II diabetes mellitus with ophthalmic complications |
| C10FC11 | Type II diabetes mellitus with nephropathy |
| C10FG11 | Type II diabetes mellitus with arthropathy |
| C10F511 | Type II diabetes mellitus with gangrene |
| C10FF11 | Type II diabetes mellitus with peripheral angiopathy |
| C109912 | Type 2 diabetes mellitus without complication |
| C10FP11 | Type II diabetes mellitus with ketoacidotic coma |
| C10FN11 | Type II diabetes mellitus with ketoacidosis |
| C10FK11 | Hyperosmolar non-ketotic state in type II diabetes mellitus |
| C10P100 | Type II diabetes mellitus in remission |
| C109312 | Type 2 diabetes mellitus with multiple complications |
| C109911 | Type II diabetes mellitus without complication |
| C10FH11 | Type II diabetes mellitus with neuropathic arthropathy |
| 66AH300 | Conversion to non-insulin injectable medication |
| C109B12 | Type 2 diabetes mellitus with polyneuropathy |
| 66o2.00 | Diabetic on non-insulin injectable medication |
| 66o5.00 | Diabetic on oral treatment and glucagon-like peptide 1 |
| C10P111 | Type 2 diabetes mellitus in remission |
| C10FQ11 | Type II diabetes mellitus with exudative maculopathy |
| C109311 | Type II diabetes mellitus with multiple complications |
| C10FR11 | Type II diabetes mellitus with gastroparesis |

**Appendix 3: Read codes of STDR used in data extraction**

|  |  |
| --- | --- |
| **Read code** | **Description** |
| 8D36.00 | Removable artificial eye |
| 6689 | Registered blind |
| F4K2800 | Vitreous haemorrhage |
| 7270100 | Extirpation of vitreous body NEC |
| F42y900 | Macular oedema |
| F490.00 | Blindness, both eyes |
| 7272013 | Laser therapy lesion of retina |
| 6688 | Registered partially sighted |
| F420200 | Preproliferative diabetic retinopathy |
| 1B75.00 | Loss of vision |
| 7272012 | Photocoagulation of lesion of retina NEC |
| F420100 | Proliferative diabetic retinopathy |
| 2BB8.00 | O/E - vitreous haemorrhages |
| F420400 | Diabetic maculopathy |
| 22EF.00 | O/E - has one eye |
| F495000 | Blindness, one eye, unspecified |
| 2B7A.11 | O/E - blind L-eye |
| F49..13 | Partial sight |
| F49..11 | Impaired vision |
| 7270 | Operations on vitreous body |
| 6688.11 | Registered partially blind |
| F492.00 | Low vision, both eyes |
| F422.00 | Other proliferative retinopathy |
| 1B77.00 | Deteriorating vision |
| F49..00 | Blindness and low vision |
| 7272300 | Laser destruction of lesion of retina |
| F49..14 | Sight impaired |
| 2BBL.00 | O/E - diabetic maculopathy present both eyes |
| F420300 | Advanced diabetic maculopathy |
| Z6F..11 | Laser therapy |
| 2B6A.11 | O/E - blind R-eye |
| F404100 | Blind hypotensive eye |
| Z9E1100 | Provision of artificial eye |
| 7276 | Pan retinal photocoagulation for diabetes |
| 7270400 | Pars plana vitrectomy |
| 5B4..11 | Retinal laser therapy |
| F49..12 | Low vision |
| 2BBT.00 | O/E - right eye proliferative diabetic retinopathy |
| 2BBR.00 | O/E - right eye preproliferative diabetic retinopathy |
| 2BBV.00 | O/E - left eye proliferative diabetic retinopathy |
| 2BBW.00 | O/E - right eye diabetic maculopathy |
| 2BBS.00 | O/E - left eye preproliferative diabetic retinopathy |
| 2BBn.00 | O/E - left eye clinically significant macular oedema |
| 2BBX.00 | O/E - left eye diabetic maculopathy |
| 668C.00 | Certificate of vision impairment |
| F495.00 | Profound impairment, one eye |
| ZV43000 | [V]Has artificial eye globe |
| 2BBO.00 | O/E - Laser photocoagulation scars |
| 2BBY.00 | O/E - referable retinopathy |
| F493.00 | Visual loss, both eyes unqualified |
| F496000 | Low vision, one eye, unspecified |
| 22E6.12 | O/E - glass eye |
| C10EP00 | Type 1 diabetes mellitus with exudative maculopathy |
| 2B78.00 | O/E - visual acuity L-eye=6/60 |
| F49z.11 | Acquired blindness |
| Z9E2.00 | Optical low vision aid provision |
| F496200 | Lesser eye: severe VI, Better eye: near normal vision |
| F49y.00 | Visual loss, one eye, unqualified |
| C10FQ00 | Type 2 diabetes mellitus with exudative maculopathy |
| F496.00 | Low vision, one eye |
| 2BBm.00 | O/E - right eye clinically significant macular oedema |
| 2B6A.00 | O/E-R-eye perceives light only |
| 5B42.00 | Laser therapy - retinal lesion |
| 22E6.11 | O/E - false eye |
| F491000 | One eye blind, one eye low vision |
| FyuH400 | [X]Vitreous haemorrhage in diseases classified elsewhere |
| F420700 | High risk proliferative diabetic retinopathy |
| 7270300 | Injection into vitreous body NEC |
| 7270z00 | Operation on vitreous body NOS |
| 7270500 | Air/gas exchange of vitreous |
| 22E6.13 | O/E - prosthetic eye |
| F4H7300 | Cortical blindness |
| Z9E1200 | Provision of removable artificial eye |
| Z96..00 | Provision for visual and hearing impairment |
| 2B68.00 | O/E - visual acuity R-eye=6/60 |
| 2B6B.00 | O/E - R-eye completely blind |
| 2B69.00 | O/E -R-eye counts fingers only |
| 2B7B.00 | O/E - L-eye completely blind |
| 2B7C.00 | O/E - L-eye sees hand movements |
| F492z00 | Low vision, both eyes NOS |
| 2B79.00 | O/E -L-eye counts fingers only |
| 2BB7.00 | O/E - retinal vascular prolif. |
| F422y00 | Other specified other proliferative retinopathy |
| F404200 | Blind hypertensive eye |
| Z9E3100 | Provision of magnifier low vision aid - near |
| F496z00 | Low vision, one eye NOS |
| F495A00 | Acquired blindness, one eye |
| F422z00 | Proliferative retinopathy NOS |
| 2B6W.00 | O/E - R-eye visual acuity (corrected) 4/60 |
| 2B7A.00 | O/E-L-eye perceives light only |
| 2B7W.00 | O/E - L-eye visual acuity (corrected) 4/60 |
| 7270200 | Injection of vitreous substitute into vitreous body |
| 7270y00 | Other specified operation on vitreous body |
| Z961.00 | Provision of guide help for visual and hearing impairment |
| 7273000 | Epiretinal dissection |
| 2B7E.00 | O/E - visual acuity L-eye=3/60 |
| Z9E4.00 | Provision of optical low vision aid - distance |
| F492000 | Low vision, both eyes unspecified |
| ZV52200 | [V]Fitting or adjustment of artificial eye |
| 2B6L.00 | O/E - pinhole visual acuity R-eye=6/60 |
| 2B6R.00 | O/E - pinhole R-eye perceives light only |
| 2B7L.00 | O/E - pinhole visual acuity L-eye=6/60 |
| F490900 | Acquired blindness, both eyes |
| ZV43100 | [V]Has artificial eye lens |
| F495z00 | Profound impairment one eye NOS |
| 2B6C.00 | O/E - R-eye sees hand movements |
| 2B6T.00 | O/E - R-eye visual acuity (corrected) 1/60 |
| 7272500 | Panretinal laser photocoagulation to lesion of retina NEC |
| 2B6Q.00 | O/E - pinhole R-eye counts fingers only |
| 2BBk.00 | O/E - right eye stable treated prolif diabetic retinopathy |
| F420500 | Advanced diabetic retinal disease |
| 2B6E.00 | O/E - visual acuity R-eye=3/60 |
| 2B6V.00 | O/E - R-eye visual acuity (corrected) 2/60 |
| 2B7T.00 | O/E - L-eye visual acuity (corrected) 1/60 |
| F490z00 | Blindness both eyes NOS |
| 2B6P.00 | O/E - pinhole R-eye sees hand movements |
| 2B7Q.00 | O/E - pinhole L-eye counts fingers only |
| 22E6.00 | O/E - glass (prosthetic) eye |
| F491300 | Better eye: severe VI, Lesser eye: near total VI |
| 2B7P.00 | O/E - pinhole L-eye sees hand movements |
| 2B6S.00 | O/E - pinhole R-eye completely blind |
| 2BBl.00 | O/E - left eye stable treated prolif diabetic retinopathy |
| 2BBo.00 | O/E - sight threatening diabetic retinopathy |
| Z9E5400 | Provision of ancillary low vision aid |
| 2B7S.00 | O/E - pinhole L-eye completely blind |
| 2B7R.00 | O/E - pinhole L-eye perceives light only |
| F491z00 | One eye blind, one eye low vision NOS |
| F490000 | Unspecified blindness both eyes |
| F490100 | Both eyes total visual impairment |
| F491.00 | Better eye: low vision, Lesser eye: profound VI |
| 8F6..11 | Blind rehabilitation |
| 7272600 | Laser photocoagulation to lesion of retina NEC |
| 2B7V.00 | O/E - L-eye visual acuity (corrected) 2/60 |
| F495400 | Lesser eye: near total VI, Better eye: unspecified |
| F494.00 | Legal blindness USA |
| Z9E3.00 | Provision of optical low vision aid - near |
| Z9E3B00 | Near low vision aid - integral spectacle telescope |
| Z9E5.00 | Provision of non-optical low vision aid |
| F496500 | Lesser eye: moderate VI, Better eye: near normal vision |
| F495100 | Lesser eye: total visual impairment, Better eye: unspecified |
| Z9E3500 | Provision of spectacle low vision aid - near |
| F495500 | Lesser eye: near total VI, Better eye: near normal vision |
| F495600 | Lesser eye: near total VI, Better eye: normal vision |
| 7270A00 | Removal of internal tamponade agent from vitreous body |
| F420800 | High risk non proliferative diabetic retinopathy |
| 2B7X.00 | O/E - L-eye visual acuity (corrected) 5/60 |
| 2B6X.00 | O/E - R-eye visual acuity (corrected) 5/60 |
| F492200 | Better eye: severe VI, Lesser eye: severe VI |
| 8F61.00 | Blind rehabilitation |
| 7270600 | Internal tamponade of retina using gas |
| Z9E3300 | Provision of low vision stand magnifier |
| F491400 | Better eye: severe VI, Lesser eye: profound VI |
| F496300 | Lesser eye: severe VI, Better eye: normal vision |
| F496600 | Lesser eye: moderate VI, Better eye: normal vision |
| F492400 | Better eye: moderate VI, Lesser eye: severe VI |
| F491500 | Better eye: moderate VI, Lesser eye: blind, unspecified |
| Z9E3200 | Provision of low vision hand magnifier |
| F495800 | Lesser eye: profound VI, Better eye: near normal vision |
| F492500 | Better eye: moderate VI, Lesser eye: moderate VI |
| F491700 | Better eye: moderate VI, Lesser eye: near total VI |
| 727C200 | Injection therapeutic substance posterior segment of eye NEC |
| 7274800 | Injection of therapeutic substance around the eye |
| F492300 | Better eye: moderate VI, Lesser eye: low vision unspecified |
| ZN56800 | Blind telephone user |
| 7L19E00 | Injection of triamcinolone |
| 727C100 | Injection of steroid into posterior segment of eye |
| 7272800 | Panretinal laser photocoagulation to lesion of retina |
| 727Cy00 | Other specified operations on posterior segment of eye |
| 7270411 | Vitrectomy using pars plana approach |
| 7270900 | Internal tamponade of retina using oil |
| 7270C00 | Injection of vitreous substitute into vitreous body NEC |
| 8F62.00 | Blind lead dog rehabilitation |
| Z9E3900 | Near low vision aid - clip-on spectacle magnifier |
| 7270800 | Internal tamponade of retina using liquid |
| F490400 | Better eye: near total VI, Lesser eye: near total VI |
| FyuF700 | [X]Other proliferative retinopathy |
| C10EP11 | Type I diabetes mellitus with exudative maculopathy |
| Z9E3C00 | Near low vision aid - clip-on spectacle telescope |
| 9NlD.00 | Seen by visual impairment teacher |
| FyuL.00 | [X]Visual disturbances and blindness |
| F490200 | Better eye: near total VI, Lesser eye: unspecified |
| 8HlE.00 | Referral to visual impairment multidisciplinary team |
| F495200 | Lesser eye: total VI, Better eye: near normal vision |
| F495300 | Lesser eye: total VI, Better eye: normal vision |
| F490600 | Better eye: profound VI, Lesser eye: total VI |
| F491100 | Better eye: severe VI, Lesser eye: blind, unspecified |
| ZK74.00 | Issue of local authority blind registration |
| 7270D00 | Injection of Ranibizumab into vitreous body |
| 7277600 | Injection of therapeutic substance into macula |
| F496400 | Lesser eye: moderate VI, Better eye: unspecified |
| 7272900 | Focal laser photocoagulation of retina |
| 668D.00 | Registered sight impaired |
| 6689.11 | Registered severely sight impaired |
| 2BBr.00 | Impaired vision due to diabetic retinopathy |
| Z9E3D00 | Near low vision aid - extra cap for telescope |
| Fy1..00 | Combined visual and hearing impairment |
| 727C000 | Insertion sustained release device posterior segment of eye |
| F49A.00 | Blindness, monocular |
| F496100 | Lesser eye: severe VI, Better eye: unspecified |
| 727Cz00 | Operations on posterior segment of eye NOS |
| F425900 | Maculopathy |
| F497.00 | Severe visual impairment, binocular |
| F49B.00 | Severe visual impairment, monocular |
| F49C.00 | Moderate visual impairment, monocular |
| F498.00 | Moderate visual impairment, binocular |
| 9NfB.00 | Requires deafblind communicator guide |
| 9m08.00 | Excluded from diabetic retinopathy screening as blind |
| 1a00000 | Uses guide dog for the blind |
| Z962.00 | Provision of communicator for visual and hearing impairment |
| F49D.00 | Visual impairment |
| Fy1..12 | Deafblind |
| 9Nfb.00 | Requires deafblind block alphabet interpreter |
| ZN56A00 | Deaf-blind telephone user |
| C10FQ11 | Type II diabetes mellitus with exudative maculopathy |
| 9Nfa.00 | Requires deafblind manual alphabet interpreter |
| Z9E3800 | Near low vision aid - integral spectacle magnifier |
| Fy1..11 | Dual sensory impairment - deafblind |
| F490500 | Better eye: profound VI, Lesser eye: unspecified |
| F492100 | Better eye: severe VI, Lesser eye: low vision unspecified |

**Appendix Table 1: Baseline characteristics of participants with diabetes**

|  |  |  |
| --- | --- | --- |
| **Type 1 diabetes** | **With Townsend index (*n =* *3,601*)** | **Without Townsend index (*n = 805*)** |
| **Age (years), meanSD** | 17.1 | 16.89.5 |
| **Male sex, *n (%)*** | 2,116 (58.8) | 444 (55.2) |
| **Ethnicity, *n (%)*** |  |  |
| White | 1,619 (45.0) | 380 (47.2) |
| Mixed or Multiples | 13 (0.4) | 2 (0.2) |
| Other ethnic groups | 15 (0.4) | 8 (1.0) |
| Black, Black British, Black Welsh, Caribbean or African | 22 (0.6) | 8 (1.0) |
| Asian, Asian British, Asian Welsh | 37 (1.0) | 20 (2.5) |
| Missing | 1,895 (52.6) | 387 (48.1) |
| **Smoking Status, *n (%)*** |  |  |
| Smoker | 1,644 (45.7) | 376 (46.7) |
| Ex-smoker | 417 (11.6) | 89 (11.1) |
| Non-smoker | 210 (5.8) | 35 (4.3) |
| Missing | 1,330 (36.9) | 305 (37.9) |
| **HbA1c categories, *n (%)\**** |  |  |
| <6.5% | 505 (14.0) | 104 (12.9) |
| 6.5-7.5% | 776 (21.5) | 165 (20.5) |
| 7.5-8.5% | 720 (20.0) | 162 (20.1) |
| 8.5% | 962 (26.7) | 210 (26.1) |
| Missing | 638 (17.7) | 164 (20.4) |
| **Hypertension, *n (%)*** | 32 (0.9) | 9 (1.1) |
| **Chronic kidney disease, *n (%)*** | 43 (1.2) | 4 (0.5) |
| **Diabetic Foot Disease, *n (%)*** | 49 (1.4) | 11 (1.4) |
| **Metformin, *n (%)*** | 153 (4.2) | 48 (6.0) |
| **Lipid-lowering drugs, *n (%)*** | 89 (2.5) | 17 (2.1) |
|  |  |  |
| **Type 2 diabetes** | **With Townsend index (*n = 142,991*)** | **Without Townsend index (*n = 28,231*)** |
| **Age (years), meanSD** | 62.913.1 | 61.613.3 |
| **Male sex, *n (%)*** | 18,314 (59.3) | 17,044 (57.3) |
| **Ethnicity, *n (%)*** |  |  |
| White | 65,404 (45.7) | 13,025 (46.1) |
| Mixed or Multiples | 875 (0.6) | 362 (1.3) |
| Other ethnic groups | 318 (0.2) | 110 (0.4) |
| Black, Black British, Black Welsh, Caribbean or African | 1,841 (1.3) | 641 (2.3) |
| Asian, Asian British, Asian Welsh | 4,363 (3.1) | 1,411 (5.0) |
| Missing | 70,190 (49.1) | 12,682 (44.9) |
| **Smoking Status, *n (%)*** |  |  |
| Smoker | 191 (0.1) | 18 (0.1) |
| Ex-smoker | 23,302 (16.3) | 4,876 (17.3) |
| Non-smoker | 52,229 (36.5) | 9,679 (34.3) |
| Missing | 67,269 (47.0) | 13,658 (48.4) |
| **BMI (kg/m2), meanSD** | 31.6 | 31.9 |
| **BMI categories** |  |  |
| Underweight/Normal Weight (<25) | 17,974 (12.6) | 3,506 (12.4) |
| Overweight (25-30) | 45,323 (31.7) | 8,689 (30.8) |
| Class 1 Obesity (30-35) | 41,049 (28.7) | 8,023 (28.4) |
| Class 2 Obesity (35-40) | 21,382 (15.0) | 4,331 (15.3) |
| Class 3 Obesity (≥40) | 14,837 (10.4) | 3,217 (11.4) |
| Missing | 2426 (1.7) | 465 (1.6) |
| **HbA1c categories, *n (%)\**** |  |  |
| 6.5% | 59,056 (41.3) | 11,322 (40.1) |
| 6.5-7.5% | 55,428 (38.8) | 10,852 (38.4) |
| 7.5-8.5% | 13,988 (9.8) | 2,896 (10.3) |
| 8.5% | 11,473 (8.0) | 2,490 (8.8) |
| Missing | 3,046 (2.1) | 671 (2.4) |
| **Hypertension, *n (%)*** | 77,971 (54.5) | 14,927 (52.9) |
| **Peripheral vascular disease, *n (%)*** | 4,462 (3.1) | 690 (2.4) |
| **Stroke, *n (%)*** | 10,399 (7.3) | 1,826 (6.5) |
| **Ischemic heart disease, *n (%)*** | 24,619 (17.2) | 4,332 (15.3) |
| **Heart Failure, *n (%)*** | 5,129 (3.6) | 964 (3.4) |
| **Chronic kidney diseases, *n (%)*** | 24,429 (17.1) | 4,307 (15.3) |
| **Diabetic Foot Disease, *n (%)*** | 21,329 (14.9) | 3,459 (12.3) |
| **Insulin, *n (%)*** | 9,771 (6.8) | 1,975 (7.0) |
| **Metformin, *n (%)*** | 76,978 (53.8) | 16,050 (56.9) |
| **All other glucose-lowering drugs, *n (%)*** | 23,710 (16.6) | 4,521 (16.0) |
| **Lipid-lowering drugs, *n (%)*** | 104,603 (73.2) | 19,401 (68.7) |
| HbA1c, hemoglobin A1c. | | |

**Appendix Table 2: The incidence rate and hazard ratio of STDR in sensitivity analysis**

|  |  |  |
| --- | --- | --- |
| **Type 1 diabetes** | **With Townsend index** | **Without Townsend index** |
| **N** | 3,601 | 805 |
| **STDR,** n (%) | 73 | 16 |
| **Person-years** | 15,895.9 | 3,373 |
| **Incidence rate (per 1,000 person-years)** | 4.6 | 4.7 |
| **Crude hazard ratio (95% CI)** | Ref | 1.01 (0.59, 1.74) |
| **Adjusted hazard ratio (95% CI)** \* | Ref | 1.00 (0.58, 1.72) |
|  |  |  |
| **Type 2 diabetes** | **With Townsend index** | **Without Townsend index** |
| **N** | 142,991 | 28,231 |
| **STDR,** n (%) | 4,312 | 1,051 |
| **Person-years** | 626,666.1 | 128,179.6 |
| **Incidence rate (per 1,000 person-years)** | 6.9 | 8.2 |
| **Crude hazard ratio (95% CI)** | Ref | 1.18 (1.10, 1.26) |
| **Adjusted hazard ratio (95% CI)** † | Ref | 1.20 (1.12, 1.28) |
| STDR, sight-threatening diabetic retinopathy. \*Adjusted for age at index, sex, ethnicity, weight and height, HbA1c, smoking, hypertension, chronic kidney disease (stage 3 to 5), diabetic foot disease, glucose-lowering medicine, and lipid-lowering medicine. †Adjusted for age at index, sex, ethnicity, BMI, HbA1c, smoking, hypertension, peripheral vascular disease, ischemic heart disease stroke, heart failure, chronic kidney disease (stage 3 to 5), diabetic foot disease, glucose-lowering medicine, and lipid-lowering medicine. | | |