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Authors
Cathy Qi MSc, statistician and research officer, ORCiD: 0000-0002-0147-1985[1]
Tim Osborne, data scientist and research officer[1]
Rowena Bailey, statistician and senior research officer[1]
Alison Cooper, clinical research fellow[2]
Joe P Hollinghurst, statistician and senior research officer[1]
Ashley Akbari, associate professor of population data science research[1]
Ruth Crowder, chief allied health professions advisor[3]
Holly Peters, clinical lecturer in assessments[4]
Rebecca-Jane Law, research and evidence lead[5]
Ruth Lewis, senior lecturer[6]
Deb Smith, patient and public involvement[2]
Mark Walker, senior medical officer[3]
Adrian Edwards, professor of general practice[2]
Ronan A Lyons, professor of public health[1]

1. Population Data Science, Swansea University Medical School, Faculty of Medicine, Health & Life Science, Swansea University
2. Wales COVID-19 Evidence Centre, Division of Population Medicine, Cardiff University
3. Directorate of Primary care and Mental Health, Health and Social Services Group, Welsh Government
4. Centre for Medical Education, Cardiff University
5. Technical Advisory Cell, Health and Social Services Group, Welsh Government
6. North Wales Centre for Primary Care Research, PRIME Centre Wales, Bangor University

Corresponding author: cathy.qi@swansea.ac.uk

Abstract

Background

The COVID-19 pandemic has indirectly impacted health service provisions owing to surge and sustained pressures on the system. The effects of these pressures on the management of long-term or chronic conditions are not fully understood.

Aim

To explore the effects of COVID-19 on the recorded incidence of 17 long-term conditions.

Design

An observational retrospective population data linkage study.

Setting

Population of Wales using primary and secondary care data within the Secure Anonymised Information Linkage (SAIL) Databank.

Methods

We presented monthly rates of new diagnosis between 2000 and 2021 for each long-term condition. Incidence rates post-2020 were compared to expected rates predicted using time series modelling of pre-2020 trends.

Proportion of annual incidence was presented by socio-demographic factors: age, sex, social deprivation, ethnicity, frailty and learning disability.

Results

We included 5,476,012 diagnoses from 2,257,992 individuals. Incidence rates from 2020 to 2021 were lower than mean expected rates across all conditions. The largest relative deficit in incidence was in chronic obstructive pulmonary disease corresponding to 343 (95% CI: 230 to 456) undiagnosed patients per 100,000 population, followed by depression, type 2 diabetes, hypertension, anxiety disorders and asthma. A GP practice of 10,000 patients might have over 400 undiagnosed long-term conditions.

No notable differences between socio-demographic profiles of post- and pre- 2020 incidences were observed.

Conclusion

There is a potential backlog of undiagnosed patients across multiple long-term conditions. Resources are required to tackle anticipated workload as part of COVID-recovery, particularly in primary care.

Keywords

COVID-19, primary health care, general practice, Public Health, Chronic Disease

Introduction

The COVID-19 pandemic has had both direct and indirect impacts on the health and care system.[1] Direct effects are those of COVID-19 related illnesses.[2] Indirect effects are highly heterogenous and include delays in cancer services, postponement of elective surgery, and other non-urgent treatments owing to surge pressures on the system. [1] For example, it has been estimated that around 28 million operations were cancelled or postponed globally during the peak 12 weeks of the pandemic's first wave.[3] Non-urgent treatment impacts include harm from cessation or delay of screening services and management of long-term conditions. [1]

A "long-term" or chronic condition is a condition that cannot presently be cured but is controlled by medication and/or other treatment/therapies for example, diabetes and asthma.[4] Long-term conditions are associated with increasing age and deprivation, and the number of people with multiple long-term conditions (multimorbidity) is increasing.[4] Patients with long-term conditions are more intensive users of health and social care services, and before the pandemic accounted for: 50% of general practice (GP) appointments, 64% of outpatient appointments, and 70% of all inpatient bed days.[4]

In primary care, a call and recall system is used to manage long-term conditions, which is offered to patients after a specific diagnosis is made and recorded in condition registries. Primary care activity was substantially reduced in the early months of the pandemic and when activity returned to more usual levels in 2020, acute care displaced much planned care such as long-term condition monitoring and review.[5] It is unknown whether this has resulted in ongoing delays in diagnosis and management for long-term conditions.

Routinely collected data provide opportunity to examine changes in recorded diagnoses. The Secure Anonymised Information Linkage (SAIL) Databank (www.saildatabank.com) contains data from 84% of the GPs and all hospital inpatient and day case activity in Wales.[6 7 8] We sought to examine historic trends in the incidence rates of 17 long-term conditions, and to compare rates in 2020 and 2021 with expected rates over these two years had previous trends continued without interruption. Further, we sought to examine changes in the characteristics of patients with recorded diagnoses to inform resource allocation.

Methods

This was an observational retrospective study reported according to the Strengthening the Reporting of Observational Studies in Epidemiology (STROBE) guidelines.

Data Sources

Anonymised individual-level, population-scale data sources were accessed within the SAIL Databank.[6 7 8 9 10 11 12] Conditions treated during hospital activity are recorded using International Classification of Diseases version 10 (ICD-10) codes in the Patient Episode Dataset for Wales (PEDW) dataset. Diagnoses from GP records are coded using Read v2 codes in the Welsh Longitudinal General Practice (WLGP) dataset. The Welsh Demographic Service Dataset (WDSD) was used to link birth, death, sex, and lower layer super output area (LSOA) [13] to records extracted from PEDW and WLGP data. Ethnicity categories were identified from 26 linked data sources (Table S1).

Study Cohort

We identified residents of Wales diagnosed for the first time with at least one of 17 long-term conditions between January 2000 and December 2021 using ICD-10 or Read v2 codes (Tables S2 and S3). The conditions included were anxiety disorders, asthma, atrial fibrillation, coronary heart disease (CHD), chronic kidney disease (CKD), chronic obstructive pulmonary disease (COPD), dementia, depression, diabetes mellitus, epilepsy, heart failure, hypertension, inflammatory bowel disease (IBD), osteoporosis, peripheral vascular disease (PVD), rheumatoid arthritis, and stroke & transient ischaemic attack (stroke & TIA). These conditions comprise most of the general practice "Quality and Outcomes (QoF) Framework".[14] Further, we identified individuals diagnosed with three diabetes subtypes (type 1, type 2, undetermined) using an algorithm.[15] "Undetermined type diabetes" was assigned when criteria for type 1 or type 2 were not met.

The final study dataset excluded records missing week of birth or sex, or where the diagnosis date was before birth or after death dates.

Variables

Monthly incidence was derived from the number of individuals diagnosed with a long-term condition for the first time, each month.

Age at the earliest found diagnosis date was categorised (<20/ 20-29/ 30-39/ 40-49/ 50- 59/ 60-69/ 70-79/ 80-89/90+years). Sex was male/female. Ethnic groups were analysed using harmonised Office for National Statistics (ONS) categories (White/Black/Asian/Mixed/Other/Unknown). Deprivation was derived from the LSOA code at the time of diagnosis mapped to the 2019 Welsh Index of Multiple Deprivation (WIMD) [16] and categorised in quintiles (1- most deprived to 5- least deprived). Frailty was based on an internationally established cumulative deficit model which utilises an

electronic Frailty Index (eFI). [17 18 19] eFI scores were used to categorise individuals as: fit, mild, moderate or severely frail using 10-years of previous WLGP data from date of diagnosis. Individuals without sufficient coverage of GP data were assigned to a missing category. Learning disability status (yes/no) was identified for the study cohort using Read v2 codes (Table S4). Socio-economic categories with 1 to 4 counts were rounded to 5 to prevent accidental disclosure and the excess counts deducted from an unknown/missing/adjacent category.

Outcomes

The primary outcome measure was the monthly incidence rates for each long-term condition. This was derived for the full study period from January 2000 to December 2021. The primary analysis used data from January 2015 to December 2021, the primary outcome was the relative difference between observed and expected incidence rates from 2020 to 2021. The secondary outcome was the annual number and proportion of incident cases by each socio-demographic and clinical subgroup.

Statistical Analysis

Monthly incidence rates were derived from the number of new diagnoses occurring each month x 100,000/population size and presented descriptively for the full study period. Population size was estimated from individuals registered to GPs in Wales on 1st July of each year; a breakdown by age group, sex and social deprivation was presented to check population stability over time. The population size of Wales published by the ONS[20] was extracted to estimate coverage achieved by the GP-registered population size. Three-month rolling averages were derived from the mean rate of the month in question, the previous and the following month.

We fitted a seasonal autoregressive integrated moving average (SARIMA) model on monthly incidence data from January 2015 to December 2019 to predict the expected incidence rate (and 95% CI) for each month in 2020 and 2021. Model selection is described in Box S1. The difference between the total observed and predicted (lower and upper 95% CI bound) rates was calculated over the two-year period, and for 2020 and 2021 separately. Percentage differences were (observed - expected)x 100/expected rates.

Counts and percentages of persons by demographic groups were presented for each year from 2000 to 2021, and for 2015-2019 and 2020-2021.

Each of the 17 long-term conditions and three diabetes subgroups was examined and analysed separately. As sensitivity analyses, the primary analysis was repeated on the number of cases, unadjusted for population.

Statistical analyses were performed using R V4.1.2.

Public involvement

A public partner contributed public or patient perspective to stakeholder discussions at each stage of the study, including interpretation of the significance and potential impact of the results.

Results

We identified 5,476,012 diagnoses of long-term conditions between January 2000 and December 2021 belonging to 2,257,992 individuals after minor exclusions (Figure 1). Coverage of the population of Wales using GP data in SAIL (Table S5) was high (>80% from 2003, and >85% from 2015). Table S6 shows that population demographics in the GP population were generally stable from 2000 to 2021.

A fully interactive dashboard showing incidence counts and rates from 2000 to 2021 for all 17 long-term conditions and diabetes subtypes is available here: https://envhe.shinyapps.io/wales-cec-ltc-incidence/ (source code: https://gitlab.com/envhe/wales-cec-ltc-incidence-shiny-dashboard).

Figure 2 shows monthly incidence rates from 2015 to 2021, and predicted rates from 2020 by condition. There was an abrupt reduction around March to April 2020 across all conditions, followed by a general upward trend in subsequent months. Table 1 shows the difference in the total observed and expected incidence rates over 2020-2021 by condition. Observed incidence was lower than mean expected incidence for all conditions, except type 1 diabetes. Predicted rates are not available for osteoporosis as a SARIMA model was not fitted due to inconsistent trends in 2015-2019 data. Conditions with the largest relative deficit in diagnoses were COPD, depression, type 2 diabetes, hypertension, anxiety disorders, and asthma. Observed rates for COPD were 38.4% (95% CI: 29.5% to 45.4%) lower than expected, corresponding to an undiagnosed population of 343 (95% CI: 230 to 456) per 100,000 individuals. Anxiety disorders had the largest absolute undiagnosed population of 830 (95% CI: 281 to 1379) per 100,000. Compared to 2020, estimated differences for 2021 were similar for COPD and anxiety disorders, and smaller but with larger 95% CIs among most other conditions (Table S7). Figure 2 suggests that there may still be an overall lag in diagnoses in 2021 for most conditions. Incidence rates for some conditions were close to pre-pandemic levels by the end of 2021, others (e.g. heart failure and stroke) were approaching predicted rates near the start of 2021 but dropped again towards the end of the year.

The estimated rate of underdiagnosis for diabetes mellitus was 178 (95% CI: 57 to 299) in 2020 and 137 (95% CI: -104 to 378) in 2021, similar to corresponding estimates for type 2 diabetes (168 (95% CI: 72 to 263) in 2020 and 132 (95% CI: -38 to 302) in 2021), while the estimated underdiagnosis for type 1 diabetes was 0 (95% CI: -8 to 7) in 2020 and -3 (-11, 5) in 2021.

Results from analysis of incidence counts unadjusted for population size (Tables S8 and S9) were consistent with primary findings. SARIMA model specification and estimated parameters for analysis of incidence rates and counts are shown in Tables S10 and S11, respectively.

Tables S12 to S31 show annual incidence by socio-demographic factors from 2015 to 2021. The study dashboard (link above) includes data from 2000. There was no notable difference between the distribution of cases among categories in 2020 and/or 2021 compared to preceding years for any of the socio-demographic factors, indicating that though overall rates of diagnosis decreased, influences of socio-demographic characteristics on being diagnosed did not drastically differ pre- and post-2020.

Type 1 diabetes was the only condition with an estimated mean net gain in incidence of 8.6% (95% CI: -22.8% to 83.3%). Given that type 1 diabetes is diagnosed in younger patients (around 75% under 50 years old), we investigated whether diagnosis trends differed between younger (<50) and older (>50) populations (Figure S1). Most conditions were rare in under 50s (monthly rate <10 per 100,000), but among the remaining conditions, trends within age groups were similar to aggregate trends, including for depression, anxiety and asthma. As further post-hoc exploration, Figures S2 and S3 show that incidence trends by sex and social deprivation groups were also similar.

Discussion

Summary

From 2020 to 2021, there were deficits in recorded incidences across multiple long-term conditions, likely an indirect effect of the COVID-19 pandemic. Increasing demand and workforce vacancies could have affected availability of appointments and postponed diagnostic tests. A typical general practice of 10,000 patients might have over 400 undiagnosed long-term conditions (some potentially occurring in the same individuals). Observed incidence for some conditions (e.g. heart failure and stroke) increased and declined again during 2021, this could reflect changes in healthcare pressures between the alpha wave (September 2020 to March 2021) and the delta wave (June 2021 to December 2021) in Wales. Other conditions were approaching pre-pandemic levels towards the end of 2021 (e.g. asthma), which could reflect condition-specific ‘catch-up’ activity but an excess would be needed to reach net expected numbers.

Strengths and limitations

Our work included multiple conditions, mostly selected from the QoF framework, previously used to monitor and reward performance in primary care, thus electronic coding quality is generally good though this can vary between individual clinicians and practices. Overall data coverage was close to the full population of Wales.

The assumption that trends in 2015-2019 would persist if COVID-19 had not occurred could not be tested. Possible interactions between COVID-19 and prognosis were not accounted, for example, excess mortality could partially explain the persistent reduction in incidence and could have led to an overestimation of expected rates. However, given that underdiagnosis is evident in a wide range of conditions and in those aged <50, non-presentation and recording may be the biggest issue.

Comparison with existing literature

Observational studies conducted in Spain have reported reduced incidence of multiple chronic diseases in 2020, [21] and substantial reductions in clinical indicators for control and treatment of chronic disease in March and April 2020. [22] A UK based study using primary care data reported reduced incidences of depression (47.1%) and anxiety (40.8%) in Wales, Scotland and Northern Ireland, especially among working age adults registered at practices in more deprived areas.[23] Our work included longer-term data showing there is likely still a lag for most conditions as services have resumed pre-pandemic activity. Further, the pandemic has exacerbated an already high prevalence of undiagnosed COPD.[24 25] UK pandemic guidance to postpone tests which may increase the respiratory transmission of viral infections including spirometry, likely contributed.[26] This might also explain the difference in lag towards the end of 2021 between asthma and COPD, since spirometry is needed to diagnose COPD while a diagnosis of asthma is based more on the clinical history. Reductions in hospital admissions for infectious exacerbation of COPD following the national lockdown in Wales[27] could also in part explain the reduction in incidence rates.

The absence of deficits in recorded incidence for type 1 diabetes is likely condition-specific rather than owing to a younger patient population since type 1 diabetes inevitably presents soon after symptom onset, and there were no indications that overall trends were confounded by age. Other studies have reported increased incidence in 2020-2021, mostly in younger patients (<18 years) [28 29 30 31] and increased risk following COVID-19 infections [28 29] though it is unclear if the association is causative.

Implications for research and/or practice

Rectifying this backlog of case identification and consequent management deficits is likely to require specific strategic and operational planning at the level of primary care organisations. Targeted catch-up initiatives are unlikely to be feasible due to the lack of socio-demographic characterisation of the missing diagnoses. Consideration for specific resource allocation to enable healthcare staff time to be committed to searching records, testing and screening risk groups (e.g. across cardio-vascular conditions) is needed. Governments and policymakers may need to identify such specific funding to tackle this workload as part of COVID-recovery, alongside other higher profile patient needs such as cancer care and elective surgery. General or condition-specific patient advocacy organisations and

charitable foundations may have a role in 'championing' for patients with potentially relevant symptoms to present to primary care (as advocated also for example with potential cancer symptoms[32]), or to seek attendance and 'health checks' among infrequent attenders.

Further research

As a second phase to this work, further research is undergoing to identify what deficits in condition management, health outcomes and health service impacts have occurred.

What is already known on this topic

- Studies have reported reduced recording of long-term or chronic condition incidence early in the COVID-19 pandemic
- Evidence for the presence and severity of lags in diagnoses across multiple long-term conditions during the pandemic, and the current status of these lags is limited

What this study adds

- Over 2020 and 2021, recorded incidence across multiple long-term conditions lagged behind projected expectations, representing a substantial backlog of undiagnosed patients, who are unlikely to be receiving systematic monitoring and management.
- Differences in socio-demographic profile of diagnosed patients post-2020 compared to years pre-2020 were not evident, making targeted catch-up initiatives unlikely to be unfeasible

Figure 1. Study flowchart: numbers presented are number of diagnoses (number of individuals). Data were extracted in two ways: (1) via using a 'diabetes algorithm' to identify individuals diagnosed with type 1, type 2 or undetermined type diabetes, (2) via using ICD-10 and Read codes to identify individuals diagnosed with one or more of 17 conditions (including diabetes mellitus). For (1), the identification algorithm selected the earliest diagnosis date per individual. For (2), the number of diagnoses refers to the number of unique diagnosis dates available, where a diagnosis date is defined as having one or more diagnosis codes recorded on that day. The final dataset included the earliest recorded diagnosis date for each individual per condition.
WLGP: Welsh Longitudinal General Practice. PEDW: Patient Episode Database for Wales. CHD: coronary heart disease. CKD: chronic kidney disease. COPD: chronic obstructive pulmonary disease. IBD: inflammatory bowel disease. PVD: peripheral vascular disease. Stroke & TIA: stroke & transient ischaemic attack.

Figure 2. Monthly observed number of diagnoses per 100,000 population from 2015 to 2021 for 17 long-term conditions and three diabetes subtypes (type 1/type 2/undetermined). For 2020 and 2021, monthly predicted number of diagnoses per 100,000 are also shown with 95% CIs indicated by the shaded region. Monthly observed data is overlaid with three-month rolling averages (solid line)

Condition	2020 and 2021			
	Observed	Predicted (95% CI)	Change (95% CI)	% Change (95% CI)
COPD	549	892 (779, 1005)	-343 (-456, -230)	-38.4 (-45.4, -29.5)
Depression	1800	2512 (2194, 2830)	-712 (-1031, -394)	-28.3 (-36.4, -17.9)
Type 2 diabetes	837	1136 (871, 1401)	-300 (-565, -34)	-26.4 (-40.3, -3.9)
Hypertension	1663	2231 (1979, 2483)	-568 (-820, -316)	-25.5 (-33, -16)
Anxiety disorders	2503	3333 (2784, 3882)	-830 (-1379, -281)	-24.9 (-35.5, -10.1)
Asthma	756	1006 (898, 1114)	-250 (-358, -142)	-24.9 (-32.2, -15.9)
Diabetes mellitus	999	1314 (952, 1676)	-315 (-677, 47)	-24 (-40.4, 4.9)
Rheumatoid arthritis	148	192 (142, 243)	-45 (-95, 6)	-23.1 (-39, 4)
PVD	341	430 (375, 485)	-90 (-145, -35)	-20.8 (-29.8, -9.2)
Inflammatory bowel disease	147	183 (152, 214)	-36 (-67, -5)	-19.8 (-31.4, -3.4)
Undetermined type diabetes	123	147 (116, 178)	-24 (-55, 7)	-16.3 (-31, 6.1)
CHD	671	774 (680, 869)	-103 (-198, -9)	-13.3 (-22.8, -1.3)
Heart failure	756	871 (753, 990)	-116 (-234, 3)	-13.3 (-23.6, 0.4)
CKD	1462	1678 (1496, 1861)	-217 (-399, -34)	-12.9 (-21.5, -2.3)
Epilepsy	159	182 (143, 220)	-23 (-61, 16)	-12.4 (-27.9, 11.4)
Atrial fibrillation	1158	1304 (1145, 1463)	-146 (-305, 13)	-11.2 (-20.8, 1.1)
Stroke & TIA	592	647 (554, 740)	-55 (-148, 38)	-8.5 (-20, 6.9)
Dementia	1050	1135 (991, 1279)	-85 (-229, 59)	-7.5 (-17.9, 6)
Type 1 diabetes	41	38 (22, 53)	3 (-12, 19)	8.6 (-22.8, 83.3)

Table 1. Total observed and predicted incidence rate per 100,000 population in 2020 and 2021. Conditions are ordered from largest to smallest relative (%) change between observed and predicted rates. COPD: chronic obstructive pulmonary disease. PVD: peripheral vascular disease. CHD: coronary heart disease. CKD: chronic kidney disease. Stroke & TIA: stroke & transient ischaemic attack.

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Ethical approval

All research conducted has been completed under the permission and approval of the SAIL independent Information Governance Review Panel (IGRP) project number 0911.

Competing interests

All authors have completed the ICMJE uniform disclosure form at http://www.icmje.org/disclosure-of-interest/ and declare: no support from any organisation for the submitted work; AE declare role as the Director of Wales Covid-19 Evidence Centre as part of university employment, receiving no further payments; no financial relationships with any organisations that might have an interest in the submitted work in the previous three years; no other relationships or activities that could appear to have influenced the submitted work.

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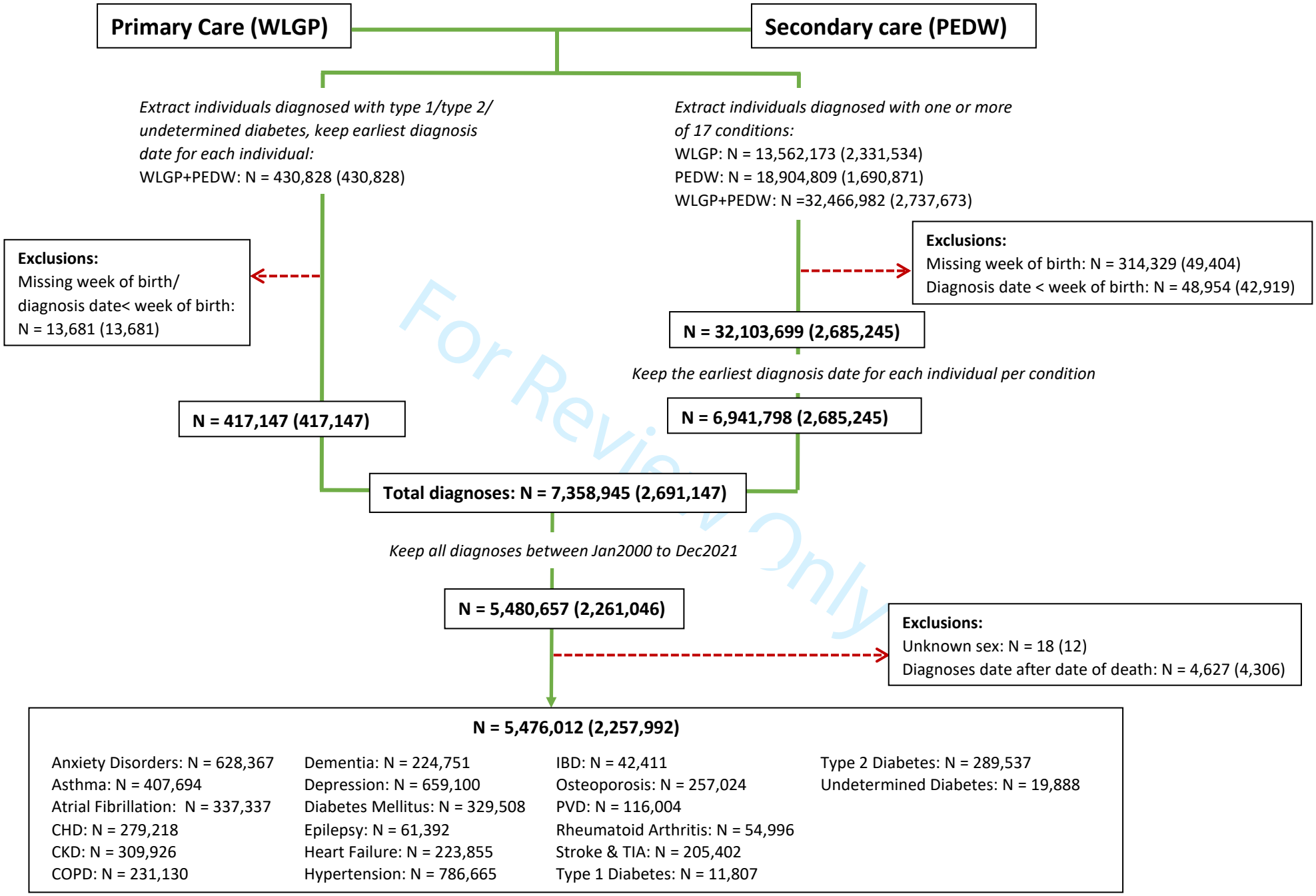

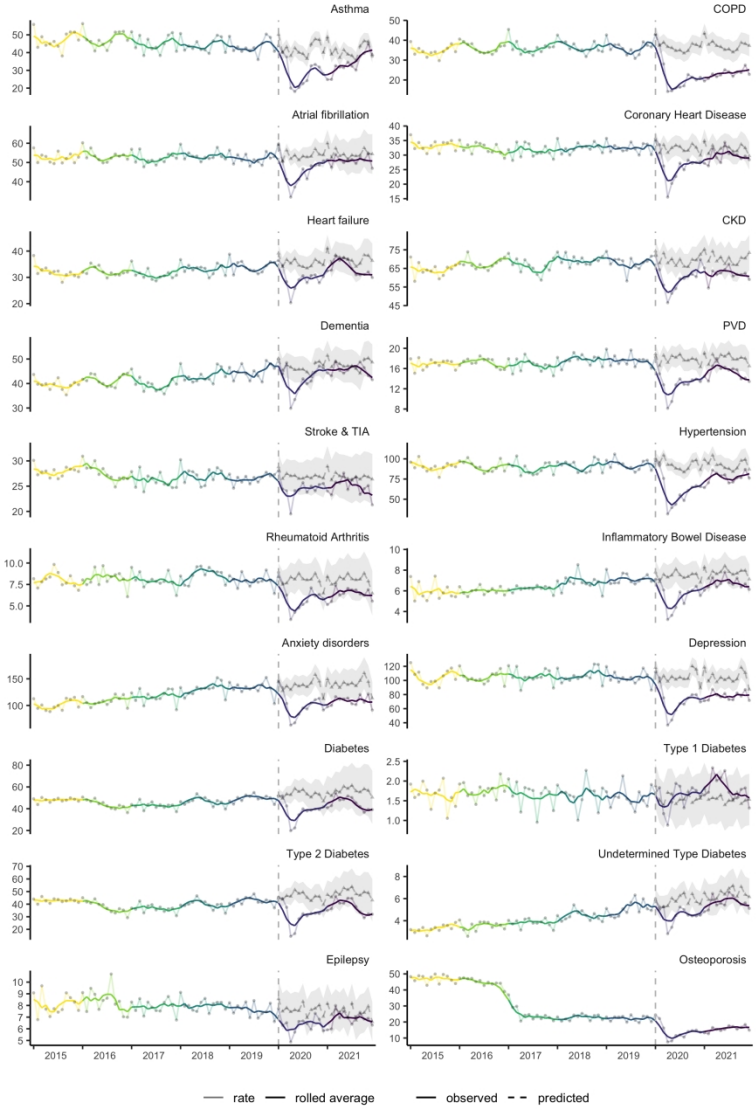

Figure 2. Monthly observed number of diagnoses per 100,000 population from 2015 to 2021 for 17 long-term conditions and three diabetes subtypes (type 1/type 2/undetermined). For 2020 and 2021, monthly predicted number of diagnoses per 100,000 are also shown with 95% CIs indicated by the shaded region. Monthly observed data is overlaid with three-month rolling averages (solid line)

874x1237mm (72 x 72 DPI)

Contents

Table S1: Ethnicity data sources

The following data sources held within the SAIL Databank were used to identify the ethnicity of individuals with diagnoses of long-term conditions

#	Schema	Data Source Name
1	BREC	Brecon Dataset
2	CARS	Congenital Anomaly Register and Information Service
3	CCDS	Critical Care Dataset
4	CENW	ONS 2011 Census Wales
5	CNIS	Cancer Network Information System
6	CTTP	COVID-19 Test Trace and Protect
7	CVLF	Covid Lateral Flow Test
8	CVVD	Covid Vaccination Dataset
9	CYFI	UK Cystic Fibrosis Registry
10	DSCW	Domiciliary Social Care Worker
11	EDDS	Emergency Department Dataset
12	EDUW	Education Wales
13	HWRA	Healthcare Workers Risk Assessment
14	ICNC	Intensive Care National Audit and Research Centre - COVID19
15	LACW	Looked After Children Wales
16	MIDS	Maternity Indicators Dataset
17	NCCH	National Community Child Health Database
18	NHSO	NHS 111 Dataset
19	NSWD	National Survey for Wales Dataset
20	OPRD	Outpatient Referral
21	PEDW	Patient Episode Dataset for Wales
22	SACT	Systemic Anti-Cancer Therapy Dataset
23	SMDS	Substance Misuse Dataset
24	SWAC	School Workforce Annual Census
25	WASD	Welsh Ambulance Services NHS Trust
26	WLGP	Welsh Longitudinal General Practice Dataset

Table S2: ICD-10 codes for long-term conditions

The Patient Episode Dataset for Wales (PEDW) within the SAIL Databank contains details of all hospital admissions, attendances and appointments within NHS Wales (excluding outpatient activity). The following codes were used to extract diagnoses of long-term conditions from PEDW data.

Condition	ICD-10 Code	ICD-10 Code Description
Anxiety Disorders	F41	Other anxiety disorders
Anxiety Disorders	F40	Phobic anxiety disorders
Asthma	J46	Status asthmaticus
Asthma	J45	Asthma
Atrial Fibrillation	I802	Phlebitis and thrombophlebitis of other deep vessels of lower extremities
Atrial Fibrillation	I48	Atrial fibrillation and flutter
Atrial Fibrillation	I801	Phlebitis and thrombophlebitis of femoral vein
Atrial Fibrillation	I26	Pulmonary embolism
Atrial Fibrillation	I803	Phlebitis and thrombophlebitis of lower extremities, unspecified
CHD	I250	Atherosclerotic cardiovascular disease, so described
CHD	I253	Aneurysm of heart
CHD	I255	Ischaemic cardiomyopathy
CHD	I251	Atherosclerotic heart disease
CHD	I254	Coronary artery aneurysm
CHD	I256	Silent myocardial ischaemia
CHD	I258	Other forms of chronic ischaemic heart disease
CHD	I259	Chronic ischaemic heart disease, unspecified
CKD	Z940	Kidney transplant status
CKD	Z49	Care involving dialysis
CKD	Y841	Kidney dialysis
CKD	T861	Kidney transplant failure and rejection
CKD	N19	Unspecified kidney failure
CKD	N181	Chronic kidney disease, stage 1
CKD	N185	Chronic kidney disease, stage 5
CKD	N184	Chronic kidney disease, stage 4
CKD	N183	Chronic kidney disease, stage 3
CKD	N03	Chronic nephritic syndrome
CKD	N189	Chronic kidney disease, unspecified
CKD	N25	Disorders resulting from impaired renal tubular function
CKD	Z992	Dependence on renal dialysis
CKD	N074	Hereditary nephropathy, not elsewhere classified ; Diffuse endocapillary proliferative glomerulonephritis
CKD	N072	Hereditary nephropathy, not elsewhere classified ; Diffuse membranous glomerulonephritis

Condition	ICD-10 Code	ICD-10 Code Description
CKD	N10	Acute tubulo-interstitial nephritis
CKD	N053	Unspecified nephritic syndrome ; Diffuse mesangial proliferative glomerulonephritis
CKD	N073	Hereditary nephropathy, not elsewhere classified ; Diffuse mesangial proliferative glomerulonephritis
CKD	N182	Chronic kidney disease, stage 2
CKD	N01	Rapidly progressive nephritic syndrome
CKD	N056	Unspecified nephritic syndrome ; Dense deposit disease
CKD	N054	Unspecified nephritic syndrome ; Diffuse endocapillary proliferative glomerulonephritis
CKD	N052	Unspecified nephritic syndrome ; Diffuse membranous glomerulonephritis
CKD	N00	Acute nephritic syndrome
CKD	N17	Acute renal failure
CKD	N055	Unspecified nephritic syndrome ; Diffuse mesangiocapillary glomerulonephritis
COPD	J42	Unspecified chronic bronchitis
COPD	J43	Emphysema
COPD	J440	Other chronic obstructive pulmonary disease
COPD	J41	Simple and mucopurulent chronic bronchitis
COPD	J40	Bronchitis, not specified as acute or chronic
COPD	J410	Simple and mucopurulent chronic bronchitis
COPD	J44	Other chronic obstructive pulmonary disease
Dementia	F024A	Dementia in human immunodef virus [HIV] disease
Dementia	333.4	Huntingdon's
Dementia	46.19	Creutzfeld Jacob
Dementia	F019	Vascular dementia, unspecified
Dementia	F013	Mixed cortical and subcortical vascular dementia
Dementia	331.1	Frontotemporal dementia
Dementia	F01	Vascular dementia
Dementia	F012	Subcortical vascular dementia
Dementia	F011	Multi-infarct dementia
Dementia	F018	Other vascular dementia
Dementia	F010	Vascular dementia of acute onset
Dementia	F028A	Dementia in other specified diseases classified elsewhere
Dementia	290.3	Senile dementia with delirium
Dementia	I67.3	Binswanger's disease
Dementia	F051	Delirium superimposed on dementia
Dementia	F021A	Dementia in Creutzfeldt-Jakob disease
Dementia	F02	Dementia in other diseases classified elsewhere
Dementia	290.2	Senile dementia with delusional features
Dementia	F020A	Dementia in Pick's disease

Condition	ICD-10 Code	ICD-10 Code Description
Dementia	F023A	Dementia in Parkinson's disease
Dementia	F03X	Unspecified dementia
Dementia	290.1x	Presenile dementia
Dementia	290.4	Vascular dementia
Dementia	290	Senile dementia, uncomplicated
Dementia	F022A	Dementia in Huntington's disease
Depression	F332	Recurrent depressive disorder, current episode severe without psychotic symptoms
Depression	F330	Recurrent depressive disorder, current episode mild
Depression	F334	Recurrent depressive disorder, currently in remission
Depression	F338	Other recurrent depressive disorders
Depression	F339	Recurrent depressive disorder, unspecified
Depression	F333	Recurrent depressive disorder, current episode severe with psychotic symptoms
Depression	F381	Other recurrent mood [affective] disorders
Depression	F341	Dysthymia
Depression	F331	Recurrent depressive disorder, current episode moderate
Depression	F321	Moderate depressive episode
Depression	F322	Severe depressive episode without psychotic symptoms
Depression	F323	Severe depressive episode with psychotic symptoms
Depression	F329	Depressive episode, unspecified
Depression	F328	Other depressive episodes
Depression	F320	Mild depressive episode
Diabetes Mellitus	E10	Insulin-dependent diabetes mellitus
Diabetes Mellitus	E11	Non-insulin-dependent diabetes mellitus
Diabetes Mellitus	E12	Malnutrition-related diabetes mellitus
Diabetes Mellitus	O242	Diabetes mellitus in pregnancy: Pre-existing malnutrition-related diabetes mellitus
Epilepsy	G41	Status epilepticus
Epilepsy	G40	Epilepsy
Heart Failure	I130	Hypertensive heart and renal disease with (congestive) heart failure
Heart Failure	I500	Congestive heart failure
Heart Failure	I110	Hypertensive heart disease with (congestive) heart failure
Heart Failure	I501	Left ventricular heart failure
Heart Failure	I322	Hypertensive heart and renal disease with both (congestive) heart failure and renal failure
Heart Failure	I509	Heart failure, unspecified
Hypertension	I10	Essential (primary) hypertension
Hypertension	I11	Hypertensive heart disease
Hypertension	I12	Hypertensive renal disease
Hypertension	I13	Hypertensive heart and renal disease
Hypertension	I15	Secondary hypertension

Condition	ICD-10 Code	ICD-10 Code Description
Inflammatory Bowel Disease	K50	Crohn's disease [regional enteritis]
Inflammatory Bowel Disease	M075	Arthropathy in ulcerative colitis
Inflammatory Bowel Disease	K519	Ulcerative colitis, unspecified
Inflammatory Bowel Disease	K518	Other ulcerative colitis
Inflammatory Bowel Disease	K515	Left sided colitis
Inflammatory Bowel Disease	K513	Ulcerative (chronic) rectosigmoiditis
Inflammatory Bowel Disease	M074	Arthropathy in Crohn's disease [regional enteritis]
Inflammatory Bowel Disease	K512	Ulcerative (chronic) proctitis
Inflammatory Bowel Disease	K510	Ulcerative (chronic) pancolitis
Osteoporosis	M82	Osteoporosis in diseases classified elsewhere
Osteoporosis	M80	Osteoporosis with pathological fracture
Osteoporosis	M81	Osteoporosis without pathological fracture
PVD	I731	Thromboangiitis obliterans [Buerger]
PVD	I745	Embolism and thrombosis of iliac artery
PVD	I744	Embolism and thrombosis of arteries of extremities, unspecified
PVD	I743	Embolism and thrombosis of arteries of lower extremities
PVD	I739	Peripheral vascular disease, unspecified
PVD	I738	Other specified peripheral vascular diseases
Rheumatoid Arthritis	M053	Rheumatoid arthritis with involvement of oth organs and sys
Rheumatoid Arthritis	M062	Rheumatoid bursitis
Rheumatoid Arthritis	M060	Seronegative rheumatoid arthritis
Rheumatoid Arthritis	M068	Other specified rheumatoid arthritis
Rheumatoid Arthritis	M061	Adult-onset Still's disease
Rheumatoid Arthritis	M059	Seropositive rheumatoid arthritis, unspecified
Rheumatoid Arthritis	M063	Rheumatoid nodule
Rheumatoid Arthritis	M069	Rheumatoid arthritis, unspecified
Rheumatoid Arthritis	M083	Juvenile polyarthritis (seronegative)

Condition	ICD-10 Code	ICD-10 Code Description
Rheumatoid Arthritis	M080	Juvenile rheumatoid arthritis
Rheumatoid Arthritis	M058	Other seropositive rheumatoid arthritis
Rheumatoid Arthritis	M052	Rheumatoid vasculitis
Rheumatoid Arthritis	I528	Rheumatoid carditis
Rheumatoid Arthritis	M084	Pauciarticular juvenile arthritis
Rheumatoid Arthritis	J990	Rheumatoid lung disease
Rheumatoid Arthritis	M051	Rheumatoid lung disease
Rheumatoid Arthritis	M050	Felty's syndrome
Rheumatoid Arthritis	M082	Juvenile arthritis with systemic onset
Stroke & TIA	G452	Multiple and bilateral precerebral artery syndromes
Stroke & TIA	G454	Transient global amnesia
Stroke & TIA	G453	Amaurosis fugax
Stroke & TIA	G463	Brain stem stroke syndrome
Stroke & TIA	I631	Cerebral infarction due to embolism of precerebral arteries
Stroke & TIA	G464	Cerebellar stroke syndrome
Stroke & TIA	1660	Occlusion and stenosis of cerebral arteries, not resulting in cerebral infarction
Stroke & TIA	G460	Middle cerebral artery syndrome
Stroke & TIA	G468	Other vascular syndromes of brain in cerebrovascular diseases
Stroke & TIA	G462	Posterior cerebral artery syndrome
Stroke & TIA	G461	Anterior cerebral artery syndrome
Stroke & TIA	G467	Other lacunar syndromes
Stroke & TIA	I630	Cerebral infarction due to thrombosis of precerebral arteries
Stroke & TIA	I633	Cerebral infarction due to thrombosis of cerebral arteries
Stroke & TIA	G466	Pure sensory lacunar syndrome
Stroke & TIA	G450	Vertebro-basilar artery syndrome
Stroke & TIA	I635	Cerebral infarction due to unspecified occlusion or stenosis of cerebral arteries
Stroke & TIA	I638	Other cerebral infarction
Stroke & TIA	I639	Cerebral infarction, unspecified
Stroke & TIA	I632	Cerebral infarction due to unspecified occlusion or stenosis of precerebral arteries
Stroke & TIA	I64	Stroke, not specified as haemorrhage or infarction
Stroke & TIA	I650	Occlusion and stenosis of precerebral arteries, not resulting in cerebral infarction

Condition	ICD-10 Code	ICD-10 Code Description
Stroke & TIA	G458	Other transient cerebral ischaemic attacks and related syndromes
Stroke & TIA	I65	Occlusion and stenosis of precerebral arteries, not resulting in cerebral infarction
Stroke & TIA	I693	Sequelae of cerebral infarction
Stroke & TIA	I69.4	Sequelae of stroke, not specified as haemorrhage or infarction
Stroke & TIA	I694	Sequelae of stroke, not specified as haemorrhage or infarction
Stroke & TIA	I634	Cerebral infarction due to embolism of cerebral arteries
Stroke & TIA	G465	Pure motor lacunar syndrome
Stroke & TIA	G451	Carotid artery syndrome (hemispheric)
Stroke & TIA	G459	Transient cerebral ischaemic attack, unspecified
Stroke & TIA	I66	Occlusion and stenosis of cerebral arteries, not resulting in cerebral infarction

Table S3: Read codes for long-term conditions

The Welsh Longitudinal General Practice (WLGP) dataset contains patient records from general practices in Wales. Data is coded using Read v2 codes which capture diagnoses, symptoms and treatments. The following codes were used to extract diagnoses of conditions from WLGP data

Condition	Read Code	Read Code Description
Anxiety Disorders	Eu41z	[X]Anxiety disorder, unspecified
Anxiety Disorders	Eu41y	[X]Other specified anxiety disorders
Anxiety Disorders	Eu412	[X]Mixed anxiety and depressive disorder
Anxiety Disorders	Eu411	[X]Generalized anxiety disorder
Anxiety Disorders	Eu410	[X]Panic disorder [episodic paroxysmal anxiety]
Anxiety Disorders	E2029	Fear of crowds
Anxiety Disorders	E20y2	Other occupational neurosis
Anxiety Disorders	Eu402	[X]Specific (isolated) phobias
Anxiety Disorders	Eu40y	[X]Other phobic anxiety disorders
Anxiety Disorders	Eu341	[X]Depressive neurosis
Anxiety Disorders	ZV112	[V]Personal history of neurosis
Anxiety Disorders	Z4L1.	Anxiety counselling
Anxiety Disorders	Z481.	Phobia counselling
Anxiety Disorders	Eu41.	[X]Other anxiety disorders
Anxiety Disorders	Eu400	[X]Agoraphobia
Anxiety Disorders	Eu401	[X]Social phobias
Anxiety Disorders	E20y3	Psychasthenic neurosis
Anxiety Disorders	E20y.	Other neurotic disorders
Anxiety Disorders	E20y1	Writer's cramp neurosis
Anxiety Disorders	E20yz	Other neurotic disorder NOS
Anxiety Disorders	E20z.	Neurotic disorder NOS
Anxiety Disorders	Eu403	[X]Needle phobia
Anxiety Disorders	Eu40z	[X]Phobic anxiety disorder, unspecified
Anxiety Disorders	Eu40.	[X]Phobic anxiety disorders
Anxiety Disorders	E202z	Phobic disorder NOS
Anxiety Disorders	E202E	Fear of pregnancy
Anxiety Disorders	E202D	Fear of death
Anxiety Disorders	E202C	Dental phobia
Anxiety Disorders	E202B	Cancer phobia
Anxiety Disorders	E202A	Fear of flying
Anxiety Disorders	E20..	Neurotic disorders
Anxiety Disorders	Eu413	[X]Other mixed anxiety disorders
Anxiety Disorders	E2027	Animal phobia
Anxiety Disorders	E2026	Acrophobia
Anxiety Disorders	E2025	Social phobia, fear of public washing
Anxiety Disorders	E2024	Social phobia, fear of public speaking
Anxiety Disorders	E2023	Social phobia, fear of eating in public
Anxiety Disorders	E2022	Agoraphobia without mention of panic attacks
Anxiety Disorders	E200z	Anxiety state NOS
Anxiety Disorders	E2020	Phobia unspecified
Anxiety Disorders	E201B	Compensation neurosis
Anxiety Disorders	E200.	Anxiety states
Anxiety Disorders	E2005	Recurrent anxiety

Condition	Read Code	Read Code Description
Anxiety Disorders	E2004	Chronic anxiety
Anxiety Disorders	E2002	Generalised anxiety disorder
Anxiety Disorders	E2000	Anxiety state unspecified
Anxiety Disorders	E2028	Claustrophobia
Anxiety Disorders	E2021	Agoraphobia with panic attacks
Anxiety Disorders	1Bb..	Specific fear
Anxiety Disorders	8G94.	Anxiety management training
Anxiety Disorders	8G52.	Antiphobic therapy
Anxiety Disorders	286..	Poor insight into neurotic condition
Anxiety Disorders	285..	Neurotic condition, insight present
Anxiety Disorders	225K.	O/E - fearful mood
Anxiety Disorders	9N54.	Encounter for fear
Anxiety Disorders	225J.	O/E - panic attack
Anxiety Disorders	8HHp.	Referral for guided self-help for anxiety
Anxiety Disorders	1B1H.	Fear
Anxiety Disorders	146G.	H/O: agoraphobia
Anxiety Disorders	1466.	H/O: anxiety state
Anxiety Disorders	E202.	Phobic disorders
Anxiety Disorders	E2003	Anxiety with depression
Anxiety Disorders	E2001	Panic disorder
Anxiety Disorders	1B1V.	C/O - panic attack
Asthma	14B4.	H/O: asthma
Asthma	173A.	Exercise induced asthma
Asthma	173c.	Occupational asthma
Asthma	173d.	Work aggravated asthma
Asthma	1780.	Aspirin induced asthma
Asthma	H332.	Mixed asthma
Asthma	1O2..	Asthma confirmed
Asthma	21262	Asthma resolved
Asthma	212G.	Asthma resolved
Asthma	H330z	Extrinsic asthma NOS
Asthma	H3310	Intrinsic asthma without status asthmaticus
Asthma	H331z	Intrinsic asthma NOS
Asthma	H333.	Acute exacerbation of asthma
Asthma	H3301	Extrinsic asthma with status asthmaticus
Asthma	H335.	Chronic asthma with fixed airflow obstruction
Asthma	H3120	Chronic asthmatic bronchitis
Asthma	H33z2	Late-onset asthma
Asthma	H33..	Asthma
Asthma	H330.	Extrinsic (atopic) asthma
Asthma	H331.	Intrinsic asthma
Asthma	H334.	Brittle asthma
Asthma	H3311	Intrinsic asthma with status asthmaticus
Asthma	H33z.	Asthma unspecified
Asthma	H33z0	Status asthmaticus NOS
Asthma	H33z1	Asthma attack
Asthma	H33zz	Asthma NOS

Condition	Read Code	Read Code Description
Asthma	H3300	Extrinsic asthma without status asthmaticus
Atrial Fibrillation	G5731	Atrial flutter
Atrial Fibrillation	3273.	ECG: atrial flutter
Atrial Fibrillation	G573z	Atrial fibrillation and flutter NOS
Atrial Fibrillation	G573.	Atrial fibrillation and flutter
Atrial Fibrillation	3272.	ECG: atrial fibrillation
Atrial Fibrillation	G5733	Non-rheumatic atrial fibrillation
Atrial Fibrillation	G5732	Paroxysmal atrial fibrillation
Atrial Fibrillation	G5734	Permanent atrial fibrillation
Atrial Fibrillation	G5730	Atrial fibrillation
Atrial Fibrillation	G5735	Persistent atrial fibrillation
Atrial Fibrillation	9hF1.	Excepted from atrial fibrillation qual indic: Inform dissent
Atrial Fibrillation	662S.	Atrial fibrillation monitoring
Atrial Fibrillation	9Os4.	Atrial fibrillation monitoring telephone invite
Atrial Fibrillation	9Os3.	Atrial fibrillation monitoring verbal invite
Atrial Fibrillation	9Os2.	Atrial fibrillation monitoring third letter
Atrial Fibrillation	9Os1.	Atrial fibrillation monitoring second letter
Atrial Fibrillation	9Os..	Atrial fibrillation monitoring administration
Atrial Fibrillation	9hF..	Exception reporting: atrial fibrillation quality indicators
Atrial Fibrillation	6A9..	Atrial fibrillation annual review
Atrial Fibrillation	212R.	Atrial fibrillation resolved
Atrial Fibrillation	14AR.	History of atrial flutter
Atrial Fibrillation	14AN.	H/O: atrial fibrillation
Atrial Fibrillation	9Os0.	Atrial fibrillation monitoring first letter
CHD	14AL.	H/O: Treatment for ischaemic heart disease
CHD	G344.	Silent myocardial ischaemia
CHD	6A4..	Coronary heart disease review
CHD	8H2V.	Admit ischaemic heart disease emergency
CHD	G31y2	Subendocardial ischaemia
CHD	G31..	Other acute and subacute ischaemic heart disease
CHD	G343.	Ischaemic cardiomyopathy
CHD	G34..	Other chronic ischaemic heart disease
CHD	G31yz	Other acute and subacute ischaemic heart disease NOS
CHD	G31y.	Other acute and subacute ischaemic heart disease
CHD	G31y3	Transient myocardial ischaemia
CHD	6A2..	Coronary heart disease annual review
CHD	8B3k.	Coronary heart disease medication review
CHD	G3y..	Other specified ischaemic heart disease
CHD	G34z0	Asymptomatic coronary heart disease
CHD	G34y1	Chronic myocardial ischaemia
CHD	G34yz	Other specified chronic ischaemic heart disease NOS
CHD	G3z..	Ischaemic heart disease NOS
CHD	Gyu3.	[X]Ischaemic heart diseases
CHD	G34z.	Other chronic ischaemic heart disease NOS
CHD	Gyu32	[X]Other forms of acute ischaemic heart disease
CHD	G34y.	Other specified chronic ischaemic heart disease
CHD	G3...	Ischaemic heart disease
CHD	G3110	Myocardial infarction aborted

Condition	Read Code	Read Code Description
CHD	G340.	Coronary atherosclerosis
CHD	Gyu33	[X]Other forms of chronic ischaemic heart disease
CKD	Ua1IM	Chronic peritoneal dialysis
CKD	X018T	Angioplasty of arteriovenous fistula
CKD	TA22y	Failure of sterile precautions during other perfusion
CKD	X018U	Thrombolysis of arteriovenous fistula
CKD	X018V	Thrombolysis of arteriovenous graft
CKD	X01AI	Continuous haemodialysis
CKD	X018Y	Embolectomy of arteriovenous fistula
CKD	7L1Cz	Placement other apparatus- compensate for renal failure NOS
CKD	7L1Bz	Placement ambulatory apparatus- compensate renal failure NOS
CKD	7L1C.	Placement other apparatus for compensation for renal failure
CKD	7L1C0	Insertion of temporary peritoneal dialysis catheter
CKD	7L1Cy	Placement other apparatus- compensate for renal failure OS
CKD	TA22.	Failure of sterile precautions during perfusion
CKD	U6122	[X]Failure sterile precautions dur kidney dialys/other perf
CKD	7A614	Ligation of acquired arteriovenous fistula
CKD	7L1B0	Insertion of chronic ambulatory peritoneal dialysis catheter
CKD	14S2.	H/O: kidney recipient
CKD	7A600	Insertion of arteriovenous prosthesis
CKD	7A603	Removal of infected arteriovenous shunt
CKD	TA420	Mech failure of instrument &/or apparatus during kidney dial
CKD	7L1B1	Removal of chronic ambulatory peritoneal dialysis catheter
CKD	7A60z	Arteriovenous shunt NOS
CKD	7A6E2	Declotting of thigh vein loop
CKD	7L1By	Placement ambulatory apparatus- compensate renal failure OS
CKD	Ua1IN	Stab peritoneal dialysis
CKD	TA22z	Failure of sterile precautions during perfusion NOS
CKD	7A60y	Other specified arteriovenous shunt
CKD	8877.	Ultrafiltration
CKD	Xaa6o	Infection of dialysis arteriovenous fistula
CKD	Xaa7F	Infection of dialysis arteriovenous shunt
CKD	Xaa7H	Haemorrhage of dialysis arteriovenous graft
CKD	Xaa7I	Haemorrhage of dialysis arteriovenous fistula
CKD	Xaa7J	Haemorrhage of dialysis arteriovenous shunt
CKD	X018Z	Embolectomy of arteriovenous graft
CKD	Xaa7K	Rupture of dialysis arteriovenous graft
CKD	XaZkw	Aneurysm of vein of transplanted kidney
CKD	XaZcU	Aneurysm of dialysis arteriovenous fistula
CKD	XaZcX	Aneurysm of needle site of dialysis arteriovenous fistula
CKD	XaZcd	Aneurysm of anastomotic site of dialysis AV fistula
CKD	XaZdk	Thrombus in peritoneal dialysis catheter
CKD	Xaa5T	Infection of dialysis vascular access
CKD	Xaa5U	Haemorrhage of dialysis vascular access
CKD	8882.	Intestinal dialysis
CKD	G760.	Acquired arteriovenous fistula
CKD	TA02z	Accid cut,puncture,perf,h'ge - perfusion NOS
CKD	X40bz	Renewal of chronic ambulatory peritoneal dialysis catheter

Condition	Read Code	Read Code Description
CKD	Xaa5j	Occlusion of dialysis arteriovenous shunt
CKD	Xaa6n	Infection of dialysis arteriovenous graft
CKD	Xaa5W	Stenosis of dialysis arteriovenous graft
CKD	Xaa5e	Thrombosis of dialysis arteriovenous graft
CKD	Xaa5f	Thrombosis of dialysis arteriovenous fistula
CKD	Xaa5g	Thrombosis of dialysis arteriovenous shunt
CKD	Xaa5h	Occlusion of dialysis arteriovenous graft
CKD	Xaa5i	Occlusion of dialysis arteriovenous fistula
CKD	Xaa5X	Stenosis of dialysis arteriovenous shunt
CKD	7A602	Attention to arteriovenous shunt
CKD	X018e	Removal of stent from arteriovenous fistula
CKD	X018g	Adjustment of arteriovenous fistula stent
CKD	X01AG	Intermittent haemodialysis with sequential ultrafiltration
CKD	X018j	Banding of arteriovenous fistula
CKD	X018o	Exploration of arteriovenous graft
CKD	7B00.	Renal transplant
CKD	X01AF	Intermittent haemodialysis
CKD	X30Lw	Long-term disorder of dialysis
CKD	X30Ls	First use syndrome of dialysis
CKD	X30Lt	Anaphylactoid reaction to dialysis
CKD	X30Lu	Hyperchloraemic acidosis associated with dialysis
CKD	X30Lv	Hard water syndrome
CKD	X018a	Procedure on intraluminal device of arteriovenous fistula
CKD	X018d	Removal of intraluminal device from arteriovenous fistula
CKD	X01AJ	Continuous arteriovenous haemodialysis
CKD	X01AK	Continuous venovenous haemodialysis
CKD	X01AL	Haemofiltration
CKD	X01AH	Intermittent haemodialysis with continuous ultrafiltration
CKD	X01AM	Intermittent haemofiltration
CKD	X018c	Insertion of stent into arteriovenous fistula
CKD	X01AN	Continuous haemofiltration
CKD	X01AP	Continuous venovenous haemofiltration
CKD	X01AQ	Haemodiafiltration
CKD	X01AR	Intermittent haemodiafiltration
CKD	X018f	Adjustment of intraluminal device of arteriovenous fistula
CKD	X018b	Insertion of intraluminal device into arteriovenous fistula
CKD	X01AO	Continuous arteriovenous haemofiltration
CKD	X30Lx	Beta-2 microglobulin amyloidosis
CKD	X30M2	Aluminium-related osteomalacia
CKD	7L1A0	(Renal dialysis) or (Thomas intravascular dialysis shunt)
CKD	7B002	Cadaveric renal transplant
CKD	7B00y	Other specified transplantation of kidney
CKD	7B00z	Transplantation of kidney NOS
CKD	X30Lr	Dialysis disequilibrium
CKD	7L1A.	Compensation for renal failure (& dialysis)
CKD	7B001	Live donor renal transplant
CKD	7L1A2	Haemodialysis NEC
CKD	7L1Ay	Other specified compensation for renal failure

Condition	Read Code	Read Code Description
CKD	7L1Az	Compensation for renal failure NOS
CKD	7L1B.	Chronic ambulatory peritoneal dialysis catheter procedure ++
CKD	7L1A1	Peritoneal dialysis
CKD	X30Lp	Disorder associated with dialysis
CKD	X30Ly	Beta-2 microglobulin arthropathy
CKD	X30Lz	Matrix stone formation of dialysis
CKD	X30M0	Aluminium intoxication
CKD	X30M1	Aluminium bone disease
CKD	X30Lq	Acute disorder of haemodialysis
CKD	X30J3	End stage renal failure with renal transplant
CKD	X30J0	End stage renal failure
CKD	X01AU	Continuous venovenous haemodiafiltration
CKD	X01AY	Plasma filtration
CKD	X30D2	Xenograft renal transplant
CKD	X30J1	End stage renal failure, untreated by RRT
CKD	X01AS	Continuous haemodiafiltration
CKD	X30J2	End stage renal failure on dialysis
CKD	X01AT	Continuous arteriovenous haemodiafiltration
CKD	XaZe2	Rupture of artery of transplanted kidney
CKD	X30MK	Poor drainage of peritoneal dialysis catheter
CKD	X30ML	Extrusion of peritoneal dialysis catheter cuff
CKD	X30MM	Misplacement of acute peritoneal dialysis catheter
CKD	X30MN	Renal transplant disorder
CKD	X30MO	Primary non-function of renal transplant
CKD	XaZe3	Rupture of vein of transplanted kidney
CKD	X30MP	Renal transplant rejection
CKD	XaMKM	Allotransplantation of kidney from cadaver NEC
CKD	XaC2Z	[X] Peritoneal dialysis associated peritonitis
CKD	XaE9T	Donor renal transplantation
CKD	XaLiG	Thrombectomy of arteriovenous fistula
CKD	XaLiH	Creation of graft fistula for dialysis
CKD	X30MX	Chronic rejection of renal transplant
CKD	X40c5	Intermittent peritoneal dialysis
CKD	X40c2	Flushing of chronic ambulatory peritoneal dialysis catheter
CKD	X40c3	Continuous ambulatory peritoneal dialysis
CKD	X40c4	Continuous cycling peritoneal dialysis
CKD	X30MQ	Hyperacute rejection of renal transplant
CKD	X30MF	Loss of solute clearance
CKD	X30MJ	Omental wrapping around peritoneal dialysis catheter
CKD	X30M4	Polyserositis syndrome of dialysis
CKD	X30M6	Adynamic bone disease
CKD	X30M7	Disorders associated with peritoneal dialysis
CKD	X30M8	Pain during inflow of dialysate
CKD	X30M9	Pain during outflow of dialysate
CKD	X30ME	Loss of ultrafiltration
CKD	X30M5	Underdialysis
CKD	XaM1o	Allotransplantation of kidney from cadaver, heart-beating
CKD	Xa0Ex	Peritoneal dialysis-associated peritonitis

Condition	Read Code	Read Code Description
CKD	Xa0FB	Percutaneous balloon angioplasty of arteriovenous fistula
CKD	Xa0Gm	Percutaneous embolectomy of arteriovenous fistula
CKD	Xa0H7	Percutaneous thrombolysis of arteriovenous fistula
CKD	Xa0HK	Unexplained episode of renal transplant dysfunction
CKD	XaM1p	Allotransplantation kidney from cadaver, heart non-beating
CKD	Xa0HL	Pre-existing disease in renal transplant
CKD	Xa0x1	Removal of arteriovenous shunt
CKD	Xa1dw	Transplant kidney
CKD	Xa24I	Acquired renal arteriovenous fistula
CKD	Xa3x6	Kidney replacement
CKD	Xa402	Extracorporeal kidney
CKD	Xa0oI	Procedure related to surgical arteriovenous connection
CKD	XE2u6	Chronic ambulatory peritoneal dialysis catheter procedure
CKD	XaM2A	Automated peritoneal dialysis
CKD	XaMMt	Peritoneal dialysis NEC
CKD	XaBrA	Haemodialysis procedure
CKD	X40c6	Tidal peritoneal dialysis
CKD	XaOmL	Ligation of arteriovenous dialysis fistula
CKD	XE0kD	Renal dialysis (& haemodialysis)
CKD	XaOoH	Ligation of arteriovenous dialysis graft
CKD	XaZWa	Urological complication of renal transplant
CKD	XaZYx	Vascular complication of renal transplant
CKD	XaMtq	Extracorporeal albumin haemodialysis
CKD	Xa9zl	Dependence on renal dialysis
CKD	X40c7	Night-time intermittent peritoneal dialysis
CKD	XaREO	Continuous ambulatory peritoneal dialysis associated perit
CKD	X40c1	Aspiration chronic ambulatory peritoneal dialysis catheter
CKD	X30Mg	Transplant glomerulopathy
CKD	X30MH	Obstruction of peritoneal dialysis catheter
CKD	X30Mh	Transplant glomerulopathy - early form
CKD	X30MI	Migration of peritoneal dialysis catheter
CKD	Xa8S7	Haemodialysis
CKD	X40c0	Adjustment chronic ambulatory peritoneal dialysis catheter
CKD	X30Mc	Failed renal transplant
CKD	XE0Fj	Repair of acquired arteriovenous fistula
CKD	XE0Jf	Compensation for renal failure
CKD	XE0Jg	Renal dialysis
CKD	XE21r	Mechanical failure of apparatus during kidney dialysis
CKD	ZV560	[V]Aftercare involving extracorporeal dialysis
CKD	XE0Fh	Creation of arteriovenous fistula NEC
CKD	X30MG	Disorder of peritoneal dialysis catheter
CKD	XaZe7	Stenosis of vein of transplanted kidney
CKD	XaZl0	Aneurysm of artery of transplanted kidney
CKD	XaaEx	Stenosis of arterial side of dialysis arteriovenous shunt
CKD	X30M3	Aluminium-related fracturing osteodystrophy
CKD	XaZlv	Thrombosis of dialysis vascular access
CKD	X30Md	Perfusion injury of renal transplant
CKD	XaZmp	Anaphylactoid reaction due to haemodialysis

Condition	Read Code	Read Code Description
CKD	Xaa2Q	Thrombosis of vein of transplanted kidney
CKD	Xaa5S	Occlusion of dialysis vascular access
CKD	XaaEy	Stenosis of venous side of dialysis arteriovenous shunt
CKD	X30Mi	Transplant glomerulopathy - late form
CKD	X30MD	Peritoneal dialysis catheter tunnel infection
CKD	Xaa2O	Thrombosis of artery of transplanted kidney
CKD	X30MC	Peritoneal dialysis catheter exit site infection
CKD	XaZlu	Stenosis of dialysis vascular access
CKD	X30MZ	Chronic rejection of renal transplant - grade II
CKD	X30MS	Very mild acute rejection of renal transplant
CKD	X30MT	Acute rejection of renal transplant
CKD	X30MU	Acute rejection of renal transplant - grade I
CKD	TA020	Accid cut,puncture,perf,h'ge - kidney dialysis
CKD	X30MV	Acute rejection of renal transplant - grade II
CKD	XaZc8	Ruptured aneurysm of dialysis vascular access
CKD	X30MY	Chronic rejection of renal transplant - grade 1
CKD	X30Ma	Chronic rejection of renal transplant - grade III
CKD	X30MR	Accelerated rejection of renal transplant
CKD	X30NN	Perirenal and periureteric post-transplant lymphocele
CKD	X30MW	Acute rejection of renal transplant - grade III
CKD	X30Mb	Acute-on-chronic rejection of renal transplant
CKD	ZV420	[V]Kidney transplanted
CKD	ZV451	[V]Renal dialysis status
CKD	ZV56.	[V]Aftercare involving intermittent dialysis
CKD	ZV561	[V]Preparatory care for dialysis
CKD	ZV56y	[V]Other specified aftercare involving intermittent dialysis
CKD	X30MB	Bloodstained peritoneal dialysis effluent
CKD	ZV56z	[V]Unspecified aftercare involving intermittent dialysis
CKD	TA220	Failure of sterile precautions during kidney dialysis
CKD	XaZcQ	Aneurysm of superficialised artery of dialysis AV fistula
CKD	TB11.	Kidney dialysis with complication, without blame
CKD	X018M	Creation of Cimino fistula
CKD	X018N	Creation brachiocephalic fistula
CKD	X018n	Exploration of arteriovenous fistula
CKD	ZVu3G	[X]Other dialysis
COPD	H3...	Chronic obstructive pulmonary disease
COPD	H3110	Purulent chronic bronchitis
COPD	H322.	Centrilobular emphysema
COPD	H3120	Chronic asthmatic bronchitis
COPD	H31yz	Other chronic bronchitis NOS
COPD	14B3.	History of chronic obstructive pulmonary disease
COPD	H310.	Simple chronic bronchitis
COPD	H310z	Simple chronic bronchitis NOS
COPD	H3111	Fetid chronic bronchitis
COPD	H3123	Bronchiolitis obliterans
COPD	H3100	Chronic catarrhal bronchitis
COPD	H321.	Panlobular emphysema
COPD	H31y.	Other chronic bronchitis

Condition	Read Code	Read Code Description
COPD	H31z.	Chronic bronchitis NOS
COPD	H31y1	Chronic tracheobronchitis
COPD	H313.	Mixed simple and mucopurulent chronic bronchitis
COPD	H320z	Chronic bullous emphysema NOS
COPD	H312z	Obstructive chronic bronchitis NOS
COPD	H3200	Segmental bullous emphysema
COPD	H3201	Zonal bullous emphysema
COPD	H3202	Giant bullous emphysema
COPD	H3203	Bullous emphysema with collapse
COPD	H320.	Chronic bullous emphysema
COPD	H312.	Obstructive chronic bronchitis
COPD	H311.	Mucopurulent chronic bronchitis
COPD	Hyu31	[X]Other specified chronic obstructive pulmonary disease
COPD	H3y..	Other specified chronic obstructive airways disease
COPD	H39..	Very severe chronic obstructive pulmonary disease
COPD	H32y0	Acute vesicular emphysema
COPD	H311z	Mucopurulent chronic bronchitis NOS
COPD	H32y2	MacLeod's unilateral emphysema
COPD	H32yz	Other emphysema NOS
COPD	H32z.	Emphysema NOS
COPD	H36..	Mild chronic obstructive pulmonary disease
COPD	H37..	Moderate chronic obstructive pulmonary disease
COPD	H38..	Severe chronic obstructive pulmonary disease
COPD	H32y.	Other emphysema
COPD	Hyu30	[X]Other emphysema
COPD	H32y1	Atrophic (senile) emphysema
COPD	H3121	Emphysematous bronchitis
COPD	H3122	Acute exacerbation of chronic obstructive airways disease
COPD	H31..	Chronic bronchitis
COPD	H5832	Eosinophilic bronchitis
COPD	H4640	Chronic emphysema due to chemical fumes
COPD	H3y0.	Chronic obstruct pulmonary dis with acute lower resp infectn
COPD	H3y1.	Chron obstruct pulmonary dis wth acute exacerbation, unspec
COPD	H3z..	Chronic obstructive airways disease NOS
COPD	H4641	Obliterative bronchiolitis due to chemical fumes
COPD	H3A..	End stage chronic obstructive airways disease
COPD	H32..	Emphysema
Dementia	Eu01.	[X]Vascular dementia
Dementia	Eu013	[X]Mixed cortical and subcortical vascular dementia
Dementia	Eu011	[X]Multi-infarct dementia
Dementia	E001z	Presenile dementia NOS
Dementia	E041.	Dementia in conditions EC
Dementia	1461.	H/O: dementia
Dementia	9hD0.	Excepted from dementia quality indicators: Patient unsuitabl
Dementia	8CMZ.	Dementia care plan
Dementia	6AB..	Dementia annual review
Dementia	66h..	Dementia monitoring
Dementia	E00y.	Other senile and presenile organic psychoses

Condition	Read Code	Read Code Description
Dementia	9hD1.	Excepted from dementia quality indicators: Informed dissent
Dementia	Eu010	[X]Vascular dementia of acute onset
Dementia	Eu000	[X]Dementia in Alzheimer's disease with early onset
Dementia	E00z.	Senile or presenile psychoses NOS
Dementia	E004z	Arteriosclerotic dementia NOS
Dementia	E0042	Arteriosclerotic dementia with paranoia
Dementia	E0041	Arteriosclerotic dementia with delirium
Dementia	Eu00z	[X]Dementia in Alzheimer's disease, unspecified
Dementia	E0040	Uncomplicated arteriosclerotic dementia
Dementia	E002z	Senile dementia with depressive or paranoid features NOS
Dementia	E002.	Senile dementia with depressive or paranoid features
Dementia	Eu001	[X]Dementia in Alzheimer's disease with late onset
Dementia	Eu002	[X]Dementia in Alzheimer's dis, atypical or mixed type
Dementia	Eu00.	[X]Dementia in Alzheimer's disease
Dementia	E003.	Senile dementia with delirium
Dementia	9hD..	Exception reporting: dementia quality indicators
Dementia	9Ou4.	Dementia monitoring verbal invite
Dementia	9Ou3.	Dementia monitoring third letter
Dementia	9Ou2.	Dementia monitoring second letter
Dementia	Eu012	[X]Subcortical vascular dementia
Dementia	Eu01z	[X]Vascular dementia, unspecified
Dementia	E0043	Arteriosclerotic dementia with depression
Dementia	ZS7C5	Language disorder of dementia
Dementia	F110.	Alzheimer's disease
Dementia	F1101	Alzheimer's disease with late onset
Dementia	F1100	Alzheimer's disease with early onset
Dementia	Eu041	[X]Delirium superimposed on dementia
Dementia	Eu02z	[X] Unspecified dementia
Dementia	Fyu30	[X]Other Alzheimer's disease
Dementia	9Ou5.	Dementia monitoring telephone invite
Dementia	E004.	Arteriosclerotic dementia
Dementia	E0021	Senile dementia with depression
Dementia	E0013	Presenile dementia with depression
Dementia	E00..	Senile/presenile dementia
Dementia	9Ou1.	Dementia monitoring first letter
Dementia	E0020	Senile dementia with paranoia
Dementia	E000.	Uncomplicated senile dementia
Dementia	E001.	Presenile dementia
Dementia	E0012	Presenile dementia with paranoia
Dementia	E0011	Presenile dementia with delirium
Dementia	E0010	Uncomplicated presenile dementia
Dementia	9Ou..	Dementia monitoring administration
Dementia	Eu01y	[X]Other vascular dementia
Depression	E1121	Single major depressive episode, mild
Depression	E1120	Single major depressive episode, unspecified
Depression	E1131	Recurrent major depressive episodes, mild
Depression	E113.	Recurrent major depressive episode
Depression	Eu32.	[X]Depressive episode

Condition	Read Code	Read Code Description
Depression	Eu251	[X]Schizoaffective disorder, depressive type
Depression	E2003	Anxiety with depression
Depression	9Ov1.	Depression monitoring second letter
Depression	E130.	Reactive depressive psychosis
Depression	Eu322	[X]Severe depressive episode without psychotic symptoms
Depression	E0043	Arteriosclerotic dementia with depression
Depression	E0021	Senile dementia with depression
Depression	E0013	Presenile dementia with depression
Depression	Eu323	[X]Severe depressive episode with psychotic symptoms
Depression	1465.	H/O: depression
Depression	8HHq.	Referral for guided self-help for depression
Depression	8CAa.	Patient given advice about management of depression
Depression	E112.	Single major depressive episode
Depression	E1122	Single major depressive episode, moderate
Depression	9Ov2.	Depression monitoring third letter
Depression	9Ov0.	Depression monitoring first letter
Depression	9Ov3.	Depression monitoring verbal invite
Depression	9Ov4.	Depression monitoring telephone invite
Depression	9Ov..	Depression monitoring administration
Depression	9kQ..	On full dose long term treatment depression - enh serv admin
Depression	9k4..	Depression - enhanced services administration
Depression	E1123	Single major depressive episode, severe, without psychosis
Depression	9k40.	Depression - enhanced service completed
Depression	9H92.	Depression interim review
Depression	E1125	Single major depressive episode, partial or unspec remission
Depression	E1130	Recurrent major depressive episodes, unspecified
Depression	E112z	Single major depressive episode NOS
Depression	Eu33z	[X]Recurrent depressive disorder, unspecified
Depression	E1126	Single major depressive episode, in full remission
Depression	E1124	Single major depressive episode, severe, with psychosis
Depression	Eu333	[X]Recurrent depress disorder cur epi severe with psyc symp
Depression	9HA0.	On depression register
Depression	8BK0.	Depression management programme
Depression	Eu334	[X]Recurrent depressive disorder, currently in remission
Depression	Eu341	[X]Depressive neurosis
Depression	Eu204	[X]Post-schizophrenic depression
Depression	E1133	Recurrent major depressive episodes, severe, no psychosis
Depression	E1134	Recurrent major depressive episodes, severe, with psychosis
Depression	E1135	Recurrent major depressive episodes,partial/unspec remission
Depression	E1136	Recurrent major depressive episodes, in full remission
Depression	212S.	Depression resolved
Depression	E1137	Recurrent depression
Depression	E118.	Seasonal affective disorder
Depression	E11..	Depressive psychoses
Depression	E11y2	Atypical depressive disorder
Depression	E11z2	Masked depression
Depression	E135.	Agitated depression
Depression	E291.	Prolonged depressive reaction

Condition	Read Code	Read Code Description
Depression	E2B1.	Chronic depression
Depression	E2B..	Depressive disorder NEC
Depression	E113z	Recurrent major depressive episode NOS
Depression	Eu33y	[X]Other recurrent depressive disorders
Depression	Eu332	[X]Recurr depress disorder cur epi severe without psyc sympt
Depression	9H91.	Depression medication review
Depression	Eu33.	[X]Recurrent depressive disorder
Depression	Eu32z	[X]Depressive episode, unspecified
Depression	Eu32y	[X]Other depressive episodes
Depression	9H90.	Depression annual review
Depression	Eu328	[X]Major depression, severe with psychotic symptoms
Depression	Eu320	[X]Mild depressive episode
Depression	Eu412	[X]Mixed anxiety and depressive disorder
Depression	Eu321	[X]Moderate depressive episode
Depression	Eu325	[X]Major depression, mild
Depression	Eu326	[X]Major depression, moderately severe
Depression	Eu327	[X]Major depression, severe without psychotic symptoms
Depression	Eu329	[X]Single major depr ep, severe with psych, psych in remiss
Depression	E1132	Recurrent major depressive episodes, moderate
Depression	Eu32A	[X]Recurr major depr ep, severe with psych, psych in remiss
Depression	Eu330	[X]Recurrent depressive disorder, current episode mild
Depression	Eu331	[X]Recurrent depressive disorder, current episode moderate
Depression	Eu324	[X]Mild depression
Diabetes Mellitus	C1082	Type I diabetes mellitus with neurological complications
Diabetes Mellitus	C1085	Type I diabetes mellitus with ulcer
Diabetes Mellitus	C1084	Unstable type I diabetes mellitus
Diabetes Mellitus	C108H	Type I diabetes mellitus with arthropathy
Diabetes Mellitus	C108F	Type I diabetes mellitus with diabetic cataract
Diabetes Mellitus	C108D	Type I diabetes mellitus with nephropathy
Diabetes Mellitus	C10E0	Type 1 diabetes mellitus with renal complications
Diabetes Mellitus	C108A	Type I diabetes mellitus without complication
Diabetes Mellitus	C10EH	Type 1 diabetes mellitus with arthropathy
Diabetes Mellitus	C1080	Type I diabetes mellitus with renal complications
Diabetes Mellitus	C10E8	Type 1 diabetes mellitus - poor control
Diabetes Mellitus	C108E	Type I diabetes mellitus with hypoglycaemic coma
Diabetes Mellitus	C10E6	Type 1 diabetes mellitus with gangrene
Diabetes Mellitus	C108.	Type 1 diabetes mellitus
Diabetes Mellitus	C1089	Type I diabetes mellitus maturity onset
Diabetes Mellitus	C1087	Type I diabetes mellitus with retinopathy
Diabetes Mellitus	C10E2	Type 1 diabetes mellitus with neurological complications
Diabetes Mellitus	C109B	Type II diabetes mellitus with polyneuropathy
Diabetes Mellitus	C10E1	Type 1 diabetes mellitus with ophthalmic complications
Diabetes Mellitus	C1088	Type I diabetes mellitus - poor control
Diabetes Mellitus	C109.	Type 2 diabetes mellitus
Diabetes Mellitus	C1091	Type II diabetes mellitus with ophthalmic complications
Diabetes Mellitus	C10EL	Type 1 diabetes mellitus with persistent microalbuminuria
Diabetes Mellitus	C10EK	Type 1 diabetes mellitus with persistent proteinuria
Diabetes Mellitus	C10EJ	Type 1 diabetes mellitus with neuropathic arthropathy

Condition	Read Code	Read Code Description
Diabetes Mellitus	C10EF	Type 1 diabetes mellitus with diabetic cataract
Diabetes Mellitus	C1092	Type II diabetes mellitus with neurological complications
Diabetes Mellitus	C10EE	Type 1 diabetes mellitus with hypoglycaemic coma
Diabetes Mellitus	C10ED	Type 1 diabetes mellitus with nephropathy
Diabetes Mellitus	C10EQ	Type 1 diabetes mellitus with gastroparesis
Diabetes Mellitus	C1090	Type II diabetes mellitus with renal complications
Diabetes Mellitus	C1095	Type II diabetes mellitus with gangrene
Diabetes Mellitus	C1096	Type II diabetes mellitus with retinopathy
Diabetes Mellitus	C10EB	Type 1 diabetes mellitus with mononeuropathy
Diabetes Mellitus	C1094	Type II diabetes mellitus with ulcer
Diabetes Mellitus	C1097	Type II diabetes mellitus - poor control
Diabetes Mellitus	C109E	Type II diabetes mellitus with diabetic cataract
Diabetes Mellitus	C109F	Type II diabetes mellitus with peripheral angiopathy
Diabetes Mellitus	C109A	Type II diabetes mellitus with mononeuropathy
Diabetes Mellitus	C109C	Type II diabetes mellitus with nephropathy
Diabetes Mellitus	C109D	Type II diabetes mellitus with hypoglycaemic coma
Diabetes Mellitus	C108J	Type I diabetes mellitus with neuropathic arthropathy
Diabetes Mellitus	C10E9	Type 1 diabetes mellitus maturity onset
Diabetes Mellitus	C10E7	Type 1 diabetes mellitus with retinopathy
Diabetes Mellitus	C109K	Hyperosmolar non-ketotic state in type 2 diabetes mellitus
Diabetes Mellitus	C10E5	Type 1 diabetes mellitus with ulcer
Diabetes Mellitus	C10E3	Type 1 diabetes mellitus with multiple complications
Diabetes Mellitus	C10F1	Type 2 diabetes mellitus with ophthalmic complications
Diabetes Mellitus	C10E.	Type 1 diabetes mellitus
Diabetes Mellitus	C109J	Insulin treated Type 2 diabetes mellitus
Diabetes Mellitus	C109G	Type II diabetes mellitus with arthropathy
Diabetes Mellitus	C109H	Type II diabetes mellitus with neuropathic arthropathy
Diabetes Mellitus	C10F0	Type 2 diabetes mellitus with renal complications
Diabetes Mellitus	C10F.	Type 2 diabetes mellitus
Diabetes Mellitus	C10EP	Type 1 diabetes mellitus with exudative maculopathy
Diabetes Mellitus	C10EA	Type 1 diabetes mellitus without complication
Diabetes Mellitus	C10EN	Type 1 diabetes mellitus with ketoacidotic coma
Diabetes Mellitus	C10F5	Type 2 diabetes mellitus with gangrene
Diabetes Mellitus	C10EG	Type 1 diabetes mellitus with peripheral angiopathy
Diabetes Mellitus	C10EC	Type 1 diabetes mellitus with polyneuropathy
Diabetes Mellitus	C10FM	Type 2 diabetes mellitus with persistent microalbuminuria
Diabetes Mellitus	C10EM	Type 1 diabetes mellitus with ketoacidosis
Diabetes Mellitus	C10E4	Unstable type 1 diabetes mellitus
Diabetes Mellitus	C10FG	Type 2 diabetes mellitus with arthropathy
Diabetes Mellitus	C10FH	Type 2 diabetes mellitus with neuropathic arthropathy
Diabetes Mellitus	C10FQ	Type 2 diabetes mellitus with exudative maculopathy
Diabetes Mellitus	C10FC	Type 2 diabetes mellitus with nephropathy
Diabetes Mellitus	C10F4	Type 2 diabetes mellitus with ulcer
Diabetes Mellitus	C10F7	Type 2 diabetes mellitus - poor control
Diabetes Mellitus	C10FN	Type 2 diabetes mellitus with ketoacidosis
Diabetes Mellitus	C10FP	Type 2 diabetes mellitus with ketoacidotic coma
Diabetes Mellitus	C10FK	Hyperosmolar non-ketotic state in type 2 diabetes mellitus
Diabetes Mellitus	C10F6	Type 2 diabetes mellitus with retinopathy

Condition	Read Code	Read Code Description
Diabetes Mellitus	C10F3	Type 2 diabetes mellitus with multiple complications
Diabetes Mellitus	C10FL	Type 2 diabetes mellitus with persistent proteinuria
Diabetes Mellitus	C10FJ	Insulin treated Type 2 diabetes mellitus
Diabetes Mellitus	C10FF	Type 2 diabetes mellitus with peripheral angiopathy
Diabetes Mellitus	C10FR	Type 2 diabetes mellitus with gastroparesis
Diabetes Mellitus	C10FE	Type 2 diabetes mellitus with diabetic cataract
Diabetes Mellitus	C10FB	Type 2 diabetes mellitus with polyneuropathy
Diabetes Mellitus	C10FA	Type 2 diabetes mellitus with mononeuropathy
Diabetes Mellitus	C10F9	Type 2 diabetes mellitus without complication
Diabetes Mellitus	C10F2	Type 2 diabetes mellitus with neurological complications
Diabetes Mellitus	C10FD	Type 2 diabetes mellitus with hypoglycaemic coma
Epilepsy	6674.	Epilepsy associated problems
Epilepsy	F2553	Visceral reflex epilepsy
Epilepsy	F259.	Early infant epileptic encephalopathy wth suppression bursts
Epilepsy	1B1W.	Transient epileptic amnesia
Epilepsy	1O30.	Epilepsy confirmed
Epilepsy	9Of3.	Epilepsy monitoring verbal invite
Epilepsy	21260	Epilepsy resolved
Epilepsy	6110.	Contraceptive advice for patients with epilepsy
Epilepsy	F256.	Infantile spasms
Epilepsy	F250y	Other specified generalised nonconvulsive epilepsy
Epilepsy	Eu052	[X]Schizophrenia-like psychosis in epilepsy
Epilepsy	Eu05y	[X]Epileptic psychosis NOS
Epilepsy	212J.	Epilepsy resolved
Epilepsy	F2550	Jacksonian, focal or motor epilepsy
Epilepsy	667D.	Epilepsy control poor
Epilepsy	667F.	Seizure free >12 months
Epilepsy	667G.	Epilepsy restricts employment
Epilepsy	667H.	Epilepsy prevents employment
Epilepsy	667J.	Epilepsy impairs education
Epilepsy	F253.	Grand mal status
Epilepsy	667K.	Epilepsy limits activities
Epilepsy	667E.	Epilepsy care arrangement
Epilepsy	667..	Epilepsy monitoring
Epilepsy	F1321	Progressive myoclonic epilepsy
Epilepsy	F2500	Petit mal (minor) epilepsy
Epilepsy	F2510	Grand mal (major) epilepsy
Epilepsy	F2511	Neonatal myoclonic epilepsy
Epilepsy	667L.	Epilepsy does not limit activities
Epilepsy	Eu060	[X]Limbic epilepsy personality
Epilepsy	667W.	Emergency epilepsy treatment since last appointment
Epilepsy	67IJ0	Pre-conception advice for patients with epilepsy
Epilepsy	667V.	Many seizures a day
Epilepsy	667S.	1 to 7 seizures a week
Epilepsy	667R.	2 to 4 seizures a month
Epilepsy	Eu803	[X]Acquired aphasia with epilepsy [Landau - Kleffner]
Epilepsy	667Q.	1 to 12 seizures a year
Epilepsy	667T.	Daily seizures

Condition	Read Code	Read Code Description
Epilepsy	9Of6.	Epilepsy monitoring call second letter
Epilepsy	9Of5.	Epilepsy monitoring call first letter
Epilepsy	9Of4.	Epilepsy monitoring telephone invite
Epilepsy	8BIF.	Epilepsy medication review
Epilepsy	667P.	No seizures on treatment
Epilepsy	667X.	No epilepsy drug side effects
Epilepsy	F25G.	Severe myoclonic epilepsy in infancy
Epilepsy	F1322	Myoclonic encephalopathy
Epilepsy	9Of7.	Epilepsy monitoring call third letter
Epilepsy	F1422	Dyssynergia cerebellaris myoclonica
Epilepsy	F2501	Pykno-epilepsy
Epilepsy	667Z.	Epilepsy monitoring NOS
Epilepsy	F2502	Epileptic seizures - atonic
Epilepsy	F2504	Juvenile absence epilepsy
Epilepsy	F2505	Lennox-Gastaut syndrome
Epilepsy	F250.	Generalised nonconvulsive epilepsy
Epilepsy	F25z.	Epilepsy NOS
Epilepsy	667N.	Epilepsy severity
Epilepsy	67AF.	Pregnancy advice for patients with epilepsy
Epilepsy	F2503	Epileptic seizures - akinetic
Epilepsy	667M.	Epilepsy management plan given
Epilepsy	F2515	Tonic-clonic epilepsy
Epilepsy	F255z	Partial epilepsy without impairment of consciousness NOS
Epilepsy	F251.	Generalised convulsive epilepsy
Epilepsy	F251z	Generalised convulsive epilepsy NOS
Epilepsy	F252.	Petit mal status
Epilepsy	667C.	Epilepsy control good
Epilepsy	F2540	Temporal lobe epilepsy
Epilepsy	F2542	Psychosensory epilepsy
Epilepsy	F251y	Other specified generalised convulsive epilepsy
Epilepsy	F2560	Hypsarrhythmia
Epilepsy	F25y1	Gelastic epilepsy
Epilepsy	F25y2	Locl-rlt(foc)(part)idiop epilep&epilptic syn seiz locl onset
Epilepsy	F2541	Psychomotor epilepsy
Epilepsy	F2514	Epileptic seizures - tonic
Epilepsy	F2545	Complex partial epileptic seizure
Epilepsy	F254.	Partial epilepsy with impairment of consciousness
Epilepsy	F254z	Partial epilepsy with impairment of consciousness NOS
Epilepsy	F2551	Sensory induced epilepsy
Epilepsy	F2552	Somatosensory epilepsy
Epilepsy	F2513	Epileptic seizures - myoclonic
Epilepsy	F2554	Visual reflex epilepsy
Epilepsy	F2556	Simple partial epileptic seizure
Epilepsy	F255.	Partial epilepsy without impairment of consciousness
Epilepsy	F255y	Partial epilepsy without impairment of consciousness OS
Epilepsy	F2544	Epileptic automatism
Epilepsy	F2543	Limbic system epilepsy
Epilepsy	F2512	Epileptic seizures - clonic

Condition	Read Code	Read Code Description
Epilepsy	F2555	Unilateral epilepsy
Epilepsy	F25y3	Complex partial status epilepticus
Epilepsy	F25C.	Drug-induced epilepsy
Epilepsy	F25D.	Menstrual epilepsy
Epilepsy	F25E.	Stress-induced epilepsy
Epilepsy	F25..	Epilepsy
Epilepsy	F25F.	Photosensitive epilepsy
Epilepsy	F25y4	Benign Rolandic epilepsy
Epilepsy	F25B.	Alcohol-induced epilepsy
Epilepsy	6677.	Epilepsy drug side effects
Epilepsy	6678.	Epilepsy treatment changed
Epilepsy	6679.	Epilepsy treatment started
Epilepsy	667A.	Epilepsy treatment stopped
Epilepsy	667B.	Nocturnal epilepsy
Epilepsy	1473.	H/O: epilepsy
Epilepsy	F25A.	Juvenile myoclonic epilepsy
Epilepsy	F250z	Generalised nonconvulsive epilepsy NOS
Epilepsy	F25y5	Panayiotopoulos syndrome
Epilepsy	F25yz	Other forms of epilepsy NOS
Epilepsy	Fyu50	[X]Other generalized epilepsy and epileptic syndromes
Epilepsy	Fyu51	[X]Other epilepsy
Epilepsy	F25X.	Status epilepticus, unspecified
Epilepsy	Fyu52	[X]Other status epilepticus
Epilepsy	F25y.	Other forms of epilepsy
Epilepsy	F25y0	Cursive (running) epilepsy
Epilepsy	F2561	Salaam attacks
Epilepsy	F256z	Infantile spasms NOS
Epilepsy	F257.	Kojevnikov's epilepsy
Epilepsy	F258.	Post-ictal state
Epilepsy	Fyu59	[X]Status epilepticus, unspecified
Heart Failure	9Or..	Heart failure monitoring administration
Heart Failure	G1yz1	Rheumatic left ventricular failure
Heart Failure	G400.	Acute cor pulmonale
Heart Failure	9On2.	Left ventricular dysfunction monitoring third letter
Heart Failure	9hH1.	Excepted heart failure quality indicators: Informed dissent
Heart Failure	9h11.	Excepted from LVD quality indicators: Patient unsuitable
Heart Failure	662h.	New York Heart Association classification - class III
Heart Failure	9h12.	Excepted from LVD quality indicators: Informed dissent
Heart Failure	9hH0.	Excepted heart failure quality indicators: Patient unsuitabl
Heart Failure	9hH..	Exception reporting: heart failure quality indicators
Heart Failure	G41z.	Chronic cor pulmonale
Heart Failure	9N2p.	Seen by community heart failure nurse
Heart Failure	9N6T.	Referred by heart failure nurse specialist
Heart Failure	9On0.	Left ventricular dysfunction monitoring first letter
Heart Failure	9On1.	Left ventricular dysfunction monitoring second letter
Heart Failure	9h1..	Exception reporting: LVD quality indicators
Heart Failure	9Or5.	Heart failure monitoring third letter
Heart Failure	662i.	New York Heart Association classification - class IV

Condition	Read Code	Read Code Description
Heart Failure	661M5	Heart failure self-management plan agreed
Heart Failure	662p.	Heart failure 6 month review
Heart Failure	662T.	Congestive heart failure monitoring
Heart Failure	388D.	New York Heart Assoc classification heart failure symptoms
Heart Failure	1O1..	Heart failure confirmed
Heart Failure	14AM.	H/O: Heart failure in last year
Heart Failure	9On3.	Left ventricular dysfunction monitoring verbal invite
Heart Failure	14A6.	H/O: heart failure
Heart Failure	9Or3.	Heart failure monitoring first letter
Heart Failure	9On4.	Left ventricular dysfunction monitoring telephone invite
Heart Failure	9On..	Left ventricular dysfunction monitoring administration
Heart Failure	9Or0.	Heart failure review completed
Heart Failure	9Or1.	Heart failure monitoring telephone invite
Heart Failure	9Or2.	Heart failure monitoring verbal invite
Heart Failure	9Or4.	Heart failure monitoring second letter
Heart Failure	G58z.	Heart failure NOS
Heart Failure	G5800	Acute congestive heart failure
Heart Failure	G584.	Right ventricular failure
Heart Failure	662f.	New York Heart Association classification - class I
Heart Failure	662W.	Heart failure annual review
Heart Failure	G5yyA	Left ventricular diastolic dysfunction
Heart Failure	G5yy9	Left ventricular systolic dysfunction
Heart Failure	8CeC.	Preferred place of care for next exacerbation heart failure
Heart Failure	G234.	Hyperten heart&renal dis+both(congestv)heart and renal fail
Heart Failure	679X.	Heart failure education
Heart Failure	8HBE.	Heart failure follow-up
Heart Failure	8H2S.	Admit heart failure emergency
Heart Failure	8CL3.	Heart failure care plan discussed with patient
Heart Failure	8B29.	Cardiac failure therapy
Heart Failure	8CMK.	Has heart failure management plan
Heart Failure	8HHz.	Referral to heart failure exercise programme
Heart Failure	8CMW8	Heart failure clinical pathway
Heart Failure	679W1	Education about deteriorating heart failure
Heart Failure	8Hk0.	Referred to heart failure education group
Heart Failure	G2101	Malignant hypertensive heart disease with CCF
Heart Failure	G2111	Benign hypertensive heart disease with CCF
Heart Failure	G21z1	Hypertensive heart disease NOS with CCF
Heart Failure	G232.	Hypertensive heart&renal dis wth (congestive) heart failure
Heart Failure	G5540	Congestive cardiomyopathy
Heart Failure	662g.	New York Heart Association classification - class II
Heart Failure	G58..	Heart failure
Heart Failure	G582.	Acute heart failure
Heart Failure	G580.	Congestive heart failure
Heart Failure	G581.	Left ventricular failure
Heart Failure	ZRad.	New York Heart Assoc classification heart failure symptoms
Heart Failure	G5810	Acute left ventricular failure
Heart Failure	G5801	Chronic congestive heart failure
Heart Failure	G5802	Decompensated cardiac failure

Condition	Read Code	Read Code Description
Heart Failure	G5803	Compensated cardiac failure
Heart Failure	G5804	Congestive heart failure due to valvular disease
Heart Failure	G580.	Right ventricular failure
Hypertension	G241z	Secondary benign hypertension NOS
Hypertension	G24z.	Secondary hypertension NOS
Hypertension	G2400	Secondary malignant renovascular hypertension
Hypertension	G24z0	Secondary renovascular hypertension NOS
Hypertension	G24z1	Hypertension secondary to drug
Hypertension	G24zz	Secondary hypertension NOS
Hypertension	Gyu21	[X]Hypertension secondary to other renal disorders
Hypertension	G240.	Secondary malignant hypertension
Hypertension	L1220	Other pre-existing hypertension in preg/childb/puerp unspec
Hypertension	L1282	Pre-exist 2ndry hypertens comp preg childbth and puerperium
Hypertension	L127z	Pre-eclampsia or eclampsia + pre-existing hypertension NOS
Hypertension	L128.	Pre-exist hypertension compl preg childbirth and puerperium
Hypertension	L1280	Pre-exist hyperten heart dis compl preg childbth+puerperium
Hypertension	TJC7.	Adverse reaction to other antihypertensives
Hypertension	L122z	Other pre-existing hypertension in preg/childb/puerp NOS
Hypertension	TJC7z	Adverse reaction to antihypertensives NOS
Hypertension	61462	Hypertension induced by oral contraceptive pill
Hypertension	G24..	Secondary hypertension
Hypertension	L127.	Pre-eclampsia or eclampsia with pre-existing hypertension
Hypertension	G2410	Secondary benign renovascular hypertension
Hypertension	L1221	Other pre-existing hypertension in preg/childb/puerp - deliv
Hypertension	U60C5	[X]Oth antihyperten drug caus advers eff in therap use, NEC
Hypertension	L1223	Other pre-exist hypertension in preg/childb/puerp-not deliv
Hypertension	G672.	Hypertensive encephalopathy
Hypertension	L122.	Other pre-existing hypertension in preg/childbirth/puerp
Hypertension	Gyu2.	[X]Hypertensive diseases
Hypertension	G2z..	Hypertensive disease NOS
Hypertension	G20z.	Essential hypertension NOS
Hypertension	G241.	Secondary benign hypertension
Hypertension	G234.	Hyperten heart&renal dis+both(congestv)heart and renal fail
Hypertension	G240z	Secondary malignant hypertension NOS
Hypertension	G244.	Hypertension secondary to endocrine disorders
Hypertension	G2y..	Other specified hypertensive disease
Hypertension	G232.	Hypertensive heart&renal dis wth (congestive) heart failure
Hypertension	G2...	Hypertensive disease
Hypertension	G2111	Benign hypertensive heart disease with CCF
Hypertension	G21z0	Hypertensive heart disease NOS without CCF
Hypertension	G21z1	Hypertensive heart disease NOS with CCF
Hypertension	G22z.	Hypertensive renal disease NOS
Hypertension	G2101	Malignant hypertensive heart disease with CCF
Hypertension	662F.	Hypertension treatm. started
Hypertension	G233.	Hypertensive heart and renal disease with renal failure
Hypertension	G231.	Benign hypertensive heart and renal disease
Hypertension	G230.	Malignant hypertensive heart and renal disease
Hypertension	G23..	Hypertensive heart and renal disease

Condition	Read Code	Read Code Description
Hypertension	G222.	Hypertensive renal disease with renal failure
Hypertension	G221.	Benign hypertensive renal disease
Hypertension	G220.	Malignant hypertensive renal disease
Hypertension	G200.	Malignant essential hypertension
Hypertension	8B26.	Antihypertensive therapy
Hypertension	G22..	Hypertensive renal disease
Hypertension	G201.	Benign essential hypertension
Hypertension	G202.	Systolic hypertension
Hypertension	G21z.	Hypertensive heart disease NOS
Hypertension	G203.	Diastolic hypertension
Hypertension	G210.	Malignant hypertensive heart disease
Hypertension	G2100	Malignant hypertensive heart disease without CCF
Hypertension	G211.	Benign hypertensive heart disease
Hypertension	G2110	Benign hypertensive heart disease without CCF
Hypertension	G21..	Hypertensive heart disease
Hypertension	G21zz	Hypertensive heart disease NOS
Hypertension	662c.	Hypertension six month review
Hypertension	662d.	Hypertension annual review
Hypertension	662r.	Trial withdrawal of antihypertensive therapy
Hypertension	7Q01.	High cost hypertension drugs
Hypertension	8BL0.	Patient on maximal tolerated antihypertensive therapy
Hypertension	662b.	Moderate hypertension control
Hypertension	8I3N.	Hypertension treatment refused
Hypertension	F4042	Blind hypertensive eye
Hypertension	F4213	Hypertensive retinopathy
Hypertension	G23z.	Hypertensive heart and renal disease NOS
Hypertension	14A2.	H/O: hypertension
Hypertension	21261	Hypertension resolved
Hypertension	212K.	Hypertension resolved
Hypertension	662O.	On treatment for hypertension
Hypertension	9OI9.	Hypertens.monitor deleted
Hypertension	6627.	Good hypertension control
Hypertension	6628.	Poor hypertension control
Hypertension	662G.	Hypertensive treatm.changed
Hypertension	G20..	Essential hypertension
Hypertension	6624.	Borderline hyperten:yearly obs
Inflammatory Bowel Disease	J4...	Inflammatory bowel disease
Inflammatory Bowel Disease	ZR3S.	CDAI - Crohn's disease activity index
Inflammatory Bowel Disease	ZR3S.	Crohn's disease activity index
Inflammatory Bowel Disease	N0453	Juvenile arthritis in Crohn's disease
Inflammatory Bowel Disease	N0311	Arthropathy in Crohn's disease
Inflammatory Bowel Disease	Jyu40	[X]Other Crohn's disease
Inflammatory Bowel Disease	J40z.	Crohn's disease NOS
Inflammatory Bowel Disease	J4005	Exacerbation of Crohn's disease of small intestine
Inflammatory Bowel Disease	J401z	Crohn's colitis
Inflammatory Bowel Disease	J40..	Crohn's disease
Inflammatory Bowel Disease	J4002	Crohn's disease of the terminal ileum
Inflammatory Bowel Disease	J4003	Crohn's disease of the ileum unspecified

Condition	Read Code	Read Code Description
Inflammatory Bowel Disease	J401z	Crohn's disease of the large bowel NOS
Inflammatory Bowel Disease	J4012	Exacerbation of Crohn's disease of large intestine
Inflammatory Bowel Disease	J400z	Crohn's disease of the small bowel NOS
Inflammatory Bowel Disease	J4004	Crohn's disease of the ileum NOS
Inflammatory Bowel Disease	J40..	Regional enteritis - Crohn's disease
Inflammatory Bowel Disease	J41..	Ulcerative colitis and/or proctitis
Inflammatory Bowel Disease	N0454	Juvenile arthritis in ulcerative colitis
Inflammatory Bowel Disease	N0310	Arthropathy in ulcerative colitis
Inflammatory Bowel Disease	Jyu41	[X]Other ulcerative colitis
Inflammatory Bowel Disease	J41z.	Idiopathic proctocolitis NOS
Inflammatory Bowel Disease	J41yz	Other idiopathic proctocolitis NOS
Inflammatory Bowel Disease	J41y.	Other idiopathic proctocolitis
Inflammatory Bowel Disease	J412.	Ulcerative (chronic) ileocolitis
Inflammatory Bowel Disease	J410z	Ulcerative proctocolitis NOS
Inflammatory Bowel Disease	J08z9	Orofacial Crohn's disease
Inflammatory Bowel Disease	J4104	Exacerbation of ulcerative colitis
Inflammatory Bowel Disease	J4103	Ulcerative proctitis
Inflammatory Bowel Disease	J4101	Ulcerative colitis
Inflammatory Bowel Disease	J4100	Ulcerative ileocolitis
Inflammatory Bowel Disease	J410.	Ulcerative proctocolitis
Inflammatory Bowel Disease	J41..	Idiopathic proctocolitis
Inflammatory Bowel Disease	14C4.	H/O: ulcerative colitis
Inflammatory Bowel Disease	J411.	Ulcerative (chronic) enterocolitis
Osteoporosis	N331M	Fragility fracture due to unspecified osteoporosis
Osteoporosis	NyuB8	[X]Unspecified osteoporosis with pathological fracture
Osteoporosis	NyuB2	[X]Osteoporosis in other disorders classified elsewhere
Osteoporosis	NyuB1	[X]Other osteoporosis
Osteoporosis	N3312	Postoophorectomy osteoporosis with pathological fracture
Osteoporosis	NyuB0	[X]Other osteoporosis with pathological fracture
Osteoporosis	N330A	Osteoporosis in endocrine disorders
Osteoporosis	N331K	Collapse of thoracic vertebra due to osteoporosis
Osteoporosis	N331J	Collapse of lumbar vertebra due to osteoporosis
Osteoporosis	N331H	Collapse of cervical vertebra due to osteoporosis
Osteoporosis	N331B	Postmenopausal osteoporosis with pathological fracture
Osteoporosis	N331L	Collapse of vertebra due to osteoporosis NOS
Osteoporosis	N3746	Osteoporotic kyphosis
Osteoporosis	N3318	Osteoporosis + pathological fracture lumbar vertebrae
Osteoporosis	N3316	Idiopathic osteoporosis with pathological fracture
Osteoporosis	N3315	Drug-induced osteoporosis with pathological fracture
Osteoporosis	N3314	Postsurgical malabsorption osteoporosis with path fracture
Osteoporosis	N331A	Osteoporosis + pathological fracture cervical vertebrae
Osteoporosis	N3313	Osteoporosis of disuse with pathological fracture
Osteoporosis	N3319	Osteoporosis + pathological fracture thoracic vertebrae
Osteoporosis	N330.	Osteoporosis
Osteoporosis	N330D	Osteoporosis due to corticosteroids
Osteoporosis	N330C	Osteoporosis localized to spine
Osteoporosis	N330B	Vertebral osteoporosis
Osteoporosis	N330z	Osteoporosis NOS

Condition	Read Code	Read Code Description
Osteoporosis	N3307	Postsurgical malabsorption osteoporosis
Osteoporosis	N3306	Postoophorectomy osteoporosis
Osteoporosis	N3305	Drug-induced osteoporosis
Osteoporosis	N3304	Dissuse osteoporosis
Osteoporosis	N3303	Idiopathic osteoporosis
Osteoporosis	9kj0.	Bone sparing drug treatment offered for osteoporosis - ESA
Osteoporosis	N3302	Postmenopausal osteoporosis
Osteoporosis	N3300	Osteoporosis, unspecified
Osteoporosis	9Od..	Osteoporosis monitoring administration
Osteoporosis	9Od9.	Osteoporosis monitoring check done
Osteoporosis	9Od8.	Osteoporosis monitoring deleted
Osteoporosis	9Od7.	Osteoporosis monitoring telephone invitation
Osteoporosis	N3301	Senile osteoporosis
Osteoporosis	N331N	Fragility fracture
Osteoporosis	9Od4.	Osteoporosis monitoring second letter
Osteoporosis	9Od3.	Osteoporosis monitoring first letter
Osteoporosis	9Od2.	Osteoporosis monitoring default
Osteoporosis	9Od0.	Attends osteoporosis monitoring
Osteoporosis	9Od6.	Osteoporosis monitoring verbal invitation
Osteoporosis	9kj..	Osteoporosis - enhanced services administration
Osteoporosis	9Od5.	Osteoporosis monitoring third letter
Osteoporosis	58EV.	Femoral neck DEXA scan result osteoporotic
Osteoporosis	58EM.	Lumbar DXA scan result osteoporotic
Osteoporosis	58EG.	Hip DXA scan result osteoporotic
Osteoporosis	14GB.	History of osteoporosis
Osteoporosis	66a..	Osteoporosis monitoring
PVD	C1070	Diabetes mellitus, juvenile +peripheral circulatory disorder
PVD	C107.	Diabetes mellitus with peripheral circulatory disorder
PVD	A3A0F	Gas gangrene-foot
PVD	7A49.	Reconstruction of femoral artery or popliteal artery
PVD	2G63.	Ischaemic toe
PVD	14F7.	H/O: arterial lower limb ulcer
PVD	7A4A3	Open embolectomy popliteal artery
PVD	G74y3	Embolism and thrombosis of the iliac artery unspecified
PVD	7A4A2	Open embolectomy of femoral artery
PVD	14NB.	H/O: Peripheral vascular disease procedure
PVD	G73zz	Peripheral vascular disease NOS
PVD	7A41C	Bypass leg artery by aorta/deep femoral art anastomosis NEC
PVD	7A41B	Bypass leg artery by aorta/com femoral art anastomosis NEC
PVD	7A419	Bypass common iliac artery by aorta/com iliac art anast NEC
PVD	7A416	Emerg bypass leg artery by aorta/com fem art anastomosis NEC
PVD	G740.	Aortoiliac obstruction
PVD	7A414	Emerg bypass comm iliac art by aorta/com iliac art anast NEC
PVD	7A4A.	Other open operations on femoral artery or popliteal artery
PVD	C1071	Diabetes mellitus, adult, + peripheral circulatory disorder
PVD	G73y6	Acroparaesthesia - unspecified
PVD	G73y2	Acrocyanosis
PVD	G73y1	Peripheral angiopathic disease EC NOS

Condition	Read Code	Read Code Description
PVD	G73y0	Diabetic peripheral angiopathy
PVD	G73y.	Other specified peripheral vascular disease
PVD	G73y4	Acroparaesthesia - Schultze's type
PVD	C1074	NIDDM with peripheral circulatory disorder
PVD	7A47.	Other emergency bypass of femoral artery or popliteal artery
PVD	7A48.	Other bypass of femoral artery or popliteal artery
PVD	7A431	Open embolectomy of iliac artery
PVD	7A43.	Other open operations on iliac artery
PVD	C1073	IDDM with peripheral circulatory disorder
PVD	7A421	Endarterectomy of iliac artery NEC
PVD	7A42.	Reconstruction of iliac artery
PVD	7A413	Bypass iliac artery by femoral/femoral art anastomosis NEC
PVD	7A412	Emerg bypass iliac artery by femoral/femoral art anast NEC
PVD	7A123	Bypass bifurcation aorta by anastom aorta to iliac artery
PVD	7A420	Endarterectomy and patch repair of iliac artery
PVD	7A430	Repair of iliac artery NEC
PVD	7A410	Emerg bypass iliac art by iliac/femoral art anastomosis NEC
PVD	7A120	Emerg bypass bifurc aorta by anast aorta to femoral artery
PVD	M2714	Mixed venous and arterial leg ulcer
PVD	M2710	Ischaemic ulcer diabetic foot
PVD	M271.	Ischaemic leg ulcer
PVD	Gyu74	[X]Other specified peripheral vascular diseases
PVD	G742z	Peripheral arterial embolism and thrombosis NOS
PVD	M2713	Arterial leg ulcer
PVD	G7426	Embolism and thrombosis of the anterior tibial artery
PVD	7A41.	Other bypass of iliac artery
PVD	7A12.	Other bypass of bifurcation of aorta
PVD	7A102	Axillo-bifemoral bypass graft
PVD	7A101	Bypass aorta by anastomosis axillary to femoral artery NEC
PVD	G7427	Embolism and thrombosis of the dorsalis pedis artery
PVD	7A100	Emerg aortic bypass by anastomosis axillary to femoral art
PVD	G74y2	Embolism and/or thrombosis of the external iliac artery
PVD	G74y1	Embolism and/or thrombosis of the internal iliac artery
PVD	G74y0	Embolism and/or thrombosis of the common iliac artery
PVD	G7429	Embolism and thrombosis of a leg artery NOS
PVD	7A103	Axillo-unifemoral PTFE bypass graft
PVD	R0542	[D]Gangrene of toe in diabetic
PVD	7A192	Open embolectomy of bifurcation of aorta
PVD	7A12z	Other bypass of bifurcation of aorta NOS
PVD	7A411	Bypass iliac artery by iliac/femoral artery anastomosis NEC
PVD	7A41F	Ilio-femoral prosthetic cross over graft
PVD	7A44z	Transluminal operation on iliac artery NOS
PVD	7A44y	Other specified transluminal operation on iliac artery
PVD	7A444	Percutaneous transluminal insertion of iliac artery stent
PVD	7A443	Insertion of iliac artery stent
PVD	R0543	[D]Widespread diabetic foot gangrene
PVD	7A41y	Other specified other bypass of iliac artery
PVD	7A433	Open insertion of iliac artery stent

Condition	Read Code	Read Code Description
PVD	7A42z	Reconstruction of iliac artery NOS
PVD	7A42y	Other specified reconstruction of iliac artery
PVD	7A41z	Other bypass of iliac artery NOS
PVD	7A440	Percutaneous transluminal angioplasty of iliac artery
PVD	7A12y	Other specified other bypass of bifurcation of aorta
PVD	G7425	Embolism and thrombosis of the popliteal artery
PVD	G7424	Embolism and thrombosis of the femoral artery
PVD	7A441	Percutaneous transluminal embolectomy of iliac artery
PVD	G733.	Ischaemic foot
PVD	7A47B	Emerg bypass pop art by pop/peron art anast c vein graft NEC
PVD	7A493	Endarterectomy of popliteal artery NEC
PVD	7A47C	Emerg bypass femoral artery by fem/fem art anastomosis NEC
PVD	7A47y	Other emergency bypass of femoral or popliteal artery OS
PVD	7A47z	Other emergency bypass of femoral or popliteal artery NOS
PVD	7A480	Bypass femoral artery by fem/pop art anast c prosthesis NEC
PVD	7A481	Bypass popliteal artery by pop/pop a anast c prosthesis NEC
PVD	G73y7	Erythrocyanosis
PVD	7A482	Bypass femoral artery by fem/pop art anast c vein graft NEC
PVD	7A47D	Emerg bypass popliteal artery by pop/fem art anastomosis NEC
PVD	7A4B3	Percutaneous transluminal embolectomy of popliteal artery
PVD	7A4B4	Percutaneous transluminal embolisation of femoral artery
PVD	7A4B5	Percutaneous transluminal embolisation of popliteal artery
PVD	7A4B8	Percut translum thrombolysis femoral graft streptokinase
PVD	7A4B9	Percutaneous transluminal insertion of stent femoral artery
PVD	7A50.	Revision of reconstruction of artery
PVD	7A494	Profundoplasty femoral artery & patch repair deep fem artery
PVD	7A483	Bypass popliteal artery by pop/pop a anast c vein graft NEC
PVD	7A477	Emerg bypass pop art by pop/tib art anast c vein graft NEC
PVD	7A486	Bypass femoral artery by fem/tib art anast c vein graft NEC
PVD	7A487	Bypass popliteal artery by pop/tib a anast c vein graft NEC
PVD	7A488	Bypass femoral artery by fem/peron a anast c prosthesis NEC
PVD	7A48A	Bypass femoral artery by fem/peron a anast c vein graft NEC
PVD	7A48B	Bypass popliteal art by pop/peron art anast c vein graft NEC
PVD	7A48C	Bypass femoral artery by femoral/femoral art anastomosis NEC
PVD	7A48D	Bypass popliteal artery by pop/fem artery anastomosis NEC
PVD	7A48E	Femoro-femoral prosthetic cross over graft
PVD	7A476	Emerg bypass femoral art by fem/tib a anast c vein graft NEC
PVD	7A48y	Other bypass of femoral artery or popliteal artery OS
PVD	7A490	Endarterectomy and patch repair of femoral artery
PVD	7A491	Endarterectomy and patch repair of popliteal artery
PVD	7A492	Endarterectomy of femoral artery NEC
PVD	7A485	Bypass popliteal artery by pop/tib a anast c prosthesis NEC
PVD	7A484	Bypass femoral artery by fem/tib art anast c prosthesis NEC
PVD	7A472	Emerg bypass femoral art by fem/pop a anast c vein graft NEC
PVD	7A473	Emerg bypass pop art by pop/pop art anast c vein graft NEC
PVD	7A474	Emerg bypass femoral art by fem/tib art anast c prosth NEC
PVD	7A48z	Other bypass of femoral artery or popliteal artery NOS
PVD	7A500	Revision of reconstruction involving aorta

Condition	Read Code	Read Code Description
PVD	7A4B1	Percutaneous transluminal angioplasty of popliteal artery
PVD	7A4A0	Repair of femoral artery NEC
PVD	7A471	Emerg bypass popliteal art by pop/pop art anast c prosth NEC
PVD	G7320	Gangrene of toe
PVD	G732.	Peripheral gangrene
PVD	G731z	Thromboangiitis obliterans NOS
PVD	G7310	Buerger's disease
PVD	7A470	Emerg bypass femoral art by fem/pop art anast c prosth NEC
PVD	7A502	Revision of reconstruction involving femoral artery
PVD	G731.	Thromboangiitis obliterans
PVD	G700.	Aorto-iliac disease
PVD	C108G	Insulin dependent diab mell with peripheral angiopathy
PVD	C107z	Diabetes mellitus NOS with peripheral circulatory disorder
PVD	G702z	Extremity artery atheroma NOS
PVD	G7321	Gangrene of foot
PVD	G73z.	Peripheral vascular disease NOS
PVD	G73yz	Other specified peripheral vascular disease NOS
PVD	G73y8	Erythromelalgia
PVD	G702.	Extremity artery atheroma
PVD	7A4B0	Percutaneous transluminal angioplasty of femoral artery
PVD	7A503	Revision of reconstruction of popliteal artery
PVD	G73..	Other peripheral vascular disease
PVD	G73y5	Acroparaesthesia - Nothnagel's type
PVD	G73z0	Intermittent claudication
PVD	R0550	[D]Failure of peripheral circulation
PVD	7A501	Revision of reconstruction involving iliac artery
PVD	7A121	Bypass bifurc aorta by anastom aorta to femoral artery NEC
PVD	7A495	Profundoplasty and patch repair of popliteal artery
PVD	7A4Ay	Other open operation on femoral or popliteal artery OS
PVD	7A496	Profundoplasty of femoral artery NEC
PVD	7A498	Reconstruction of femoral artery with vein graft
PVD	7A499	Reconstruction of popliteal artery with vein graft
PVD	7A49y	Reconstruction of femoral or popliteal artery OS
PVD	7A4B2	Percutaneous transluminal embolectomy of femoral artery
PVD	7A49z	Reconstruction of femoral or popliteal artery NOS
PVD	7A4A1	Repair of popliteal artery NEC
PVD	7A4A7	Repair of femoral artery with temporary silastic shunt
PVD	7A4A8	Repair of popliteal artery with temporary silastic shunt
PVD	7A497	Profundoplasty of popliteal artery NEC
Rheumatoid Arthritis	N0422	Rheumatoid nodule
Rheumatoid Arthritis	N042z	Rheumatoid arthropathy + visceral/systemic involvement NOS
Rheumatoid Arthritis	N040F	Rheumatoid arthritis of ankle
Rheumatoid Arthritis	N040R	Rheumatoid nodule
Rheumatoid Arthritis	N0405	Rheumatoid arthritis of elbow
Rheumatoid Arthritis	N005.	Adult Still's Disease
Rheumatoid Arthritis	N040.	Rheumatoid arthritis
Rheumatoid Arthritis	N0400	Rheumatoid arthritis of cervical spine
Rheumatoid Arthritis	N0401	Other rheumatoid arthritis of spine

Condition	Read Code	Read Code Description
Rheumatoid Arthritis	H570.	Rheumatoid lung
Rheumatoid Arthritis	N0421	Rheumatoid lung disease
Rheumatoid Arthritis	N040H	Rheumatoid arthritis of talonavicular joint
Rheumatoid Arthritis	N040J	Rheumatoid arthritis of other tarsal joint
Rheumatoid Arthritis	N040K	Rheumatoid arthritis of 1st MTP joint
Rheumatoid Arthritis	N040N	Rheumatoid vasculitis
Rheumatoid Arthritis	N042.	Other rheumatoid arthropathy + visceral/systemic involvement
Rheumatoid Arthritis	N040P	Seronegative rheumatoid arthritis
Rheumatoid Arthritis	N040S	Rheumatoid arthritis - multiple joint
Rheumatoid Arthritis	N040G	Rheumatoid arthritis of subtalar joint
Rheumatoid Arthritis	N040T	Flare of rheumatoid arthritis
Rheumatoid Arthritis	N041.	Felty's syndrome
Rheumatoid Arthritis	N040Q	Rheumatoid bursitis
Rheumatoid Arthritis	N0402	Rheumatoid arthritis of shoulder
Rheumatoid Arthritis	F3964	Myopathy due to rheumatoid arthritis
Rheumatoid Arthritis	G5y8.	Rheumatoid myocarditis
Rheumatoid Arthritis	14G1.	H/O: rheumatoid arthritis
Rheumatoid Arthritis	Nyu1G	[X]Seropositive rheumatoid arthritis, unspecified
Rheumatoid Arthritis	N0406	Rheumatoid arthritis of distal radio-ulnar joint
Rheumatoid Arthritis	Nyu12	[X]Other specified rheumatoid arthritis
Rheumatoid Arthritis	N04y2	Adult-onset Still's disease
Rheumatoid Arthritis	N04y0	Fibrosing alveolitis associated with rheumatoid arthritis
Rheumatoid Arthritis	N04y0	Caplan's syndrome
Rheumatoid Arthritis	N04y0	Rheumatoid lung
Rheumatoid Arthritis	Nyu11	[X]Other seropositive rheumatoid arthritis
Rheumatoid Arthritis	F3712	Polyneuropathy in rheumatoid arthritis
Rheumatoid Arthritis	N047.	Seropositive errosive rheumatoid arthritis
Rheumatoid Arthritis	N0407	Rheumatoid arthritis of wrist
Rheumatoid Arthritis	N0408	Rheumatoid arthritis of MCP joint
Rheumatoid Arthritis	N0409	Rheumatoid arthritis of PIP joint of finger
Rheumatoid Arthritis	66H..	Rheumatoid arthrit. monitoring
Rheumatoid Arthritis	N040A	Rheumatoid arthritis of DIP joint of finger
Rheumatoid Arthritis	N040D	Rheumatoid arthritis of knee
Rheumatoid Arthritis	N04X.	"Seropositive rheumatoid arthritis, unspecified"
Rheumatoid Arthritis	G5yA.	Rheumatoid carditis
Rheumatoid Arthritis	2G27.	O/E-hands-rheumatoid spindling
Rheumatoid Arthritis	N040B	Rheumatoid arthritis of hip
Stroke & TIA	Z7CE7	Transient global amnesia
Stroke & TIA	ZV125	[V]Personal history of stroke
Stroke & TIA	G66..	Stroke unspecified
Stroke & TIA	G66..	Stroke and cerebrovascular accident unspecified
Stroke & TIA	G65..	Transient cerebral ischaemia
Stroke & TIA	G64z1	Wallenberg syndrome
Stroke & TIA	14AB.	H/O: TIA
Stroke & TIA	G641.	Cerebral embolism
Stroke & TIA	G64..	Cerebral arterial occlusion
Stroke & TIA	14A7.	H/O: CVA/stroke
Stroke & TIA	ZV12D	[V]Personal history of transient ischaemic attack

Condition	Read Code	Read Code Description
Stroke & TIA	G65zz	Transient cerebral ischaemia NOS
Stroke & TIA	G65z.	Transient cerebral ischaemia NOS
Stroke & TIA	G65z1	Intermittent cerebral ischaemia
Stroke & TIA	G664.	Cerebellar stroke syndrome
Stroke & TIA	G64z.	Cerebral infarction NOS
Stroke & TIA	G656.	Vertebrobasilar insufficiency
Stroke & TIA	G655.	Transient global amnesia
Stroke & TIA	G650.	Insufficiency - basilar artery
Stroke & TIA	Fyu55	[X]Other transnt cerebral ischaemic attacks+related syndroms
Stroke & TIA	F4236	Amaurosis fugax
Stroke & TIA	8CRB.	Transient ischaemic attack clinical management plan
Stroke & TIA	G65y.	Other transient cerebral ischaemia
Stroke & TIA	1B1S.	Transient global amnesia
Stroke & TIA	G657.	Carotid territory transient ischaemic attack
Stroke & TIA	Gyu6C	[X]Sequelae of stroke,not specfd as h'morrhage or infarction
Stroke & TIA	G68X.	Sequelae of stroke,not specfd as h'morrhage or infarction
Stroke & TIA	G668.	Right sided CVA
Stroke & TIA	G667.	Left sided CVA
Stroke & TIA	G666.	Pure sensory lacunar syndrome
Stroke & TIA	G665.	Pure motor lacunar syndrome
Stroke & TIA	14AB0	H/O amaurosis fugax
Stroke & TIA	G663.	Brain stem stroke syndrome
Stroke & TIA	Fyu56	[X]Other lacunar syndromes
Stroke & TIA	9h2..	Exception reporting: stroke quality indicators
Stroke & TIA	9h22.	Excepted from stroke quality indicators: Informed dissent
Stroke & TIA	9h21.	Excepted from stroke quality indicators: Patient unsuitable
Stroke & TIA	8IEC.	Ref multidisciplinary stroke function improvement declined
Stroke & TIA	8HHM.	Ref to multidisciplinary stroke function improvement service
Stroke & TIA	G64z0	Brainstem infarction
Stroke & TIA	7P242	Delivery of rehabilitation for stroke
Stroke & TIA	Gyu6G	[X]Cereb infarct due unsp occlus/stenos precerebr arteries
Stroke & TIA	662M1	Stroke 6 month review
Stroke & TIA	661N7	Stroke self-management plan review
Stroke & TIA	661M7	Stroke self-management plan agreed
Stroke & TIA	1M4..	Central post-stroke pain
Stroke & TIA	14AK.	H/O: Stroke in last year
Stroke & TIA	662M2	Stroke initial post discharge review
Stroke & TIA	662M.	Stroke monitoring
Stroke & TIA	Gyu63	[X]Cerebrl infarctn due/unspcf occlusn or sten/cerebrl artrs
Stroke & TIA	G6X..	Cerebrl infarctn due/unspcf occlusn or sten/cerebrl artrs
Stroke & TIA	G6W..	Cereb infarct due unsp occlus/stenos precerebr arteries
Stroke & TIA	G683.	Sequelae of cerebral infarction
Stroke & TIA	G64z4	Infarction of basal ganglia
Stroke & TIA	G64z3	Right sided cerebral infarction
Stroke & TIA	Gyu64	[X]Other cerebral infarction
Stroke & TIA	G64z2	Left sided cerebral infarction
Stroke & TIA	L440.	CVA - cerebrovascular accident in the puerperium
Stroke & TIA	G640.	Cerebral thrombosis

Condition	Read Code	Read Code Description
Stroke & TIA	G6400	Cerebral infarction due to thrombosis of cerebral arteries
Stroke & TIA	G63y1	Cerebral infarction due to embolism of precerebral arteries
Stroke & TIA	G63y0	Cerebral infarct due to thrombosis of precerebral arteries
Stroke & TIA	G63..	Infarction - precerebral
Stroke & TIA	662e.	Stroke/CVA annual review
Stroke & TIA	G6410	Cerebral infarction due to embolism of cerebral arteries

Table S4: Read codes for learning disability status

The Welsh Longitudinal General Practice (WLGP) dataset contains patient records from general practices in Wales. Data is coded using Read v2 codes which capture diagnoses, symptoms and treatments. The following Read codes were used to identify individuals with a learning disability out of those with diagnoses of long-term conditions.

Condition	Read Code	Read Code Description
Learning Disability	13Z4E00	Learning difficulties
Learning Disability	E2F2.00	Other specific learning difficulty
Learning Disability	E3...00	Mental retardation
Learning Disability	E30..00	Mild mental retardation, IQ in range 50-70
Learning Disability	E31..00	Other specified mental retardation
Learning Disability	E310.00	Moderate mental retardation, IQ in range 35-49
Learning Disability	E311.00	Severe mental retardation, IQ in range 20-34
Learning Disability	E312.00	Profound mental retardation with IQ less than 20
Learning Disability	E31z.00	Other specified mental retardation NOS
Learning Disability	E3y..00	Other specified mental retardation
Learning Disability	E3z..00	Mental retardation NOS
Learning Disability	Eu7..00	[X]Mental retardation
Learning Disability	Eu70.00	[X]Mild mental retardation
Learning Disability	Eu70y00	[X]Mild mental retardation, other impairments of behaviour
Learning Disability	Eu70z00	[X]Mild mental retardation without mention impairment behav
Learning Disability	Eu71.00	[X]Moderate mental retardation
Learning Disability	Eu71z00	[X]Mod mental retardation without mention impairment behav
Learning Disability	Eu72.00	[X]Severe mental retardation
Learning Disability	Eu72y00	[X]Severe mental retardation, other impairments of behaviour
Learning Disability	Eu72z00	[X]Sev mental retardation without mention impairment behav
Learning Disability	Eu73.00	[X]Profound mental retardation
Learning Disability	Eu73y00	[X]Profound mental retardation, other impairments of behavr
Learning Disability	Eu73z00	[X]Prfnd mental retardation without mention impairment behav
Learning Disability	Eu7y.00	[X]Other mental retardation
Learning Disability	Eu7yy00	[X]Other mental retardation, other impairments of behaviour
Learning Disability	Eu7yz00	[X]Other mental retardation without mention impairment behav
Learning Disability	Eu7z.00	[X]Unspecified mental retardation
Learning Disability	Eu7zz00	[X]Unsp mental retardation without mention impairment behav
Learning Disability	Eu81.00	[X]Specific developmental disorders of scholastic skills
Learning Disability	Eu81y00	[X]Other developmental disorders of scholastic skills
Learning Disability	Eu81z00	[X]Developmental disorder of scholastic skills, unspecified
Learning Disability	Eu81z11	[X]Learning disability NOS
Learning Disability	Eu84112	[X]Mental retardation with autistic features
Learning Disability	Z7CD200	Learning difficulties
Learning Disability	ZS34.00	Developmental disorder of scholastic skill
Learning Disability	ZS34.11	Learning disability

Table S5: Population size of Wales

Number of individuals registered to a GP in Wales on 1st July each year estimated using data from the SAIL databank. This 'GP population' was used to derive rates of diagnosis of long-term conditions. Also shown is the population of Wales estimated by the Office of National Statistics (ONS)[20], and the GP population as a percentage of the ONS population.

Year	GP population	ONS population	% GP population of ONS population
2000	1949270	2906870	67.1
2001	2048231	2910232	70.4
2002	2251499	2922876	77.0
2003	2363048	2937721	80.4
2004	2428807	2957422	82.1
2005	2464217	2969309	83.0
2006	2486529	2985668	83.3
2007	2526442	3006299	84.0
2008	2548093	3025867	84.2
2009	2556236	3038872	84.1
2010	2566668	3049971	84.2
2011	2585716	3063758	84.4
2012	2598826	3074067	84.5
2013	2614843	3082412	84.8
2014	2634186	3092036	85.2
2015	2653926	3099086	85.6
2016	2702601	3113150	86.8
2017	2724916	3125165	87.2
2018	2685265	3138631	85.6
2019	2720284	3152879	86.3
2020	2728618	3169586	86.1
2021	2738647	3180078	86.1

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Table S6: Population size of Wales by sex, age and social deprivation

Number of individuals registered to a GP in Wales on 1st July each year by sex, age group, and social deprivation quintile. Percentages shown are out of the total GP population each year.

Year	Sex			Age									Social deprivation					
	Male	Female	Unknown	Age 0-19	Age 20-29	Age 30-39	Age 40-49	Age 50-59	Age 60-69	Age 70-79	Age 80+	Unknown	1 Most deprived	2	3	4	5 Least deprived	Unknown
2000	953900	981505	13865	478544	246439	286076	254169	245788	186375	154219	83798	13862	373933	356945	375670	338214	389041	115467
2001	1003999	1029631	14601	499057	258975	300699	269213	262460	195068	158248	89914	14597	388122	371195	390304	364333	414348	119929
2002	1104586	1130761	16152	544303	282034	328547	299476	292068	217040	170376	101509	16146	430602	413176	435351	392437	450641	129292
2003	1160158	1185999	16891	569145	299877	339801	317986	306631	230378	175252	107094	16884	454071	440229	457021	410282	465161	136284
2004	1193686	1217832	17289	581674	312933	343837	331399	313809	240515	176835	110522	17283	470844	451940	468706	421169	475480	140668
2005	1212593	1234104	17520	584565	322040	341797	342868	317306	247443	178295	112390	17513	482701	464124	477252	428014	480073	132053
2006	1224753	1244147	17629	584987	330097	337059	350529	318691	254202	178652	114690	17622	487432	469810	482514	434329	484514	127930
2007	1246500	1262058	17884	589389	340084	333301	359775	316708	270247	181831	117229	17878	497757	480092	489640	443470	485701	129782
2008	1258392	1271723	17978	589592	349239	327279	364843	315781	280458	184559	118370	17972	501810	484762	493618	447518	489037	131348
2009	1264402	1273815	18019	587198	350886	321933	368178	316028	287850	186478	119673	18012	503964	487882	495083	447737	489386	132184
2010	1271066	1277528	18074	586072	349808	320098	369710	318014	294873	188665	121361	18067	508212	491616	497096	447289	488648	133807
2011	1280841	1286660	18215	586492	352455	316859	372404	323695	300430	191659	123514	18208	515679	496711	501236	448330	488375	135385
2012	1287596	1292921	18309	586812	353299	314790	371093	329791	304451	195312	124975	18303	520964	500386	502441	449438	489445	136152
2013	1294420	1301985	18438	587476	354045	315513	367832	337354	307780	200604	125807	18432	526590	498912	509103	453000	489331	137907
2014	1304411	1311208	18567	587810	355060	317435	363291	345797	310674	207458	128100	18561	531745	503585	512804	454110	492842	139100
2015	1314561	1320651	18714	589344	354794	322667	357949	355431	312551	212924	129557	18709	536336	504524	516906	457015	494974	144171
2016	1339050	1344418	19133	597457	356334	332964	355973	367701	318456	222016	132572	19128	550321	512254	521066	460794	496068	162098
2017	1349499	1356124	19293	598578	355725	340969	349802	374555	315796	235721	134482	19288	551555	512912	524158	460015	495101	181175
2018	1328497	1337676	19092	586954	345528	340750	336303	372578	309179	241355	133532	19086	541341	501610	508441	450554	484679	198640
2019	1345648	1355279	19357	591145	344772	348585	333753	381118	313289	251170	137104	19348	545774	505877	512527	451104	480241	224761
2020	1350051	1359140	19427	589774	340684	350467	333328	383737	316145	257195	137871	19417	543851	503240	508855	448591	479852	244229
2021	1353704	1365486	19457	588115	334057	357378	331118	387061	321780	262283	137408	19447	543544	503809	510630	450169	479328	251167
	Percentage																	
2000	48.9	50.4	0.7	24.5	12.6	14.7	13.0	12.6	9.6	7.9	4.3	0.7	19.2	18.3	19.3	17.4	20.0	5.9
2001	49.0	50.3	0.7	24.4	12.6	14.7	13.1	12.8	9.5	7.7	4.4	0.7	18.9	18.1	19.1	17.8	20.2	5.9
2002	49.1	50.2	0.7	24.2	12.5	14.6	13.3	13.0	9.6	7.6	4.5	0.7	19.1	18.4	19.3	17.4	20.0	5.7
2003	49.1	50.2	0.7	24.1	12.7	14.4	13.5	13.0	9.7	7.4	4.5	0.7	19.2	18.6	19.3	17.4	19.7	5.8
2004	49.1	50.1	0.7	23.9	12.9	14.2	13.6	12.9	9.9	7.3	4.6	0.7	19.4	18.6	19.3	17.3	19.6	5.8
2005	49.2	50.1	0.7	23.7	13.1	13.9	13.9	12.9	10.0	7.2	4.6	0.7	19.6	18.8	19.4	17.4	19.5	5.4
2006	49.3	50.0	0.7	23.5	13.3	13.6	14.1	12.8	10.2	7.2	4.6	0.7	19.6	18.9	19.4	17.5	19.5	5.1
2007	49.3	50.0	0.7	23.3	13.5	13.2	14.2	12.5	10.7	7.2	4.6	0.7	19.7	19.0	19.4	17.6	19.2	5.1

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Year	Sex			Age									Social deprivation					
	Male	Female	Unknown	Age 0-19	Age 20-29	Age 30-39	Age 40-49	Age 50-59	Age 60-69	Age 70-79	Age 80+	Unknown	1 Most deprived	2	3	4	5 Least deprived	Unknown
2008	49.4	49.9	0.7	23.1	13.7	12.8	14.3	12.4	11.0	7.2	4.6	0.7	19.7	19.0	19.4	17.6	19.2	5.2
2009	49.5	49.8	0.7	23.0	13.7	12.6	14.4	12.4	11.3	7.3	4.7	0.7	19.7	19.1	19.4	17.5	19.1	5.2
2010	49.5	49.8	0.7	22.8	13.6	12.5	14.4	12.4	11.5	7.4	4.7	0.7	19.8	19.2	19.4	17.4	19.0	5.2
2011	49.5	49.8	0.7	22.7	13.6	12.3	14.4	12.5	11.6	7.4	4.8	0.7	19.9	19.2	19.4	17.3	18.9	5.2
2012	49.5	49.8	0.7	22.6	13.6	12.1	14.3	12.7	11.7	7.5	4.8	0.7	20.0	19.3	19.3	17.3	18.8	5.2
2013	49.5	49.8	0.7	22.5	13.5	12.1	14.1	12.9	11.8	7.7	4.8	0.7	20.1	19.1	19.5	17.3	18.7	5.3
2014	49.5	49.8	0.7	22.3	13.5	12.1	13.8	13.1	11.8	7.9	4.9	0.7	20.2	19.1	19.5	17.2	18.7	5.3
2015	49.5	49.8	0.7	22.2	13.4	12.2	13.5	13.4	11.8	8.0	4.9	0.7	20.2	19.0	19.5	17.2	18.7	5.4
2016	49.5	49.7	0.7	22.1	13.2	12.3	13.2	13.6	11.8	8.2	4.9	0.7	20.4	19.0	19.3	17.1	18.4	6.0
2017	49.5	49.8	0.7	22.0	13.1	12.5	12.8	13.7	11.6	8.7	4.9	0.7	20.2	18.8	19.2	16.9	18.2	6.6
2018	49.5	49.8	0.7	21.9	12.9	12.7	12.5	13.9	11.5	9.0	5.0	0.7	20.2	18.7	18.9	16.8	18.0	7.4
2019	49.5	49.8	0.7	21.7	12.7	12.8	12.3	14.0	11.5	9.2	5.0	0.7	20.1	18.6	18.8	16.6	17.7	8.3
2020	49.5	49.8	0.7	21.6	12.5	12.8	12.2	14.1	11.6	9.4	5.1	0.7	19.9	18.4	18.6	16.4	17.6	9.0
2021	49.4	49.9	0.7	21.5	12.2	13.0	12.1	14.1	11.7	9.6	5.0	0.7	19.8	18.4	18.6	16.4	17.5	9.2

Box S1: time series analysis methods

The description below details the time series analysis for deriving predicted incidence in 2020 and 2021

Time series analysis was conducted on each long-term condition and diabetes subtype.

Data analysed were monthly incidence from January 2015 to December 2019.

For each condition, separate models were fitted for: incidence rates (number of new diagnoses per 100,000 population) and incidence counts (number of new diagnoses).

We used the arima and sarima functions in R to fit a seasonal autoregressive integrated moving average (SARIMA) model.

The SARIMA model is expressed as $(p, d, q) \times (P, D, Q)_{s=12}$ where:

s=12 specifies that the seasonal order is every 12 observations.

d indicates the order of differencing of the time series data and D the order of differencing at the seasonal level, respectively. We used first order differences (d=1) and first order seasonal differences (D=1) to induce stationarity i.e. we analysed $(Y_t - Y_{t-1})$- $(Y_{t-12} - Y_{t-12-1})$ where Y is the incidence rate at month t.

For the autoregressive (AR) component of the model, observed values at p and P previous lags were used to predict the value at a given time point. [33] For example, a model specifying p= 2 and P=2 indicate lags 1 and 2, and lags 12 and 24 were used for predictions, and two AR and two seasonal AR (SAR) parameters will be estimated.

For the moving average (MA) component of the model, the error terms of observed values at q and Q previous lags were used to predict the value at a given time point.[33] For example, a model specifying q= 2 and Q=2 indicate lags 1 and 2, and lags 12 and 24 were used for predictions and two MA and two seasonal MA (SMA) parameters will be estimated.

The order of p, P, q, Q were selected based on minimising the Akaike information criterion (AIC).

Residual plots and the Ljung-Box test were used to examine remaining autocorrelation and check model validity.

The maximum value of P and Q was constrained to 2 to avoid convergence issues.

Table S7: observed vs predicted incidence per 100,000 population in 2020, 2021

The table below shows the observed and predicted (95% CI) number of diagnoses (per 100,000) in 2020 and 2021 separately. Also shown are the differences (observed minus predicted) and percentage differences between observed and predicted values. Conditions are ordered by largest to smallest percentage difference over 2020 and 2021 combined (values for 2020 and 2021 combined are shown in Table 1 of the main text). Observed and predicted rates and change were rounded to the nearest whole number.

Condition	**2020**				**2021**			
	Observed	Predicted (95% CI)	Change (95% CI)	% Change (95% CI)	Observed	Predicted (95% CI)	Change (95% CI)	% Change (95% CI)
COPD	272	443 (391, 495)	-170 (-222, -118)	-38.5 (-45, -30.2)	277	449 (388, 510)	-172 (-233, -112)	-38.4 (-45.7, -28.8)
Depression	867	1262 (1112, 1411)	-394 (-544, -245)	-31.3 (-38.5, -22)	933	1250 (1082, 1419)	-318 (-486, -149)	-25.4 (-34.3, -13.8)
Type 2 diabetes	383	550 (455, 646)	-168 (-263, -72)	-30.4 (-40.7, -15.9)	454	586 (416, 755)	-132 (-302, 38)	-22.5 (-39.9, 9.1)
Hypertension	743	1114 (1013, 1216)	-372 (-473, -270)	-33.4 (-38.9, -26.7)	920	1117 (966, 1267)	-196 (-347, -45)	-17.6 (-27.4, -4.7)
Anxiety disorders	1206	1646 (1426, 1866)	-440 (-660, -220)	-26.7 (-35.4, -15.4)	1297	1687 (1358, 2016)	-390 (-719, -61)	-23.1 (-35.7, -4.5)
Asthma	353	510 (457, 562)	-157 (-210, -104)	-30.8 (-37.3, -22.8)	403	497 (441, 552)	-93 (-149, -38)	-18.8 (-26.9, -8.7)
Diabetes mellitus	460	638 (517, 759)	-178 (-299, -57)	-27.9 (-39.4, -11.1)	539	676 (435, 918)	-137 (-378, 104)	-20.3 (-41.3, 24)
Rheumatoid arthritis	71	96 (75, 118)	-25 (-46, -3)	-25.8 (-39.4, -4.2)	77	96 (68, 125)	-20 (-48, 9)	-20.5 (-38.6, 13)
PVD	157	214 (189, 239)	-57 (-82, -32)	-26.5 (-34.2, -16.9)	184	216 (186, 247)	-33 (-63, -3)	-15.1 (-25.5, -1.4)
Inflammatory bowel disease	66	89 (75, 104)	-23 (-38, -9)	-26 (-36.3, -11.7)	80	93 (77, 110)	-13 (-30, 4)	-13.9 (-26.9, 4.7)
Undetermined type diabetes	55	69 (57, 82)	-14 (-27, -1)	-20.6 (-33, -2.5)	68	77 (59, 95)	-10 (-28, 9)	-12.5 (-29.2, 14.4)

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Condition	2020				2021			
	Observed	Predicted (95% CI)	Change (95% CI)	% Change (95% CI)	Observed	Predicted (95% CI)	Change (95% CI)	% Change (95% CI)
CHD	316	388 (346, 431)	-72 (-114, -30)	-18.5 (-26.5, -8.5)	355	386 (334, 438)	-31 (-84, 21)	-8.1 (-19.1, 6.3)
Heart failure	353	426 (377, 474)	-73 (-121, -24)	-17.1 (-25.6, -6.4)	403	446 (376, 515)	-43 (-113, 27)	-9.6 (-21.8, 7.1)
CKD	717	833 (754, 912)	-117 (-196, -38)	-14 (-21.4, -5)	745	845 (741, 949)	-100 (-204, 4)	-11.8 (-21.5, 0.5)
Epilepsy	77	92 (74, 111)	-15 (-34, 3)	-16.7 (-30.7, 4.4)	82	89 (69, 110)	-7 (-27, 13)	-8.1 (-25.1, 18.9)
Atrial fibrillation	546	647 (592, 702)	-101 (-156, -46)	-15.6 (-22.2, -7.7)	612	657 (553, 761)	-45 (-149, 58)	-6.9 (-19.6, 10.6)
Stroke & TIA	294	324 (285, 363)	-30 (-69, 9)	-9.3 (-19, 3.1)	298	323 (269, 377)	-25 (-79, 30)	-7.6 (-20.9, 11)
Dementia	504	559 (495, 623)	-55 (-119, 9)	-9.8 (-19.1, 1.8)	545	576 (495, 656)	-30 (-110, 50)	-5.2 (-16.8, 10.2)
Type 1 diabetes	19	19 (11, 26)	1. 0 (-7, 8)	0.6 (-27.9, 66.4)	22	19 (11, 26)	3 (-5, 11)	16.7 (-17.7, 101)

Table S8: observed vs predicted incidence unadjusted for population over 2020 and 2021

The table below shows the observed and predicted (95% CI) number of diagnoses over 2020 and 2021 combined. Also shown are the differences (observed minus predicted) and percentage differences between observed and predicted values. Conditions are ordered by largest to smallest percentage difference. Predicted numbers and change were rounded to the nearest whole number.

Condition	**2020 and 2021**			
	Observed	Predicted (95% CI)	Change (95% CI)	% Change (95% CI)
COPD	15009	24479 (21239, 27718)	-9470 (-12709, -6230)	-38.7 (-45.9, -29.3)
Depression	49205	67018 (57673, 76363)	-17813 (-27158, -8468)	-26.6 (-35.6, -14.7)
Asthma	20665	28054 (22844, 33263)	-7389 (-12598, -2179)	-26.3 (-37.9, -9.5)
Hypertension	45473	61458 (55398, 67518)	-15985 (-22045, -9925)	-26 (-32.7, -17.9)
Type 2 Diabetes	22873	30860 (23980, 37740)	-7987 (-14867, -1107)	-25.9 (-39.4, -4.6)
Anxiety Disorders	68420	92028 (78930, 105126)	-23608 (-36706, -10510)	-25.7 (-34.9, -13.3)
Diabetes Mellitus	27312	35793 (26159, 45427)	-8481 (-18115, 1153)	-23.7 (-39.9, 4.4)
Rheumatoid Arthritis	4045	5280 (4023, 6536)	-1235 (-2491, 22)	-23.4 (-38.1, 0.5)
PVD	9320	11789 (10450, 13128)	-2469 (-3808, -1130)	-20.9 (-29, -10.8)
Inflammatory Bowel Disease	4009	4982 (4187, 5776)	-973 (-1767, -178)	-19.5 (-30.6, -4.3)
Undetermined Type Diabetes	3354	3999 (3176, 4822)	-645 (-1468, 178)	-16.1 (-30.4, 5.6)
CHD	18347	21218 (18919, 23517)	-2871 (-5170, -572)	-13.5 (-22, -3)
CKD	39957	45894 (40937, 50851)	-5937 (-10894, -980)	-12.9 (-21.4, -2.4)
Heart Failure	20661	23162 (20467, 25856)	-2501 (-5195, 194)	-10.8 (-20.1, 0.9)
Epilepsy	4346	4822 (3607, 6037)	-476 (-1691, 739)	-9.9 (-28, 20.5)
Atrial Fibrillation	31659	35037 (30839, 39236)	-3378 (-7577, 820)	-9.6 (-19.3, 2.7)
Stroke & TIA	16185	17768 (15289, 20247)	-1583 (-4062, 896)	-8.9 (-20.1, 5.9)
Dementia	28698	31053 (27279, 34827)	-2355 (-6129, 1419)	-7.6 (-17.6, 5.2)
Type 1 Diabetes	1116	1030 (614, 1445)	86 (-329, 502)	8.4 (-22.8, 81.8)

Table S9: observed vs predicted incidence unadjusted for population in 2020, 2021

The table below shows the observed and predicted (95% CI) number of diagnoses in 2020 and 2021 separately. Also shown are the differences (observed minus predicted) and percentage differences between observed and predicted values. Conditions are ordered by largest to smallest percentage difference over 2020 and 2021 combined (values for 2020 and 2021 combined are shown in Table S8 above). Predicted numbers and change were rounded to the nearest whole number.

Condition	**2020**				**2021**			
	Observed	Predicted (95% CI)	Change (95% CI)	% Change (95% CI)	Observed	Predicted (95% CI)	Change (95% CI)	% Change (95% CI)
COPD	7434	12114 (10649, 13579)	-4680 (-6145, -3215)	-38.6 (-45.3, -30.2)	7575	12364 (10590, 14139)	-4789 (-6564, -3015)	-38.7 (-46.4, -28.5)
Depression	23667	33682 (29471, 37893)	-10015 (-14226, -5804)	-29.7 (-37.5, -19.7)	25538	33336 (28202, 38471)	-7798 (-12933, -2664)	-23.4 (-33.6, -9.4)
Asthma	9623	14129 (12101, 16157)	-4506 (-6534, -2478)	-31.9 (-40.4, -20.5)	11042	13925 (10743, 17107)	-2883 (-6065, 299)	-20.7 (-35.5, 2.8)
Hypertension	20264	30546 (27860, 33232)	-10282 (-12968, -7596)	-33.7 (-39, -27.3)	25209	30912 (27538, 34286)	-5703 (-9077, -2329)	-18.4 (-26.5, -8.5)
Type 2 Diabetes	10448	14913 (12422, 17404)	-4465 (-6956, -1974)	-29.9 (-40, -15.9)	12425	15947 (11558, 20335)	-3522 (-7910, 867)	-22.1 (-38.9, 7.5)
Anxiety Disorders	32909	45213 (39723, 50703)	-12304 (-17794, -6814)	-27.2 (-35.1, -17.2)	35511	46815 (39207, 54423)	-11304 (-18912, -3696)	-24.1 (-34.7, -9.4)
Diabetes Mellitus	12550	17333 (14113, 20553)	-4783 (-8003, -1563)	-27.6 (-38.9, -11.1)	14762	18460 (12046, 24874)	-3698 (-10112, 2716)	-20 (-40.7, 22.5)
Rheumatoid Arthritis	1947	2631 (2073, 3189)	-684 (-1242, -126)	-26 (-38.9, -6.1)	2098	2649 (1950, 3348)	-551 (-1250, 148)	-20.8 (-37.3, 7.6)
PVD	4290	5848 (5218, 6477)	-1558 (-2187, -928)	-26.6 (-33.8, -17.8)	5030	5942 (5232, 6651)	-912 (-1621, -202)	-15.3 (-24.4, -3.9)
Inflammatory Bowel Disease	1806	2430 (2051, 2809)	-624 (-1003, -245)	-25.7 (-35.7, -12)	2203	2551 (2136, 2967)	-348 (-764, 67)	-13.7 (-25.8, 3.1)
Undetermined Type Diabetes	1504	1891 (1549, 2232)	-387 (-728, -45)	-20.4 (-32.6, -2.9)	1850	2109 (1628, 2590)	-259 (-740, 222)	-12.3 (-28.6, 13.6)

Condition	2020				2021			
	Observed	Predicted (95% CI)	Change (95% CI)	% Change (95% CI)	Observed	Predicted (95% CI)	Change (95% CI)	% Change (95% CI)
CHD	8636	10608 (9544, 11671)	-1972 (-3035, -908)	-18.6 (-26, -9.5)	9711	10610 (9375, 11845)	-899 (-2134, 336)	-8.5 (-18, 3.6)
CKD	19553	22744 (20622, 24866)	-3191 (-5313, -1069)	-14 (-21.4, -5.2)	20404	23150 (20315, 25985)	-2746 (-5581, 89)	-11.9 (-21.5, 0.4)
Heart Failure	9634	11465 (10240, 12690)	-1831 (-3056, -606)	-16 (-24.1, -5.9)	11027	11697 (10227, 13166)	-670 (-2139, 800)	-5.7 (-16.2, 7.8)
Epilepsy	2096	2450 (1908, 2992)	-354 (-896, 188)	-14.4 (-29.9, 9.9)	2250	2372 (1700, 3045)	-122 (-795, 550)	-5.2 (-26.1, 32.4)
Atrial Fibrillation	14907	17394 (15934, 18853)	-2487 (-3946, -1027)	-14.3 (-20.9, -6.4)	16752	17644 (14905, 20383)	-892 (-3631, 1847)	-5.1 (-17.8, 12.4)
Stroke & TIA	8020	8873 (7841, 9905)	-853 (-1885, 179)	-9.6 (-19, 2.3)	8165	8895 (7448, 10342)	-730 (-2177, 717)	-8.2 (-21, 9.6)
Dementia	13760	15271 (13589, 16952)	-1511 (-3192, 171)	-9.9 (-18.8, 1.3)	14938	15782 (13690, 17875)	-844 (-2937, 1248)	-5.4 (-16.4, 9.1)
Type 1 Diabetes	519	517 (314, 720)	2 (-201, 205)	0.4 (-27.9, 65.4)	597	513 (300, 726)	84 (-129, 297)	16.4 (-17.7, 99)

Table S10: time series model specification and estimated parameters for incidence rates (number of new diagnoses per 100,000)

Models are expressed as ARIMA(p,d,q)(P,D,Q)[s=12]. p and q are orders of AR and MA, respectively, and P and Q are orders of SAR and SMA, respectively. For all models, we specified d=1 and D=1. Parameter estimates are presented as 'coefficient (95% CI), p-value' (where p=0, this indicates p<0.001)

	Anxiety Disorders	**Asthma**	**Atrial Fibrillation**	**CHD**	**CKD**	**COPD**	**Dementia**	**Depression**	**Diabetes Mellitus**	**Epilepsy**
	ARIMA(0,1,1)(1,1,0)[12]	ARIMA(0,1,4)(0,1,1)[12]	ARIMA(0,1,5)(0,1,1)[12]	ARIMA(0,1,1)(0,1,1)[12]	ARIMA(0,1,1)(0,1,1)[12]	ARIMA(0,1,1)(0,1,1)[12]	ARIMA(0,1,2)(0,1,1)[12]	ARIMA(0,1,1)(1,1,0)[12]	ARIMA(0,1,2)(1,1,0)[12]	ARIMA(0,1,1)(1,1,0)[12]
ar1	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
ar2	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
ar3	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
ar4	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
ar5	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
ar6	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
ma1	-0.754 (-0.968, -0.54), 0	-0.987 (-1.337, -0.636), 0	-0.929 (-1.214, -0.644), 0	-0.802 (-0.984, -0.62), 0	-0.772 (-1.011, -0.533), 0	-0.85 (-1.028, -0.673), 0	-0.561 (-0.865, -0.256), 0.001	-0.956 (-1.294, -0.619), 0	-0.759 (-1.039, -0.48), 0	-1 (-1.317, -0.683), 0
ma2	NA	0.057 (-0.361, 0.475), 0.791	0.23 (-0.238, 0.698), 0.34	NA	NA	NA	-0.221 (-0.538, 0.096), 0.179	NA	0.441 (0.121, 0.761), 0.01	NA
ma3	NA	0.223 (-0.159, 0.605), 0.259	0.155 (-0.344, 0.653), 0.546	NA	NA	NA	NA	NA	NA	NA
ma4	NA	-0.293 (-0.584, -0.003), 0.055	-0.664 (-1.102, -0.227), 0.005	NA	NA	NA	NA	NA	NA	NA
ma5	NA	NA	0.838 (0.395, 1.281), 0.001	NA	NA	NA	NA	NA	NA	NA
sar1	-0.495	NA	NA	NA	NA	NA	NA	-0.556	-0.54	-0.596

	Anxiety Disorders	Asthma	Atrial Fibrillation	CHD	CKD	COPD	Dementia	Depression	Diabetes Mellitus	Epilepsy
	(-0.745, -0.246), 0							(-0.79, -0.322), 0	(-0.775, -0.306), 0	(-0.832, -0.36), 0
sar2	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
sma1	NA	-1 (-1.981, -0.019), 0.052	-0.827 (-2.027, 0.374), 0.185	-1 (-1.762, -0.238), 0.014	-0.817 (-1.833, 0.2), 0.122	-1 (-2.065, 0.065), 0.072	-1 (-2.055, 0.055), 0.07	NA	NA	NA
-	-	-	-	-	-	-	-	-	-	-
AIC	340.569	229.161	211.417	196.352	251.287	220.238	230.505	320.199	248.891	126.095
Sigma^2 estimate	66.03	3.58	2.44	2.19	8.31	3.6	4.35	40.01	8.87	0.61
Log likelihood	-167.284	-108.58	-98.708	-95.176	-122.643	-107.119	-111.253	-157.1	-120.446	-60.047

ar- autoregressive, ma- moving average, sar- seasonal autoregressive, sma- seasonal moving average

Table S10- continued

	Heart Failure	Hypertension	Inflammatory Bowel Disease	PVD	Rheumatoid Arthritis	Stroke & TIA	Type 1 Diabetes	Type 2 Diabetes	Undetermined Type Diabetes
	ARIMA(4,1,0)(2,1,0)[12]	ARIMA(0,1,5)(0,1,1)[12]	ARIMA(0,1,2)(0,1,1)[12]	ARIMA(0,1,1)(0,1,1)[12]	ARIMA(0,1,1)(0,1,1)[12]	ARIMA(6,1,0)(0,1,1)[12]	ARIMA(0,1,5)(0,1,1)[12]	ARIMA(2,1,0)(1,1,0)[12]	ARIMA(0,1,1)(0,1,1)[12]
ar1	-0.688 (-0.972, -0.404), 0	NA	NA	NA	NA	-0.74 (-1.012, -0.469), 0	NA	-0.67 (-0.939, -0.4), 0	NA
ar2	-0.754 (-1.13, -0.378), 0	NA	NA	NA	NA	-0.394 (-0.725, -0.063), 0.025	NA	-0.315 (-0.582, -0.048), 0.026	NA
ar3	-0.292 (-0.655, 0.07), 0.122	NA	NA	NA	NA	-0.222 (-0.563, 0.118), 0.208	NA	NA	NA
ar4	-0.36	NA	NA	NA	NA	-0.36	NA	NA	NA

	Heart Failure	Hypertension	Inflammatory Bowel Disease	PVD	Rheumatoid Arthritis	Stroke & TIA	Type 1 Diabetes	Type 2 Diabetes	Undetermined Type Diabetes
	(-0.638, -0.081), 0.015					(-0.686, -0.035), 0.036			
ar5	NA	NA	NA	NA	NA	-0.286 (-0.598, 0.026), 0.08	NA	NA	NA
ar6	NA	NA	NA	NA	NA	-0.325 (-0.597, -0.053), 0.024	NA	NA	NA
ma1	NA	-1.287 (-1.593, -0.981), 0	-1.168 (-1.502, -0.834), 0	-0.837 (-1.059, -0.615), 0	-0.752 (-1.021, -0.484), 0	NA	-1.121 (-1.52, -0.723), 0	NA	-0.819 (-1.078, -0.559), 0
ma2	NA	0.415 (-0.04, 0.871), 0.081	0.287 (-0.041, 0.615), 0.094	NA	NA	NA	-0.058 (-0.456, 0.339), 0.775	NA	NA
ma3	NA	0.19 (-0.297, 0.677), 0.45	NA	NA	NA	NA	-0.168 (-0.528, 0.192), 0.366	NA	NA
ma4	NA	-0.417 (-0.863, 0.03), 0.075	NA	NA	NA	NA	0.768 (0.364, 1.172), 0.001	NA	NA
ma5	NA	0.472 (0.17, 0.774), 0.004	NA	NA	NA	NA	-0.42 (-0.772, -0.068), 0.024	NA	NA
sar1	-0.827 (-1.124, -0.531), 0	NA	NA	NA	NA	NA	NA	-0.62 (-0.84, -0.401), 0	NA
sar2	-0.464 (-0.815, -0.113), 0.013	NA	NA	NA	NA	NA	NA	NA	NA
sma1	NA	-1 (-1.907, -0.093), 0.037	-0.743 (-1.46, -0.025), 0.048	-0.783 (-1.619, 0.053), 0.073	-1 (-2.242, 0.243), 0.122	-1 (-1.749, -0.251), 0.012	-1 (-1.968, -0.032), 0.049	NA	-0.429 (-0.833, -0.024), 0.044
-	-	-	-	-	-	-	-	-	-

	Heart Failure	Hypertension	Inflammatory Bowel Disease	PVD	Rheumatoid Arthritis	Stroke & TIA	Type 1 Diabetes	Type 2 Diabetes	Undetermined Type Diabetes
AIC	207.562	281.757	101.426	147.718	129.009	187.925	44.895	242.546	78.359
Sigma^2 estimate	2.78	10.34	0.34	0.93	0.52	1.48	0.07	7.52	0.25
Log likelihood	-96.781	-133.879	-46.713	-70.859	-61.505	-85.962	-15.448	-117.273	-36.18

ar- autoregressive, ma- moving average, sar- seasonal autoregressive, sma- seasonal moving average

Table S11: time series model specification and estimated parameters for incidence counts (number of new diagnoses)

Models are expressed as ARIMA(p,d,q)(P,D,Q)[s=12]. p and q are orders of AR and MA, respectively, and P and Q are orders of SAR and SMA, respectively. For all models, we specified d=1 and D=1. Parameter estimates are presented as 'coefficient (95% CI), p-value' (where p=0, this indicates p<0.001)

	Anxiety Disorders	**Asthma**	**Atrial Fibrillation**	**CHD**	**CKD**	**COPD**	**Dementia**	**Depression**	**Diabetes Mellitus**	**Epilepsy**
	ARIMA(0,1,1)(1,1,0)[12]	ARIMA(2,1,0)(0,1,1)[12]	ARIMA(0,1,5)(0,1,1)[12]	ARIMA(0,1,1)(0,1,1)[12]	ARIMA(0,1,1)(0,1,1)[12]	ARIMA(0,1,1)(0,1,1)[12]	ARIMA(0,1,2)(0,1,1)[12]	ARIMA(0,1,1)(1,1,0)[12]	ARIMA(0,1,2)(1,1,0)[12]	ARIMA(0,1,1)(1,1,0)[12]
ar1	NA	-0.77 (-1.007, -0.533), 0	NA	NA	NA	NA	NA	NA	NA	NA
ar2	NA	-0.54 (-0.785, -0.296), 0	NA	NA	NA	NA	NA	NA	NA	NA
ar3	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
ar4	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
ar5	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
ar6	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
ma1	-0.811 (-1.056, -0.566), 0	NA	-0.959 (-1.266, -0.653), 0	-0.851 (-1.031, -0.672), 0	-0.776 (-0.975, -0.576), 0	-0.819 (-0.982, -0.656), 0	-0.565 (-0.874, -0.256), 0.001	-0.891 (-1.098, -0.684), 0	-0.743 (-1.009, -0.477), 0	-0.875 (-1.144, -0.605), 0
ma2	NA	NA	0.338 (-0.162, 0.838), 0.193	NA	NA	NA	-0.226 (-0.548, 0.096), 0.176	NA	0.416 (0.097, 0.736), 0.014	NA
ma3	NA	NA	0.009 (-0.486, 0.504), 0.973	NA	NA	NA	NA	NA	NA	NA
ma4	NA	NA	-0.718	NA	NA	NA	NA	NA	NA	NA

	Anxiety Disorders	Asthma	Atrial Fibrillation	CHD	CKD	COPD	Dementia	Depression	Diabetes Mellitus	Epilepsy
			(-1.147, -0.289), 0.002							
ma5	NA	NA	0.916 (0.459, 1.373), 0	NA	NA	NA	NA	NA	NA	NA
sar1	-0.505 (-0.752, -0.259), 0	NA	NA	NA	NA	NA	NA	-0.548 (-0.781, -0.316), 0	-0.541 (-0.774, -0.309), 0	-0.557 (-0.814, -0.3), 0
sma1	NA	-1 (-1.801, -0.199), 0.018	-0.665 (-1.235, -0.095), 0.028	-1 (-1.763, -0.237), 0.014	-0.729 (-1.408, -0.049), 0.041	-0.997 (-2.102, 0.107), 0.083	-0.999 (-2.218, 0.221), 0.116	NA	NA	NA
-	-	-	-	-	-	-	-	-	-	-
AIC	648.335	541.037	519.809	503.667	559.587	531.193	538.709	630.162	558.059	436.527
Sigma ^2 estimate	45662.21	3223.67	1822.61	1498.77	6236.2	2714.15	3062.22	30086.06	6386.34	488.88
Log likelihood	-321.168	-266.519	-252.904	-248.834	-276.793	-262.597	-265.355	-312.081	-275.03	-215.263

ar- autoregressive, ma- moving average, sar- seasonal autoregressive, sma- seasonal moving average

Table S11- continued

	Heart Failure	Hypertension	Inflammatory Bowel Disease	PVD	Rheumatoid Arthritis	Stroke & TIA	Type 1 Diabetes	Type 2 Diabetes	Undetermined Type Diabetes
	ARIMA(1,1,2)(0,1,1)[12]	ARIMA(5,1,1)(0,1,1)[12]	ARIMA(0,1,2)(0,1,1)[12]	ARIMA(0,1,1)(0,1,1)[12]	ARIMA(0,1,1)(0,1,1)[12]	ARIMA(6,1,0)(0,1,1)[12]	ARIMA(0,1,5)(0,1,1)[12]	ARIMA(2,1,0)(1,1,0)[12]	ARIMA(0,1,1)(0,1,1)[12]
ar1	-0.606 (-1.019, -0.193), 0.006	-0.738 (-1.288, -0.189), 0.012	NA	NA	NA	-0.749 (-1.022, -0.477), 0	NA	-0.693 (-0.961, -0.425), 0	NA

	Heart Failure	Hypertension	Inflammatory Bowel Disease	PVD	Rheumatoid Arthritis	Stroke & TIA	Type 1 Diabetes	Type 2 Diabetes	Undetermined Type Diabetes
ar2	NA	-0.567 (-1.166, 0.033), 0.072	NA	NA	NA	-0.402 (-0.738, -0.067), 0.024	NA	-0.335 (-0.6, -0.07), 0.017	NA
ar3	NA	-0.272 (-0.853, 0.308), 0.363	NA	NA	NA	-0.22 (-0.567, 0.128), 0.223	NA	NA	NA
ar4	NA	-0.4 (-0.774, -0.026), 0.042	NA	NA	NA	-0.342 (-0.676, -0.009), 0.051	NA	NA	NA
ar5	NA	-0.376 (-0.684, -0.068), 0.021	NA	NA	NA	-0.262 (-0.578, 0.055), 0.113	NA	NA	NA
ar6	NA	NA	NA	NA	NA	-0.317 (-0.589, -0.044), 0.028	NA	NA	NA
ma1	-0.006 (-0.363, 0.352), 0.975	-0.367 (-0.963, 0.23), 0.235	-1.289 (-1.662, -0.917), 0	-0.895 (-1.21, -0.581), 0	-0.793 (-1.088, -0.497), 0	NA	-1.108 (-1.897, -0.319), 0.009	NA	-0.825 (-1.067, -0.582), 0
ma2	-0.709 (-0.984, -0.433), 0	NA	0.366 (0.003, 0.73), 0.055	NA	NA	NA	-0.06 (-0.459, 0.339), 0.771	NA	NA
ma3	NA	NA	NA	NA	NA	NA	-0.175 (-0.552, 0.203), 0.37	NA	NA
ma4	NA	NA	NA	NA	NA	NA	0.765 (0.301, 1.23), 0.002	NA	NA
ma5	NA	NA	NA	NA	NA	NA	-0.423 (-0.87, 0.024), 0.071	NA	NA
sar1	NA	NA	NA	NA	NA	NA	NA	-0.632 (-0.848, -0.417), 0	NA

	Heart Failure	**Hypertension**	**Inflammatory Bowel Disease**	**PVD**	**Rheumatoid Arthritis**	**Stroke & TIA**	**Type 1 Diabetes**	**Type 2 Diabetes**	**Undetermined Type Diabetes**
sma1	-1 (-1.662, -0.337), 0.005	-1 (-1.806, -0.193), 0.02	-0.712 (-1.345, -0.079), 0.033	-0.777 (-1.585, 0.031), 0.066	-1 (-2.262, 0.263), 0.128	-1 (-1.819, -0.181), 0.021	-1 (-1.949, -0.05), 0.045	NA	-0.428 (-0.832, -0.025), 0.043
-	-	-	-	-	-	-	-	-	-
AIC	514.877	596.008	407.848	455.539	438.086	496.118	355.359	550.732	387.385
Sigma^2 estimate	1742.84	8661	230.47	645.83	374.85	1042.78	48.72	5257.66	181.07
Log likelihood	-252.439	-290.004	-199.924	-224.77	-216.043	-240.059	-170.68	-271.366	-190.692

ar- autoregressive, ma- moving average, sar- seasonal autoregressive, sma- seasonal moving average

Annual incidence by socio-demographic factors: age, sex, WIMD, ethnicity, frailty, learning disability

Impact of COVID-19 pandemic on incidence of long-term conditions in Wales: a population data linkage study: supplementary

Table S12: Anxiety disorders

	2015		2016		2017		2018		2019		2020		2021		pre (2015-2019)		post (2020-2021)	
	total n	%	total n	%	total n	%	total n	%	total n	%	total n	%	total n	%	total n	%	total n	%
age																		
0-19	4,658	14.5%	5,035	14.4%	5,679	14.9%	6,512	15.5%	6,598	15.2%	4,914	14.9%	5,922	16.7%	28,482	14.9%	10,836	15.8%
20-29	9,064	28.2%	10,013	28.6%	10,832	28.4%	11,871	28.3%	12,089	27.9%	8,860	26.9%	9,153	25.8%	53,869	28.2%	18,013	26.3%
30-39	5,335	16.6%	5,859	16.7%	6,667	17.5%	7,469	17.8%	7,999	18.4%	6,239	19.0%	6,494	18.3%	33,329	17.5%	12,733	18.6%
40-49	4,394	13.7%	4,547	13.0%	4,794	12.6%	4,967	11.8%	5,184	12.0%	3,884	11.8%	4,121	11.6%	23,886	12.5%	8,005	11.7%
50-59	3,470	10.8%	3,866	11.0%	4,115	10.8%	4,544	10.8%	4,721	10.9%	3,648	11.1%	4,041	11.4%	20,716	10.9%	7,689	11.2%
60-69	2,344	7.3%	2,524	7.2%	2,705	7.1%	2,902	6.9%	2,895	6.7%	2,352	7.1%	2,547	7.2%	13,370	7.0%	4,899	7.2%
70-79	1,723	5.4%	1,820	5.2%	1,973	5.2%	2,196	5.2%	2,300	5.3%	1,736	5.3%	1,907	5.4%	10,012	5.2%	3,643	5.3%
80-89	950	3.0%	1,064	3.0%	1,128	3.0%	1,272	3.0%	1,292	3.0%	1,020	3.1%	1,086	3.1%	5,706	3.0%	2,106	3.1%
90+	239	0.7%	265	0.8%	291	0.8%	270	0.6%	279	0.6%	256	0.8%	240	0.7%	1,344	0.7%	496	0.7%
gender																		
Females	20,088	62.4%	21,819	62.4%	23,849	62.5%	25,914	61.7%	26,557	61.3%	20,678	62.8%	22,207	62.5%	118,227	62.0%	42,885	62.7%
Males	12,089	37.6%	13,174	37.6%	14,335	37.5%	16,089	38.3%	16,800	38.7%	12,231	37.2%	13,304	37.5%	72,487	38.0%	25,535	37.3%
wimd																		
1. Most deprived	7,297	22.7%	7,991	22.8%	8,613	22.6%	9,469	22.5%	9,774	22.5%	7,481	22.7%	7,720	21.7%	43,144	22.6%	15,201	22.2%
2	6,213	19.3%	6,687	19.1%	7,388	19.3%	8,365	19.9%	8,536	19.7%	6,303	19.2%	6,753	19.0%	37,189	19.5%	13,056	19.1%
3	5,543	17.2%	6,100	17.4%	6,529	17.1%	7,185	17.1%	7,438	17.2%	5,543	16.8%	6,310	17.8%	32,795	17.2%	11,853	17.3%
4	4,978	15.5%	5,409	15.5%	6,017	15.8%	6,531	15.5%	6,601	15.2%	5,161	15.7%	5,765	16.2%	29,536	15.5%	10,926	16.0%
5. Least deprived	4,964	15.4%	5,242	15.0%	5,712	15.0%	6,191	14.7%	6,498	15.0%	4,875	14.8%	5,559	15.7%	28,607	15.0%	10,434	15.2%
Unknown	3,182	9.9%	3,564	10.2%	3,925	10.3%	4,262	10.1%	4,510	10.4%	3,546	10.8%	3,404	9.6%	19,443	10.2%	6,950	10.2%
ethinicity																		
Asian	537	1.7%	614	1.8%	654	1.7%	760	1.8%	860	2.0%	758	2.3%	867	2.4%	3,425	1.8%	1,625	2.4%
Black	157	0.5%	186	0.5%	185	0.5%	218	0.5%	231	0.5%	224	0.7%	244	0.7%	977	0.5%	468	0.7%
Mixed	283	0.9%	355	1.0%	388	1.0%	449	1.1%	497	1.1%	394	1.2%	508	1.4%	1,972	1.0%	902	1.3%
Other	213	0.7%	255	0.7%	278	0.7%	286	0.7%	395	0.9%	301	0.9%	341	1.0%	1,427	0.7%	642	0.9%
White	30,228	93.9%	32,764	93.6%	35,815	93.8%	39,504	94.1%	40,552	93.5%	30,736	93.4%	32,946	92.8%	178,863	93.8%	63,682	93.1%
Unknown	759	2.4%	819	2.3%	864	2.3%	786	1.9%	822	1.9%	496	1.5%	605	1.7%	4,050	2.1%	1,101	1.6%
Frailty																		
Fit	25,484	79.2%	27,813	79.5%	30,352	79.5%	33,487	79.7%	34,618	79.8%	26,252	79.8%	28,703	80.8%	151,754	79.6%	54,955	80.3%
Mild	4,487	13.9%	4,670	13.3%	5,140	13.5%	5,472	13.0%	5,506	12.7%	4,095	12.4%	4,078	11.5%	25,275	13.3%	8,173	11.9%
missing	925	2.9%	1,120	3.2%	1,285	3.4%	1,547	3.7%	1,655	3.8%	1,409	4.3%	1,627	4.6%	6,532	3.4%	3,036	4.4%
Moderate	1,005	3.1%	1,080	3.1%	1,099	2.9%	1,174	2.8%	1,254	2.9%	903	2.7%	849	2.4%	5,612	2.9%	1,752	2.6%
Severe	276	0.9%	310	0.9%	308	0.8%	323	0.8%	324	0.7%	250	0.8%	254	0.7%	1,541	0.8%	504	0.7%
learning disability																		
no	31,747	98.7%	34,545	98.7%	37,690	98.7%	41,420	98.6%	42,796	98.7%	32,496	98.7%	35,121	98.9%	188,198	98.7%	67,617	98.8%
yes	430	1.3%	448	1.3%	494	1.3%	583	1.4%	561	1.3%	413	1.3%	390	1.1%	2,516	1.3%	803	1.2%

Table S13: Asthma

	2015		2016		2017		2018		2019		2020		2021		pre (2015-2019)		post (2020-2021)	
	total n	%	total n	%	total n	%	total n	%	total n	%	total n	%	total n	%	total n	%	total n	%
age																		
0-19	5,382	35.9%	5,460	35.3%	5,059	34.4%	4,725	33.1%	4,854	34.2%	2,917	30.3%	3,535	32.0%	25,480	34.6%	6,452	31.2%
20-29	1,574	10.5%	1,692	11.0%	1,599	10.9%	1,526	10.7%	1,627	11.5%	1,271	13.2%	1,403	12.7%	8,018	10.9%	2,674	12.9%
30-39	1,195	8.0%	1,276	8.3%	1,285	8.7%	1,280	9.0%	1,304	9.2%	978	10.2%	1,187	10.7%	6,340	8.6%	2,165	10.5%
40-49	1,418	9.4%	1,476	9.6%	1,340	9.1%	1,321	9.2%	1,258	8.9%	895	9.3%	1,056	9.6%	6,813	9.2%	1,951	9.4%
50-59	1,664	11.1%	1,711	11.1%	1,701	11.6%	1,729	12.1%	1,629	11.5%	1,194	12.4%	1,306	11.8%	8,434	11.4%	2,500	12.1%
60-69	1,694	11.3%	1,703	11.0%	1,649	11.2%	1,615	11.3%	1,549	10.9%	1,052	10.9%	1,182	10.7%	8,210	11.1%	2,234	10.8%
70-79	1,237	8.2%	1,336	8.6%	1,322	9.0%	1,326	9.3%	1,296	9.1%	821	8.5%	856	7.8%	6,517	8.8%	1,677	8.1%
80-89	691	4.6%	657	4.3%	626	4.3%	643	4.5%	556	3.9%	401	4.2%	429	3.9%	3,173	4.3%	830	4.0%
90+	154	1.0%	135	0.9%	141	1.0%	130	0.9%	122	0.9%	94	1.0%	88	0.8%	682	0.9%	182	0.9%
gender																		
Females	8,205	54.7%	8,464	54.8%	8,077	54.9%	7,798	54.6%	7,851	55.3%	5,363	55.7%	6,231	56.4%	40,395	54.8%	11,594	56.1%
Males	6,804	45.3%	6,982	45.2%	6,645	45.1%	6,497	45.4%	6,344	44.7%	4,260	44.3%	4,811	43.6%	33,272	45.2%	9,071	43.9%
wimd																		
1. Most deprived	3,226	21.5%	3,443	22.3%	3,224	21.9%	3,051	21.3%	2,938	20.7%	1,924	20.0%	2,351	21.3%	15,882	21.6%	4,275	20.7%
2	2,835	18.9%	2,915	18.9%	2,768	18.8%	2,585	18.1%	2,616	18.4%	1,761	18.3%	2,055	18.6%	13,719	18.6%	3,816	18.5%
3	2,759	18.4%	2,716	17.6%	2,657	18.0%	2,572	18.0%	2,508	17.7%	1,663	17.3%	1,948	17.6%	13,212	17.9%	3,611	17.5%
4	2,555	17.0%	2,728	17.7%	2,490	16.9%	2,465	17.2%	2,392	16.9%	1,595	16.6%	1,788	16.2%	12,630	17.1%	3,383	16.4%
5. Least deprived	2,279	15.2%	2,352	15.2%	2,221	15.1%	2,180	15.3%	2,187	15.4%	1,552	16.1%	1,640	14.9%	11,219	15.2%	3,192	15.4%
Unknown	1,355	9.0%	1,292	8.4%	1,362	9.3%	1,442	10.1%	1,554	10.9%	1,128	11.7%	1,260	11.4%	7,005	9.5%	2,388	11.6%
ethinicity																		
Asian	456	3.0%	490	3.2%	488	3.3%	477	3.3%	459	3.2%	314	3.3%	417	3.8%	2,370	3.2%	731	3.5%
Black	125	0.8%	143	0.9%	134	0.9%	100	0.7%	135	1.0%	102	1.1%	129	1.2%	637	0.9%	231	1.1%
Mixed	236	1.6%	219	1.4%	256	1.7%	238	1.7%	259	1.8%	149	1.5%	206	1.9%	1,208	1.6%	355	1.7%
Other	149	1.0%	165	1.1%	146	1.0%	151	1.1%	176	1.2%	134	1.4%	129	1.2%	787	1.1%	263	1.3%
White	13,665	91.0%	14,087	91.2%	13,360	90.7%	13,013	91.0%	12,857	90.6%	8,733	90.8%	9,854	89.2%	66,982	90.9%	18,587	89.9%
Unknown	378	2.5%	342	2.2%	338	2.3%	316	2.2%	309	2.2%	191	2.0%	307	2.8%	1,683	2.3%	498	2.4%
Frailty																		
Fit	10,167	67.7%	10,411	67.4%	9,902	67.3%	9,466	66.2%	9,629	67.8%	6,467	67.2%	7,605	68.9%	49,575	67.3%	14,072	68.1%
Mild	2,474	16.5%	2,541	16.5%	2,490	16.9%	2,517	17.6%	2,299	16.2%	1,617	16.8%	1,770	16.0%	12,321	16.7%	3,387	16.4%
missing	1,513	10.1%	1,587	10.3%	1,506	10.2%	1,551	10.8%	1,556	11.0%	1,030	10.7%	1,235	11.2%	7,713	10.5%	2,265	11.0%
Moderate	686	4.6%	726	4.7%	675	4.6%	623	4.4%	576	4.1%	414	4.3%	361	3.3%	3,286	4.5%	775	3.8%
Severe	169	1.1%	181	1.2%	149	1.0%	138	1.0%	135	1.0%	95	1.0%	71	0.6%	772	1.0%	166	0.8%
learning disability																		
no	14,862	99.0%	15,289	99.0%	14,575	99.0%	14,173	99.1%	14,082	99.2%	9,544	99.2%	10,959	99.2%	72,981	99.1%	20,503	99.2%
yes	147	1.0%	157	1.0%	147	1.0%	122	0.9%	113	0.8%	79	0.8%	83	0.8%	686	0.9%	162	0.8%

Table S14: Atrial fibrillation

	2015		2016		2017		2018		2019		2020		2021		pre (2015-2019)		post (2020-2021)	
	total n	%	total n	%	total n	%	total n	%	total n	%	total n	%	total n	%	total n	%	total n	%
age																		
0-19	40	0.2%	47	0.3%	42	0.2%	48	0.3%	37	0.2%	37	0.2%	41	0.2%	214	0.3%	78	0.2%
20-29	191	1.1%	202	1.2%	185	1.1%	178	1.0%	152	0.9%	152	1.0%	174	1.0%	908	1.1%	326	1.0%
30-39	317	1.9%	318	1.8%	315	1.9%	355	2.1%	307	1.8%	353	2.4%	391	2.3%	1,612	1.9%	744	2.4%
40-49	664	4.0%	682	3.9%	633	3.7%	598	3.5%	636	3.7%	605	4.1%	674	4.0%	3,213	3.8%	1,279	4.0%
50-59	1,369	8.2%	1,521	8.8%	1,443	8.5%	1,554	9.0%	1,502	8.8%	1,503	10.1%	1,616	9.6%	7,389	8.7%	3,119	9.9%
60-69	3,220	19.3%	3,337	19.3%	3,264	19.2%	3,123	18.1%	3,039	17.9%	2,615	17.5%	2,995	17.9%	15,983	18.7%	5,610	17.7%
70-79	4,885	29.3%	5,080	29.3%	5,055	29.7%	5,347	31.0%	5,329	31.4%	4,500	30.2%	5,221	31.2%	25,696	30.1%	9,721	30.7%
80-89	4,559	27.3%	4,600	26.6%	4,686	27.5%	4,651	26.9%	4,593	27.0%	3,889	26.1%	4,294	25.6%	23,089	27.1%	8,183	25.8%
90+	1,448	8.7%	1,530	8.8%	1,400	8.2%	1,416	8.2%	1,395	8.2%	1,253	8.4%	1,346	8.0%	7,189	8.4%	2,599	8.2%
gender																		
Females	7,890	47.3%	8,221	47.5%	7,979	46.9%	8,029	46.5%	7,998	47.1%	6,886	46.2%	7,736	46.2%	40,117	47.0%	14,622	46.2%
Males	8,803	52.7%	9,096	52.5%	9,044	53.1%	9,241	53.5%	8,992	52.9%	8,021	53.8%	9,016	53.8%	45,176	53.0%	17,037	53.8%
wimd																		
1. Most deprived	2,924	17.5%	3,064	17.7%	2,952	17.3%	2,939	17.0%	3,017	17.8%	2,684	18.0%	2,812	16.8%	14,896	17.5%	5,496	17.4%
2	3,139	18.8%	3,352	19.4%	3,282	19.3%	3,289	19.0%	3,147	18.5%	2,796	18.8%	3,203	19.1%	16,209	19.0%	5,999	18.9%
3	3,316	19.9%	3,333	19.2%	3,363	19.8%	3,329	19.3%	3,301	19.4%	2,819	18.9%	3,106	18.5%	16,642	19.5%	5,925	18.7%
4	3,338	20.0%	3,456	20.0%	3,286	19.3%	3,385	19.6%	3,269	19.2%	2,858	19.2%	3,320	19.8%	16,734	19.6%	6,178	19.5%
5. Least deprived	3,126	18.7%	3,228	18.6%	3,150	18.5%	3,240	18.8%	3,184	18.7%	2,753	18.5%	3,207	19.1%	15,928	18.7%	5,960	18.8%
Unknown	850	5.1%	884	5.1%	990	5.8%	1,088	6.3%	1,072	6.3%	997	6.7%	1,104	6.6%	4,884	5.7%	2,101	6.6%
ethinicity																		
Asian	148	0.9%	137	0.8%	163	1.0%	184	1.1%	202	1.2%	217	1.5%	328	2.0%	834	1.0%	545	1.7%
Black	24	0.1%	26	0.2%	32	0.2%	33	0.2%	38	0.2%	34	0.2%	57	0.3%	153	0.2%	91	0.3%
Mixed	45	0.3%	53	0.3%	49	0.3%	58	0.3%	46	0.3%	52	0.3%	52	0.3%	251	0.3%	104	0.3%
Other	33	0.2%	38	0.2%	27	0.2%	42	0.2%	51	0.3%	41	0.3%	52	0.3%	191	0.2%	93	0.3%
White	16,130	96.6%	16,811	97.1%	16,485	96.8%	16,680	96.6%	16,426	96.7%	14,358	96.3%	16,054	95.8%	82,532	96.8%	30,412	96.1%
Unknown	313	1.9%	252	1.5%	267	1.6%	273	1.6%	227	1.3%	205	1.4%	209	1.2%	1,332	1.6%	414	1.3%
Frailty																		
Fit	4,999	29.9%	5,262	30.4%	5,265	30.9%	5,364	31.1%	5,327	31.4%	4,892	32.8%	5,888	35.1%	26,217	30.7%	10,780	34.1%
Mild	5,925	35.5%	6,112	35.3%	6,085	35.7%	6,192	35.9%	5,999	35.3%	5,121	34.4%	5,760	34.4%	30,313	35.5%	10,881	34.4%
missing	1,841	11.0%	1,927	11.1%	1,828	10.7%	1,853	10.7%	1,808	10.6%	1,733	11.6%	1,851	11.0%	9,257	10.9%	3,584	11.3%
Moderate	3,087	18.5%	3,130	18.1%	3,035	17.8%	3,048	17.6%	3,010	17.7%	2,486	16.7%	2,593	15.5%	15,310	17.9%	5,079	16.0%
Severe	841	5.0%	886	5.1%	810	4.8%	813	4.7%	846	5.0%	675	4.5%	660	3.9%	4,196	4.9%	1,335	4.2%
learning disability																		
no	16,614	99.5%	17,237	99.5%	16,945	99.5%	17,166	99.4%	16,911	99.5%	14,831	99.5%	16,672	99.5%	84,873	99.5%	31,503	99.5%
yes	79	0.5%	80	0.5%	78	0.5%	104	0.6%	79	0.5%	76	0.5%	80	0.5%	420	0.5%	156	0.5%

Impact of COVID-19 pandemic on incidence of long-term conditions in Wales: a population data linkage study: supplementary

Table S15: Coronary heart disease

	2015		2016		2017		2018		2019		2020		2021		pre (2015-2019)		post (2020-2021)	
	total n	%	total n	%	total n	%	total n	%	total n	%	total n	%	total n	%	total n	%	total n	%
age																		
0-19	10	0.1%	10	0.1%	11	0.1%	6	0.1%	10	0.1%	10	0.1%	6	0.1%	47	0.1%	16	0.1%
20-29	31	0.3%	28	0.3%	28	0.3%	32	0.3%	31	0.3%	37	0.4%	33	0.3%	150	0.3%	70	0.4%
30-39	116	1.1%	115	1.1%	122	1.2%	133	1.3%	126	1.2%	100	1.2%	111	1.1%	612	1.2%	211	1.2%
40-49	627	5.9%	600	5.7%	597	5.8%	554	5.3%	585	5.5%	454	5.3%	491	5.1%	2,963	5.7%	945	5.2%
50-59	1,651	15.6%	1,760	16.8%	1,651	16.1%	1,687	16.1%	1,797	16.9%	1,474	17.1%	1,607	16.5%	8,546	16.3%	3,081	16.8%
60-69	2,768	26.1%	2,724	26.0%	2,556	25.0%	2,607	24.9%	2,550	24.0%	2,041	23.6%	2,454	25.3%	13,205	25.2%	4,495	24.5%
70-79	2,930	27.6%	2,811	26.8%	2,940	28.7%	3,039	29.0%	3,093	29.1%	2,494	28.9%	2,877	29.6%	14,813	28.2%	5,371	29.3%
80-89	1,967	18.5%	1,929	18.4%	1,870	18.3%	1,985	18.9%	1,933	18.2%	1,623	18.8%	1,701	17.5%	9,684	18.5%	3,324	18.1%
90+	505	4.8%	512	4.9%	461	4.5%	446	4.3%	493	4.6%	403	4.7%	431	4.4%	2,417	4.6%	834	4.5%
gender																		
Females	4,223	39.8%	4,221	40.2%	4,096	40.0%	4,104	39.1%	4,147	39.1%	3,344	38.7%	3,807	39.2%	20,791	39.6%	7,151	39.0%
Males	6,382	60.2%	6,268	59.8%	6,140	60.0%	6,385	60.9%	6,471	60.9%	5,292	61.3%	5,904	60.8%	31,646	60.4%	11,196	61.0%
wimd																		
1. Most deprived	1,925	18.2%	2,010	19.2%	1,936	18.9%	1,960	18.7%	1,954	18.4%	1,539	17.8%	1,734	17.9%	9,785	18.7%	3,273	17.8%
2	2,035	19.2%	1,971	18.8%	1,921	18.8%	2,024	19.3%	2,006	18.9%	1,618	18.7%	1,866	19.2%	9,957	19.0%	3,484	19.0%
3	2,085	19.7%	1,987	18.9%	2,011	19.6%	1,969	18.8%	2,001	18.8%	1,588	18.4%	1,811	18.6%	10,053	19.2%	3,399	18.5%
4	2,097	19.8%	1,962	18.7%	1,935	18.9%	2,044	19.5%	2,047	19.3%	1,679	19.4%	1,832	18.9%	10,085	19.2%	3,511	19.1%
5. Least deprived	1,901	17.9%	1,960	18.7%	1,816	17.7%	1,841	17.6%	1,904	17.9%	1,592	18.4%	1,780	18.3%	9,422	18.0%	3,372	18.4%
Unknown	562	5.3%	599	5.7%	617	6.0%	651	6.2%	706	6.6%	620	7.2%	688	7.1%	3,135	6.0%	1,308	7.1%
ethinicity																		
Asian	176	1.7%	175	1.7%	175	1.7%	177	1.7%	176	1.7%	177	2.0%	255	2.6%	879	1.7%	432	2.4%
Black	20	0.2%	27	0.3%	22	0.2%	23	0.2%	25	0.2%	30	0.3%	22	0.2%	117	0.2%	52	0.3%
Mixed	33	0.3%	35	0.3%	35	0.3%	38	0.4%	37	0.3%	33	0.4%	41	0.4%	178	0.3%	74	0.4%
Other	43	0.4%	44	0.4%	47	0.5%	46	0.4%	57	0.5%	47	0.5%	54	0.6%	237	0.5%	101	0.6%
White	10,149	95.7%	10,049	95.8%	9,805	95.8%	10,055	95.9%	10,175	95.8%	8,211	95.1%	9,166	94.4%	50,233	95.8%	17,377	94.7%
Unknown	184	1.7%	159	1.5%	152	1.5%	150	1.4%	148	1.4%	138	1.6%	173	1.8%	793	1.5%	311	1.7%
Frailty																		
Fit	3,485	32.9%	3,556	33.9%	3,526	34.4%	3,490	33.3%	3,675	34.6%	3,103	35.9%	3,612	37.2%	17,732	33.8%	6,715	36.6%
Mild	3,638	34.3%	3,597	34.3%	3,496	34.2%	3,635	34.7%	3,638	34.3%	2,872	33.3%	3,278	33.8%	18,004	34.3%	6,150	33.5%
missing	1,307	12.3%	1,255	12.0%	1,180	11.5%	1,256	12.0%	1,185	11.2%	1,007	11.7%	1,133	11.7%	6,183	11.8%	2,140	11.7%
Moderate	1,728	16.3%	1,634	15.6%	1,600	15.6%	1,680	16.0%	1,686	15.9%	1,293	15.0%	1,349	13.9%	8,328	15.9%	2,642	14.4%
Severe	447	4.2%	447	4.3%	434	4.2%	428	4.1%	434	4.1%	361	4.2%	339	3.5%	2,190	4.2%	700	3.8%
learning disability																		
no	10,561	99.6%	10,455	99.7%	10,213	99.8%	10,437	99.5%	10,585	99.7%	8,610	99.7%	9,680	99.7%	52,251	99.6%	18,290	99.7%
yes	44	0.4%	34	0.3%	23	0.2%	52	0.5%	33	0.3%	26	0.3%	31	0.3%	186	0.4%	57	0.3%

Table S16: Chronic kidney disease

	2015		2016		2017		2018		2019		2020		2021		pre (2015-2019)		post (2020-2021)	
	total n	%	total n	%	total n	%	total n	%	total n	%	total n	%	total n	%	total n	%	total n	%
age																		
0-19	261	1.3%	320	1.5%	368	1.7%	359	1.6%	361	1.6%	320	1.6%	305	1.5%	1,669	1.5%	625	1.6%
20-29	315	1.5%	322	1.5%	351	1.6%	358	1.6%	406	1.8%	319	1.6%	334	1.6%	1,752	1.6%	653	1.6%
30-39	394	1.9%	413	1.9%	428	2.0%	495	2.2%	557	2.5%	491	2.5%	524	2.6%	2,287	2.1%	1,015	2.5%
40-49	721	3.5%	750	3.4%	729	3.4%	818	3.6%	772	3.5%	766	3.9%	781	3.8%	3,790	3.5%	1,547	3.9%
50-59	1,482	7.2%	1,604	7.3%	1,681	7.7%	1,795	8.0%	1,879	8.4%	1,623	8.3%	1,775	8.7%	8,441	7.8%	3,398	8.5%
60-69	3,089	15.1%	3,277	15.0%	3,307	15.2%	3,427	15.3%	3,347	15.0%	2,936	15.0%	3,118	15.3%	16,447	15.1%	6,054	15.2%
70-79	5,365	26.2%	5,822	26.6%	5,928	27.3%	6,167	27.5%	6,222	27.9%	5,386	27.5%	5,723	28.0%	29,504	27.1%	11,109	27.8%
80-89	6,501	31.7%	6,862	31.3%	6,513	30.0%	6,593	29.4%	6,450	29.0%	5,629	28.8%	5,822	28.5%	32,919	30.3%	11,451	28.7%
90+	2,356	11.5%	2,534	11.6%	2,393	11.0%	2,405	10.7%	2,278	10.2%	2,083	10.7%	2,022	9.9%	11,966	11.0%	4,105	10.3%
gender																		
Females	10,117	49.4%	10,745	49.1%	10,469	48.2%	10,714	47.8%	10,608	47.6%	9,234	47.2%	9,462	46.4%	52,653	48.4%	18,696	46.8%
Males	10,367	50.6%	11,159	50.9%	11,229	51.8%	11,703	52.2%	11,664	52.4%	10,319	52.8%	10,942	53.6%	56,122	51.6%	21,261	53.2%
wimd																		
1. Most deprived	4,158	20.3%	4,434	20.2%	4,410	20.3%	4,492	20.0%	4,310	19.4%	3,915	20.0%	3,934	19.3%	21,804	20.0%	7,849	19.6%
2	4,137	20.2%	4,403	20.1%	4,430	20.4%	4,517	20.1%	4,424	19.9%	3,792	19.4%	3,900	19.1%	21,911	20.1%	7,692	19.3%
3	3,970	19.4%	4,204	19.2%	4,111	18.9%	4,162	18.6%	4,109	18.4%	3,627	18.5%	3,850	18.9%	20,556	18.9%	7,477	18.7%
4	3,983	19.4%	4,227	19.3%	3,977	18.3%	4,131	18.4%	4,218	18.9%	3,544	18.1%	3,841	18.8%	20,536	18.9%	7,385	18.5%
5. Least deprived	3,406	16.6%	3,687	16.8%	3,651	16.8%	3,808	17.0%	3,812	17.1%	3,354	17.2%	3,527	17.3%	18,364	16.9%	6,881	17.2%
Unknown	830	4.1%	949	4.3%	1,119	5.2%	1,307	5.8%	1,399	6.3%	1,321	6.8%	1,352	6.6%	5,604	5.2%	2,673	6.7%
ethinicity																		
Asian	255	1.2%	265	1.2%	270	1.2%	309	1.4%	312	1.4%	368	1.9%	584	2.9%	1,411	1.3%	952	2.4%
Black	42	0.2%	65	0.3%	75	0.3%	64	0.3%	78	0.4%	68	0.3%	96	0.5%	324	0.3%	164	0.4%
Mixed	71	0.3%	79	0.4%	85	0.4%	92	0.4%	90	0.4%	81	0.4%	75	0.4%	417	0.4%	156	0.4%
Other	46	0.2%	59	0.3%	51	0.2%	65	0.3%	78	0.4%	74	0.4%	63	0.3%	299	0.3%	137	0.3%
White	19,644	95.9%	21,100	96.3%	20,918	96.4%	21,610	96.4%	21,447	96.3%	18,726	95.8%	19,370	94.9%	104,719	96.3%	38,096	95.3%
Unknown	426	2.1%	336	1.5%	299	1.4%	277	1.2%	267	1.2%	236	1.2%	216	1.1%	1,605	1.5%	452	1.1%
Frailty																		
Fit	4,415	21.6%	4,716	21.5%	5,155	23.8%	5,424	24.2%	5,591	25.1%	5,177	26.5%	5,595	27.4%	25,301	23.3%	10,772	27.0%
Mild	6,515	31.8%	7,372	33.7%	7,406	34.1%	7,785	34.7%	7,755	34.8%	6,831	34.9%	7,350	36.0%	36,833	33.9%	14,181	35.5%
missing	2,465	12.0%	2,467	11.3%	2,206	10.2%	2,420	10.8%	2,392	10.7%	2,022	10.3%	2,113	10.4%	11,950	11.0%	4,135	10.3%
Moderate	5,089	24.8%	5,439	24.8%	5,177	23.9%	5,082	22.7%	5,007	22.5%	4,206	21.5%	4,147	20.3%	25,794	23.7%	8,353	20.9%
Severe	2,000	9.8%	1,910	8.7%	1,754	8.1%	1,706	7.6%	1,527	6.9%	1,317	6.7%	1,199	5.9%	8,897	8.2%	2,516	6.3%
learning disability																		
no	20,332	99.3%	21,718	99.2%	21,490	99.0%	22,204	99.0%	22,082	99.1%	19,374	99.1%	20,253	99.3%	107,826	99.1%	39,627	99.2%
yes	152	0.7%	186	0.8%	208	1.0%	213	1.0%	190	0.9%	179	0.9%	151	0.7%	949	0.9%	330	0.8%

Table S17: Chronic obstructive pulmonary disease

	2015		2016		2017		2018		2019		2020		2021		pre (2015-2019)		post (2020-2021)	
	total n	%	total n	%	total n	%	total n	%	total n	%	total n	%	total n	%	total n	%	total n	%
age																		
0-19	45	0.4%	49	0.4%	56	0.5%	53	0.4%	74	0.6%	37	0.5%	61	0.8%	277	0.5%	98	0.7%
20-29	65	0.6%	69	0.6%	84	0.7%	85	0.7%	91	0.8%	67	0.9%	48	0.6%	394	0.7%	115	0.8%
30-39	147	1.3%	190	1.6%	174	1.5%	217	1.8%	208	1.8%	162	2.2%	154	2.0%	936	1.6%	316	2.1%
40-49	727	6.6%	800	6.8%	806	6.8%	777	6.6%	751	6.4%	461	6.2%	462	6.1%	3,861	6.6%	923	6.1%
50-59	1,779	16.2%	1,937	16.5%	2,067	17.4%	2,075	17.5%	2,138	18.1%	1,317	17.7%	1,294	17.1%	9,996	17.2%	2,611	17.4%
60-69	3,046	27.7%	3,258	27.7%	3,148	26.5%	3,066	25.9%	2,968	25.1%	1,760	23.7%	1,836	24.2%	15,486	26.6%	3,596	24.0%
70-79	2,965	27.0%	3,183	27.1%	3,242	27.3%	3,341	28.3%	3,406	28.9%	2,067	27.8%	2,203	29.1%	16,137	27.7%	4,270	28.4%
80-89	1,846	16.8%	1,837	15.6%	1,855	15.6%	1,839	15.6%	1,802	15.3%	1,291	17.4%	1,249	16.5%	9,179	15.8%	2,540	16.9%
90+	377	3.4%	419	3.6%	439	3.7%	372	3.1%	365	3.1%	272	3.7%	268	3.5%	1,972	3.4%	540	3.6%
gender																		
Females	5,437	49.4%	5,882	50.1%	5,928	49.9%	5,918	50.0%	5,852	49.6%	3,637	48.9%	3,760	49.6%	29,017	49.8%	7,397	49.3%
Males	5,560	50.6%	5,860	49.9%	5,943	50.1%	5,907	50.0%	5,951	50.4%	3,797	51.1%	3,815	50.4%	29,221	50.2%	7,612	50.7%
wimd																		
1. Most deprived	2,734	24.9%	2,955	25.2%	3,024	25.5%	2,988	25.3%	2,909	24.6%	1,864	25.1%	1,903	25.1%	14,610	25.1%	3,767	25.1%
2	2,426	22.1%	2,573	21.9%	2,542	21.4%	2,564	21.7%	2,526	21.4%	1,599	21.5%	1,598	21.1%	12,631	21.7%	3,197	21.3%
3	2,089	19.0%	2,155	18.4%	2,248	18.9%	2,162	18.3%	2,211	18.7%	1,367	18.4%	1,341	17.7%	10,865	18.7%	2,708	18.0%
4	1,800	16.4%	1,929	16.4%	1,974	16.6%	1,928	16.3%	1,841	15.6%	1,226	16.5%	1,248	16.5%	9,472	16.3%	2,474	16.5%
5. Least deprived	1,377	12.5%	1,511	12.9%	1,425	12.0%	1,450	12.3%	1,536	13.0%	874	11.8%	961	12.7%	7,299	12.5%	1,835	12.2%
Unknown	571	5.2%	619	5.3%	658	5.5%	733	6.2%	780	6.6%	504	6.8%	524	6.9%	3,361	5.8%	1,028	6.8%
ethinicity																		
Asian	112	1.0%	120	1.0%	111	0.9%	136	1.2%	143	1.2%	88	1.2%	139	1.8%	622	1.1%	227	1.5%
Black	18	0.2%	25	0.2%	21	0.2%	26	0.2%	12	0.1%	25	0.3%	21	0.3%	102	0.2%	46	0.3%
Mixed	36	0.3%	39	0.3%	36	0.3%	32	0.3%	52	0.4%	26	0.3%	34	0.4%	195	0.3%	60	0.4%
Other	22	0.2%	29	0.2%	33	0.3%	24	0.2%	34	0.3%	22	0.3%	27	0.4%	142	0.2%	49	0.3%
White	10,601	96.4%	11,334	96.5%	11,476	96.7%	11,409	96.5%	11,392	96.5%	7,131	95.9%	7,212	95.2%	56,212	96.5%	14,343	95.6%
Unknown	208	1.9%	195	1.7%	194	1.6%	198	1.7%	170	1.4%	142	1.9%	142	1.9%	965	1.7%	284	1.9%
Frailty																		
Fit	3,822	34.8%	4,023	34.3%	4,117	34.7%	4,093	34.6%	4,245	36.0%	2,570	34.6%	2,686	35.5%	20,300	34.9%	5,256	35.0%
Mild	3,873	35.2%	4,235	36.1%	4,313	36.3%	4,340	36.7%	4,265	36.1%	2,579	34.7%	2,640	34.9%	21,026	36.1%	5,219	34.8%
missing	1,138	10.3%	1,170	10.0%	1,193	10.0%	1,269	10.7%	1,164	9.9%	833	11.2%	973	12.8%	5,934	10.2%	1,806	12.0%
Moderate	1,673	15.2%	1,789	15.2%	1,772	14.9%	1,677	14.2%	1,656	14.0%	1,133	15.2%	1,001	13.2%	8,567	14.7%	2,134	14.2%
Severe	491	4.5%	525	4.5%	476	4.0%	446	3.8%	473	4.0%	319	4.3%	275	3.6%	2,411	4.1%	594	4.0%
learning disability																		
no	10,962	99.7%	11,691	99.6%	11,817	99.5%	11,764	99.5%	11,729	99.4%	7,399	99.5%	7,535	99.5%	57,963	99.5%	14,934	99.5%
yes	35	0.3%	51	0.4%	54	0.5%	61	0.5%	74	0.6%	35	0.5%	40	0.5%	275	0.5%	75	0.5%

Table S18: Dementia

	2015		2016		2017		2018		2019		2020		2021		pre (2015-2019)		post (2020-2021)	
	total n	%	total n	%	total n	%	total n	%	total n	%	total n	%	total n	%	total n	%	total n	%
age																		
0-19	8	0.1%	13	0.1%	23	0.2%	15	0.1%	25	0.2%	20	0.1%	18	0.1%	84	0.1%	38	0.1%
20-29	21	0.2%	18	0.1%	26	0.2%	23	0.2%	26	0.2%	27	0.2%	34	0.2%	114	0.2%	61	0.2%
30-39	26	0.2%	49	0.4%	36	0.3%	53	0.4%	58	0.4%	74	0.5%	61	0.4%	222	0.3%	135	0.5%
40-49	144	1.1%	123	0.9%	139	1.1%	144	1.0%	172	1.2%	175	1.3%	163	1.1%	722	1.1%	338	1.2%
50-59	361	2.9%	429	3.2%	430	3.3%	504	3.6%	540	3.7%	523	3.8%	620	4.2%	2,264	3.3%	1,143	4.0%
60-69	1,097	8.7%	1,255	9.3%	1,199	9.2%	1,295	9.3%	1,301	8.9%	1,380	10.0%	1,399	9.4%	6,147	9.1%	2,779	9.7%
70-79	3,285	26.1%	3,505	26.1%	3,376	26.0%	3,798	27.3%	4,003	27.3%	3,953	28.7%	4,292	28.7%	17,967	26.6%	8,245	28.7%
80-89	5,414	43.0%	5,643	42.0%	5,460	42.1%	5,844	42.0%	6,100	41.7%	5,451	39.6%	5,977	40.0%	28,461	42.1%	11,428	39.8%
90+	2,244	17.8%	2,408	17.9%	2,287	17.6%	2,252	16.2%	2,417	16.5%	2,157	15.7%	2,374	15.9%	11,608	17.2%	4,531	15.8%
gender																		
Females	7,261	57.6%	7,691	57.2%	7,424	57.2%	7,761	55.7%	8,111	55.4%	7,499	54.5%	8,109	54.3%	38,248	56.6%	15,608	54.4%
Males	5,339	42.4%	5,752	42.8%	5,552	42.8%	6,167	44.3%	6,531	44.6%	6,261	45.5%	6,829	45.7%	29,341	43.4%	13,090	45.6%
wimd																		
1. Most deprived	2,288	18.2%	2,470	18.4%	2,315	17.8%	2,562	18.4%	2,568	17.5%	2,493	18.1%	2,664	17.8%	12,203	18.1%	5,157	18.0%
2	2,468	19.6%	2,569	19.1%	2,413	18.6%	2,532	18.2%	2,822	19.3%	2,647	19.2%	2,741	18.3%	12,804	18.9%	5,388	18.8%
3	2,307	18.3%	2,440	18.2%	2,329	17.9%	2,444	17.5%	2,638	18.0%	2,492	18.1%	2,793	18.7%	12,158	18.0%	5,285	18.4%
4	2,428	19.3%	2,542	18.9%	2,462	19.0%	2,679	19.2%	2,747	18.8%	2,513	18.3%	2,855	19.1%	12,858	19.0%	5,368	18.7%
5. Least deprived	2,448	19.4%	2,681	19.9%	2,700	20.8%	2,784	20.0%	2,852	19.5%	2,648	19.2%	2,937	19.7%	13,465	19.9%	5,585	19.5%
Unknown	661	5.2%	741	5.5%	757	5.8%	927	6.7%	1,015	6.9%	967	7.0%	948	6.3%	4,101	6.1%	1,915	6.7%
ethinicity																		
Asian	101	0.8%	123	0.9%	150	1.2%	148	1.1%	194	1.3%	230	1.7%	411	2.8%	716	1.1%	641	2.2%
Black	27	0.2%	25	0.2%	34	0.3%	27	0.2%	32	0.2%	34	0.2%	42	0.3%	145	0.2%	76	0.3%
Mixed	49	0.4%	44	0.3%	40	0.3%	42	0.3%	56	0.4%	33	0.2%	45	0.3%	231	0.3%	78	0.3%
Other	17	0.1%	22	0.2%	19	0.1%	33	0.2%	32	0.2%	33	0.2%	33	0.2%	123	0.2%	66	0.2%
White	12,089	95.9%	12,980	96.6%	12,508	96.4%	13,472	96.7%	14,119	96.4%	13,242	96.2%	14,232	95.3%	65,168	96.4%	27,474	95.7%
Unknown	317	2.5%	249	1.9%	225	1.7%	206	1.5%	209	1.4%	188	1.4%	175	1.2%	1,206	1.8%	363	1.3%
Frailty																		
Fit	2,382	18.9%	2,416	18.0%	2,430	18.7%	2,666	19.1%	2,753	18.8%	2,952	21.5%	3,124	20.9%	12,647	18.7%	6,076	21.2%
Mild	4,037	32.0%	4,528	33.7%	4,410	34.0%	4,788	34.4%	5,019	34.3%	4,685	34.0%	5,320	35.6%	22,782	33.7%	10,005	34.9%
missing	1,169	9.3%	1,205	9.0%	1,095	8.4%	1,227	8.8%	1,283	8.8%	1,275	9.3%	1,318	8.8%	5,979	8.8%	2,593	9.0%
Moderate	3,524	28.0%	3,736	27.8%	3,535	27.2%	3,761	27.0%	4,002	27.3%	3,494	25.4%	3,772	25.3%	18,558	27.5%	7,266	25.3%
Severe	1,488	11.8%	1,558	11.6%	1,506	11.6%	1,486	10.7%	1,585	10.8%	1,354	9.8%	1,404	9.4%	7,623	11.3%	2,758	9.6%
learning disability																		
no	12,532	99.5%	13,335	99.2%	12,899	99.4%	13,819	99.2%	14,533	99.3%	13,682	99.4%	14,818	99.2%	67,118	99.3%	28,500	99.3%
yes	68	0.5%	108	0.8%	77	0.6%	109	0.8%	109	0.7%	78	0.6%	120	0.8%	471	0.7%	198	0.7%

Table S19: Depression

	2015		2016		2017		2018		2019		2020		2021		pre (2015-2019)		post (2020-2021)	
	total n	%	total n	%	total n	%	total n	%	total n	%	total n	%	total n	%	total n	%	total n	%
age																		
0-19	3,860	11.6%	3,771	11.1%	4,011	11.6%	4,283	12.5%	4,146	12.2%	2,845	12.0%	3,120	12.2%	20,071	11.8%	5,965	12.1%
20-29	9,569	28.7%	9,824	29.0%	10,263	29.6%	10,360	30.2%	10,379	30.6%	7,133	30.1%	7,549	29.6%	50,395	29.6%	14,682	29.8%
30-39	5,388	16.2%	5,693	16.8%	5,956	17.2%	5,967	17.4%	6,291	18.5%	4,410	18.6%	4,783	18.7%	29,295	17.2%	9,193	18.7%
40-49	4,676	14.0%	4,671	13.8%	4,432	12.8%	4,213	12.3%	3,897	11.5%	2,717	11.5%	2,923	11.4%	21,889	12.9%	5,640	11.5%
50-59	3,928	11.8%	3,976	11.7%	4,004	11.6%	3,860	11.2%	3,799	11.2%	2,605	11.0%	2,789	10.9%	19,567	11.5%	5,394	11.0%
60-69	2,382	7.2%	2,434	7.2%	2,423	7.0%	2,323	6.8%	2,286	6.7%	1,618	6.8%	1,835	7.2%	11,848	7.0%	3,453	7.0%
70-79	1,813	5.4%	1,791	5.3%	1,851	5.3%	1,801	5.2%	1,711	5.0%	1,206	5.1%	1,377	5.4%	8,967	5.3%	2,583	5.2%
80-89	1,321	4.0%	1,339	4.0%	1,297	3.7%	1,234	3.6%	1,138	3.4%	858	3.6%	924	3.6%	6,329	3.7%	1,782	3.6%
90+	377	1.1%	355	1.0%	383	1.1%	319	0.9%	310	0.9%	275	1.2%	238	0.9%	1,744	1.0%	513	1.0%
gender																		
Females	19,243	57.8%	19,657	58.1%	20,070	58.0%	19,546	56.9%	19,191	56.5%	13,723	58.0%	15,011	58.8%	97,707	57.4%	28,734	58.4%
Males	14,071	42.2%	14,197	41.9%	14,550	42.0%	14,814	43.1%	14,766	43.5%	9,944	42.0%	10,527	41.2%	72,398	42.6%	20,471	41.6%
wimd																		
1. Most deprived	8,057	24.2%	8,061	23.8%	8,159	23.6%	7,970	23.2%	7,905	23.3%	5,333	22.5%	5,744	22.5%	40,152	23.6%	11,077	22.5%
2	6,546	19.6%	6,671	19.7%	6,772	19.6%	6,798	19.8%	6,700	19.7%	4,556	19.3%	4,957	19.4%	33,487	19.7%	9,513	19.3%
3	5,582	16.8%	5,792	17.1%	5,877	17.0%	5,719	16.6%	5,669	16.7%	4,042	17.1%	4,358	17.1%	28,639	16.8%	8,400	17.1%
4	5,082	15.3%	5,053	14.9%	5,188	15.0%	5,140	15.0%	5,129	15.1%	3,635	15.4%	3,998	15.7%	25,592	15.0%	7,633	15.5%
5. Least deprived	4,955	14.9%	4,992	14.7%	5,121	14.8%	4,972	14.5%	4,763	14.0%	3,298	13.9%	3,844	15.1%	24,803	14.6%	7,142	14.5%
Unknown	3,092	9.3%	3,285	9.7%	3,503	10.1%	3,761	10.9%	3,791	11.2%	2,803	11.8%	2,637	10.3%	17,432	10.2%	5,440	11.1%
ethinicity																		
Asian	599	1.8%	611	1.8%	631	1.8%	661	1.9%	729	2.1%	571	2.4%	671	2.6%	3,231	1.9%	1,242	2.5%
Black	187	0.6%	221	0.7%	180	0.5%	226	0.7%	227	0.7%	184	0.8%	190	0.7%	1,041	0.6%	374	0.8%
Mixed	308	0.9%	371	1.1%	357	1.0%	361	1.1%	397	1.2%	301	1.3%	338	1.3%	1,794	1.1%	639	1.3%
Other	206	0.6%	271	0.8%	245	0.7%	242	0.7%	328	1.0%	245	1.0%	281	1.1%	1,292	0.8%	526	1.1%
White	31,169	93.6%	31,581	93.3%	32,401	93.6%	32,059	93.3%	31,512	92.8%	21,932	92.7%	23,518	92.1%	158,722	93.3%	45,450	92.4%
Unknown	845	2.5%	799	2.4%	806	2.3%	811	2.4%	764	2.2%	434	1.8%	540	2.1%	4,025	2.4%	974	2.0%
Frailty																		
Fit	25,827	77.5%	26,396	78.0%	27,239	78.7%	27,084	78.8%	27,085	79.8%	18,767	79.3%	20,341	79.6%	133,631	78.6%	39,108	79.5%
Mild	4,642	13.9%	4,530	13.4%	4,462	12.9%	4,432	12.9%	4,079	12.0%	2,833	12.0%	2,961	11.6%	22,145	13.0%	5,794	11.8%
missing	1,269	3.8%	1,322	3.9%	1,377	4.0%	1,519	4.4%	1,543	4.5%	1,186	5.0%	1,316	5.2%	7,030	4.1%	2,502	5.1%
Moderate	1,203	3.6%	1,224	3.6%	1,170	3.4%	1,058	3.1%	942	2.8%	689	2.9%	727	2.8%	5,597	3.3%	1,416	2.9%
Severe	373	1.1%	382	1.1%	372	1.1%	267	0.8%	308	0.9%	192	0.8%	193	0.8%	1,702	1.0%	385	0.8%
learning disability																		
no	32,925	98.8%	33,452	98.8%	34,212	98.8%	33,929	98.7%	33,538	98.8%	23,352	98.7%	25,260	98.9%	168,056	98.8%	48,612	98.8%
yes	389	1.2%	402	1.2%	408	1.2%	431	1.3%	419	1.2%	315	1.3%	278	1.1%	2,049	1.2%	593	1.2%

Table S20: Epilepsy

	2015		2016		2017		2018		2019		2020		2021		pre (2015-2019)		post (2020-2021)	
	total n	%	total n	%	total n	%	total n	%	total n	%	total n	%	total n	%	total n	%	total n	%
age																		
0-19	519	20.2%	557	20.4%	582	22.6%	548	21.1%	534	21.5%	469	22.4%	478	21.2%	2,740	21.2%	947	21.8%
20-29	285	11.1%	287	10.5%	291	11.3%	295	11.4%	286	11.5%	263	12.5%	270	12.0%	1,444	11.1%	533	12.3%
30-39	237	9.2%	250	9.2%	248	9.6%	229	8.8%	240	9.6%	199	9.5%	220	9.8%	1,204	9.3%	419	9.6%
40-49	262	10.2%	312	11.4%	226	8.8%	230	8.9%	206	8.3%	163	7.8%	191	8.5%	1,236	9.5%	354	8.1%
50-59	262	10.2%	300	11.0%	275	10.7%	277	10.7%	282	11.3%	235	11.2%	255	11.3%	1,396	10.8%	490	11.3%
60-69	287	11.2%	308	11.3%	265	10.3%	348	13.4%	282	11.3%	221	10.5%	235	10.4%	1,490	11.5%	456	10.5%
70-79	317	12.4%	370	13.6%	349	13.5%	335	12.9%	303	12.2%	272	13.0%	313	13.9%	1,674	12.9%	585	13.5%
80-89	323	12.6%	277	10.2%	269	10.4%	260	10.0%	268	10.8%	228	10.9%	233	10.4%	1,397	10.8%	461	10.6%
90+	74	2.9%	66	2.4%	71	2.8%	74	2.9%	87	3.5%	46	2.2%	55	2.4%	372	2.9%	101	2.3%
gender																		
Females	1,234	48.1%	1,322	48.5%	1,290	50.1%	1,268	48.8%	1,247	50.1%	986	47.0%	1,085	48.2%	6,361	49.1%	2,071	47.7%
Males	1,332	51.9%	1,405	51.5%	1,286	49.9%	1,328	51.2%	1,241	49.9%	1,110	53.0%	1,165	51.8%	6,592	50.9%	2,275	52.3%
wimd																		
1. Most deprived	569	22.2%	672	24.6%	615	23.9%	592	22.8%	543	21.8%	454	21.7%	497	22.1%	2,991	23.1%	951	21.9%
2	501	19.5%	510	18.7%	496	19.3%	494	19.0%	509	20.5%	387	18.5%	440	19.6%	2,510	19.4%	827	19.0%
3	474	18.5%	487	17.9%	465	18.1%	457	17.6%	401	16.1%	350	16.7%	394	17.5%	2,284	17.6%	744	17.1%
4	435	17.0%	428	15.7%	425	16.5%	415	16.0%	384	15.4%	314	15.0%	349	15.5%	2,087	16.1%	663	15.3%
5. Least deprived	338	13.2%	389	14.3%	329	12.8%	389	15.0%	355	14.3%	333	15.9%	339	15.1%	1,800	13.9%	672	15.5%
Unknown	249	9.7%	241	8.8%	246	9.5%	249	9.6%	296	11.9%	258	12.3%	231	10.3%	1,281	9.9%	489	11.3%
ethinicity																		
Asian	49	1.9%	78	2.9%	52	2.0%	53	2.0%	55	2.2%	58	2.8%	77	3.4%	287	2.2%	135	3.1%
Black	13	0.5%	19	0.7%	17	0.7%	17	0.7%	22	0.9%	25	1.2%	20	0.9%	88	0.7%	45	1.0%
Mixed	23	0.9%	27	1.0%	23	0.9%	21	0.8%	29	1.2%	27	1.3%	18	0.8%	123	0.9%	45	1.0%
Other	17	0.7%	27	1.0%	17	0.7%	25	1.0%	11	0.4%	17	0.8%	19	0.8%	97	0.7%	36	0.8%
White	2,405	93.7%	2,528	92.7%	2,420	93.9%	2,439	94.0%	2,320	93.2%	1,934	92.3%	2,058	91.5%	12,112	93.5%	3,992	91.9%
Unknown	59	2.3%	48	1.8%	47	1.8%	41	1.6%	51	2.0%	35	1.7%	58	2.6%	246	1.9%	93	2.1%
Frailty																		
Fit	1,430	55.7%	1,528	56.0%	1,417	55.0%	1,432	55.2%	1,391	55.9%	1,220	58.2%	1,272	56.5%	7,198	55.6%	2,492	57.3%
Mild	529	20.6%	581	21.3%	534	20.7%	578	22.3%	473	19.0%	419	20.0%	489	21.7%	2,695	20.8%	908	20.9%
missing	233	9.1%	217	8.0%	252	9.8%	229	8.8%	251	10.1%	184	8.8%	219	9.7%	1,182	9.1%	403	9.3%
Moderate	253	9.9%	289	10.6%	254	9.9%	252	9.7%	259	10.4%	187	8.9%	196	8.7%	1,307	10.1%	383	8.8%
Severe	121	4.7%	112	4.1%	119	4.6%	105	4.0%	114	4.6%	86	4.1%	74	3.3%	571	4.4%	160	3.7%
learning disability																		
no	2,450	95.5%	2,615	95.9%	2,486	96.5%	2,505	96.5%	2,401	96.5%	2,017	96.2%	2,175	96.7%	12,457	96.2%	4,192	96.5%
yes	116	4.5%	112	4.1%	90	3.5%	91	3.5%	87	3.5%	79	3.8%	75	3.3%	496	3.8%	154	3.5%

Table S21: Heart failure

	2015		2016		2017		2018		2019		2020		2021		pre (2015-2019)		post (2020-2021)	
	total n	%	total n	%	total n	%	total n	%	total n	%	total n	%	total n	%	total n	%	total n	%
age																		
0-19	43	0.4%	40	0.4%	35	0.3%	42	0.4%	49	0.4%	29	0.3%	40	0.4%	209	0.4%	69	0.3%
20-29	38	0.4%	54	0.5%	40	0.4%	45	0.4%	64	0.6%	34	0.4%	57	0.5%	241	0.5%	91	0.4%
30-39	77	0.8%	85	0.8%	90	0.9%	128	1.2%	127	1.1%	117	1.2%	132	1.2%	507	1.0%	249	1.2%
40-49	286	2.8%	275	2.6%	267	2.6%	288	2.7%	277	2.5%	264	2.7%	324	2.9%	1,393	2.6%	588	2.8%
50-59	662	6.5%	752	7.2%	720	7.1%	788	7.4%	875	7.8%	778	8.1%	848	7.7%	3,797	7.2%	1,626	7.9%
60-69	1,618	15.9%	1,665	15.9%	1,565	15.4%	1,607	15.0%	1,605	14.4%	1,432	14.9%	1,645	14.9%	8,060	15.3%	3,077	14.9%
70-79	2,827	27.7%	2,943	28.2%	2,789	27.4%	3,108	29.0%	3,294	29.5%	2,743	28.5%	3,276	29.7%	14,961	28.4%	6,019	29.1%
80-89	3,426	33.6%	3,390	32.5%	3,377	33.2%	3,495	32.6%	3,585	32.2%	3,151	32.7%	3,424	31.1%	17,273	32.8%	6,575	31.8%
90+	1,220	12.0%	1,238	11.9%	1,287	12.7%	1,211	11.3%	1,273	11.4%	1,086	11.3%	1,281	11.6%	6,229	11.8%	2,367	11.5%
gender																		
Females	4,975	48.8%	5,049	48.4%	4,842	47.6%	5,032	47.0%	5,369	48.2%	4,458	46.3%	5,152	46.7%	25,267	48.0%	9,610	46.5%
Males	5,222	51.2%	5,393	51.6%	5,328	52.4%	5,680	53.0%	5,780	51.8%	5,176	53.7%	5,875	53.3%	27,403	52.0%	11,051	53.5%
wimd																		
1. Most deprived	1,934	19.0%	1,936	18.5%	1,927	18.9%	1,968	18.4%	2,061	18.5%	1,756	18.2%	2,079	18.9%	9,826	18.7%	3,835	18.6%
2	1,989	19.5%	2,059	19.7%	2,000	19.7%	2,038	19.0%	2,142	19.2%	1,827	19.0%	2,102	19.1%	10,228	19.4%	3,929	19.0%
3	2,004	19.7%	1,988	19.0%	2,049	20.1%	2,040	19.0%	2,155	19.3%	1,819	18.9%	2,074	18.8%	10,236	19.4%	3,893	18.8%
4	2,024	19.8%	2,079	19.9%	1,900	18.7%	2,056	19.2%	2,079	18.6%	1,826	19.0%	2,181	19.8%	10,138	19.2%	4,007	19.4%
5. Least deprived	1,773	17.4%	1,815	17.4%	1,713	16.8%	1,920	17.9%	1,969	17.7%	1,756	18.2%	1,914	17.4%	9,190	17.4%	3,670	17.8%
Unknown	473	4.6%	565	5.4%	581	5.7%	690	6.4%	743	6.7%	650	6.7%	677	6.1%	3,052	5.8%	1,327	6.4%
ethinicity																		
Asian	125	1.2%	113	1.1%	93	0.9%	126	1.2%	162	1.5%	177	1.8%	263	2.4%	619	1.2%	440	2.1%
Black	24	0.2%	28	0.3%	19	0.2%	30	0.3%	25	0.2%	34	0.4%	29	0.3%	126	0.2%	63	0.3%
Mixed	26	0.3%	41	0.4%	28	0.3%	40	0.4%	36	0.3%	34	0.4%	40	0.4%	171	0.3%	74	0.4%
Other	22	0.2%	23	0.2%	25	0.2%	34	0.3%	48	0.4%	27	0.3%	34	0.3%	152	0.3%	61	0.3%
White	9,777	95.9%	10,081	96.5%	9,874	97.1%	10,344	96.6%	10,752	96.4%	9,242	95.9%	10,550	95.7%	50,828	96.5%	19,792	95.8%
Unknown	223	2.2%	156	1.5%	131	1.3%	138	1.3%	126	1.1%	120	1.2%	111	1.0%	774	1.5%	231	1.1%
Frailty																		
Fit	1,926	18.9%	1,857	17.8%	1,871	18.4%	1,935	18.1%	2,022	18.1%	1,848	19.2%	2,226	20.2%	9,611	18.2%	4,074	19.7%
Mild	3,373	33.1%	3,563	34.1%	3,487	34.3%	3,783	35.3%	3,890	34.9%	3,438	35.7%	4,005	36.3%	18,096	34.4%	7,443	36.0%
missing	1,137	11.2%	1,152	11.0%	1,039	10.2%	1,148	10.7%	1,138	10.2%	1,065	11.1%	1,144	10.4%	5,614	10.7%	2,209	10.7%
Moderate	2,764	27.1%	2,877	27.6%	2,764	27.2%	2,831	26.4%	3,047	27.3%	2,371	24.6%	2,795	25.3%	14,283	27.1%	5,166	25.0%
Severe	997	9.8%	993	9.5%	1,009	9.9%	1,015	9.5%	1,052	9.4%	912	9.5%	857	7.8%	5,066	9.6%	1,769	8.6%
learning disability																		
no	10,150	99.5%	10,398	99.6%	10,129	99.6%	10,657	99.5%	11,094	99.5%	9,598	99.6%	10,972	99.5%	52,428	99.5%	20,570	99.6%
yes	47	0.5%	44	0.4%	41	0.4%	55	0.5%	55	0.5%	36	0.4%	55	0.5%	242	0.5%	91	0.4%

Table S22: Hypertension

	2015		2016		2017		2018		2019		2020		2021		pre (2015-2019)		post (2020-2021)	
	total n	%	total n	%	total n	%	total n	%	total n	%	total n	%	total n	%	total n	%	total n	%
age																		
0-19	139	0.5%	150	0.5%	153	0.5%	163	0.6%	142	0.5%	147	0.7%	142	0.6%	747	0.5%	289	0.6%
20-29	412	1.4%	456	1.5%	412	1.4%	402	1.4%	480	1.6%	323	1.6%	397	1.6%	2,162	1.5%	720	1.6%
30-39	1,366	4.7%	1,270	4.3%	1,356	4.7%	1,488	5.1%	1,631	5.4%	1,022	5.0%	1,380	5.5%	7,111	4.8%	2,402	5.3%
40-49	4,157	14.4%	4,075	13.8%	4,030	14.0%	4,004	13.6%	4,143	13.7%	2,554	12.6%	3,343	13.3%	20,409	13.9%	5,897	13.0%
50-59	6,709	23.3%	7,156	24.2%	6,919	24.0%	7,108	24.2%	7,516	24.9%	4,804	23.7%	6,166	24.5%	35,408	24.1%	10,970	24.1%
60-69	7,493	26.0%	7,692	26.1%	7,260	25.2%	7,171	24.4%	7,230	23.9%	5,051	24.9%	5,992	23.8%	36,846	25.1%	11,043	24.3%
70-79	5,369	18.7%	5,662	19.2%	5,757	20.0%	5,985	20.4%	6,099	20.2%	4,215	20.8%	5,341	21.2%	28,872	19.7%	9,556	21.0%
80-89	2,601	9.0%	2,581	8.7%	2,461	8.5%	2,572	8.8%	2,529	8.4%	1,795	8.9%	2,099	8.3%	12,744	8.7%	3,894	8.6%
90+	538	1.9%	485	1.6%	495	1.7%	451	1.5%	459	1.5%	353	1.7%	349	1.4%	2,428	1.7%	702	1.5%
gender																		
Females	13,720	47.7%	13,893	47.1%	13,637	47.3%	13,835	47.1%	14,667	48.5%	9,764	48.2%	12,646	50.2%	69,752	47.5%	22,410	49.3%
Males	15,064	52.3%	15,634	52.9%	15,206	52.7%	15,509	52.9%	15,562	51.5%	10,500	51.8%	12,563	49.8%	76,975	52.5%	23,063	50.7%
wimd																		
1. Most deprived	5,101	17.7%	5,272	17.9%	5,266	18.3%	5,270	18.0%	5,333	17.6%	3,457	17.1%	4,482	17.8%	26,242	17.9%	7,939	17.5%
2	5,448	18.9%	5,514	18.7%	5,330	18.5%	5,464	18.6%	5,606	18.5%	3,709	18.3%	4,655	18.5%	27,362	18.6%	8,364	18.4%
3	5,552	19.3%	5,649	19.1%	5,437	18.9%	5,588	19.0%	5,574	18.4%	3,619	17.9%	4,536	18.0%	27,800	18.9%	8,155	17.9%
4	5,607	19.5%	5,789	19.6%	5,532	19.2%	5,665	19.3%	5,836	19.3%	3,866	19.1%	4,906	19.5%	28,429	19.4%	8,772	19.3%
5. Least deprived	5,121	17.8%	5,225	17.7%	5,198	18.0%	5,327	18.2%	5,604	18.5%	3,919	19.3%	4,738	18.8%	26,475	18.0%	8,657	19.0%
Unknown	1,955	6.8%	2,078	7.0%	2,080	7.2%	2,030	6.9%	2,276	7.5%	1,694	8.4%	1,892	7.5%	10,419	7.1%	3,586	7.9%
ethinicity																		
Asian	537	1.9%	538	1.8%	602	2.1%	636	2.2%	683	2.3%	550	2.7%	703	2.8%	2,996	2.0%	1,253	2.8%
Black	165	0.6%	166	0.6%	152	0.5%	159	0.5%	215	0.7%	174	0.9%	218	0.9%	857	0.6%	392	0.9%
Mixed	138	0.5%	126	0.4%	136	0.5%	146	0.5%	137	0.5%	92	0.5%	156	0.6%	683	0.5%	248	0.5%
Other	167	0.6%	161	0.5%	184	0.6%	192	0.7%	216	0.7%	171	0.8%	204	0.8%	920	0.6%	375	0.8%
White	27,109	94.2%	27,857	94.3%	27,138	94.1%	27,502	93.7%	28,292	93.6%	18,844	93.0%	23,324	92.5%	137,898	94.0%	42,168	92.7%
Unknown	668	2.3%	679	2.3%	631	2.2%	709	2.4%	686	2.3%	433	2.1%	604	2.4%	3,373	2.3%	1,037	2.3%
Frailty																		
Fit	16,158	56.1%	16,603	56.2%	16,222	56.2%	16,370	55.8%	17,193	56.9%	11,227	55.4%	14,604	57.9%	82,546	56.3%	25,831	56.8%
Mild	7,228	25.1%	7,654	25.9%	7,407	25.7%	7,518	25.6%	7,692	25.4%	5,339	26.3%	6,385	25.3%	37,499	25.6%	11,724	25.8%
missing	3,727	12.9%	3,570	12.1%	3,533	12.2%	3,783	12.9%	3,728	12.3%	2,549	12.6%	2,893	11.5%	18,341	12.5%	5,442	12.0%
Moderate	1,422	4.9%	1,483	5.0%	1,467	5.1%	1,435	4.9%	1,419	4.7%	1,000	4.9%	1,200	4.8%	7,226	4.9%	2,200	4.8%
Severe	249	0.9%	217	0.7%	214	0.7%	238	0.8%	197	0.7%	149	0.7%	127	0.5%	1,115	0.8%	276	0.6%
learning disability																		
no	28,636	99.5%	29,354	99.4%	28,695	99.5%	29,178	99.4%	30,074	99.5%	20,161	99.5%	25,089	99.5%	145,937	99.5%	45,250	99.5%
yes	148	0.5%	173	0.6%	148	0.5%	166	0.6%	155	0.5%	103	0.5%	120	0.5%	790	0.5%	223	0.5%

Table S23: Inflammatory bowel disease

	2015		2016		2017		2018		2019		2020		2021		pre (2015-2019)		post (2020-2021)	
	total n	%	total n	%	total n	%	total n	%	total n	%	total n	%	total n	%	total n	%	total n	%
age																		
0-19	163	8.6%	156	8.0%	171	8.4%	155	7.1%	150	6.4%	153	8.5%	159	7.2%	795	7.7%	312	7.8%
20-29	318	16.8%	294	15.1%	298	14.7%	338	15.4%	334	14.3%	258	14.3%	295	13.4%	1,582	15.2%	553	13.8%
30-39	258	13.6%	237	12.2%	276	13.6%	340	15.5%	345	14.8%	262	14.5%	334	15.2%	1,456	14.0%	596	14.9%
40-49	232	12.2%	296	15.2%	274	13.5%	270	12.3%	333	14.3%	227	12.6%	293	13.3%	1,405	13.5%	520	13.0%
50-59	298	15.7%	295	15.2%	309	15.3%	332	15.2%	391	16.7%	272	15.1%	357	16.2%	1,625	15.6%	629	15.7%
60-69	305	16.1%	322	16.6%	332	16.4%	368	16.8%	328	14.0%	274	15.2%	332	15.1%	1,655	15.9%	606	15.1%
70-79	228	12.0%	236	12.1%	259	12.8%	269	12.3%	314	13.4%	244	13.5%	300	13.6%	1,306	12.6%	544	13.6%
80-89	85	4.5%	100	5.1%	91	4.5%	104	4.8%	126	5.4%	99	5.5%	117	5.3%	506	4.9%	216	5.4%
90+	9	0.5%	8	0.4%	14	0.7%	13	0.6%	14	0.6%	17	0.9%	16	0.7%	58	0.6%	33	0.8%
gender																		
Females	951	50.2%	1,004	51.6%	1,033	51.0%	1,166	53.3%	1,277	54.7%	943	52.2%	1,149	52.2%	5,431	52.3%	2,092	52.2%
Males	945	49.8%	940	48.4%	991	49.0%	1,023	46.7%	1,058	45.3%	863	47.8%	1,054	47.8%	4,957	47.7%	1,917	47.8%
wimd																		
1. Most deprived	333	17.6%	382	19.7%	348	17.2%	366	16.7%	418	17.9%	312	17.3%	401	18.2%	1,847	17.8%	713	17.8%
2	342	18.0%	343	17.6%	384	19.0%	401	18.3%	416	17.8%	338	18.7%	410	18.6%	1,886	18.2%	748	18.7%
3	327	17.2%	358	18.4%	380	18.8%	400	18.3%	445	19.1%	327	18.1%	378	17.2%	1,910	18.4%	705	17.6%
4	350	18.5%	356	18.3%	379	18.7%	410	18.7%	427	18.3%	321	17.8%	407	18.5%	1,922	18.5%	728	18.2%
5. Least deprived	352	18.6%	340	17.5%	359	17.7%	405	18.5%	418	17.9%	333	18.4%	400	18.2%	1,874	18.0%	733	18.3%
Unknown	192	10.1%	165	8.5%	174	8.6%	207	9.5%	211	9.0%	175	9.7%	207	9.4%	949	9.1%	382	9.5%
ethinicity																		
Asian	38	2.0%	36	1.9%	29	1.4%	40	1.8%	45	1.9%	49	2.7%	57	2.6%	188	1.8%	106	2.6%
Black	5	0.3%	6	0.3%	7	0.3%	5	0.2%	10	0.4%	5	0.3%	9	0.4%	33	0.3%	14	0.3%
Mixed	13	0.7%	17	0.9%	23	1.1%	18	0.8%	28	1.2%	14	0.8%	18	0.8%	99	1.0%	32	0.8%
Other	13	0.7%	13	0.7%	16	0.8%	13	0.6%	16	0.7%	15	0.8%	11	0.5%	71	0.7%	26	0.6%
White	1,798	94.8%	1,831	94.2%	1,899	93.8%	2,074	94.7%	2,195	94.0%	1,689	93.5%	2,065	93.7%	9,797	94.3%	3,754	93.6%
Unknown	29	1.5%	41	2.1%	50	2.5%	39	1.8%	41	1.8%	34	1.9%	43	2.0%	200	1.9%	77	1.9%
Frailty																		
Fit	1,169	61.7%	1,229	63.2%	1,274	62.9%	1,361	62.2%	1,406	60.2%	1,092	60.5%	1,352	61.4%	6,439	62.0%	2,444	61.0%
Mild	431	22.7%	379	19.5%	391	19.3%	458	20.9%	512	21.9%	397	22.0%	460	20.9%	2,171	20.9%	857	21.4%
missing	173	9.1%	188	9.7%	201	9.9%	211	9.6%	244	10.4%	190	10.5%	236	10.7%	1,017	9.8%	426	10.6%
Moderate	96	5.1%	111	5.7%	131	6.5%	135	6.2%	142	6.1%	104	5.8%	126	5.7%	615	5.9%	230	5.7%
Severe	27	1.4%	37	1.9%	27	1.3%	24	1.1%	31	1.3%	23	1.3%	29	1.3%	146	1.4%	52	1.3%
learning disability																		
no	1,884	99.4%	1,937	99.6%	2,012	99.4%	2,176	99.4%	2,316	99.2%	1,798	99.6%	2,186	99.2%	10,325	99.4%	3,984	99.4%
yes	12	0.6%	7	0.4%	12	0.6%	13	0.6%	19	0.8%	8	0.4%	17	0.8%	63	0.6%	25	0.6%

Table S24: Osteoporosis

	2015		2016		2017		2018		2019		2020		2021		pre (2015-2019)		post (2020-2021)	
	total n	%	total n	%	total n	%	total n	%	total n	%	total n	%	total n	%	total n	%	total n	%
age																		
0-19	96	0.6%	63	0.4%	42	0.5%	39	0.5%	35	0.5%	24	0.5%	37	0.7%	275	0.5%	61	0.6%
20-29	134	0.9%	124	0.9%	53	0.6%	28	0.4%	34	0.5%	22	0.5%	17	0.3%	373	0.7%	39	0.4%
30-39	226	1.5%	245	1.7%	96	1.2%	62	0.8%	66	0.9%	49	1.1%	52	1.0%	695	1.3%	101	1.0%
40-49	655	4.4%	566	3.9%	236	2.9%	179	2.4%	166	2.3%	97	2.1%	108	2.1%	1,802	3.4%	205	2.1%
50-59	2,076	13.9%	1,938	13.3%	977	11.9%	889	12.1%	850	11.8%	501	10.8%	541	10.5%	6,730	12.9%	1,042	10.6%
60-69	3,762	25.1%	3,672	25.2%	1,823	22.2%	1,685	22.9%	1,547	21.4%	930	20.1%	1,096	21.2%	12,489	23.9%	2,026	20.7%
70-79	4,048	27.0%	4,057	27.8%	2,386	29.1%	2,111	28.7%	2,190	30.3%	1,378	29.8%	1,638	31.8%	14,792	28.3%	3,016	30.8%
80-89	3,108	20.8%	3,073	21.1%	2,030	24.8%	1,829	24.9%	1,840	25.5%	1,244	26.9%	1,287	24.9%	11,880	22.7%	2,531	25.9%
90+	864	5.8%	830	5.7%	557	6.8%	533	7.2%	495	6.9%	383	8.3%	383	7.4%	3,279	6.3%	766	7.8%
gender																		
Females	9,203	61.5%	8,964	61.5%	6,203	75.6%	5,877	79.9%	5,730	79.3%	3,621	78.2%	4,100	79.5%	35,977	68.8%	7,721	78.9%
Males	5,766	38.5%	5,604	38.5%	1,997	24.4%	1,478	20.1%	1,493	20.7%	1,007	21.8%	1,059	20.5%	16,338	31.2%	2,066	21.1%
wimd																		
1. Most deprived	2,837	19.0%	2,787	19.1%	1,391	17.0%	1,233	16.8%	1,158	16.0%	752	16.2%	764	14.8%	9,406	18.0%	1,516	15.5%
2	2,847	19.0%	2,712	18.6%	1,464	17.9%	1,387	18.9%	1,277	17.7%	800	17.3%	955	18.5%	9,687	18.5%	1,755	17.9%
3	2,612	17.4%	2,561	17.6%	1,565	19.1%	1,418	19.3%	1,388	19.2%	870	18.8%	1,027	19.9%	9,544	18.2%	1,897	19.4%
4	2,775	18.5%	2,640	18.1%	1,670	20.4%	1,453	19.8%	1,454	20.1%	889	19.2%	983	19.1%	9,992	19.1%	1,872	19.1%
5. Least deprived	3,337	22.3%	3,298	22.6%	1,631	19.9%	1,378	18.7%	1,443	20.0%	963	20.8%	1,094	21.2%	11,087	21.2%	2,057	21.0%
Unknown	561	3.7%	570	3.9%	479	5.8%	486	6.6%	503	7.0%	354	7.6%	336	6.5%	2,599	5.0%	690	7.1%
ethinicity																		
Asian	176	1.2%	177	1.2%	94	1.1%	117	1.6%	103	1.4%	66	1.4%	102	2.0%	667	1.3%	168	1.7%
Black	33	0.2%	37	0.3%	11	0.1%	7	0.1%	10	0.1%	8	0.2%	6	0.1%	98	0.2%	14	0.1%
Mixed	58	0.4%	56	0.4%	26	0.3%	17	0.2%	21	0.3%	13	0.3%	22	0.4%	178	0.3%	35	0.4%
Other	49	0.3%	38	0.3%	23	0.3%	22	0.3%	14	0.2%	13	0.3%	21	0.4%	146	0.3%	34	0.3%
White	14,390	96.1%	14,023	96.3%	7,943	96.9%	7,106	96.6%	6,986	96.7%	4,468	96.5%	4,932	95.6%	50,448	96.4%	9,400	96.0%
Unknown	263	1.8%	237	1.6%	103	1.3%	86	1.2%	89	1.2%	60	1.3%	76	1.5%	778	1.5%	136	1.4%
Frailty																		
Fit	5,697	38.1%	5,459	37.5%	2,319	28.3%	1,939	26.4%	1,916	26.5%	1,250	27.0%	1,443	28.0%	17,330	33.1%	2,693	27.5%
Mild	5,163	34.5%	5,066	34.8%	3,000	36.6%	2,834	38.5%	2,725	37.7%	1,672	36.1%	1,917	37.2%	18,788	35.9%	3,589	36.7%
missing	1,054	7.0%	1,051	7.2%	681	8.3%	656	8.9%	730	10.1%	496	10.7%	594	11.5%	4,172	8.0%	1,090	11.1%
Moderate	2,333	15.6%	2,277	15.6%	1,664	20.3%	1,466	19.9%	1,391	19.3%	900	19.4%	911	17.7%	9,131	17.5%	1,811	18.5%
Severe	722	4.8%	715	4.9%	536	6.5%	460	6.3%	461	6.4%	310	6.7%	294	5.7%	2,894	5.5%	604	6.2%
learning disability																		
no	14,908	99.6%	14,491	99.5%	8,162	99.5%	7,319	99.5%	7,191	99.6%	4,612	99.7%	5,129	99.4%	52,071	99.5%	9,741	99.5%
yes	61	0.4%	77	0.5%	38	0.5%	36	0.5%	32	0.4%	16	0.3%	30	0.6%	244	0.5%	46	0.5%

Table S25: Rheumatoid arthritis

	2015		2016		2017		2018		2019		2020		2021		pre (2015-2019)		post (2020-2021)	
	total n	%	total n	%	total n	%	total n	%	total n	%	total n	%	total n	%	total n	%	total n	%
age																		
0-19	67	2.6%	67	2.5%	52	2.0%	60	2.2%	40	1.5%	57	2.9%	53	2.5%	286	2.2%	110	2.7%
20-29	77	3.0%	70	2.6%	74	2.8%	90	3.2%	73	2.8%	69	3.5%	68	3.2%	384	2.9%	137	3.4%
30-39	149	5.8%	152	5.7%	171	6.5%	170	6.1%	122	4.7%	100	5.1%	128	6.1%	764	5.8%	228	5.6%
40-49	285	11.2%	283	10.7%	263	10.1%	284	10.2%	243	9.4%	179	9.2%	218	10.4%	1,358	10.3%	397	9.8%
50-59	498	19.5%	490	18.5%	452	17.3%	544	19.6%	497	19.2%	354	18.2%	359	17.1%	2,481	18.8%	713	17.6%
60-69	592	23.2%	614	23.2%	588	22.5%	643	23.2%	586	22.6%	446	22.9%	491	23.4%	3,023	22.9%	937	23.2%
70-79	501	19.6%	559	21.1%	607	23.2%	614	22.1%	613	23.7%	418	21.5%	476	22.7%	2,894	22.0%	894	22.1%
80-89	317	12.4%	332	12.6%	338	12.9%	319	11.5%	340	13.1%	260	13.4%	258	12.3%	1,646	12.5%	518	12.8%
90+	64	2.5%	77	2.9%	71	2.7%	52	1.9%	75	2.9%	64	3.3%	47	2.2%	339	2.6%	111	2.7%
gender																		
Females	1,695	66.5%	1,762	66.6%	1,752	67.0%	1,811	65.2%	1,669	64.5%	1,294	66.5%	1,368	65.2%	8,689	66.0%	2,662	65.8%
Males	855	33.5%	882	33.4%	864	33.0%	965	34.8%	920	35.5%	653	33.5%	730	34.8%	4,486	34.0%	1,383	34.2%
wimd																		
1. Most deprived	483	18.9%	540	20.4%	543	20.8%	550	19.8%	522	20.2%	400	20.5%	377	18.0%	2,638	20.0%	777	19.2%
2	544	21.3%	540	20.4%	531	20.3%	531	19.1%	504	19.5%	381	19.6%	381	18.2%	2,650	20.1%	762	18.8%
3	488	19.1%	527	19.9%	509	19.5%	568	20.5%	485	18.7%	354	18.2%	399	19.0%	2,577	19.6%	753	18.6%
4	493	19.3%	473	17.9%	476	18.2%	510	18.4%	478	18.5%	363	18.6%	389	18.5%	2,430	18.4%	752	18.6%
5. Least deprived	423	16.6%	398	15.1%	421	16.1%	453	16.3%	422	16.3%	322	16.5%	391	18.6%	2,117	16.1%	713	17.6%
Unknown	119	4.7%	166	6.3%	136	5.2%	164	5.9%	178	6.9%	127	6.5%	161	7.7%	763	5.8%	288	7.1%
ethinicity																		
Asian	47	1.8%	37	1.4%	51	1.9%	52	1.9%	40	1.5%	31	1.6%	60	2.9%	227	1.7%	91	2.2%
Black	13	0.5%	13	0.5%	11	0.4%	9	0.3%	15	0.6%	9	0.5%	11	0.5%	61	0.5%	20	0.5%
Mixed	11	0.4%	17	0.6%	11	0.4%	10	0.4%	15	0.6%	8	0.4%	11	0.5%	64	0.5%	19	0.5%
Other	11	0.4%	8	0.3%	10	0.4%	12	0.4%	16	0.6%	11	0.6%	9	0.4%	57	0.4%	20	0.5%
White	2,433	95.4%	2,532	95.8%	2,495	95.4%	2,645	95.3%	2,471	95.4%	1,861	95.6%	1,971	93.9%	12,576	95.5%	3,832	94.7%
Unknown	35	1.4%	37	1.4%	38	1.5%	48	1.7%	32	1.2%	27	1.4%	36	1.7%	190	1.4%	63	1.6%
Frailty																		
Fit	1,020	40.0%	1,004	38.0%	1,018	38.9%	1,102	39.7%	998	38.5%	787	40.4%	904	43.1%	5,142	39.0%	1,691	41.8%
Mild	845	33.1%	904	34.2%	906	34.6%	941	33.9%	888	34.3%	647	33.2%	694	33.1%	4,484	34.0%	1,341	33.2%
missing	278	10.9%	271	10.2%	248	9.5%	289	10.4%	292	11.3%	208	10.7%	223	10.6%	1,378	10.5%	431	10.7%
Moderate	308	12.1%	362	13.7%	344	13.1%	357	12.9%	309	11.9%	239	12.3%	209	10.0%	1,680	12.8%	448	11.1%
Severe	99	3.9%	103	3.9%	100	3.8%	87	3.1%	102	3.9%	66	3.4%	68	3.2%	491	3.7%	134	3.3%
learning disability																		
no	2,544	99.8%	2,636	99.7%	2,606	99.6%	2,768	99.7%	2,580	99.7%	1,942	99.7%	2,090	99.6%	13,134	99.7%	4,032	99.7%
yes	6	0.2%	8	0.3%	10	0.4%	8	0.3%	9	0.3%	5	0.3%	8	0.4%	41	0.3%	13	0.3%

Table S26: peripheral vascular disease

	2015		2016		2017		2018		2019		2020		2021		pre (2015-2019)		post (2020-2021)	
	total n	%	total n	%	total n	%	total n	%	total n	%	total n	%	total n	%	total n	%	total n	%
age																		
0-19	55	1.0%	54	1.0%	53	1.0%	49	0.9%	59	1.0%	31	0.7%	49	1.0%	270	1.0%	80	0.9%
20-29	72	1.3%	76	1.4%	82	1.5%	79	1.4%	97	1.7%	62	1.4%	68	1.4%	406	1.5%	130	1.4%
30-39	121	2.2%	127	2.3%	145	2.7%	153	2.7%	179	3.1%	121	2.8%	144	2.9%	725	2.6%	265	2.8%
40-49	328	6.1%	336	6.0%	326	6.0%	352	6.2%	340	5.9%	249	5.8%	289	5.7%	1,682	6.0%	538	5.8%
50-59	704	13.1%	751	13.5%	710	13.0%	795	14.0%	799	13.9%	572	13.3%	699	13.9%	3,759	13.5%	1,271	13.6%
60-69	1,216	22.6%	1,234	22.2%	1,086	19.9%	1,207	21.2%	1,220	21.2%	864	20.1%	1,090	21.7%	5,963	21.4%	1,954	21.0%
70-79	1,378	25.6%	1,430	25.7%	1,506	27.6%	1,534	26.9%	1,569	27.2%	1,205	28.1%	1,301	25.9%	7,417	26.6%	2,506	26.9%
80-89	1,156	21.5%	1,165	20.9%	1,189	21.8%	1,203	21.1%	1,171	20.3%	936	21.8%	1,056	21.0%	5,884	21.1%	1,992	21.4%
90+	351	6.5%	389	7.0%	350	6.4%	321	5.6%	325	5.6%	250	5.8%	334	6.6%	1,736	6.2%	584	6.3%
gender																		
Females	2,596	48.2%	2,651	47.7%	2,597	47.7%	2,726	47.9%	2,852	49.5%	2,005	46.7%	2,463	49.0%	13,422	48.2%	4,468	47.9%
Males	2,785	51.8%	2,911	52.3%	2,850	52.3%	2,967	52.1%	2,907	50.5%	2,285	53.3%	2,567	51.0%	14,420	51.8%	4,852	52.1%
wimd																		
1. Most deprived	1,162	21.6%	1,195	21.5%	1,133	20.8%	1,168	20.5%	1,203	20.9%	847	19.7%	944	18.8%	5,861	21.1%	1,791	19.2%
2	1,085	20.2%	1,085	19.5%	1,080	19.8%	1,113	19.6%	1,113	19.3%	832	19.4%	1,025	20.4%	5,476	19.7%	1,857	19.9%
3	1,041	19.3%	1,076	19.3%	1,031	18.9%	1,104	19.4%	1,089	18.9%	839	19.6%	938	18.6%	5,341	19.2%	1,777	19.1%
4	987	18.3%	999	18.0%	1,029	18.9%	1,079	19.0%	1,085	18.8%	799	18.6%	981	19.5%	5,179	18.6%	1,780	19.1%
5. Least deprived	817	15.2%	902	16.2%	862	15.8%	883	15.5%	904	15.7%	684	15.9%	830	16.5%	4,368	15.7%	1,514	16.2%
Unknown	289	5.4%	305	5.5%	312	5.7%	346	6.1%	365	6.3%	289	6.7%	312	6.2%	1,617	5.8%	601	6.4%
ethinicity																		
Asian	58	1.1%	75	1.3%	53	1.0%	88	1.5%	89	1.5%	72	1.7%	117	2.3%	363	1.3%	189	2.0%
Black	12	0.2%	12	0.2%	6	0.1%	13	0.2%	19	0.3%	11	0.3%	9	0.2%	62	0.2%	20	0.2%
Mixed	14	0.3%	28	0.5%	16	0.3%	17	0.3%	23	0.4%	15	0.3%	12	0.2%	98	0.4%	27	0.3%
Other	8	0.1%	10	0.2%	23	0.4%	22	0.4%	18	0.3%	11	0.3%	23	0.5%	81	0.3%	34	0.4%
White	5,190	96.5%	5,340	96.0%	5,270	96.8%	5,464	96.0%	5,533	96.1%	4,124	96.1%	4,807	95.6%	26,797	96.2%	8,931	95.8%
Unknown	99	1.8%	97	1.7%	79	1.5%	89	1.6%	77	1.3%	57	1.3%	62	1.2%	441	1.6%	119	1.3%
Frailty																		
Fit	1,639	30.5%	1,706	30.7%	1,596	29.3%	1,661	29.2%	1,779	30.9%	1,227	28.6%	1,576	31.3%	8,381	30.1%	2,803	30.1%
Mild	1,789	33.2%	1,888	33.9%	1,932	35.5%	2,047	36.0%	2,021	35.1%	1,503	35.0%	1,761	35.0%	9,677	34.8%	3,264	35.0%
missing	367	6.8%	385	6.9%	366	6.7%	392	6.9%	397	6.9%	295	6.9%	383	7.6%	1,907	6.8%	678	7.3%
Moderate	1,163	21.6%	1,120	20.1%	1,096	20.1%	1,162	20.4%	1,130	19.6%	917	21.4%	956	19.0%	5,671	20.4%	1,873	20.1%
Severe	423	7.9%	463	8.3%	457	8.4%	431	7.6%	432	7.5%	348	8.1%	354	7.0%	2,206	7.9%	702	7.5%
learning disability																		
no	5,351	99.4%	5,527	99.4%	5,416	99.4%	5,650	99.2%	5,722	99.4%	4,257	99.2%	4,992	99.2%	27,666	99.4%	9,249	99.2%
yes	30	0.6%	35	0.6%	31	0.6%	43	0.8%	37	0.6%	33	0.8%	38	0.8%	176	0.6%	71	0.8%

Table S27: Stroke & TIA

	2015		2016		2017		2018		2019		2020		2021		pre (2015-2019)		post (2020-2021)	
	total n	%	total n	%	total n	%	total n	%	total n	%	total n	%	total n	%	total n	%	total n	%
age																		
0-19	41	0.5%	44	0.5%	39	0.5%	38	0.4%	44	0.5%	28	0.3%	36	0.4%	206	0.5%	64	0.4%
20-29	51	0.6%	51	0.6%	51	0.6%	48	0.5%	72	0.8%	47	0.6%	43	0.5%	273	0.6%	90	0.6%
30-39	119	1.3%	126	1.4%	131	1.5%	137	1.6%	141	1.6%	135	1.7%	146	1.8%	654	1.5%	281	1.7%
40-49	403	4.5%	442	4.9%	396	4.7%	365	4.2%	383	4.4%	318	4.0%	378	4.6%	1,989	4.5%	696	4.3%
50-59	990	11.1%	1,089	12.1%	1,001	11.8%	1,041	11.9%	1,068	12.3%	960	12.0%	985	12.1%	5,189	11.8%	1,945	12.0%
60-69	1,776	20.0%	1,791	19.9%	1,671	19.6%	1,747	19.9%	1,602	18.5%	1,507	18.8%	1,567	19.2%	8,587	19.6%	3,074	19.0%
70-79	2,488	28.0%	2,463	27.4%	2,426	28.5%	2,469	28.2%	2,512	29.0%	2,402	30.0%	2,440	29.9%	12,358	28.2%	4,842	29.9%
80-89	2,234	25.1%	2,236	24.9%	2,098	24.6%	2,237	25.5%	2,171	25.1%	2,024	25.2%	1,925	23.6%	10,976	25.1%	3,949	24.4%
90+	781	8.8%	739	8.2%	702	8.2%	687	7.8%	668	7.7%	599	7.5%	645	7.9%	3,577	8.2%	1,244	7.7%
gender																		
Females	4,565	51.4%	4,460	49.7%	4,137	48.6%	4,314	49.2%	4,313	49.8%	3,836	47.8%	3,960	48.5%	21,789	49.7%	7,796	48.2%
Males	4,318	48.6%	4,521	50.3%	4,378	51.4%	4,455	50.8%	4,348	50.2%	4,184	52.2%	4,205	51.5%	22,020	50.3%	8,389	51.8%
wimd																		
1. Most deprived	1,629	18.3%	1,629	18.1%	1,473	17.3%	1,610	18.4%	1,548	17.9%	1,418	17.7%	1,371	16.8%	7,889	18.0%	2,789	17.2%
2	1,709	19.2%	1,657	18.5%	1,575	18.5%	1,696	19.3%	1,596	18.4%	1,490	18.6%	1,455	17.8%	8,233	18.8%	2,945	18.2%
3	1,672	18.8%	1,651	18.4%	1,691	19.9%	1,612	18.4%	1,643	19.0%	1,480	18.5%	1,577	19.3%	8,269	18.9%	3,057	18.9%
4	1,765	19.9%	1,755	19.5%	1,611	18.9%	1,697	19.4%	1,663	19.2%	1,520	19.0%	1,584	19.4%	8,491	19.4%	3,104	19.2%
5. Least deprived	1,566	17.6%	1,710	19.0%	1,638	19.2%	1,581	18.0%	1,576	18.2%	1,550	19.3%	1,577	19.3%	8,071	18.4%	3,127	19.3%
Unknown	542	6.1%	579	6.4%	527	6.2%	573	6.5%	635	7.3%	562	7.0%	601	7.4%	2,856	6.5%	1,163	7.2%
ethinicity																		
Asian	110	1.2%	115	1.3%	113	1.3%	138	1.6%	118	1.4%	167	2.1%	264	3.2%	594	1.4%	431	2.7%
Black	24	0.3%	16	0.2%	25	0.3%	25	0.3%	37	0.4%	28	0.3%	31	0.4%	127	0.3%	59	0.4%
Mixed	29	0.3%	31	0.3%	31	0.4%	30	0.3%	26	0.3%	29	0.4%	23	0.3%	147	0.3%	52	0.3%
Other	24	0.3%	22	0.2%	17	0.2%	32	0.4%	23	0.3%	32	0.4%	36	0.4%	118	0.3%	68	0.4%
White	8,512	95.8%	8,639	96.2%	8,190	96.2%	8,422	96.0%	8,326	96.1%	7,654	95.4%	7,687	94.1%	42,089	96.1%	15,341	94.8%
Unknown	184	2.1%	158	1.8%	139	1.6%	122	1.4%	131	1.5%	110	1.4%	124	1.5%	734	1.7%	234	1.4%
Frailty																		
Fit	2,751	31.0%	2,881	32.1%	2,818	33.1%	2,916	33.3%	2,935	33.9%	2,803	35.0%	2,980	36.5%	14,301	32.6%	5,783	35.7%
Mild	3,018	34.0%	3,153	35.1%	2,984	35.0%	3,044	34.7%	2,930	33.8%	2,696	33.6%	2,755	33.7%	15,129	34.5%	5,451	33.7%
missing	805	9.1%	697	7.8%	630	7.4%	669	7.6%	703	8.1%	650	8.1%	659	8.1%	3,504	8.0%	1,309	8.1%
Moderate	1,711	19.3%	1,642	18.3%	1,551	18.2%	1,590	18.1%	1,551	17.9%	1,415	17.6%	1,329	16.3%	8,045	18.4%	2,744	17.0%
Severe	598	6.7%	608	6.8%	532	6.2%	550	6.3%	542	6.3%	456	5.7%	442	5.4%	2,830	6.5%	898	5.5%
learning disability																		
no	8,832	99.4%	8,936	99.5%	8,454	99.3%	8,715	99.4%	8,605	99.4%	7,982	99.5%	8,114	99.4%	43,542	99.4%	16,096	99.5%
yes	51	0.6%	45	0.5%	61	0.7%	54	0.6%	56	0.6%	38	0.5%	51	0.6%	267	0.6%	89	0.5%

Table S28: Diabetes Mellitus

	2015		2016		2017		2018		2019		2020		2021		pre (2015-2019)		post (2020-2021)	
	total n	%	total n	%	total n	%	total n	%	total n	%	total n	%	total n	%	total n	%	total n	%
age																		
0-19	281	1.8%	292	2.0%	280	2.0%	290	1.9%	272	1.7%	274	2.2%	318	2.2%	1,415	1.9%	592	2.2%
20-29	700	4.6%	766	5.4%	770	5.5%	820	5.5%	872	5.4%	758	6.0%	789	5.3%	3,928	5.3%	1,547	5.7%
30-39	1,248	8.2%	1,416	9.9%	1,413	10.1%	1,526	10.1%	1,566	9.7%	1,344	10.7%	1,426	9.7%	7,169	9.6%	2,770	10.1%
40-49	1,859	12.2%	1,737	12.1%	1,770	12.7%	1,773	11.8%	1,848	11.5%	1,457	11.6%	1,867	12.6%	8,987	12.0%	3,324	12.2%
50-59	3,073	20.1%	2,908	20.3%	2,859	20.5%	3,087	20.5%	3,297	20.5%	2,700	21.5%	3,295	22.3%	15,224	20.4%	5,995	22.0%
60-69	3,650	23.9%	3,193	22.3%	3,044	21.8%	3,201	21.3%	3,499	21.7%	2,677	21.3%	3,215	21.8%	16,587	22.2%	5,892	21.6%
70-79	2,790	18.3%	2,568	17.9%	2,430	17.4%	2,853	19.0%	3,067	19.1%	2,090	16.7%	2,538	17.2%	13,708	18.3%	4,628	16.9%
80-89	1,461	9.6%	1,218	8.5%	1,199	8.6%	1,277	8.5%	1,433	8.9%	1,054	8.4%	1,110	7.5%	6,588	8.8%	2,164	7.9%
90+	219	1.4%	216	1.5%	208	1.5%	217	1.4%	242	1.5%	196	1.6%	204	1.4%	1,102	1.5%	400	1.5%
gender																		
Females	7,376	48.3%	6,993	48.9%	6,886	49.3%	7,490	49.8%	7,877	48.9%	6,106	48.7%	7,237	49.0%	36,622	49.0%	13,343	48.9%
Males	7,905	51.7%	7,321	51.1%	7,087	50.7%	7,554	50.2%	8,219	51.1%	6,444	51.3%	7,525	51.0%	38,086	51.0%	13,969	51.1%
wimd																		
1. Most deprived	3,302	21.6%	3,095	21.6%	3,079	22.0%	3,169	21.1%	3,535	22.0%	2,673	21.3%	3,171	21.5%	16,180	21.7%	5,844	21.4%
2	3,106	20.3%	2,782	19.4%	2,819	20.2%	2,990	19.9%	3,175	19.7%	2,505	20.0%	2,924	19.8%	14,872	19.9%	5,429	19.9%
3	2,905	19.0%	2,617	18.3%	2,666	19.1%	2,860	19.0%	2,973	18.5%	2,289	18.2%	2,698	18.3%	14,021	18.8%	4,987	18.3%
4	2,723	17.8%	2,608	18.2%	2,393	17.1%	2,662	17.7%	2,722	16.9%	2,145	17.1%	2,517	17.1%	13,108	17.5%	4,662	17.1%
5. Least deprived	2,252	14.7%	2,163	15.1%	2,016	14.4%	2,228	14.8%	2,394	14.9%	1,855	14.8%	2,265	15.3%	11,053	14.8%	4,120	15.1%
Unknown	993	6.5%	1,049	7.3%	1,000	7.2%	1,135	7.5%	1,297	8.1%	1,083	8.6%	1,187	8.0%	5,474	7.3%	2,270	8.3%
ethinicity																		
Asian	550	3.6%	528	3.7%	550	3.9%	566	3.8%	716	4.4%	568	4.5%	606	4.1%	2,910	3.9%	1,174	4.3%
Black	108	0.7%	124	0.9%	143	1.0%	125	0.8%	175	1.1%	151	1.2%	174	1.2%	675	0.9%	325	1.2%
Mixed	98	0.6%	97	0.7%	86	0.6%	127	0.8%	119	0.7%	90	0.7%	123	0.8%	527	0.7%	213	0.8%
Other	145	0.9%	126	0.9%	144	1.0%	159	1.1%	194	1.2%	135	1.1%	176	1.2%	768	1.0%	311	1.1%
White	14,044	91.9%	13,107	91.6%	12,717	91.0%	13,693	91.0%	14,545	90.4%	11,332	90.3%	13,313	90.2%	68,106	91.2%	24,645	90.2%
Unknown	336	2.2%	332	2.3%	333	2.4%	374	2.5%	347	2.2%	274	2.2%	370	2.5%	1,722	2.3%	644	2.4%
Frailty																		
Fit	7,249	47.4%	7,078	49.4%	7,095	50.8%	7,566	50.3%	8,003	49.7%	6,459	51.5%	7,836	53.1%	36,991	49.5%	14,295	52.3%
Mild	4,788	31.3%	4,260	29.8%	4,046	29.0%	4,392	29.2%	4,862	30.2%	3,748	29.9%	4,311	29.2%	22,348	29.9%	8,059	29.5%
missing	1,437	9.4%	1,465	10.2%	1,442	10.3%	1,601	10.6%	1,511	9.4%	1,149	9.2%	1,311	8.9%	7,456	10.0%	2,460	9.0%
Moderate	1,457	9.5%	1,235	8.6%	1,124	8.0%	1,238	8.2%	1,457	9.1%	976	7.8%	1,114	7.5%	6,511	8.7%	2,090	7.7%
Severe	350	2.3%	276	1.9%	266	1.9%	247	1.6%	263	1.6%	218	1.7%	190	1.3%	1,402	1.9%	408	1.5%
learning disability																		
no	15,140	99.1%	14,179	99.1%	13,868	99.2%	14,908	99.1%	15,953	99.1%	12,452	99.2%	14,626	99.1%	74,048	99.1%	27,078	99.1%
yes	141	0.9%	135	0.9%	105	0.8%	136	0.9%	143	0.9%	98	0.8%	136	0.9%	660	0.9%	234	0.9%

Table S29: Type 1 diabetes

	2015		2016		2017		2018		2019		2020		2021		pre (2015-2019)		post (2020-2021)	
	total n	%	total n	%	total n	%	total n	%	total n	%	total n	%	total n	%	total n	%	total n	%
age																		
0-19	198	37.8%	218	38.1%	198	36.9%	200	37.5%	196	37.8%	193	37.2%	242	40.5%	1,010	37.6%	435	39.0%
20-29	92	17.6%	94	16.4%	81	15.1%	103	19.3%	99	19.1%	95	18.3%	85	14.2%	469	17.5%	180	16.1%
30-39	65	12.4%	73	12.8%	68	12.7%	71	13.3%	67	12.9%	54	10.4%	58	9.7%	344	12.8%	112	10.0%
40-49	62	11.8%	50	8.7%	49	9.1%	40	7.5%	48	9.2%	47	9.1%	49	8.2%	249	9.3%	96	8.6%
50-59	40	7.6%	57	10.0%	51	9.5%	40	7.5%	40	7.7%	50	9.6%	67	11.2%	228	8.5%	117	10.5%
60-69	39	7.4%	45	7.9%	52	9.7%	38	7.1%	34	6.6%	37	7.1%	37	6.2%	208	7.7%	74	6.6%
70-79	18	3.4%	23	4.0%	24	4.5%	26	4.9%	25	4.8%	27	5.2%	39	6.5%	116	4.3%	66	5.9%
80-89	5	1.0%	7	1.2%	9	1.7%	11	2.1%	5	1.0%	11	2.1%	15	2.5%	37	1.4%	26	2.3%
90+	5	1.0%	5	0.9%	5	0.9%	5	0.9%	5	1.0%	5	1.0%	5	0.8%	25	0.9%	10	0.9%
gender																		
Females	240	45.8%	247	43.2%	234	43.6%	224	41.9%	219	42.2%	210	40.5%	229	38.4%	1,164	43.3%	439	39.3%
Males	284	54.2%	325	56.8%	303	56.4%	310	58.1%	300	57.8%	309	59.5%	368	61.6%	1,522	56.7%	677	60.7%
wimd																		
1. Most deprived	125	23.9%	131	22.9%	105	19.6%	118	22.1%	118	22.7%	106	20.4%	126	21.1%	597	22.2%	232	20.8%
(blank)	106	20.2%	118	20.6%	97	18.1%	101	18.9%	96	18.5%	110	21.2%	119	19.9%	518	19.3%	229	20.5%
	99	18.9%	100	17.5%	96	17.9%	101	18.9%	83	16.0%	75	14.5%	101	16.9%	479	17.8%	176	15.8%
ethnicity	78	14.9%	96	16.8%	84	15.6%	80	15.0%	81	15.6%	76	14.6%	105	17.6%	419	15.6%	181	16.2%
5. Least deprived	72	13.7%	80	14.0%	94	17.5%	85	15.9%	66	12.7%	87	16.8%	99	16.6%	397	14.8%	186	16.7%
Unknown	44	8.4%	47	8.2%	61	11.4%	49	9.2%	75	14.5%	65	12.5%	47	7.9%	276	10.3%	112	10.0%
ethinicity																		
Asian	8	1.5%	17	3.0%	20	3.7%	15	2.8%	12	2.3%	14	2.7%	29	4.9%	72	2.7%	43	3.9%
Black	5	1.0%	8	1.4%	7	1.3%	8	1.5%	6	1.2%	16	3.1%	11	1.8%	34	1.3%	27	2.4%
Mixed	6	1.1%	5	0.9%	7	1.3%	11	2.1%	5	1.0%	5	1.0%	11	1.8%	34	1.3%	16	1.4%
Other	13	2.5%	5	0.9%	6	1.1%	9	1.7%	8	1.5%	8	1.5%	7	1.2%	41	1.5%	15	1.3%
White	480	91.6%	516	90.2%	477	88.8%	475	89.0%	471	90.8%	461	88.8%	517	86.6%	2,419	90.1%	978	87.6%
Unknown	12	2.3%	21	3.7%	20	3.7%	16	3.0%	17	3.3%	15	2.9%	22	3.7%	86	3.2%	37	3.3%
Frailty																		
Fit	433	82.6%	462	80.8%	435	81.0%	434	81.3%	436	84.0%	425	81.9%	491	82.2%	2,200	81.9%	916	82.1%
Mild	60	11.5%	69	12.1%	68	12.7%	73	13.7%	58	11.2%	63	12.1%	67	11.2%	328	12.2%	130	11.6%
missing	14	2.7%	21	3.7%	22	4.1%	13	2.4%	13	2.5%	13	2.5%	21	3.5%	83	3.1%	34	3.0%
Moderate	12	2.3%	15	2.6%	7	1.3%	9	1.7%	7	1.3%	13	2.5%	13	2.2%	50	1.9%	26	2.3%
Severe	5	1.0%	5	0.9%	5	0.9%	5	0.9%	5	1.0%	5	1.0%	5	0.8%	25	0.9%	10	0.9%
learning disability																		
no	517	98.7%	564	98.6%	532	99.1%	528	98.9%	509	98.1%	511	98.5%	591	99.0%	2,650	98.7%	1,102	98.7%
yes	7	1.3%	8	1.4%	5	0.9%	6	1.1%	10	1.9%	8	1.5%	6	1.0%	36	1.3%	14	1.3%

Table S30: Type 2 diabetes

	2015		2016		2017		2018		2019		2020		2021		pre (2015-2019)		post (2020-2021)	
	total n	%	total n	%	total n	%	total n	%	total n	%	total n	%	total n	%	total n	%	total n	%
age																		
0-19	22	0.2%	29	0.2%	21	0.2%	26	0.2%	27	0.2%	24	0.2%	20	0.2%	125	0.2%	44	0.2%
20-29	202	1.5%	195	1.6%	204	1.7%	167	1.3%	182	1.3%	175	1.7%	203	1.6%	950	1.5%	378	1.7%
30-39	666	4.9%	655	5.3%	622	5.2%	611	4.8%	695	5.0%	559	5.4%	654	5.3%	3,249	5.0%	1,213	5.3%
40-49	1,741	12.8%	1,593	12.9%	1,629	13.7%	1,631	12.7%	1,688	12.2%	1,295	12.4%	1,654	13.3%	8,282	12.8%	2,949	12.9%
50-59	3,023	22.2%	2,827	22.9%	2,768	23.2%	3,010	23.5%	3,207	23.3%	2,579	24.7%	3,142	25.3%	14,835	23.0%	5,721	25.0%
60-69	3,584	26.3%	3,127	25.4%	2,953	24.8%	3,124	24.4%	3,401	24.7%	2,574	24.6%	3,085	24.8%	16,189	25.1%	5,659	24.7%
70-79	2,756	20.2%	2,513	20.4%	2,366	19.8%	2,799	21.9%	2,962	21.5%	2,049	19.6%	2,416	19.4%	13,396	20.8%	4,465	19.5%
80-89	1,429	10.5%	1,183	9.6%	1,162	9.7%	1,233	9.6%	1,393	10.1%	1,010	9.7%	1,056	8.5%	6,400	9.9%	2,066	9.0%
90+	217	1.6%	202	1.6%	206	1.7%	208	1.6%	234	1.7%	183	1.8%	195	1.6%	1,067	1.7%	378	1.7%
gender																		
Females	6,144	45.0%	5,423	44.0%	5,272	44.2%	5,719	44.6%	6,081	44.1%	4,471	42.8%	5,577	44.9%	28,639	44.4%	10,048	43.9%
Males	7,496	55.0%	6,901	56.0%	6,659	55.8%	7,090	55.4%	7,708	55.9%	5,977	57.2%	6,848	55.1%	35,854	55.6%	12,825	56.1%
wimd																		
1. Most deprived	2,921	21.4%	2,634	21.4%	2,605	21.8%	2,702	21.1%	2,980	21.6%	2,201	21.1%	2,693	21.7%	13,842	21.5%	4,894	21.4%
(blank)	2,761	20.2%	2,373	19.3%	2,413	20.2%	2,533	19.8%	2,749	19.9%	2,054	19.7%	2,488	20.0%	12,829	19.9%	4,542	19.9%
	2,609	19.1%	2,270	18.4%	2,301	19.3%	2,435	19.0%	2,582	18.7%	1,952	18.7%	2,253	18.1%	12,197	18.9%	4,205	18.4%
ethnicity	2,462	18.0%	2,268	18.4%	2,063	17.3%	2,305	18.0%	2,374	17.2%	1,831	17.5%	2,144	17.3%	11,472	17.8%	3,975	17.4%
5. Least deprived	2,032	14.9%	1,863	15.1%	1,708	14.3%	1,915	15.0%	2,079	15.1%	1,570	15.0%	1,917	15.4%	9,597	14.9%	3,487	15.2%
Unknown	855	6.3%	916	7.4%	841	7.0%	919	7.2%	1,025	7.4%	840	8.0%	930	7.5%	4,556	7.1%	1,770	7.7%
ethinicity																		
Asian	437	3.2%	409	3.3%	434	3.6%	434	3.4%	547	4.0%	426	4.1%	445	3.6%	2,261	3.5%	871	3.8%
Black	88	0.6%	95	0.8%	115	1.0%	87	0.7%	143	1.0%	100	1.0%	116	0.9%	528	0.8%	216	0.9%
Mixed	75	0.5%	75	0.6%	64	0.5%	86	0.7%	92	0.7%	67	0.6%	76	0.6%	392	0.6%	143	0.6%
Other	110	0.8%	98	0.8%	102	0.9%	108	0.8%	128	0.9%	97	0.9%	126	1.0%	546	0.8%	223	1.0%
White	12,637	92.6%	11,357	92.2%	10,936	91.7%	11,774	91.9%	12,576	91.2%	9,519	91.1%	11,365	91.5%	59,280	91.9%	20,884	91.3%
Unknown	293	2.1%	290	2.4%	280	2.3%	320	2.5%	303	2.2%	239	2.3%	297	2.4%	1,486	2.3%	536	2.3%
Frailty																		
Fit	5,931	43.5%	5,534	44.9%	5,515	46.2%	5,816	45.4%	6,218	45.1%	4,803	46.0%	6,042	48.6%	29,014	45.0%	10,845	47.4%
Mild	4,624	33.9%	4,002	32.5%	3,795	31.8%	4,131	32.3%	4,560	33.1%	3,504	33.5%	3,991	32.1%	21,112	32.7%	7,495	32.8%
missing	1,310	9.6%	1,333	10.8%	1,268	10.6%	1,427	11.1%	1,336	9.7%	1,004	9.6%	1,164	9.4%	6,674	10.3%	2,168	9.5%
Moderate	1,428	10.5%	1,191	9.7%	1,101	9.2%	1,192	9.3%	1,416	10.3%	932	8.9%	1,048	8.4%	6,328	9.8%	1,980	8.7%
Severe	347	2.5%	264	2.1%	252	2.1%	243	1.9%	259	1.9%	205	2.0%	180	1.4%	1,365	2.1%	385	1.7%
learning disability																		
no	13,514	99.1%	12,203	99.0%	11,835	99.2%	12,691	99.1%	13,664	99.1%	10,367	99.2%	12,310	99.1%	63,907	99.1%	22,677	99.1%
yes	126	0.9%	121	1.0%	96	0.8%	118	0.9%	125	0.9%	81	0.8%	115	0.9%	586	0.9%	196	0.9%

Table S31: Undetermined type diabetes

	2015		2016		2017		2018		2019		2020		2021		pre (2015-2019)		post (2020-2021)	
	total n	%	total n	%	total n	%	total n	%	total n	%	total n	%	total n	%	total n	%	total n	%
age																		
0-19	60	5.7%	54	4.7%	65	5.2%	60	4.2%	61	3.7%	63	4.2%	61	3.3%	300	4.6%	124	3.7%
20-29	317	30.3%	373	32.7%	330	26.5%	391	27.3%	430	26.0%	390	25.9%	365	19.7%	1,841	28.3%	755	22.5%
30-39	409	39.1%	465	40.8%	525	42.1%	600	41.9%	637	38.5%	585	38.9%	621	33.6%	2,636	40.5%	1,206	36.0%
40-49	73	7.0%	104	9.1%	116	9.3%	113	7.9%	117	7.1%	142	9.4%	175	9.5%	523	8.0%	317	9.5%
50-59	57	5.4%	57	5.0%	67	5.4%	80	5.6%	130	7.9%	93	6.2%	220	11.9%	391	6.0%	313	9.3%
60-69	45	4.3%	39	3.4%	67	5.4%	85	5.9%	110	6.7%	108	7.2%	207	11.2%	346	5.3%	315	9.4%
70-79	51	4.9%	28	2.5%	51	4.1%	68	4.8%	105	6.4%	79	5.3%	139	7.5%	303	4.7%	218	6.5%
80-89	29	2.8%	15	1.3%	20	1.6%	27	1.9%	55	3.3%	37	2.5%	52	2.8%	146	2.2%	89	2.7%
90+	5	0.5%	5	0.4%	5	0.4%	7	0.5%	8	0.5%	7	0.5%	10	0.5%	30	0.5%	17	0.5%
gender																		
Females	852	81.5%	974	85.4%	1,044	83.8%	1,193	83.4%	1,340	81.1%	1,210	80.5%	1,338	72.3%	5,403	82.9%	2,548	76.0%
Males	194	18.5%	166	14.6%	202	16.2%	238	16.6%	313	18.9%	294	19.5%	512	27.7%	1,113	17.1%	806	24.0%
wimd																		
1. Most deprived	198	18.9%	245	21.5%	264	21.2%	285	19.9%	370	22.4%	331	22.0%	416	22.5%	1,362	20.9%	747	22.3%
(blank)	208	19.9%	214	18.8%	230	18.5%	282	19.7%	321	19.4%	314	20.9%	393	21.2%	1,255	19.3%	707	21.1%
	183	17.5%	199	17.5%	215	17.3%	248	17.3%	295	17.8%	234	15.6%	329	17.8%	1,140	17.5%	563	16.8%
ethnicity	177	16.9%	182	16.0%	214	17.2%	246	17.2%	267	16.2%	223	14.8%	291	15.7%	1,086	16.7%	514	15.3%
5. Least deprived	148	14.1%	169	14.8%	183	14.7%	218	15.2%	221	13.4%	204	13.6%	268	14.5%	939	14.4%	472	14.1%
Unknown	132	12.6%	131	11.5%	140	11.2%	152	10.6%	179	10.8%	198	13.2%	153	8.3%	734	11.3%	351	10.5%
ethinicity																		
Asian	74	7.1%	80	7.0%	99	7.9%	91	6.4%	112	6.8%	131	8.7%	133	7.2%	456	7.0%	264	7.9%
Black	12	1.1%	15	1.3%	14	1.1%	18	1.3%	18	1.1%	34	2.3%	36	1.9%	77	1.2%	70	2.1%
Mixed	14	1.3%	20	1.8%	13	1.0%	18	1.3%	17	1.0%	20	1.3%	36	1.9%	82	1.3%	56	1.7%
Other	15	1.4%	29	2.5%	30	2.4%	28	2.0%	39	2.4%	27	1.8%	35	1.9%	141	2.2%	62	1.8%
White	903	86.3%	971	85.2%	1,064	85.4%	1,235	86.3%	1,432	86.6%	1,264	84.0%	1,563	84.5%	5,605	86.0%	2,827	84.3%
Unknown	28	2.7%	25	2.2%	26	2.1%	41	2.9%	35	2.1%	28	1.9%	47	2.5%	155	2.4%	75	2.2%
Frailty																		
Fit	815	77.9%	910	79.8%	982	78.8%	1,124	78.5%	1,273	77.0%	1,150	76.5%	1,346	72.8%	5,104	78.3%	2,496	74.4%
Mild	150	14.3%	164	14.4%	184	14.8%	204	14.3%	262	15.8%	256	17.0%	378	20.4%	964	14.8%	634	18.9%
missing	44	4.2%	38	3.3%	55	4.4%	63	4.4%	50	3.0%	53	3.5%	58	3.1%	250	3.8%	111	3.3%
Moderate	28	2.7%	22	1.9%	20	1.6%	33	2.3%	59	3.6%	37	2.5%	57	3.1%	162	2.5%	94	2.8%
Severe	9	0.9%	6	0.5%	5	0.4%	7	0.5%	9	0.5%	8	0.5%	11	0.6%	36	0.6%	19	0.6%
learning disability																		
no	1,041	99.5%	1,129	99.0%	1,239	99.4%	1,422	99.4%	1,643	99.4%	1,494	99.3%	1,835	99.2%	6,474	99.4%	3,329	99.3%
yes	5	0.5%	11	1.0%	7	0.6%	9	0.6%	10	0.6%	10	0.7%	15	0.8%	42	0.6%	25	0.7%

Figure S1: Incidence rate by age

Monthly rates of diagnoses 2015-2021. Rates are per 100,000 and calculated for each demographic group i.e.: number of diagnoses x 100,000/ population size of demographic group. Presented are 3-month rolling averages.

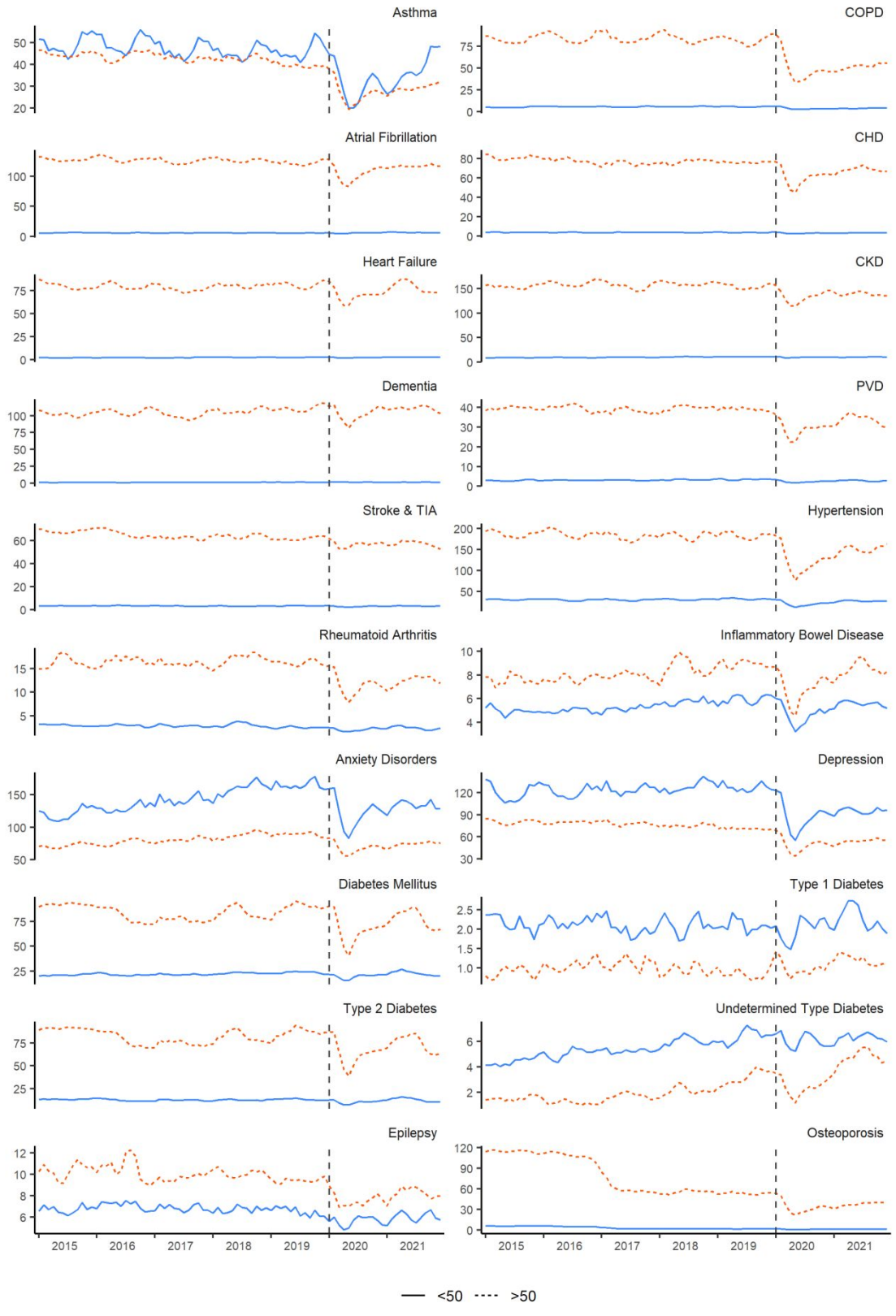


Figure S2: Incidence rate by sex

Monthly rates of diagnoses 2015-2021. Rates are per 100,000 and calculated for each demographic group i.e.: number of diagnoses x 100,000/ population size of demographic group. Presented are 3-month rolling averages.

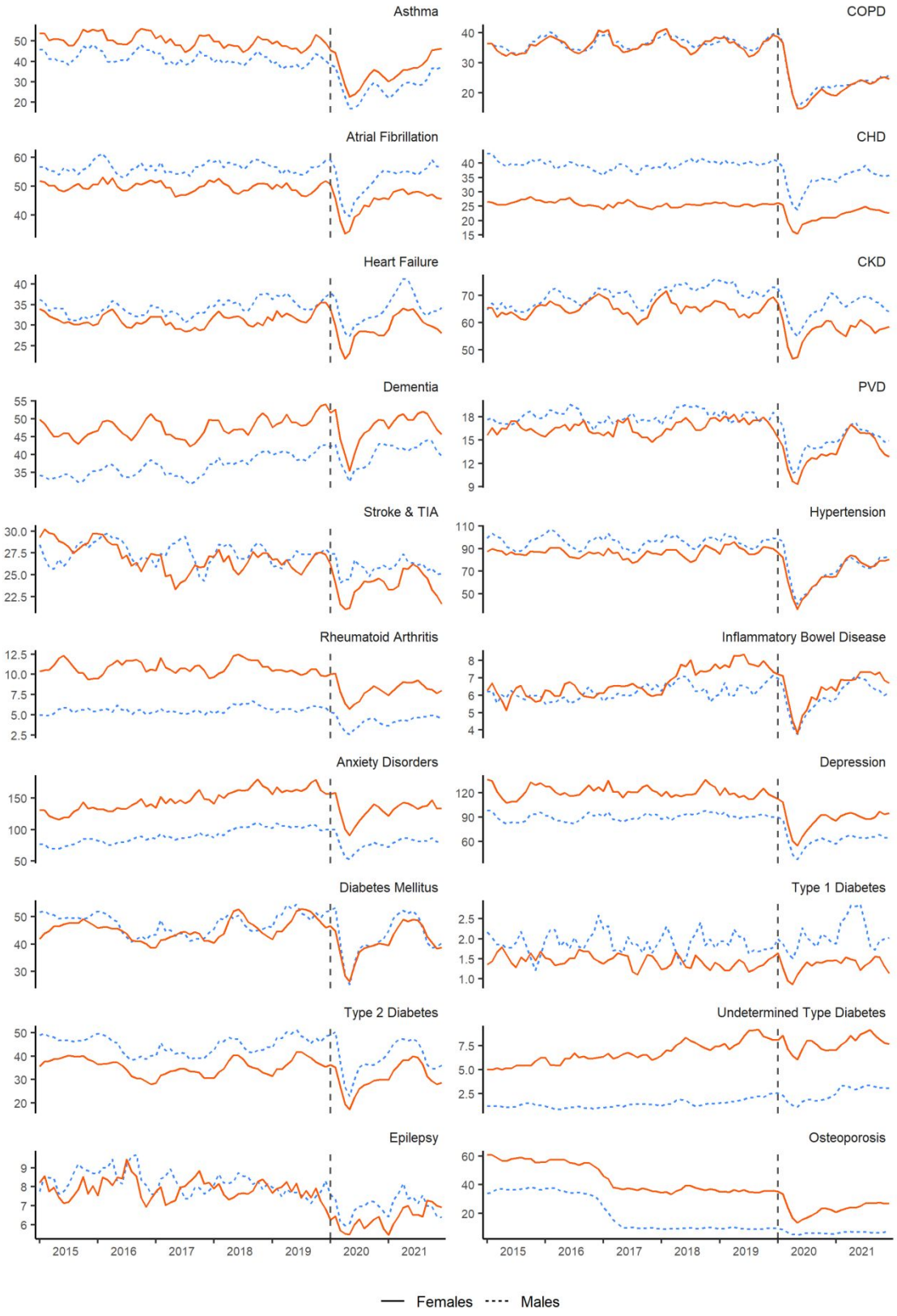
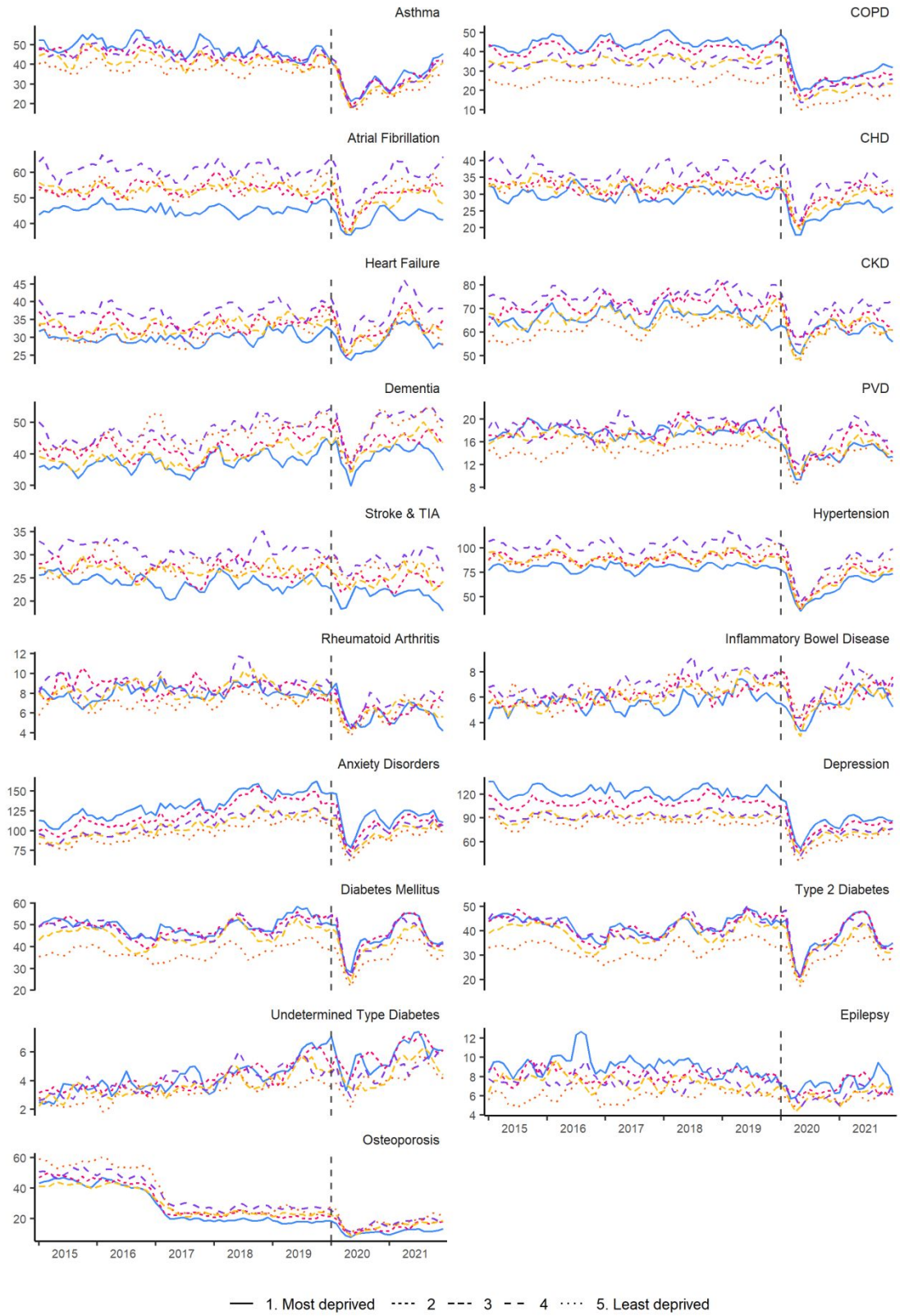


Figure S3: Incidence rate by social deprivation quintile

Monthly rates of diagnoses 2015-2021. Rates are per 100,000 and calculated for each demographic group i.e.: number of diagnoses x 100,000/ population size of demographic group. Presented are 3-month rolling averages.



Impact of COVID-19 pandemic on incidence of long-term conditions in Wales: a population data linkage study: response to peer reviewers' comments

Reviewer(s)' Comments to Author:

Reviewer: 1

Comments to the Author
This is a nice approach to the question of missing non-COVID diagnoses during the pandemic. The authors elegantly showed the incidence rates of registered diagnoses of 17 long-term conditions. The study period is large enough to see different trends and includes almost two years of pandemic data, more than the better part of the published articles that address this issue. I think that the statistical approach and methods are accurate. Although there are several articles worldwide describing similar patterns, the present manuscript is still of interest because it includes data until the end of 2021 and 17 chronic diseases. I have only a few questions because I think that the authors performed good research.

We would like to thank the reviewer for their thorough review and excellent suggestions, and for recognising the relevance of our work.

1. In the Abstract, I think that the authors should specify better the design of the study. Is it an observational retrospective study?

We agree with the reviewer that the study design can be described as an observational retrospective study, and this has now been specified in the abstract and methods (changes highlighted).

2. In the Introduction, the authors provided the % of GP with data available in SAIL Databank. It would be nice if they also provided the population size covered by this database, as most readers are not familiar with Wales' demographic characteristics. In addition, it could be of interest to inform about any change in the population pyramid across the years considering the long period analysed, or at least a reference about the stability of the demographic characteristics.

Thank you for this suggestion. The population estimates used in this study to derive diagnosis rates are now shown in Table S5. This is the number of individuals registered to a GP on 1st July each year in Wales with data available in SAIL. The coverage of this 'GP population', as estimated by comparing to ONS population estimates (also shown in Table S5) is overall high. The GP population has over 80% coverage from 2003 to 2021. Coverage from 2015 to 2021 is 85% to 87%.

Table S6 shows the breakdown of the total GP population by sex, age group and social deprivation quintile. Overall, population demographics are stable over the study period. There is a slight decline (from 24.5% in 2000 to 21.5% in 2021) in the <20 age group over the 22-year duration. From 2015 to 2021, the ratio between demographic categories is very similar.

Changes (highlighted) are made under methods/statistical analysis and the first paragraph in the results section.

3. Which is the reason to not perform any stratified analysis? It would be interesting to know if trends were different regarding sex or socioeconomic status.

We agree with the reviewer that it would be interesting to observe if the trends described in our primary findings differ by sex and socioeconomic status.

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Our primary objective was to observe trends in overall diagnosis rates over time and our secondary objective was to observe if there were any notable changes in the demographic composition of diagnosed patients, which may, when combined with evidence of diagnostic delays indicate the possibility of taking a 'targeted' approach for catch-up initiatives.
However as post-hoc exploration, we have now included graphs of monthly diagnosis rates by sex and social deprivation quintiles in Figures S2 and S3. We did not observe any conditions whereby trends in diagnosis notably differed between males and females or between social deprivation groups. A paragraph has been added to the end of the results section (highlighted).

4. Is the data from 2000 to 2014 used for any analysis? It seems that it is only used to decide the date of the first diagnosis? Maybe the authors should specify this in the methods section, detailing the study period and the different sub-periods with a little explanation of their uses.

That is correct, our aim was to extract rates of diagnosis over a long period and make these data available on a public interactive dashboard so historical rates can be viewed, but we fitted a time-series model only to data from 2015 to 2019. This has been made clearer in the methods section under outcomes (changes highlighted). Our assumption was that data from recent years would likely reflect consistent practices in clinical coding and more reliably predict the behaviour of the time series in 2020 and 2021 had it not been interrupted by the pandemic.

5. When authors selected the first diagnosis date for each patient, the overall number of chronic diseases dropped from 72 million to 7 million registers, that's a 90% drop. Why are all these diagnoses registered in the database? As the 17 conditions are chronic diseases, one will expect only one diagnosis is registered in the electronic health records. Are those diagnoses resulting from some episodes of some of the conditions such as asthma, depression, or anxiety? Or are duplicated information from the database?

Thank you for spotting this. The 72 million should not have been reported as it did not reflect the amount of data available but was an artefact of the data linkage process. The data flow diagram (Figure 1) has now been updated, and the main text revised (highlighted first paragraph under results). Multiple records per individual is expected due to the large number of ICD-10/Read codes (Tables S2 and S3) used to identify each condition (and an individual may have codes for more than one condition).

With regards to the error, the issue arose because the process of data linkage involved merging ICD-10 (first 3 characters) and Read codes with a list of reference codes for each condition (Tables S2 and S3) to determine if an individual has been diagnosed with the condition in question. For a given code, there are likely to be multiple matches since the reference code list is long, and all matches were initially retained creating a very large dataset before the earliest date of diagnosis per individual could be selected.

6. Regarding the interactive dashboard I was not able to access it. When using the link provided by the authors the website asked for a username and password. I recommend the authors to revise the availability of this dashboard.

Apologies for neglecting to provide a password to the dashboard (https://envhe.shinyapps.io/wales-cec-ltc-incidence/). The username is **CEC** and the password is: **Tamatoa!**. We will make the dashboard and Gitlab repository available to the public once the study has been published.

Impact of COVID-19 pandemic on incidence of long-term conditions in Wales: a population data linkage study: response to peer reviewers' comments

7. Regarding Figure 2, it seems that some of the long-term conditions achieve the expected level at the beginning of 2021 like dementia, stroke or heart failure, but dropped again at the end of 2021. Is this related to covid-19 waves in Wales?

This is an interesting observation. The alpha wave in Wales was from 15 September 2020 to 14 March 2021 and the delta wave from 20 June 2021 to 19 December 2021. It is possible that higher rates in early 2021 and lower rates in late 2021 observed in some conditions (now noted under results and highlighted) are related to changes in healthcare pressures towards the end of the first wave and the start of the second wave. We have now mentioned this in the discussion (changes highlighted under discussion/summary).

8. In addition, it's surprising that at the end of the study period, asthma diagnoses have reached the expected while COPD diagnoses are far lesser. Any insight about these differences considering that the diagnostic procedure for both conditions is spirometry which has reduced its use in some countries, including in Wales as the authors state in their discussion section? Could this be related to the age of the patients (younger the patients with new asthma diagnoses compared to new COPD)? In that sense, in Table S11 it seems that the percentage of diagnoses for 20-39 years slightly increase compared to pre-pandemic percentage.

We have also noted this interesting difference in trends between Asthma and COPD in 2021. We speculate the reason rates for asthma are closer to expected at the end of 2021 compared to COPD may be that a COPD diagnosis depends on spirometry; but asthma is mostly a clinical (history) diagnosis hence less constrained. This has now been mentioned in the discussion (changes highlighted under discussion/comparison with existing literature).
We also investigated whether the difference between these conditions can be explained by possible differences in the behaviour of incidence rates by age group. Figure S1 shows incidence rates by patients aged <50 and >50. Looking at just the >50 group, asthma rates at the end of 2021 remain closer to pre-pandemic levels compared to COPD.
For asthma, the overall post-2020 trend in both age groups is similar. It is unclear whether the divergence towards the end of 2021 reflect differential catch-up in recording since rates in <50s rise at the end of every year i.e. a trend that existed pre-pandemic. This is more apparent when looking at actual monthly rates instead of rolling-averages (Figure S1 shows rolling-averages). We also observed consistent trends within 10- year age bands though this graph cannot be reported due to disclosure issues arising from small counts within categories. We conclude there is no notable interaction between age and the overall behaviour in incidence trends across conditions (last paragraph under results, highlighted).

9. Could a part of the observed and persistent reduction of some conditions during 2021 be linked to the harvesting effect due to some excess mortality related to covid-19?

We agree with the reviewer that this is a possibility; this is an example of how our expected rates could be overestimated and has now been mentioned under Discussion/strengths and limitations (changes highlighted). However, given that underdiagnosis is evident in such a wide range of conditions, and having now explored the monthly rates by patients aged <50 and >50 (Figure S1), the data indicate that non-presentation may be the biggest issue.

Impact of COVID-19 pandemic on incidence of long-term conditions in Wales: a population data linkage study: response to peer reviewers' comments

10. Any age group analysis would be nice if possible, as the only condition that reaches the expected during almost the whole pandemic period is type 1 diabetes mellitus. Or at least this finding should be discussed more in depth. Is this finding consistent with other works?

We agree with the reviewer that our findings for type 1 diabetes raises the question to what extent the trends we described are exclusive to older populations.
We carried out post-hoc exploration of diagnosis rates stratified by age (Figures S1). Age was categorised <50 and >50, to avoid disclosure issues due to small counts at the monthly level. (Around 75% of type 1 diabetes patients diagnosed annually were <50 years old.)
Most conditions are diagnosed in a predominantly older population such that there were very few (<10 per 100,000) diagnoses per month in the <50 age group and little could be inferred from the data. Among conditions with a more even distribution of patients aged <50 and >50, trends within age groups are similar to aggregate trends as per our primary findings, including conditions with the largest estimated underdiagnosis: depression, anxiety and asthma. (Note as previously mentioned in 8., asthma rates in <50s rise at the end of every year, so divergence at the end of 2021 likely reflect a pre-existing trend and it is unclear whether there is differential catch-up in recording.)
We hypothesise that the trends observed for type 1 diabetes may be related to the condition rather than confounding effect resulting from a much younger cohort of patients compared to most other conditions. Interestingly, studies have reported increased type 1 diabetes incidence during the pandemic. We have added these points to the discussion section under comparison with existing literature (changes highlighted).

11.Did you analyse if the % of new diagnoses during pandemic years were more performed in secondary care rather than in primary care compared to previous years?

We agree with the reviewer that this is an important question. While this was not our objective for this study, we intend to fully explore this in a second phase of this work which will look at health resource utilisation during the pandemic in the individuals identified here to have been diagnosed with a long-term condition. Currently, it is not possible to fully distinguish between diagnoses made in secondary vs primary care as outpatient events are not coded for diagnoses unlike GP events and hospital admissions but this could be reviewed when OPD coding had been improved. A brief further research section has been added at the end of Discussion (highlighted).

Commented [AE1]: confirm if this is mentioned in Further Research

12.There is a little mistake in the number of COPD predicted in Table S6, should be 24,478 (the sum of 12,114 and 12,364 that is provided separately in Table S7).

Thank you for spotting this. After checking, this discrepancy is due to rounding predicted numbers to the nearest whole number since all model predicted values and rates are presented as whole numbers. The predicted numbers for COPD for 2020 and 2021 were 12,114.39 and 12,364.13 and the total is therefore 24,478.52 to 2.d.p. This has now been noted in the table descriptions (text highlighted).

13.The discussion should have a little more "body". You can discuss some more differences about conditions, some more references for comparison, the possible return to pre-pandemic diagnosis level of some of them without a rebound effect, any possible explanation of the findings, etc.

Impact of COVID-19 pandemic on incidence of long-term conditions in Wales: a population data linkage study: response to peer reviewers' comments

Thank you for this suggestion. We have added detail to the discussion to consider findings and excess mortality related to COVID-19 and the difference in diagnostic approaches for conditions such as asthma and COPD. We have added a paragraph to discuss our findings for type 1 diabetes including references to relevant literature. We have also added how our findings may impact on practice (identifying patients with potentially relevant symptoms) and further research in term of the impact on health services. (All changes highlighted in the discussion section). With regards to the possible return to pre-pandemic level of some conditions without a rebound effect, we are currently not aware of any hypothesis that might support this outcome.

14.I'm not sure if as a limitation the authors should mention the use of electronic records.

Thank you, we have now clarified in the strength and limitations of the discussion section that since electronic coding of the conditions selected for this study was previously used to monitor and reward performance, the quality is generally good but this may vary between individual clinicians and practices. Changes are highlighted.

Reviewer: 2

Comments to the Author

This manuscript aims to explore the impact of Covid-19 on the diagnosis of long term conditions in Wales, using large data sets and quantitative analyses. Early focus has already been applied to cancer diagnosis but this work is equally as important as theses conditions can have a cumulative effect on long term health and wellbeing.

We would like to thank the reviewer for their review and for recognising the importance of our findings on informing future strategies for long-term condition management.

1.The research question is clear and methodology appropriate with descriptive analyses of results easy to follow. The discussion is fairly brief with recommendations to encourage case finding and policymakers to fund additional work. Have the authors considered approaches such as condition specific champions and/or charity groups armed with this data could be considered as important stakeholders in working with policymakers to address this "diagnostic deficit". Population level approaches are not considered for long term conditions as much as cancer diagnosis (public health messaging) but with the strength of the evidence here should be.

Thank you. Reaching out to condition specific charity groups is an excellent suggestion. We have mentioned this in the discussion section under Implications for research and/or practice (highlighted) and will consider reporting our study findings to the Association of Medical Research Charities for dissemination and encourage them to distribute to their members to strengthen impact.

2.The study dashboard links (page 7) are currently inactive.

Apologies for neglecting to provide a password to the dashboard (https://envhe.shinyapps.io/wales-cec-ltc-incidence/). The username is **CEC** and the password is: **Tamatoa!.** We will make the dashboard and the Gitlab repository available to the public once the study has been published.

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3.There are very minor spelling/grammar issues identified
P4 L49 - reads "stoke" should be "stroke"
P5 L55 - ?incorrect use of word diagnose - should be diagnosis
P6 L23 - "number cases" - should this read "number of cases"

Thank you for spotting these errors, this has now been corrected (highlighted).