

# Bioimpedance and New-Onset Heart Failure: A Longitudinal Study of >500 000 Individuals From the General Population

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**Background**—Heart failure constitutes a high burden on patients and society, but although lifetime risk is high, it is difficult to predict without costly or invasive testing. We aimed to establish new risk factors of heart failure, which potentially could enable early diagnosis and preemptive treatment.

**Methods and Results**—We applied machine learning in the UK Biobank in an agnostic search of risk factors for heart failure in 500 451 individuals, excluding individuals with prior heart failure. Novel factors were then subjected to several in-depth analyses, including multivariable Cox models of incident heart failure, and assessment of discrimination and calibration. Machine learning confirmed many known and putative risk factors for heart failure and identified several novel candidates. Mean reticulocyte volume appeared as one novel factor and leg bioimpedance another, the latter appearing as the most important new marker. Leg bioimpedance was lower in those who developed heart failure during an up to 9.8-year follow-up. When adjusting for known heart failure risk factors, leg bioimpedance was inversely related to heart failure (hazard ratio [95% confidence interval], 0.60 [0.48–0.73] and 0.75 [0.59–0.94], in age- and sex-adjusted and fully adjusted models, respectively, comparing the upper versus lower quartile). A model including leg bioimpedance, age, sex, and self-reported history of myocardial infarction showed good discrimination for future heart failure hospitalization (Concordance index [C-index]=0.82) and good calibration.

**Conclusions**—Leg bioimpedance is inversely associated with heart failure incidence in the general population. A simple model of exclusively noninvasive measures, combining leg bioimpedance with history of myocardial infarction, age, and sex provides accurate predictive capacity. (*J Am Heart Assoc.* 2018;7:e008970. DOI: 10.1161/JAHA.118.008970.)

**Key Words:** heart failure • machine learning • risk factors

Heart failure is a common cause of mortality and is associated with substantial morbidity that greatly impacts quality of life of the affected individuals and their families. The lifetime risk of developing heart failure is high, and it is among the most common discharge diagnoses in the

United States, with frequent costly readmissions for decompensation once disease has been established.<sup>1</sup> While invasively measured biomarkers have improved prognostication, prediction of new-onset heart failure remains challenging.<sup>2</sup> Increased knowledge of risk factors for incident heart failure in the general population could enable earlier diagnosis, preemptive treatment, and risk factor control, to possibly mitigate disease development and improve outcomes. This is in line with recent heart failure guidelines, which outline several evidence-based treatments that may delay or prevent the development of overt heart failure.<sup>3</sup>

We hypothesized that novel risk factors for incident heart failure in the UK Biobank, a population-based longitudinal cohort study of >500 000 individuals, could be identified in an agnostic search by machine learning techniques, combined with confirmatory in-depth analyses.

## Methods

### Study Design and Participants

The full UK Biobank data set is available to approved researchers.<sup>4,5</sup> Between 2006 and 2010, 502 639 individuals aged 49 to 69 years were enrolled in the UK Biobank, a

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Accompanying Data S1, Table S1, and Figures S1 through S6 are available at <http://jaha.ahajournals.org/content/7/13/e008970/DC1/embed/inline-supplementary-material-1.pdf>

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## Clinical Perspective

### What Is New?

- By leveraging the power of machine learning, we identified leg bioimpedance as a novel risk factor for incident heart failure in the general population.
- A simple model combining leg bioimpedance, history of myocardial infarction, age, and sex provides accurate prediction of new-onset heart failure.

### What Are the Clinical Implications?

- Given the simplicity of measurement, leg bioimpedance could potentially be used as a tool for screening in primary care facilities, providing independent validation of our findings.

longitudinal, population-based cohort study that recruited volunteers across 21 centers in England, Wales, and Scotland. The study has been described in detail previously<sup>6</sup> and online ([www.ukbiobank.ac.uk](http://www.ukbiobank.ac.uk)). Briefly, participants were carefully investigated, using a series of questionnaires, physiological measures, imaging, blood and urine biomarkers, and genotype data. Importantly, the UK Biobank was merged with the national in-hospital diagnosis and procedure registries, providing information about diagnoses before and after baseline of the study.<sup>6</sup>

For the main analyses, we excluded individuals with prevalent heart failure (either primary or secondary in-hospital diagnosis of heart failure, *International Classification of Diseases, Tenth Edition [ICD-10]*, I50; or self-reported history of heart failure,  $n=2188$ ), leaving 500 451 individuals eligible. In secondary analyses of leg bioimpedance, we instead studied individuals with prevalent heart failure ( $n=2188$ ). The UK Biobank study was approved by the North West Multi-Centre Research Ethics Committee, and all participants provided written informed consent to participate in the study.

## Leg Bioimpedance and Other Risk Factors

In our phenome-wide scan of risk factors for incident heart failure, we considered all 3646 variables reflecting different aspects of lifestyle, health, and disease-related factors in the UK Biobank (except a few administrative variables such as meta-data regarding the genomics part of the UK Biobank, as well as genomics and raw imaging data), and all *ICD-10* diagnoses (excluding administrative, temporary, and unspecified codes [Chapters U, V, W, X, Y, and Z]) (Table S1).

Leg bioimpedance was measured using the Tanita BC418MA body composition analyzer. This device is reminiscent of a standard scale but also has handlebars; ie, there are 4 electrodes (1 for each foot, and 1 for each hand) between which small

electric signals are passed. The resistance, ie, the impedance, for different parts of the body is calculated. A detailed description of how these measurements were made (including a photo of the device used) is available in the UK Biobank data showcase (<http://biobank.ctsu.ox.ac.uk/crystal/>). In our confirmatory analyses, we defined leg bioimpedance as the mean of left and right leg bioimpedance.

Blood pressure and body mass index were measured in a standardized fashion; as were medical history, smoking status, and alcohol consumption, through standardized questionnaires (full details available in the UK Biobank data showcase: <http://biobank.ctsu.ox.ac.uk/crystal/>). High alcohol intake was defined as “daily or almost daily” intake of alcohol. Chronic kidney failure (N18) and coronary heart disease (I20–I25), were defined as presence of these (primary or secondary) *ICD-10* diagnoses in hospitalizations before inclusion in the UK Biobank.

## Outcome and Follow-Up

The primary outcome was hospitalization for heart failure (*ICD-10*: I50) as the primary cause during follow-up, and for the Cox models, time to hospitalization for heart failure. This was based on the Hospital Episode Statistics register, that includes all hospitalizations in the United Kingdom, by linkage to the UK Biobank data set. Vital status is observed through the mandatory Death register. Thereby, loss-of-follow-up is negligible. There were 1054 incident events of heart failure during follow-up of up to 9.8 years, with a median follow-up of 6.2 years (lower and upper quartile, 5.5 and 6.9).

## Statistical Analysis

For discovery of new potential risk factors for heart failure, we used a gradient boosting machine model. This machine learning method allows the computer to learn how to classify individuals as having heart failure or not in an iterative fashion, considering all of the 3646 available variables, improving prediction by each iteration. In addition to providing a model for classification, it provides a measure of how important each variable is in this classification. We used hospitalization for heart failure (ie, our primary outcome) as the response variable. The data set was divided into training (60%), validation (20%), and test (20%) sets. The maximum tree depth was set to 3, the maximum number of trees to 50, and the learning rate to 0.01. Performance was assessed by the receiver operating characteristic area under the curve, and classification error was assessed by logloss. Results are presented as variable importance for the classification. Variable importance can be considered a measure of how important each feature is in improving the classification. An extended description of the gradient boosting machine method is found in Data S1.

Next, we assessed the relationships between the top 15 features associated with heart failure from the gradient boosting machine model and incident heart failure by using Cox proportional hazards regression in 2 sets of models: (1) adjusting for age and sex; and (2) additionally adjusting for body mass index, systolic and diastolic blood pressure, antihypertensive treatment, alcohol consumption, diabetes mellitus, smoking status, prevalent chronic renal failure, and prevalent coronary heart disease, all of which are established risk factors for heart failure.<sup>7–11</sup> Continuous variables were entered as restricted cubic splines to account for any nonlinear associations. The association between features and heart failure are reported as hazard ratios and 95% confidence intervals for the upper versus the lower quartile for continuous variables, or for presence or absence for binary variables. The proportional hazards assumption was assessed by visual inspection of the Schoenfeld residuals, without any signs of violation of this assumption.

As leg bioimpedance was deemed of particular importance after our initial analyses, we proceeded with in-depth analyses of this variable. First, we performed a sensitivity analysis, where all individuals with any primary or secondary inpatient diagnosis in Chapter 9 of *ICD-10* (“Diseases of the Circulatory System”) were excluded, as well as anyone with any of the following self-reported conditions: hypertension, prior stroke or transient ischemic attack, high cholesterol, diabetes mellitus, angina pectoris, or myocardial infarction (as well as self-reported heart failure) rendering a subsample of 309 079 individuals. This was to exclude any other prevalent cardiometabolic disorders that could influence bioimpedance. Further, we assessed leg bioimpedance in the full population in relation to incident or prevalent heart failure, and to any

incident or prevalent cardiovascular disease, to further characterize the associations between leg bioimpedance and cardiovascular disease. Distributions are presented as density plots. The predicted rate of heart failure hospitalization up to 8 years after inclusion in the study was plotted in relation to leg bioimpedance in a spline plot. The *x* axis was truncated at the 0.1th percentile at the lower end, and the 99.9th percentile in the higher end. Normality was assessed with visual inspection of the distributions, and levels of leg bioimpedance were compared with *t* tests. Finally, we assessed the addition of leg bioimpedance to age and sex, and in a final model adding leg bioimpedance to age, sex, and self-reported myocardial infarction. There were few missing observations of leg impedance (<2%), so we performed complete case analyses without any attempts of imputation.

The discriminatory ability of the models is presented using *c*-indices, and model fit was estimated by Akaike information criterion. We assessed calibration by visual inspection of calibration plots, and performed bootstrap validation using 100 bootstrap samples. All analyses were conducted using R versions 3.3.0 and 3.3.3, and the machine learning platform H2O version 3.10.4.1.

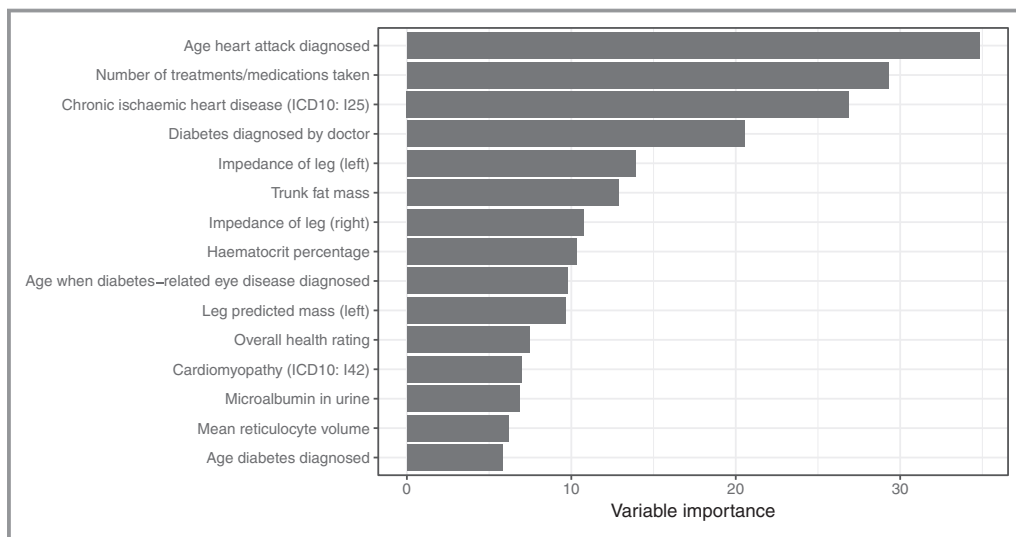
## Results

Baseline characteristics of the study population are presented in Table 1. The 15 variables with the highest importance in the gradient boosting machine model are shown in Figure 1. Among these are some of the most well-established risk factors for heart failure, such as manifestations of coronary artery disease and type 2 diabetes mellitus, as well as known correlates of heart failure, such as obesity, microalbuminuria,

**Table 1.** Baseline Characteristics

| Characteristic                       | N       | Without Incident Heart Failure (n=499 394) | With Incident Heart Failure (n=1054) |
|--------------------------------------|---------|--|--------------------------------------|
| Leg bioimpedance, Ohms               | 490 660 | 246.5 (223.5–270.5)                        | 221.5 (194.5–247.2)                  |
| Age, y                               | 500 488 | 58 (50–63)                                 | 64 (60–67)                           |
| Male sex                             | 500 488 | 45% (226 815)                              | 68% (718)                            |
| Body mass index, kg/m <sup>2</sup>   | 497 382 | 26.7 (24.1–29.9)                           | 29.7 (26.2–34.6)                     |
| Systolic blood pressure, mm Hg       | 499 157 | 136.5 (124.5–149.5)                        | 143.2 (130.5–157.0)                  |
| Diastolic blood pressure, mm Hg      | 499 159 | 82.0 (75.3–89.0)                           | 82.0 (74.0–89.0)                     |
| Antihypertensive medication          | 492 594 | 21% (104 123)                              | 59% (603)                            |
| Alcohol intake daily or almost daily | 498 969 | 21% (102 321)                              | 20% (205)                            |
| Diabetes mellitus                    | 497 858 | 5% (25 557)                                | 29% (305)                            |
| Current smoker                       | 497 576 | 11% (52 741)                               | 16% (163)                            |
| Prevalent chronic renal failure      | 500 448 | 0.1% (619)                                 | 2% (16)                              |
| Prevalent coronary heart disease     | 500 448 | 4% (17 364)                                | 30% (314)                            |

For continuous variables, medians and interquartile ranges are reported; for categorical variables, percentages and frequencies. N is the number of nonmissing values.



**Figure 1.** Variable importance for the top 15 variables in the gradient boosting machine model for incident hospitalization for heart failure.

and anemia. There were also several novel variables associated with incident heart failure. Among the most important were left and right leg bioimpedance and mean reticulocyte volume. The receiver operating characteristic areas under the curve were similar in the training, validation, and test sets: 0.79, 0.78, and 0.81 (receiver operating characteristic curves shown in Figure S1); as were the logloss values: 0.0127, 0.0149, 0.0143, ie, acceptable discrimination and low error,

which were very similar in the 3 sets, suggesting that the model was not overfitted.

For in-depth analyses of the most important variables, we then performed 2 sets of Cox regression models (age- and sex-adjusted; and adjusting for established heart failure risk factors) relating the top 15 features to incident heart failure during up to 9.8 years of follow-up (Table 2). Among the independently associated variables were well-established risk

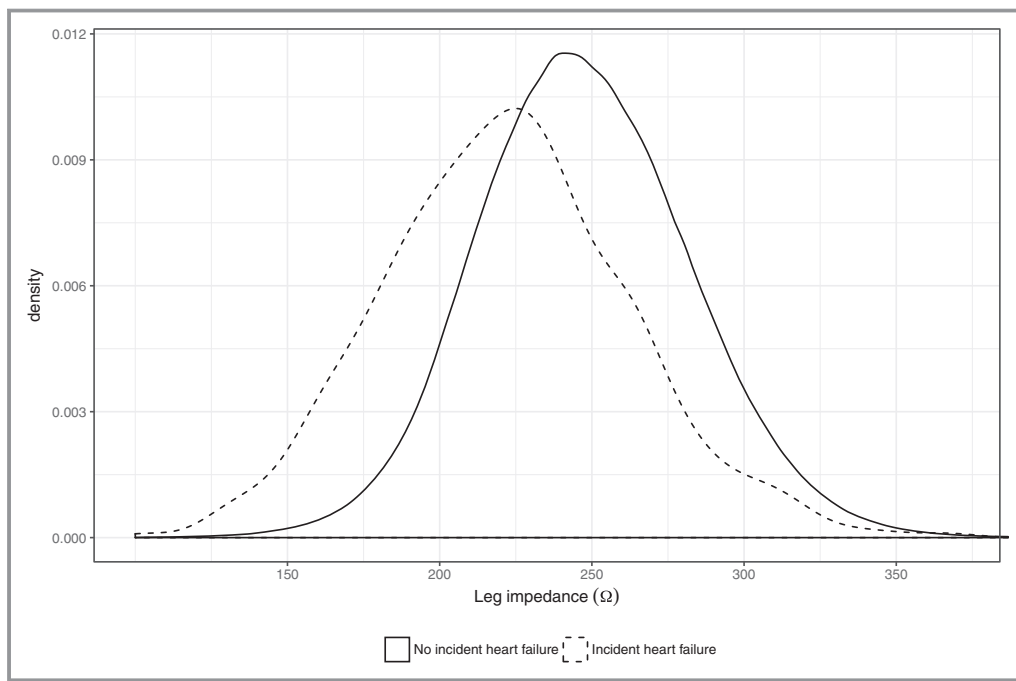
**Table 2.** Cox Models of the Top 15 Associated Variables From the Machine Learning Approach

| Variable   | Age- and Sex-Adjusted HR (95% CI) | Fully Adjusted* HR (95% CI) |
|--|-----------------------------------|-----------------------------|
| Prior myocardial infarction <sup>†</sup>           | 7.06 (6.06–8.23)                  | 4.29 (3.62–5.07)            |
| Number of treatments/medications taken             | 3.05 (2.44–3.82)                  | 1.96 (1.52–2.53)            |
| Chronic ischemic heart disease (ICD-10: I25)       | 6.88 (5.95–7.95)                  | 4.04 (3.44–4.75)            |
| History of diabetes mellitus <sup>†</sup>          | 5.27 (4.60–6.03)                  | 2.45 (2.10–2.87)            |
| Leg bioimpedance (left) (Ohms)                     | 0.59 (0.48–0.72)                  | 0.75 (0.60–0.94)            |
| Trunk fat mass, kg                                 | 1.73 (1.43–2.09)                  | 0.86 (0.64–1.17)            |
| Leg bioimpedance (right) (Ohms)                    | 0.60 (0.49–0.73)                  | 0.78 (0.62–0.97)            |
| Hematocrit, %                                      | 0.56 (0.47–0.67)                  | 0.73 (0.61–0.87)            |
| Diabetes mellitus-related eye disease <sup>†</sup> | 8.57 (6.01–12.21)                 | 2.01 (1.37–2.94)            |
| Leg predicted mass (left) (kg)                     | 3.73 (2.74–5.07)                  | 1.45 (0.99–2.12)            |
| Overall health rating                              | 3.14 (2.91–3.38)                  | 2.04 (1.86–2.22)            |
| Cardiomyopathy (ICD-10: I42)                       | 18.73 (11.59–30.27)               | 9.61 (5.70–16.18)           |
| Microalbumin in urine (log) (mg/L)                 | 2.12 (1.62–2.77)                  | 1.83 (1.38–2.42)            |
| Mean reticulocyte volume (fL)                      | 1.28 (1.10–1.50)                  | 1.19 (1.01–1.39)            |

CI indicates confidence interval; HR, hazard ratio (for continuous variables, HR represents upper vs lower quartile); ICD-10, *International Classification of Diseases, Tenth Edition*. “Diabetes diagnosed by doctor” and “Age diabetes diagnosed,” was instead analyzed as history of diabetes mellitus.

\*Fully adjusted model includes age, sex, body mass index, systolic blood pressure, diastolic blood pressure, antihypertensive treatment, alcohol consumption, diabetes mellitus, smoking status, prevalent chronic renal failure, prevalent coronary heart disease.

<sup>†</sup>Age when occurrence of myocardial infarction, diabetes mellitus, and diabetes mellitus-related eye disease were diagnosed were dichotomized to reflect the presence of these conditions or not.



**Figure 2.** Distributions of leg bioimpedance in relation to incident heart failure.

factors, such as ischemic heart disease and diabetes mellitus, but also other, novel markers, such as mean reticulocyte volume and leg bioimpedance.

As left and right leg bioimpedance emerged as novel, independent risk factors (Figure 1 and Table 2) and strong indicators of incident heart failure that can be assessed in a simple and noninvasive manner, we decided to focus the remaining analyses on leg bioimpedance, defined as the mean of left and right leg bioimpedance. The distribution of leg bioimpedance in relation to incident heart failure was investigated, and it showed fairly good separation between those who experienced future outcome compared with those who did not (Figure 2;  $P=1.1 \times 10^{-72}$ ). Compared with individuals who were free from heart failure during follow-up, individuals with incident heart failure had significantly lower leg bioimpedance (Figure 3).

In sensitivity analyses, we assessed leg bioimpedance in relation to incident heart failure in a subsample, excluding all individuals who had prior hospitalizations for any cardiovascular disease, as well as those with self-reported presence of cardiovascular disease and/or cardiovascular risk factors ( $N=309\,079$  with 212 cases [0.07%] of incident heart failure). In this healthy subsample, associations of leg bioimpedance with heart failure were nonsignificant but displayed similar effect sizes as in the full study sample (hazard ratio, 0.74; 95% confidence interval, 0.47–1.15; comparing upper versus lower quartile in a multivariable-adjusted model; Figure S2).

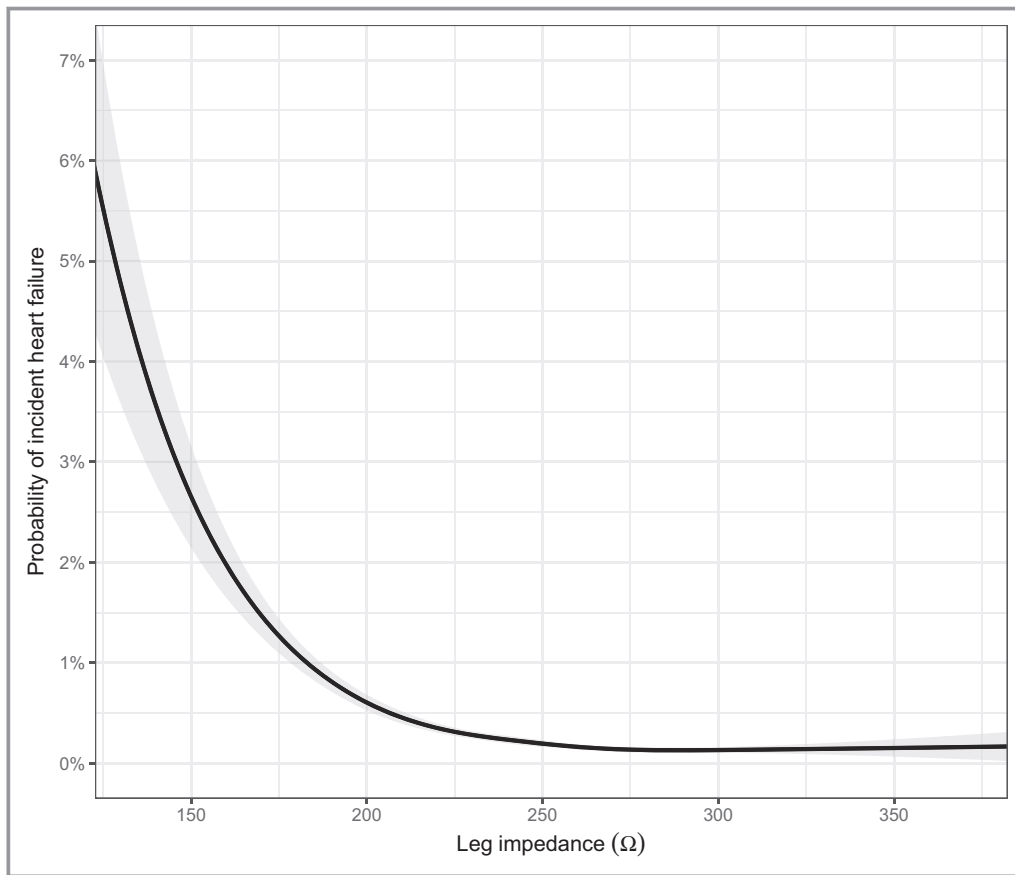
In additional sensitivity analyses in relation to prevalent cardiovascular disease, leg bioimpedance was consistently

lower in those experiencing heart failure hospitalizations during follow-up (Figures S3 and S4); and in those with known prior heart failure, lower leg bioimpedance was associated with having multiple rehospitalizations during follow-up (Figure S5).

When adding leg bioimpedance to a model including only age and sex, the concordance index (C-index) increased from 0.76 to 0.80, which should be compared with an increase from 0.76 to 0.79 when adding self-reported myocardial infarction to the model (Table 3). Combining age, sex, leg bioimpedance, and self-reported myocardial infarction (the variable with highest importance in the gradient boosting machine model; Figure 1) in a model led to a C-index of 0.82. This model was well calibrated (calibration slope, 0.9985; Figure S6), and the optimism-corrected C-index was 0.82 (ie, essentially unchanged, obtained via bootstrap validation), indicating that overfitting was not an issue. When taking all known risk factors for heart failure into account, leg bioimpedance remained significantly inversely associated with incident heart failure, calibration was similar as for the smaller model (Figure S7), and the C-index improved further to 0.85 (Table 3). The Akaike information criterion decreased (indicating better model fit) in a manner consistent with increases in the C-index (Table 3).

## Discussion

Using a contemporary, prospective cohort study of >500 000 individuals from the general population, we have performed an extensive investigation of factors associated with incident



**Figure 3.** Spline plot of probability for heart failure hospitalization in relation to leg bioimpedance.

heart failure. Our key findings are several-fold. First, using an agnostic machine learning approach in a phenome-wide manner, we established the strongest features associated with incident heart failure, which included well-established (eg, coronary artery disease, type 2 diabetes mellitus), previously suggested (eg, obesity, microalbuminuria, anemia), and novel (eg, leg bioimpedance, mean reticulocyte volume)

potential risk factors of incident heart failure. Second, we report that leg bioimpedance was inversely associated with incident heart failure, even after taking known risk factors into account in multivariable-adjusted Cox regression models. Third, a multivariable model including leg bioimpedance, age, sex, and self-reported prior myocardial infarction provided accurate prediction of heart failure incidence, highlighting the

**Table 3.** Discrimination and Model Fit of Multivariable Models of Incident Heart Failure During Up to 8 Years of Follow-Up

| Model                                     | HR (95% CI) Upper vs Lower Quartile of Leg Bioimpedance | C-Index* | AIC*   |
|---|---|----------|--------|
| Age+sex                                   | ...   | 0.76     | 26 241 |
| Age+sex+leg bioimpedance                  | 0.60 (0.48–0.73)  | 0.80     | 23 531 |
| Age+sex+self-reported MI                  | ...   | 0.79     | 25 820 |
| Age+sex+self-reported MI+leg bioimpedance | 0.60 (0.49–0.74)  | 0.82     | 23 204 |
| Fully adjusted†                           | 0.75 (0.59–0.94)  | 0.85     | 21 615 |

AIC indicates Akaike Information Criterion; CI, confidence interval; HR, hazard ratio; MI, myocardial infarction.

\*Concordance index (C-index) is a measure of discrimination, where higher is better (0.5 is random, 1 indicates perfect discrimination); Akaike Information Criterion (AIC) is a measure of model fit, where lower is better.

†Fully adjusted model includes age, sex, self-reported myocardial infarction, leg bioimpedance, body mass index, systolic blood pressure, diastolic blood pressure, antihypertensive treatment, alcohol consumption, diabetes mellitus, smoking status, prevalent chronic renal failure, and prevalent coronary heart disease.

potential of this simple, noninvasive, and cheap measure for clinical use. Given the simplicity of measurement, leg bioimpedance could potentially be used as a tool for screening in primary care facilities. In addition to independent prospective validation of leg bioimpedance in this setting, its role in established heart failure should be further investigated, especially assessing whether rehospitalizations could be predicted and ultimately prevented by preemptive treatment.

## Previous Studies of Bioimpedance and Heart Failure

To our knowledge, this is the largest study of risk factors for heart failure hospitalization, and the only study of bioimpedance in relation to incident heart failure in the general population. There are a few previous studies that have assessed bioimpedance in relation to heart failure decompensation in patients with already established severe heart failure treated with cardiac resynchronization devices or implantable defibrillators, where impedance could be measured using the pacemaker leads. In that setting, decompensation is characterized by a decrease in intrathoracic impedance, indicative of volume overload, well before rehospitalization for congestion.<sup>12</sup> There are also a few prior studies of noninvasive impedance measures in patients with established heart failure. In a phase II trial, treatment guided by lung impedance (assessed using external electrodes) reduced heart failure hospitalizations.<sup>13</sup> In addition, bioimpedance measures have been suggested as an adjunctive test for patients presenting with dyspnea at the emergency department, to identify heart failure patients when other tests are equivocal.<sup>14,15</sup> Whether the information obtained from impedance measures in patients with established heart failure translates into improved outcomes is, however, uncertain.<sup>13,16,17</sup>

## Machine Learning Studies of Heart Failure

In the present study, we employed machine learning techniques to identify novel factors associated with incident heart failure, and then studied these factors (especially the top new marker, leg bioimpedance) in more detail. Machine learning has been employed before in the heart failure setting, but with the primary goal to develop machine learning–based prediction models,<sup>18,19</sup> in contrast to the present study, where we proceeded with standard Cox proportional hazards models after the top features had been identified. In a recent study, machine learning algorithms (random forests, gradient boosting machine, and support vector machine) were compared with standard regression models (logistic regression, and Poisson regression) to detect readmission of patients with established heart failure. Although performing better than the standard models, the machine learning models demonstrated

only modest discriminatory ability, with a C-index of 0.68 for the best-performing model.<sup>18</sup>

Another study focused on prediction of new-onset heart failure, as in the present study. Based on electronic health record data in the primary care setting, these models included information on demographics, vital signs, diagnoses, medications, laboratory values, Framingham heart failure signs and symptoms, hospitalizations, and imaging. Although taking a large number of features into account, the best-performing model had a receiver operating characteristic area under the curve of about 0.80.<sup>19</sup> In the present study, a simple model including only 4 features (of which leg bioimpedance was one) provided slightly higher discriminatory capacity for incident heart failure, which highlights the strong predictive value of the variables included.

## Strengths and Limitations

Strengths of our study include the unprecedented sample size from the general population with consistent assessment of risk factors for heart failure, including leg bioimpedance in >500 000 individuals; the minimal loss-to-follow-up; and our stringent, yet exploratory approach that allowed us to discover leg bioimpedance as a novel risk factor for heart failure in the general population. Our study also has some important limitations. Cardiac-specific biomarkers, especially the natriuretic peptides, which are strongly associated with incident heart failure when screening the general population,<sup>20,21</sup> are not available in the UK Biobank. The factors included in our prediction models (Table 3) do not require any blood draw and could be easily assessed and rapidly in a primary care facility using simple and available instruments and self-reported information. However, it would have been interesting both from a mechanistic and predictive standpoint to be able to study leg bioimpedance in relation to, for example, B-type natriuretic peptide. Furthermore, incident heart failure was defined as a diagnosis of heart failure in national registries during follow-up, rather than via review of journal records including echocardiography reports. As a consequence, the etiology of the heart failure, and whether the events represented heart failure with reduced or preserved ejection fraction could not be discerned, and milder heart failure never requiring hospitalization may not have been captured, which, in addition to a possible selection of healthier individuals who chose to participate in the UK Biobank, may explain that the event rate might be slightly lower than expected. Finally, even if the association between leg bioimpedance and incident heart failure was strong also when excluding individuals with any prior cardiovascular diagnoses or self-reported cardiovascular history and risk factors (including self-reported heart failure, which presumably also would capture milder cases of heart failure), reverse

causation is always a possibility in any observational analysis. In this case, we cannot be certain whether the associations are attributable to subclinical heart failure, as impedance changes have been suggested to precede heart failure symptoms,<sup>22</sup> or if this relates to specific biological attributes associated with increased risk of future heart failure. Along the same lines, even if we have adjusted our models for known risk factors for heart failure, there is certainly risk of residual confounding, so any conclusions regarding mechanistic and causal relations between leg bioimpedance and heart failure needs to be studied using other study designs. That said, our finding that leg bioimpedance is strongly associated with incident heart failure with good discrimination and calibration in the general population remains valid regardless of the above limitations.

## Conclusions

Leg bioimpedance is inversely associated with incident heart failure in the general population. A model combining leg bioimpedance with self-reported history of myocardial infarction, age, and sex shows high discrimination that may be useful in the clinical setting, provided independent prospective validation.

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# **SUPPLEMENTAL MATERIAL**

## Data S1.

### Supplemental Methods

#### Gradient Boosting Machine (GBM)

GBM is a machine learning algorithm that is based on decision trees, to solve a classification or regression problem. In the present case, we aimed to classify individuals as either having heart failure or not. A single decision tree generally does not classify well, but the idea with GBM (and other tree-based methods such as Random Forests) is to combine a large number of different trees. The maximum allowed complexity of a decision tree is often set, i.e. how many splits or how deep a tree is allowed to grow. In the case of GBM, the maximum tree depth is usually low, which provides a so called 'weak learner'. This means that each decision tree provides a small increment in learning. In the present study, we used a maximum tree depth of 3, which is shallow (in practice, a maximum depth is usually set somewhere between 1 and 5 for GBM). If we were to allow for very deep trees, we would get a very good fit to the data at hand, but this would be too good, i.e. the model would be overfitted.

The GBM algorithm was pioneered by Friedman<sup>1</sup>, and involves three components:

1. A weak learner (as described above)
2. A loss function, in the case of classification the logarithmic loss (short: logloss) is used.
3. An additive model to add weak learners to minimize the logloss.

A gradient descent procedure is used to minimize the loss function when adding trees. The tree is parameterized, then the parameters of the tree are changed in the direction that reduces the residual loss. The output of each new tree is added to the existing sequence of trees, aiming to improve the final output of the model.

Apart from the maximum tree depth there are other so called tuning parameters. One is the number of trees to fit, in our case 50. Another important parameter is the learning rate. This constant specifies how large impact each tree should have on the final outcome. Lower rates are often associated with robust, generalizable results, whereas high learning rates increase the risk of overfitting.

The model performance in classification is reported as the ROC-AUC, where a value of 0.5 indicates randomness, and 1.0 a perfect discrimination. The classification error, or loss function, is typically logloss. To assure that a model would not overfit, data are often divided into a training set and a validation set. In case there are a large number of observations, an additional validation set is often used. In the present study, we randomly split the data into a training set (60% of the data), a validation set (20%), and a test set (20%).

Typical signs of overfitting would include that discrimination deteriorates substantially and the logloss increases when the model (which was trained in the training set) is applied to the validation set. In our study, the ROC-AUCs were similar in the training, validation, and test sets; 0.79, 0.78, and 0.81; as were the logloss values; 0.0127, 0.0149, 0.0143, i.e. there were reassuringly no signs of overfitting.

Variable importance in each tree is based on how large the reduction in classification error that is achieved through a split based on the variable at hand. This information is then aggregated across all trees to get variable importance in the full GBM model. This measure could be considered a measure of how important each feature is in improving the classification, which then can be ranked as in Figure 1 in the manuscript.

One common problem with some machine learning algorithms is class imbalance, i.e. a substantially lower number of events than non-events. Boosting algorithms, with their iterative change in weighting based on the previously incorrectly classified examples have the potential to handle this imbalance, as rare classes are more error prone, whereby the algorithm will increase the weights of these observations<sup>2</sup>.

**Bioimpedance and new onset heart failure: A longitudinal study of ~500,000 individuals from the general population**

Daniel Lindholm, MD, PhD; Eri Fukaya, MD, PhD; Nicholas J. Leeper MD; Erik Ingelsson, MD, PhD

**Table S1: Variable importance in the GBM model**

| <b>Variable</b>  | <b>Importance</b> |
|--|-------------------|
| Age heart attack diagnosed   | 34.81938553       |
| Number of treatments/medications taken                                   | 29.29693222       |
| Chronic ischaemic heart disease (ICD10: I25)                             | 26.8881588        |
| Diabetes diagnosed by doctor   | 20.52134895       |
| Impedance of leg (left)  | 13.89874554       |
| Trunk fat mass   | 12.88663197       |
| Impedance of leg (right)   | 10.73295403       |
| Haematocrit percentage   | 10.31356716       |
| Age when diabetes-related eye disease diagnosed                          | 9.755029678       |
| Leg predicted mass (left)  | 9.645722389       |
| Overall health rating  | 7.433412075       |
| Cardiomyopathy (ICD10: I42)  | 6.974932671       |
| Microalbumin in urine  | 6.832242012       |
| Mean reticulocyte volume   | 6.187887192       |
| Age diabetes diagnosed   | 5.830031872       |
| Recent medication for emphysema  | 5.435075283       |
| Other serious medical condition/disability diagnosed by doctor           | 5.217849255       |
| Atrial fibrillation and flutter (ICD10: I48)                             | 4.683951378       |
| Body mass index (BMI)  | 4.151173115       |
| Procedure: C82 Destruction of lesion of retina                           | 4.058948994       |
| Weight, manual entry   | 3.822955608       |
| Duration of walks  | 3.805681229       |
| Diseases of spleen (ICD10: D73)  | 3.678014755       |
| Bread intake   | 3.411819458       |
| Leg fat percentage (left)  | 3.347532749       |
| Waist circumference  | 3.204713821       |
| Financial situation satisfaction   | 3.100990295       |
| Impedance of whole body  | 2.982378483       |
| Whole body water mass  | 2.948852062       |
| Complications and ill-defined descriptions of heart disease (ICD10: I51) | 2.483741045       |
| Amyloidosis (ICD10: E85)   | 2.377692699       |
| Forced expiratory volume in 1-second (FEV1), Best measure                | 2.295759439       |
| Red blood cell (erythrocyte) count                                       | 2.099164009       |
| Shoulder lesions (ICD10: M75)  | 2.09590292        |
| Procedure: J01 Transplantation of liver                                  | 2.058511257       |
| White blood cell (leukocyte) count acquisition time                      | 1.764669895       |
| Whole body fat-free mass   | 1.12155664        |
| Hair/balding pattern   | 1.055838466       |

|   |             |
|---|-------------|
| Unspecified kidney failure (ICD10: N19)   | 0.960114598 |
| Frequency of unenthusiasm / disinterest in last 2 weeks                           | 0.896714687 |
| Other disorders of pancreatic internal secretion (ICD10: E16)                     | 0.894829571 |
| Reticulocyte percentage acquisition time  | 0.840911806 |
| Other symptoms and signs involving cognitive functions and awareness (ICD10: R41) | 0.806458294 |
| Age angina diagnosed  | 0.789974988 |
| Reason for skipping weight  | 0.751762748 |
| Seropositive rheumatoid arthritis (ICD10: M05)                                    | 0.718437493 |
| Forced vital capacity (FVC), Best measure   | 0.715978682 |
| Fresh fruit intake  | 0.698187232 |
| Non-follicular lymphoma (ICD10: C83)  | 0.672502875 |
| Microalbumin in urine result flag   | 0           |
| Creatinine (enzymatic) in urine   | 0           |
| Potassium in urine  | 0           |
| Potassium in urine result flag  | 0           |
| Sodium in urine   | 0           |
| Sodium in urine result flag   | 0           |
| Microalbumin in urine acquisition time  | 0           |
| Creatinine (enzymatic) in urine acquisition time                                  | 0           |
| Potassium in urine acquisition time   | 0           |
| Sodium in urine acquisition time  | 0           |
| Heel ultrasound method  | 0           |
| Weight method   | 0           |
| Spirometry method   | 0           |
| Sex   | 0           |
| Year of birth   | 0           |
| Hand grip strength (left)   | 0           |
| Hand grip strength (right)  | 0           |
| Hip circumference   | 0           |
| Standing height   | 0           |
| Month of birth  | 0           |
| UK Biobank assessment centre  | 0           |
| Heel bone ultrasound T-score, manual entry  | 0           |
| Heel bone mineral density (BMD) T-score, automated                                | 0           |
| Cancer year/age first occurred  | 0           |
| Non-cancer illness year/age first occurred  | 0           |
| Systolic blood pressure, manual reading   | 0           |
| Diastolic blood pressure, manual reading  | 0           |
| Pulse rate (during blood-pressure measurement)                                    | 0           |
| Pulse rate, automated reading   | 0           |
| Birth weight known  | 0           |
| Place of birth in UK - north co-ordinate  | 0           |
| Place of birth in UK - east co-ordinate   | 0           |
| Job code  | 0           |

|   |   |
|---|---|
| Number of self-reported cancers                               | 0 |
| Number of self-reported non-cancer illnesses                  | 0 |
| Townsend deprivation index at recruitment                     | 0 |
| Number of times snap-button pressed                           | 0 |
| Duration to first press of snap-button in each round          | 0 |
| Average total household income before tax                     | 0 |
| Age completed full time education                             | 0 |
| Number of days/week walked 10+ minutes                        | 0 |
| Number of days/week of moderate physical activity 10+ minutes | 0 |
| Duration of moderate activity                                 | 0 |
| Number of days/week of vigorous physical activity 10+ minutes | 0 |
| Duration of vigorous activity                                 | 0 |
| Frequency of stair climbing in last 4 weeks                   | 0 |
| Frequency of walking for pleasure in last 4 weeks             | 0 |
| Duration walking for pleasure                                 | 0 |
| Frequency of strenuous sports in last 4 weeks                 | 0 |
| Duration of strenuous sports                                  | 0 |
| Frequency of light DIY in last 4 weeks                        | 0 |
| Duration of light DIY   | 0 |
| Frequency of friend/family visits                             | 0 |
| Time spent watching television (TV)                           | 0 |
| Time spent using computer                                     | 0 |
| Time spent driving  | 0 |
| Drive faster than motorway speed limit                        | 0 |
| Sleep duration  | 0 |
| Getting up in morning   | 0 |
| Morning/evening person (chronotype)                           | 0 |
| Nap during day  | 0 |
| Sleeplessness / insomnia                                      | 0 |
| Snoring   | 0 |
| Daytime dozing / sleeping (narcolepsy)                        | 0 |
| Current tobacco smoking                                       | 0 |
| Past tobacco smoking  | 0 |
| Smoking/smokers in household                                  | 0 |
| Exposure to tobacco smoke at home                             | 0 |
| Exposure to tobacco smoke outside home                        | 0 |
| Cooked vegetable intake                                       | 0 |
| Salad / raw vegetable intake                                  | 0 |
| Dried fruit intake  | 0 |
| Oily fish intake  | 0 |
| Non-oily fish intake  | 0 |
| Processed meat intake   | 0 |
| Poultry intake  | 0 |
| Lamb/mutton intake  | 0 |

|   |   |
|---|---|
| Pork intake                                     | 0 |
| Cheese intake                                   | 0 |
| Milk type used                                  | 0 |
| Spread type                                     | 0 |
| Bread type                                      | 0 |
| Cereal intake                                   | 0 |
| Cereal type                                     | 0 |
| Salt added to food                              | 0 |
| Tea intake                                      | 0 |
| Coffee intake                                   | 0 |
| Coffee type                                     | 0 |
| Hot drink temperature                           | 0 |
| Water intake                                    | 0 |
| Major dietary changes in the last 5 years       | 0 |
| Variation in diet                               | 0 |
| Alcohol intake frequency.                       | 0 |
| Average weekly red wine intake                  | 0 |
| Average weekly champagne plus white wine intake | 0 |
| Average weekly beer plus cider intake           | 0 |
| Average weekly spirits intake                   | 0 |
| Average weekly fortified wine intake            | 0 |
| Alcohol usually taken with meals                | 0 |
| Alcohol intake versus 10 years previously       | 0 |
| Country of birth (UK/elsewhere)                 | 0 |
| Breastfed as a baby                             | 0 |
| Comparative body size at age 10                 | 0 |
| Comparative height size at age 10               | 0 |
| Handedness (chirality/laterality)               | 0 |
| Adopted as a child                              | 0 |
| Part of a multiple birth                        | 0 |
| Maternal smoking around birth                   | 0 |
| Father still alive                              | 0 |
| Father's age at death                           | 0 |
| Mother still alive                              | 0 |
| Mother's age                                    | 0 |
| Number of full brothers                         | 0 |
| Number of full sisters                          | 0 |
| Mood swings                                     | 0 |
| Miserableness                                   | 0 |
| Irritability                                    | 0 |
| Sensitivity / hurt feelings                     | 0 |
| Fed-up feelings                                 | 0 |
| Nervous feelings                                | 0 |
| Worrier / anxious feelings                      | 0 |



|  |   |
|--|---|
| Tense / 'highly strung'  | 0 |
| Worry too long after embarrassment                             | 0 |
| Suffer from 'nerves'   | 0 |
| Loneliness, isolation  | 0 |
| Guilty feelings  | 0 |
| Risk taking  | 0 |
| Frequency of depressed mood in last 2 weeks                    | 0 |
| Frequency of tenseness / restlessness in last 2 weeks          | 0 |
| Frequency of tiredness / lethargy in last 2 weeks              | 0 |
| Seen doctor (GP) for nerves, anxiety, tension or depression    | 0 |
| Seen a psychiatrist for nerves, anxiety, tension or depression | 0 |
| Able to confide  | 0 |
| Long-standing illness, disability or infirmity                 | 0 |
| Wears glasses or contact lenses                                | 0 |
| Age started wearing glasses or contact lenses                  | 0 |
| Other eye problems   | 0 |
| Hearing difficulty/problems                                    | 0 |
| Hearing difficulty/problems with background noise              | 0 |
| Falls in the last year   | 0 |
| Weight change compared with 1 year ago                         | 0 |
| Wheeze or whistling in the chest in last year                  | 0 |
| Chest pain or discomfort                                       | 0 |
| Relative age of first facial hair                              | 0 |
| Relative age voice broke                                       | 0 |
| Number of children fathered                                    | 0 |
| Had major operations   | 0 |
| Cancer diagnosed by doctor                                     | 0 |
| Fractured/broken bones in last 5 years                         | 0 |
| Taking other prescription medications                          | 0 |
| Frequency of heavy DIY in last 4 weeks                         | 0 |
| Duration of heavy DIY  | 0 |
| Light smokers, at least 100 smokes in lifetime                 | 0 |
| Non-butter spread type details                                 | 0 |
| Reason for reducing amount of alcohol drunk                    | 0 |
| Ever had breast cancer screening / mammogram                   | 0 |
| Years since last breast cancer screening / mammogram           | 0 |
| Ever had cervical smear test                                   | 0 |
| Years since last cervical smear test                           | 0 |
| Age when periods started (menarche)                            | 0 |
| Had menopause  | 0 |
| Number of live births  | 0 |
| Birth weight of first child                                    | 0 |
| Age at first live birth  | 0 |
| Age at last live birth   | 0 |

|   |   |
|---|---|
| Ever had stillbirth, spontaneous miscarriage or termination | 0 |
| Ever taken oral contraceptive pill                          | 0 |
| Age started oral contraceptive pill                         | 0 |
| Age when last used oral contraceptive pill                  | 0 |
| Ever used hormone-replacement therapy (HRT)                 | 0 |
| Age at hysterectomy   | 0 |
| Bilateral oophorectomy (both ovaries removed)               | 0 |
| Had other major operations                                  | 0 |
| Age started smoking in former smokers                       | 0 |
| Type of tobacco previously smoked                           | 0 |
| Number of cigarettes previously smoked daily                | 0 |
| Age stopped smoking   | 0 |
| Ever stopped smoking for 6+ months                          | 0 |
| Number of unsuccessful stop-smoking attempts                | 0 |
| Likelihood of resuming smoking                              | 0 |
| Father's age  | 0 |
| General pain for 3+ months                                  | 0 |
| Age high blood pressure diagnosed                           | 0 |
| Started insulin within one year diagnosis of diabetes       | 0 |
| Fracture resulting from simple fall                         | 0 |
| Forced vital capacity (FVC)                                 | 0 |
| Forced expiratory volume in 1-second (FEV1)                 | 0 |
| Peak expiratory flow (PEF)                                  | 0 |
| Ordering of blows   | 0 |
| Foot measured for bone density                              | 0 |
| Fractured heel  | 0 |
| Heel quantitative ultrasound index (QUI), manual entry      | 0 |
| Heel bone mineral density (BMD), manual entry               | 0 |
| Heel Broadband ultrasound attenuation (BUA), manual entry   | 0 |
| Contra-indications for spirometry                           | 0 |
| Caffeine drink within last hour                             | 0 |
| Used an inhaler for chest within last hour                  | 0 |
| Number of measurements made                                 | 0 |
| Pregnant  | 0 |
| Ankle spacing width   | 0 |
| Heel Broadband ultrasound attenuation, direct entry         | 0 |
| Heel quantitative ultrasound index (QUI), direct entry      | 0 |
| Heel bone mineral density (BMD)                             | 0 |
| Smoked cigarette or pipe within last hour                   | 0 |
| Hearing aid user  | 0 |
| Neck/shoulder pain for 3+ months                            | 0 |
| Hip pain for 3+ months                                      | 0 |
| Age started smoking in current smokers                      | 0 |
| Type of tobacco currently smoked                            | 0 |

|   |   |
|---|---|
| Number of cigarettes currently smoked daily (current cigarette smokers) | 0 |
| Time from waking to first cigarette                                     | 0 |
| Difficulty not smoking for 1 day  | 0 |
| Ever tried to stop smoking  | 0 |
| Wants to stop smoking   | 0 |
| Smoking compared to 10 years previous                                   | 0 |
| Mother's age at death   | 0 |
| Age started hormone-replacement therapy (HRT)                           | 0 |
| Age last used hormone-replacement therapy (HRT)                         | 0 |
| Back pain for 3+ months   | 0 |
| Age at menopause (last menstrual period)                                | 0 |
| Ever had hysterectomy (womb removed)                                    | 0 |
| Chest pain or discomfort walking normally                               | 0 |
| Chest pain due to walking ceases when standing still                    | 0 |
| Frequency of other exercises in last 4 weeks                            | 0 |
| Duration of other exercises   | 0 |
| Year immigrated to UK (United Kingdom)                                  | 0 |
| Age when last ate meat  | 0 |
| Time since last menstrual period  | 0 |
| Length of menstrual cycle   | 0 |
| Menstruating today  | 0 |
| Former alcohol drinker  | 0 |
| Stomach/abdominal pain for 3+ months                                    | 0 |
| Chest pain or discomfort when walking uphill or hurrying                | 0 |
| Age hay fever, rhinitis or eczema diagnosed                             | 0 |
| Knee pain for 3+ months   | 0 |
| Age asthma diagnosed  | 0 |
| Headaches for 3+ months   | 0 |
| Number of stillbirths   | 0 |
| Number of spontaneous miscarriages                                      | 0 |
| Number of pregnancy terminations  | 0 |
| Reason former drinker stopped drinking alcohol                          | 0 |
| Age of primiparous women at birth of child                              | 0 |
| Age at bilateral oophorectomy (both ovaries removed)                    | 0 |
| Adopted father still alive  | 0 |
| Adopted mother still alive  | 0 |
| Number of adopted brothers  | 0 |
| Number of adopted sisters   | 0 |
| Age emphysema/chronic bronchitis diagnosed                              | 0 |
| Age deep-vein thrombosis (DVT, blood clot in leg) diagnosed             | 0 |
| Age pulmonary embolism (blood clot in lung) diagnosed                   | 0 |
| Gestational diabetes only   | 0 |
| Age stroke diagnosed  | 0 |
| Facial pains for 3+ months  | 0 |

|   |   |
|---|---|
| Diastolic blood pressure, automated reading                       | 0 |
| Systolic blood pressure, automated reading                        | 0 |
| Heel ultrasound method (left)                                     | 0 |
| Fractured heel (left)   | 0 |
| Heel ultrasound method (right)                                    | 0 |
| Fractured heel (right)  | 0 |
| Ankle spacing width (left)  | 0 |
| Heel broadband ultrasound attenuation (left)                      | 0 |
| Heel quantitative ultrasound index (QUI), direct entry (left)     | 0 |
| Heel bone mineral density (BMD) (left)                            | 0 |
| Heel bone mineral density (BMD) T-score, automated (left)         | 0 |
| Ankle spacing width (right)                                       | 0 |
| Heel broadband ultrasound attenuation (right)                     | 0 |
| Heel quantitative ultrasound index (QUI), direct entry (right)    | 0 |
| Heel bone mineral density (BMD) (right)                           | 0 |
| Heel bone mineral density (BMD) T-score, automated (right)        | 0 |
| Heel bone mineral density (BMD) T-score, manual entry (left)      | 0 |
| Heel quantitative ultrasound index (QUI), manual entry (left)     | 0 |
| Heel bone mineral density (BMD), manual entry (left)              | 0 |
| Heel broadband ultrasound attenuation (BUA), manual entry (left)  | 0 |
| Heel bone mineral density (BMD) T-score, manual entry (right)     | 0 |
| Heel quantitative ultrasound index (QUI), manual entry (right)    | 0 |
| Heel bone mineral density (BMD), manual entry (right)             | 0 |
| Heel broadband ultrasound attenuation (BUA), manual entry (right) | 0 |
| Stiffness method  | 0 |
| Pulse rate  | 0 |
| Pulse wave reflection index                                       | 0 |
| Pulse wave peak to peak time                                      | 0 |
| Pulse wave velocity (manual entry)                                | 0 |
| Number entered by participant                                     | 0 |
| Digits entered correctly  | 0 |
| Completion status (left)  | 0 |
| Number of triplets attempted (left)                               | 0 |
| Volume level set by participant (left)                            | 0 |
| Completion status (right)   | 0 |
| Number of triplets attempted (right)                              | 0 |
| Volume level set by participant (right)                           | 0 |
| Completion status of numeric memory test                          | 0 |
| Maximum digits remembered correctly                               | 0 |
| Test completion status  | 0 |
| Time to answer  | 0 |
| Duration screen displayed   | 0 |
| Number of attempts  | 0 |
| PM: initial answer  | 0 |

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| PM: final answer                                   | 0 |
| Final attempt correct                              | 0 |
| History of attempts                                | 0 |
| Average monthly red wine intake                    | 0 |
| Average monthly champagne plus white wine intake   | 0 |
| Average monthly beer plus cider intake             | 0 |
| Average monthly spirits intake                     | 0 |
| Average monthly fortified wine intake              | 0 |
| Average monthly intake of other alcoholic drinks   | 0 |
| Non-accidental death in close genetic family       | 0 |
| Happiness  | 0 |
| Work/job satisfaction                              | 0 |
| Health satisfaction                                | 0 |
| Family relationship satisfaction                   | 0 |
| Friendships satisfaction                           | 0 |
| Ever depressed for a whole week                    | 0 |
| Longest period of depression                       | 0 |
| Number of depression episodes                      | 0 |
| Ever unenthusiastic/disinterested for a whole week | 0 |
| Ever manic/hyper for 2 days                        | 0 |
| Ever highly irritable/argumentative for 2 days     | 0 |
| Age glaucoma diagnosed                             | 0 |
| Age cataract diagnosed                             | 0 |
| Shortness of breath walking on level ground        | 0 |
| Leg pain on walking                                | 0 |
| Cochlear implant                                   | 0 |
| Tinnitus   | 0 |
| Tinnitus severity/nuisance                         | 0 |
| Noisy workplace                                    | 0 |
| Loud music exposure frequency                      | 0 |
| Hearing test done                                  | 0 |
| Attempted fluid intelligence (FI) test.            | 0 |
| FI1 : numeric addition test                        | 0 |
| FI2 : identify largest number                      | 0 |
| FI3 : word interpolation                           | 0 |
| FI4 : positional arithmetic                        | 0 |
| FI5 : family relationship calculation              | 0 |
| FI6 : conditional arithmetic                       | 0 |
| FI7 : synonym                                      | 0 |
| FI8 : chained arithmetic                           | 0 |
| Number of older siblings                           | 0 |
| Spherical power (right)                            | 0 |
| Spherical power (left)                             | 0 |
| Cylindrical power (left)                           | 0 |

|   |   |
|---|---|
| Cylindrical power (right)                 | 0 |
| Astigmatism angle (right)                 | 0 |
| Astigmatism angle (left)                  | 0 |
| Refractometry result unreliable (left)    | 0 |
| Refractometry result unreliable (right)   | 0 |
| 3mm weak meridian (left)                  | 0 |
| 6mm weak meridian (left)                  | 0 |
| 6mm weak meridian (right)                 | 0 |
| 3mm weak meridian (right)                 | 0 |
| 3mm weak meridian angle (right)           | 0 |
| 6mm weak meridian angle (right)           | 0 |
| 6mm weak meridian angle (left)            | 0 |
| 3mm weak meridian angle (left)            | 0 |
| 3mm strong meridian angle (left)          | 0 |
| 6mm strong meridian angle (left)          | 0 |
| 6mm strong meridian angle (right)         | 0 |
| 3mm strong meridian angle (right)         | 0 |
| 3mm asymmetry angle (right)               | 0 |
| 6mm asymmetry angle (right)               | 0 |
| 6mm asymmetry angle (left)                | 0 |
| 3mm asymmetry angle (left)                | 0 |
| 3mm cylindrical power angle (left)        | 0 |
| 6mm cylindrical power angle (left)        | 0 |
| 6mm cylindrical power angle (right)       | 0 |
| 3mm cylindrical power angle (right)       | 0 |
| 3mm cylindrical power (right)             | 0 |
| 6mm cylindrical power (right)             | 0 |
| 6mm cylindrical power (left)              | 0 |
| 3mm cylindrical power (left)              | 0 |
| 3mm strong meridian (right)               | 0 |
| 6mm strong meridian (right)               | 0 |
| 6mm strong meridian (left)                | 0 |
| 3mm strong meridian (left)                | 0 |
| 3mm keratometry result unreliable (left)  | 0 |
| 6mm keratometry result unreliable (left)  | 0 |
| 6mm keratometry result unreliable (right) | 0 |
| 3mm keratometry result unreliable (right) | 0 |
| 3mm asymmetry index unreliable (left)     | 0 |
| 6mm asymmetry index unreliable (left)     | 0 |
| 6mm asymmetry index unreliable (right)    | 0 |
| 3mm asymmetry index unreliable (right)    | 0 |
| 3mm regularity index unreliable (right)   | 0 |
| 6mm regularity index unreliable (right)   | 0 |
| 6mm regularity index unreliable (left)    | 0 |

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|--|---|
| 3mm regularity index unreliable (left)                       | 0 |
| 3mm regularity index for irregular astigmatism level (left)  | 0 |
| 3mm asymmetry index for irregular astigmatism level (right)  | 0 |
| 3mm asymmetry index for irregular astigmatism level (left)   | 0 |
| 3mm asymmetry index (left)                                   | 0 |
| 6mm asymmetry index (left)                                   | 0 |
| 6mm asymmetry index (right)                                  | 0 |
| 3mm asymmetry index (right)                                  | 0 |
| 3mm regularity index (right)                                 | 0 |
| 6mm regularity index (right)                                 | 0 |
| 6mm regularity index (left)                                  | 0 |
| 3mm regularity index (left)                                  | 0 |
| 3mm regularity index for irregular astigmatism level (right) | 0 |
| Ever had eye surgery   | 0 |
| Both eyes present  | 0 |
| Current eye infection  | 0 |
| Visual acuity measured (right)                               | 0 |
| Visual acuity measured (left)                                | 0 |
| Auto-refraction method (right)                               | 0 |
| Auto-refraction method (left)                                | 0 |
| Intra-ocular pressure (IOP) method (right)                   | 0 |
| Intra-ocular pressure (IOP) method (left)                    | 0 |
| logMAR, final (right)  | 0 |
| logMAR, final (left)   | 0 |
| Index of best refractometry result (right)                   | 0 |
| 3mm index of best keratometry results (right)                | 0 |
| 6mm index of best keratometry results (right)                | 0 |
| Intra-ocular pressure, corneal-compensated (right)           | 0 |
| Intra-ocular pressure, Goldmann-correlated (right)           | 0 |
| Corneal hysteresis (right)                                   | 0 |
| Corneal resistance factor (right)                            | 0 |
| Intra-ocular pressure, corneal-compensated (left)            | 0 |
| Intra-ocular pressure, Goldmann-correlated (left)            | 0 |
| Corneal hysteresis (left)                                    | 0 |
| Corneal resistance factor (left)                             | 0 |
| Vertex distance (left)                                       | 0 |
| Index of best refractometry result (left)                    | 0 |
| 3mm index of best keratometry results (left)                 | 0 |
| 6mm index of best keratometry results (left)                 | 0 |
| Ever had cataract surgery                                    | 0 |
| Ever had refractive laser eye surgery                        | 0 |
| Ever had surgery for glaucoma or high eye pressure           | 0 |
| Ever had laser treatment for glaucoma or high eye pressure   | 0 |
| Ever had corneal graft surgery                               | 0 |

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|---|---|
| Average weekly intake of other alcoholic drinks                       | 0 |
| Longest period of unenthusiasm / disinterest                          | 0 |
| Number of unenthusiastic/disinterested episodes                       | 0 |
| Which eye(s) affected by amblyopia (lazy eye)                         | 0 |
| Which eye(s) affected by injury or trauma resulting in loss of vision | 0 |
| Age when loss of vision due to injury or trauma diagnosed             | 0 |
| Which eye(s) are affected by cataract                                 | 0 |
| Leg pain when standing still or sitting                               | 0 |
| Leg pain in calf/calves   | 0 |
| Leg pain when walking uphill or hurrying                              | 0 |
| Leg pain when walking normally  | 0 |
| Leg pain when walking ever disappears while walking                   | 0 |
| Leg pain on walking : action taken                                    | 0 |
| Leg pain on walking : effect of standing still                        | 0 |
| Surgery on leg arteries (other than for varicose veins)               | 0 |
| Surgery/amputation of toe or leg                                      | 0 |
| FI9 : concept interpolation   | 0 |
| Which eye(s) affected by presbyopia                                   | 0 |
| Length of longest manic/irritable episode                             | 0 |
| Severity of manic/irritable episodes                                  | 0 |
| FI10 : arithmetic sequence recognition                                | 0 |
| FI11 : antonym  | 0 |
| FI12 : square sequence recognition                                    | 0 |
| Which eye(s) affected by hypermetropia (long sight)                   | 0 |
| Which eye(s) affected by myopia (short sight)                         | 0 |
| Which eye(s) affected by astigmatism                                  | 0 |
| FI13 : subset inclusion logic   | 0 |
| Which eye(s) affected by other eye condition                          | 0 |
| Which eye(s) affected by diabetes-related eye disease                 | 0 |
| Which eye(s) affected by macular degeneration                         | 0 |
| Age macular degeneration diagnosed                                    | 0 |
| Which eye(s) affected by other serious eye condition                  | 0 |
| Age other serious eye condition diagnosed                             | 0 |
| Previously smoked cigarettes on most/all days                         | 0 |
| ECG, heart rate   | 0 |
| ECG, phase time   | 0 |
| ECG, trend phase name   | 0 |
| ECG, stage name   | 0 |
| ECG, phase name   | 0 |
| ECG, phase duration   | 0 |
| ECG, number of stages in a phase                                      | 0 |
| Doctor restricts physical activity due to heart condition             | 0 |
| Chest pain felt during physical activity                              | 0 |
| Chest pain felt outside physical activity                             | 0 |



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|---|---|
| Able to walk or cycle unaided for 10 minutes  | 0 |
| ECG/bike method for fitness test  | 0 |
| Completion status of test   | 0 |
| Program category  | 0 |
| Maximum workload during fitness test  | 0 |
| Maximum heart rate during fitness test  | 0 |
| Target heart rate achieved  | 0 |
| Number of trend entries   | 0 |
| Duration of fitness test  | 0 |
| OCT measured (right)  | 0 |
| OCT measured (left)   | 0 |
| Glasses worn/required (right)   | 0 |
| Glasses worn/required (left)  | 0 |
| Which eye(s) affected by glaucoma   | 0 |
| Qualifications  | 0 |
| Never eat eggs, dairy, wheat, sugar   | 0 |
| Illness, injury, bereavement, stress in last 2 years  | 0 |
| Reason for glasses/contact lenses   | 0 |
| Eye problems/disorders  | 0 |
| Mouth/teeth dental problems   | 0 |
| Vascular/heart problems diagnosed by doctor   | 0 |
| Fractured bone site(s)  | 0 |
| Blood clot, DVT, bronchitis, emphysema, asthma, rhinitis, eczema, allergy diagnosed by doctor | 0 |
| Medication for cholesterol, blood pressure, diabetes, or take exogenous hormones              | 0 |
| Medication for pain relief, constipation, heartburn   | 0 |
| Vitamin and mineral supplements   | 0 |
| Manic/hyper symptoms  | 0 |
| Why stopped smoking   | 0 |
| Why reduced smoking   | 0 |
| Pain type(s) experienced in last month  | 0 |
| Leisure/social activities   | 0 |
| Types of transport used (excluding work)  | 0 |
| Types of physical activity in last 4 weeks  | 0 |
| Medication for cholesterol, blood pressure or diabetes  | 0 |
| Mineral and other dietary supplements   | 0 |
| Number of cigarettes previously smoked daily (current cigar/pipe smokers)                     | 0 |
| Age stopped smoking cigarettes (current cigar/pipe or previous cigarette smoker)              | 0 |
| Which eye(s) affected by strabismus (squint)  | 0 |
| Medication for pain relief, constipation, heartburn (pilot)                                   | 0 |
| Medication for smoking cessation, constipation, heartburn, allergies (pilot)                  | 0 |
| Mouth/teeth dental problems (pilot)   | 0 |
| Vitamin and mineral supplements (pilot)   | 0 |
| Why stopped smoking (pilot)   | 0 |
| Type of progestan-only oral contraceptive used (pilot)  | 0 |

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|---|---|
| Number of times snap-button pressed (pilot)                             | 0 |
| Duration to first press of snap-button in each round (pilot)            | 0 |
| Words answer array (pilot)  | 0 |
| Word count (pilot)  | 0 |
| Number of words beginning with 'S' (pilot)                              | 0 |
| Spirometry method (pilot)   | 0 |
| Illness, injury, bereavement, stress in last 2 years (pilot)            | 0 |
| Qualifications (pilot)  | 0 |
| Vitamin supplements (pilot)   | 0 |
| Frequency of friend/family visits (pilot)                               | 0 |
| Spread type (pilot)   | 0 |
| Bread type/intake (pilot)   | 0 |
| Hearing difficulty/problems (pilot)                                     | 0 |
| Reason for reducing amount of alcohol drunk (pilot)                     | 0 |
| Ever stopped smoking for 6+ months (pilot)                              | 0 |
| Gestational diabetes only (pilot)                                       | 0 |
| Reason former drinker stopped drinking alcohol (pilot)                  | 0 |
| Other dietary supplements (pilot)                                       | 0 |
| Never eat eggs, dairy, wheat, sugar (pilot)                             | 0 |
| Average total household income before tax (pilot)                       | 0 |
| Light smokers, at least 100 smokes in lifetime (pilot)                  | 0 |
| Variation in diet (pilot)   | 0 |
| Duration of walks (pilot)   | 0 |
| Duration of moderate physical activity (pilot)                          | 0 |
| Duration of vigorous physical activity (pilot)                          | 0 |
| Cancer code, self-reported  | 0 |
| Non-cancer illness code, self-reported                                  | 0 |
| Treatment/medication code   | 0 |
| Interpolated Year when cancer first diagnosed                           | 0 |
| Interpolated Age of participant when cancer first diagnosed             | 0 |
| Interpolated Year when non-cancer illness first diagnosed               | 0 |
| Interpolated Age of participant when non-cancer illness first diagnosed | 0 |
| Method of recording time when cancer first diagnosed                    | 0 |
| Method of recording time when non-cancer illness first diagnosed        | 0 |
| Sitting height  | 0 |
| Fluid intelligence score  | 0 |
| Prospective memory result   | 0 |
| Speech-reception-threshold (SRT) estimate (left)                        | 0 |
| Speech-reception-threshold (SRT) estimate (right)                       | 0 |
| Birth weight  | 0 |
| Mean time to correctly identify matches                                 | 0 |
| Job code - deduced  | 0 |
| Reason for skipping spirometry  | 0 |
| Reason for skipping grip strength (right)                               | 0 |

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| Reason for skipping grip strength (left)                           | 0 |
| Reason for skipping waist  | 0 |
| Reason for skipping hip measurement                                | 0 |
| Reason for skipping standing height                                | 0 |
| Reason for skipping sitting height                                 | 0 |
| Reason for skipping arterial stiffness                             | 0 |
| Reason for skipping refractometry (left)                           | 0 |
| Reason for skipping IOP (right)                                    | 0 |
| Reason for skipping IOP (left)                                     | 0 |
| Reason for skipping refractometry (right)                          | 0 |
| Reason for skipping visual acuity (right)                          | 0 |
| Reason for skipping visual acuity (left)                           | 0 |
| Reason for skipping ECG  | 0 |
| Reason ECG not completed   | 0 |
| Reason at-rest ECG performed without bicycle                       | 0 |
| Reason for skipping OCT (right)                                    | 0 |
| Reason for skipping OCT (left)                                     | 0 |
| Illnesses of father  | 0 |
| Illnesses of mother  | 0 |
| Illnesses of siblings  | 0 |
| Illnesses of adopted father  | 0 |
| Illnesses of adopted mother  | 0 |
| Illnesses of adopted siblings                                      | 0 |
| Country of Birth (non-UK origin)                                   | 0 |
| Smoking status   | 0 |
| Alcohol drinker status   | 0 |
| Cascot confidence score  | 0 |
| Bipolar disorder status  | 0 |
| Bipolar and major depression status                                | 0 |
| Neuroticism score  | 0 |
| Number of fluid intelligence questions attempted within time limit | 0 |
| Number of correct matches in round                                 | 0 |
| Number of incorrect matches in round                               | 0 |
| Time to complete round   | 0 |
| Reproducibility of spirometry measurement using ERS/ATS criteria   | 0 |
| Forced expiratory volume in 1-second (FEV1), predicted             | 0 |
| Forced expiratory volume in 1-second (FEV1), predicted percentage  | 0 |
| Duration to complete numeric path (trail #1)                       | 0 |
| Duration to complete alphanumeric path (trail #2)                  | 0 |
| Number of symbol digit matches made correctly                      | 0 |
| Ever smoked  | 0 |
| FI1 : numeric addition test  | 0 |
| FI2 : identify largest number                                      | 0 |
| FI3 : word interpolation   | 0 |

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| FI4 : positional arithmetic                                   | 0 |
| FI5 : family relationship calculation                         | 0 |
| FI6 : conditional arithmetic                                  | 0 |
| FI7 : synonym   | 0 |
| FI8 : chained arithmetic                                      | 0 |
| FI9 : concept interpolation                                   | 0 |
| FI10 : arithmetic sequence recognition                        | 0 |
| FI11 : antonym  | 0 |
| FI12 : square sequence recognition                            | 0 |
| FI13 : subset inclusion logic                                 | 0 |
| Fluid intelligence score                                      | 0 |
| FI14 : alphanumeric substitution                              | 0 |
| Number of symbol digit matches attempted                      | 0 |
| Code array presented  | 0 |
| Value entered   | 0 |
| Duration to entering value                                    | 0 |
| Maximum digits remembered correctly                           | 0 |
| Fluid intelligence completion status                          | 0 |
| Pairs matching completion status                              | 0 |
| Symbol digit completion status                                | 0 |
| Trail making completion status                                | 0 |
| Total errors traversing numeric path (trail #1)               | 0 |
| Total errors traversing alphanumeric path (trail #2)          | 0 |
| Ethnic background   | 0 |
| Weight  | 0 |
| Age when attended assessment centre                           | 0 |
| Pulse wave Arterial Stiffness index                           | 0 |
| Age at recruitment  | 0 |
| Doctor diagnosed hayfever or allergic rhinitis                | 0 |
| Doctor diagnosed asthma                                       | 0 |
| Doctor diagnosed emphysema                                    | 0 |
| Doctor diagnosed chronic bronchitis                           | 0 |
| Doctor diagnosed COPD (chronic obstructive pulmonary disease) | 0 |
| Doctor diagnosed cystic fibrosis                              | 0 |
| Doctor diagnosed alpha-1 antitrypsin deficiency               | 0 |
| Doctor diagnosed sarcoidosis                                  | 0 |
| Doctor diagnosed bronchiectasis                               | 0 |
| Doctor diagnosed idiopathic pulmonary fibrosis                | 0 |
| Doctor diagnosed fibrosing alveolitis/unspecified alveolitis  | 0 |
| Doctor diagnosed tuberculosis                                 | 0 |
| Doctor diagnosed silicosis                                    | 0 |
| Doctor diagnosed asbestosis                                   | 0 |
| Doctor diagnosed lung cancer (not mesothelioma)               | 0 |
| Doctor diagnosed mesothelioma of the lung                     | 0 |

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| Age hayfever or allergic rhinitis diagnosed by doctor                | 0 |
| Age asthma diagnosed by doctor                                       | 0 |
| Age emphysema diagnosed by doctor                                    | 0 |
| Age chronic bronchitis diagnosed by doctor                           | 0 |
| Age COPD (Chronic Obstructive Pulmonary Disease) diagnosed by doctor | 0 |
| Age cystic fibrosis diagnosed by doctor                              | 0 |
| Age alpha-1 antitrypsin deficiency diagnosed by doctor               | 0 |
| Age sarcoidosis diagnosed by doctor                                  | 0 |
| Age bronchiectasis diagnosed by doctor                               | 0 |
| Age idiopathic pulmonary fibrosis diagnosed by doctor                | 0 |
| Age fibrosing alveolitis/unspecified alveolitis diagnosed by doctor  | 0 |
| Age tuberculosis diagnosed by doctor                                 | 0 |
| Age silicosis diagnosed by doctor                                    | 0 |
| Age asbestosis diagnosed by doctor                                   | 0 |
| Age lung cancer (not mesothelioma) diagnosed by doctor               | 0 |
| Age mesothelioma of the lung diagnosed by doctor                     | 0 |
| Recent medication for hayfever or allergic rhinitis                  | 0 |
| Recent medication for asthma   | 0 |
| Recent medication for chronic bronchitis                             | 0 |
| Recent medication for COPD (Chronic Obstructive Pulmonary Disease)   | 0 |
| Recent medication for cystic fibrosis                                | 0 |
| Recent medication for alpha-1 antitrypsin deficiency                 | 0 |
| Recent medication for sarcoidosis                                    | 0 |
| Recent medication for bronchiectasis                                 | 0 |
| Recent medication for idiopathic pulmonary fibrosis                  | 0 |
| Recent medication for fibrosing alveolitis/unspecified alveolitis    | 0 |
| Recent medication for tuberculosis                                   | 0 |
| Recent medication for asbestosis                                     | 0 |
| Recent medication for lung cancer (not mesothelioma)                 | 0 |
| Recent medication for mesothelioma of the lung                       | 0 |
| Cough on most days   | 0 |
| Years of cough on most days  | 0 |
| Bring up phlegm/sputum/mucus on most days                            | 0 |
| Years of bringing up phlegm/sputum/mucus on most days                | 0 |
| Tobacco smoking  | 0 |
| Age of stopping smoking  | 0 |
| Amount of tobacco currently smoked                                   | 0 |
| Minimum carotid IMT (intima-medial thickness) at 120 degrees         | 0 |
| Mean carotid IMT (intima-medial thickness) at 120 degrees            | 0 |
| Maximum carotid IMT (intima-medial thickness) at 120 degrees         | 0 |
| Minimum carotid IMT (intima-medial thickness) at 150 degrees         | 0 |
| Mean carotid IMT (intima-medial thickness) at 150 degrees            | 0 |
| Maximum carotid IMT (intima-medial thickness) at 150 degrees         | 0 |
| Minimum carotid IMT (intima-medial thickness) at 210 degrees         | 0 |

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| Mean carotid IMT (intima-medial thickness) at 210 degrees    | 0 |
| Maximum carotid IMT (intima-medial thickness) at 210 degrees | 0 |
| Minimum carotid IMT (intima-medial thickness) at 240 degrees | 0 |
| Mean carotid IMT (intima-medial thickness) at 240 degrees    | 0 |
| Maximum carotid IMT (intima-medial thickness) at 240 degrees | 0 |
| Quality control indicator for IMT at 120 degrees             | 0 |
| Quality control indicator for IMT at 150 degrees             | 0 |
| Quality control indicator for IMT at 210 degrees             | 0 |
| Quality control indicator for IMT at 240 degrees             | 0 |
| Weight   | 0 |
| Body fat percentage  | 0 |
| Whole body fat mass  | 0 |
| Body mass index (BMI)  | 0 |
| Basal metabolic rate   | 0 |
| Impedance of arm (right)                                     | 0 |
| Impedance of arm (left)                                      | 0 |
| Leg fat percentage (right)                                   | 0 |
| Leg fat mass (right)   | 0 |
| Leg fat-free mass (right)                                    | 0 |
| Leg predicted mass (right)                                   | 0 |
| Leg fat mass (left)  | 0 |
| Leg fat-free mass (left)                                     | 0 |
| Arm fat percentage (right)                                   | 0 |
| Arm fat mass (right)   | 0 |
| Arm fat-free mass (right)                                    | 0 |
| Arm predicted mass (right)                                   | 0 |
| Arm fat percentage (left)                                    | 0 |
| Arm fat mass (left)  | 0 |
| Arm fat-free mass (left)                                     | 0 |
| Arm predicted mass (left)                                    | 0 |
| Trunk fat percentage   | 0 |
| Trunk fat-free mass  | 0 |
| Trunk predicted mass   | 0 |
| White blood cell (leukocyte) count                           | 0 |
| White blood cell (leukocyte) count device ID                 | 0 |
| White blood cell (leukocyte) count acquisition route         | 0 |
| Red blood cell (erythrocyte) count device ID                 | 0 |
| Red blood cell (erythrocyte) count acquisition route         | 0 |
| Haemoglobin concentration                                    | 0 |
| Haemoglobin concentration device ID                          | 0 |
| Haemoglobin concentration acquisition route                  | 0 |
| Haematocrit percentage device ID                             | 0 |
| Haematocrit percentage acquisition route                     | 0 |
| Mean corpuscular volume                                      | 0 |

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| Mean corpuscular volume device ID                                 | 0 |
| Mean corpuscular volume acquisition route                         | 0 |
| Mean corpuscular haemoglobin                                      | 0 |
| Mean corpuscular haemoglobin device ID                            | 0 |
| Mean corpuscular haemoglobin acquisition route                    | 0 |
| Mean corpuscular haemoglobin concentration                        | 0 |
| Mean corpuscular haemoglobin concentration device ID              | 0 |
| Mean corpuscular haemoglobin concentration acquisition route      | 0 |
| Red blood cell (erythrocyte) distribution width                   | 0 |
| Red blood cell (erythrocyte) distribution width device ID         | 0 |
| Red blood cell (erythrocyte) distribution width acquisition route | 0 |
| Platelet count  | 0 |
| Platelet count device ID  | 0 |
| Platelet count acquisition route                                  | 0 |
| Platelet crit   | 0 |
| Platelet crit device ID   | 0 |
| Platelet crit acquisition route                                   | 0 |
| Mean platelet (thrombocyte) volume                                | 0 |
| Mean platelet (thrombocyte) volume device ID                      | 0 |
| Mean platelet (thrombocyte) volume acquisition route              | 0 |
| Platelet distribution width                                       | 0 |
| Platelet distribution width device ID                             | 0 |
| Platelet distribution width acquisition route                     | 0 |
| Lymphocyte count  | 0 |
| Lymphocyte count device ID  | 0 |
| Lymphocyte count acquisition route                                | 0 |
| Monocyte count  | 0 |
| Monocyte count device ID  | 0 |
| Monocyte count acquisition route                                  | 0 |
| Neutrophil count  | 0 |
| Neutrophil count device ID  | 0 |
| Neutrophil count acquisition route                                | 0 |
| Eosinophill count   | 0 |
| Eosinophill count device ID                                       | 0 |
| Eosinophill count acquisition route                               | 0 |
| Basophill count   | 0 |
| Basophill count device ID   | 0 |
| Basophill count acquisition route                                 | 0 |
| Nucleated red blood cell count                                    | 0 |
| Nucleated red blood cell count device ID                          | 0 |
| Nucleated red blood cell count acquisition route                  | 0 |
| Lymphocyte percentage   | 0 |
| Lymphocyte percentage device ID                                   | 0 |
| Lymphocyte percentage acquisition route                           | 0 |

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| Monocyte percentage  | 0 |
| Monocyte percentage device ID                                | 0 |
| Monocyte percentage acquisition route                        | 0 |
| Neutrophill percentage                                       | 0 |
| Neutrophill percentage device ID                             | 0 |
| Neutrophill percentage acquisition route                     | 0 |
| Eosinophill percentage                                       | 0 |
| Eosinophill percentage device ID                             | 0 |
| Eosinophill percentage acquisition route                     | 0 |
| Basophill percentage   | 0 |
| Basophill percentage device ID                               | 0 |
| Basophill percentage acquisition route                       | 0 |
| Nucleated red blood cell percentage                          | 0 |
| Nucleated red blood cell percentage device ID                | 0 |
| Nucleated red blood cell percentage acquisition route        | 0 |
| Reticulocyte percentage                                      | 0 |
| Reticulocyte percentage device ID                            | 0 |
| Reticulocyte percentage acquisition route                    | 0 |
| Reticulocyte count   | 0 |
| Reticulocyte count device ID                                 | 0 |
| Reticulocyte count acquisition route                         | 0 |
| Mean reticulocyte volume device ID                           | 0 |
| Mean reticulocyte volume acquisition route                   | 0 |
| Mean sphered cell volume                                     | 0 |
| Mean sphered cell volume device ID                           | 0 |
| Mean sphered cell volume acquisition route                   | 0 |
| Immature reticulocyte fraction                               | 0 |
| Immature reticulocyte fraction device ID                     | 0 |
| Immature reticulocyte fraction acquisition route             | 0 |
| High light scatter reticulocyte percentage                   | 0 |
| High light scatter reticulocyte percentage device ID         | 0 |
| High light scatter reticulocyte percentage acquisition route | 0 |
| High light scatter reticulocyte count                        | 0 |
| High light scatter reticulocyte count device ID              | 0 |
| High light scatter reticulocyte count acquisition route      | 0 |
| Acceleration data - cwa format                               | 0 |
| Data problem indicator                                       | 0 |
| Overall acceleration average                                 | 0 |
| Standard deviation of acceleration                           | 0 |
| Data quality, good wear time                                 | 0 |
| Data quality, good calibration                               | 0 |
| Data quality, calibrated on own data                         | 0 |
| Daylight savings crossover                                   | 0 |
| Monday average acceleration                                  | 0 |



|                                    |   |
|------------------------------------|---|
| Tuesday average acceleration       | 0 |
| Wednesday average acceleration     | 0 |
| Thursday average acceleration      | 0 |
| Friday average acceleration        | 0 |
| Saturday average acceleration      | 0 |
| Sunday average acceleration        | 0 |
| First weekday of wear              | 0 |
| Average acceleration 00:00 - 00:59 | 0 |
| Average acceleration 01:00 - 01:59 | 0 |
| Average acceleration 02:00 - 02:59 | 0 |
| Average acceleration 03:00 - 03:59 | 0 |
| Average acceleration 04:00 - 04:59 | 0 |
| Average acceleration 05:00 - 05:59 | 0 |
| Average acceleration 06:00 - 06:59 | 0 |
| Average acceleration 07:00 - 07:59 | 0 |
| Average acceleration 08:00 - 08:59 | 0 |
| Average acceleration 09:00 - 09:59 | 0 |
| Average acceleration 10:00 - 10:59 | 0 |
| Average acceleration 11:00 - 11:59 | 0 |
| Average acceleration 12:00 - 12:59 | 0 |
| Average acceleration 13:00 - 13:59 | 0 |
| Average acceleration 14:00 - 14:59 | 0 |
| Average acceleration 15:00 - 15:59 | 0 |
| Average acceleration 16:00 - 16:59 | 0 |
| Average acceleration 17:00 - 17:59 | 0 |
| Average acceleration 18:00 - 18:59 | 0 |
| Average acceleration 19:00 - 19:59 | 0 |
| Average acceleration 20:00 - 20:59 | 0 |
| Average acceleration 21:00 - 21:59 | 0 |
| Average acceleration 22:00 - 22:59 | 0 |
| Average acceleration 23:00 - 23:59 | 0 |
| Wear duration overall              | 0 |
| Non wear duration overall          | 0 |
| Wear duration during Monday        | 0 |
| Wear duration during Tuesday       | 0 |
| Wear duration during Wednesday     | 0 |
| Wear duration during Thursday      | 0 |
| Wear duration during Friday        | 0 |
| Wear duration during Saturday      | 0 |
| Wear duration during Sunday        | 0 |
| Wear duration during 00:00 - 00:59 | 0 |
| Wear duration during 01:00 - 01:59 | 0 |
| Wear duration during 02:00 - 02:59 | 0 |
| Wear duration during 03:00 - 03:59 | 0 |

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| Wear duration during 04:00 - 04:59                                       | 0 |
| Wear duration during 05:00 - 05:59                                       | 0 |
| Wear duration during 06:00 - 06:59                                       | 0 |
| Wear duration during 07:00 - 07:59                                       | 0 |
| Wear duration during 08:00 - 08:59                                       | 0 |
| Wear duration during 09:00 - 09:59                                       | 0 |
| Wear duration during 10:00 - 10:59                                       | 0 |
| Wear duration during 11:00 - 11:59                                       | 0 |
| Wear duration during 12:00 - 12:59                                       | 0 |
| Wear duration during 13:00 - 13:59                                       | 0 |
| Wear duration during 14:00 - 14:59                                       | 0 |
| Wear duration during 15:00 - 15:59                                       | 0 |
| Wear duration during 16:00 - 16:59                                       | 0 |
| Wear duration during 17:00 - 17:59                                       | 0 |
| Wear duration during 18:00 - 18:59                                       | 0 |
| Wear duration during 19:00 - 19:59                                       | 0 |
| Wear duration during 20:00 - 20:59                                       | 0 |
| Wear duration during 21:00 - 21:59                                       | 0 |
| Wear duration during 22:00 - 22:59                                       | 0 |
| Wear duration during 23:00 - 23:59                                       | 0 |
| Unique hours of wear in a 24 hour cycle (scattered over multiple days)   | 0 |
| Unique minutes of wear in a 24 hour cycle (scattered over multiple days) | 0 |
| Non wear episodes over 1 hour duration                                   | 0 |
| No-wear time bias adjusted average acceleration                          | 0 |
| No-wear time bias adjusted acceleration standard deviation               | 0 |
| No-wear time bias adjusted acceleration median                           | 0 |
| No-wear time bias adjusted acceleration minimum                          | 0 |
| No-wear time bias adjusted acceleration maximum                          | 0 |
| Fraction acceleration <= 1 milli-gravities                               | 0 |
| Fraction acceleration <= 2 milli-gravities                               | 0 |
| Fraction acceleration <= 3 milli-gravities                               | 0 |
| Fraction acceleration <= 4 milli-gravities                               | 0 |
| Fraction acceleration <= 5 milli-gravities                               | 0 |
| Fraction acceleration <= 6 milli-gravities                               | 0 |
| Fraction acceleration <= 7 milli-gravities                               | 0 |
| Fraction acceleration <= 8 milli-gravities                               | 0 |
| Fraction acceleration <= 9 milli-gravities                               | 0 |
| Fraction acceleration <= 10 milli-gravities                              | 0 |
| Fraction acceleration <= 11 milli-gravities                              | 0 |
| Fraction acceleration <= 12 milli-gravities                              | 0 |
| Fraction acceleration <= 13 milli-gravities                              | 0 |
| Fraction acceleration <= 14 milli-gravities                              | 0 |
| Fraction acceleration <= 15 milli-gravities                              | 0 |
| Fraction acceleration <= 16 milli-gravities                              | 0 |



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| Fraction acceleration <= 1400 milli-gravities                                    | 0 |
| Fraction acceleration <= 1500 milli-gravities                                    | 0 |
| Fraction acceleration <= 1600 milli-gravities                                    | 0 |
| Fraction acceleration <= 1700 milli-gravities                                    | 0 |
| Fraction acceleration <= 1800 milli-gravities                                    | 0 |
| Fraction acceleration <= 1900 milli-gravities                                    | 0 |
| Fraction acceleration <= 2000 milli-gravities                                    | 0 |
| Error tolerance before calibration   | 0 |
| Error tolerance after calibration  | 0 |
| Calibration coefficients - x offset  | 0 |
| Calibration coefficients - y offset  | 0 |
| Calibration coefficients - z offset  | 0 |
| Calibration coefficients - x slope   | 0 |
| Calibration coefficients - y slope   | 0 |
| Calibration coefficients - z slope   | 0 |
| Calibration coefficients - x temp  | 0 |
| Calibration coefficients - y temp  | 0 |
| Calibration coefficients - z temp  | 0 |
| Calibration coefficients - mean temperature                                      | 0 |
| Calibration - number of static points  | 0 |
| Calibration - minimum x stationary value   | 0 |
| Calibration - maximum x stationary value   | 0 |
| Calibration - minimum y stationary value   | 0 |
| Calibration - maximum y stationary value   | 0 |
| Calibration - minimum z stationary value   | 0 |
| Calibration - maximum z stationary value   | 0 |
| Device ID  | 0 |
| Interrupted recording periods  | 0 |
| Duration of interrupted recording periods  | 0 |
| Data recording errors  | 0 |
| Readings exceeding +/-8 gravities before calibration                             | 0 |
| Maximum readings exceeding +/-8 gravities before calibration in a 5 second epoch | 0 |
| Readings exceeding +/-8 gravities after calibration                              | 0 |
| Maximum readings exceeding +/-8 gravities after calibration in a 5 second epoch  | 0 |
| Total data readings  | 0 |
| Sample rate average  | 0 |
| Sample rate standard deviation   | 0 |
| Sample rate minimum  | 0 |
| Sample rate maximum  | 0 |
| Temperature average  | 0 |
| Temperature standard deviation   | 0 |
| Temperature minimum  | 0 |
| Temperature maximum  | 0 |
| Invitation to physical activity study, acceptance                                | 0 |

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| Date of attending assessment centre                              | 0 |
| Time when initial screen shown                                   | 0 |
| Time screen exited   | 0 |
| When pairs test completed  | 0 |
| When fluid intelligence test completed                           | 0 |
| When trail making test completed                                 | 0 |
| When symbol digit substitution test completed                    | 0 |
| When numeric memory test completed                               | 0 |
| Red blood cell (erythrocyte) count acquisition time              | 0 |
| Haemoglobin concentration acquisition time                       | 0 |
| Haematocrit acquisition time                                     | 0 |
| Mean corpuscular volume acquisition time                         | 0 |
| Mean corpuscular haemoglobin acquisition time                    | 0 |
| Mean corpuscular haemoglobin concentration acquisition time      | 0 |
| Red blood cell (erythrocyte) distribution width acquisition time | 0 |
| Platelet count acquisition time                                  | 0 |
| Platelet crit acquisition time                                   | 0 |
| Mean platelet (thrombocyte) volume acquisition time              | 0 |
| Platelet distribution width acquisition time                     | 0 |
| Lymphocyte count acquisition time                                | 0 |
| Monocyte count acquisition time                                  | 0 |
| Neutrophil count acquisition time                                | 0 |
| Eosinophil count acquisition time                                | 0 |
| Basophil count acquisition time                                  | 0 |
| Nucleated red blood cell count acquisition time                  | 0 |
| Lymphocyte percentage acquisition time                           | 0 |
| Monocyte percentage acquisition time                             | 0 |
| Neutrophil percentage acquisition time                           | 0 |
| Eosinophil percentage acquisition time                           | 0 |
| Basophil percentage acquisition time                             | 0 |
| Nucleated red blood cell percentage acquisition time             | 0 |
| Reticulocyte count acquisition time                              | 0 |
| Mean reticulocyte volume acquisition time                        | 0 |
| Mean spheroid cell volume acquisition time                       | 0 |
| Immature reticulocyte fraction acquisition time                  | 0 |
| High light scatter reticulocyte percentage acquisition time      | 0 |
| High light scatter reticulocyte count acquisition time           | 0 |
| Start of requested wear period                                   | 0 |
| Start time of wear   | 0 |
| End time of wear   | 0 |
| Invitation to physical activity study, date sent                 | 0 |
| Cholera (ICD10: A00)   | 0 |
| Typhoid and paratyphoid fevers (ICD10: A01)                      | 0 |
| Other salmonella infections (ICD10: A02)                         | 0 |

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| Shigellosis (ICD10: A03)   | 0 |
| Other bacterial intestinal infections (ICD10: A04)                                       | 0 |
| Other bacterial foodborne intoxications, not elsewhere classified (ICD10: A05)           | 0 |
| Amoebiasis (ICD10: A06)  | 0 |
| Other protozoal intestinal diseases (ICD10: A07)   | 0 |
| Viral and other specified intestinal infections (ICD10: A08)                             | 0 |
| Other gastroenteritis and colitis of infectious and unspecified origin (ICD10: A09)      | 0 |
| Respiratory tuberculosis, bacteriologically and histologically confirmed (ICD10: A15)    | 0 |
| Respiratory tuberculosis, not confirmed bacteriologically or histologically (ICD10: A16) | 0 |
| Tuberculosis of nervous system (ICD10: A17)  | 0 |
| Tuberculosis of other organs (ICD10: A18)  | 0 |
| Miliary tuberculosis (ICD10: A19)  | 0 |
| Plague (ICD10: A20)  | 0 |
| Erysipeloid (ICD10: A26)   | 0 |
| Leptospirosis (ICD10: A27)   | 0 |
| Other zoonotic bacterial diseases, not elsewhere classified (ICD10: A28)                 | 0 |
| Infection due to other mycobacteria (ICD10: A31)   | 0 |
| Diphtheria (ICD10: A36)  | 0 |
| Scarlet fever (ICD10: A38)   | 0 |
| Meningococcal infection (ICD10: A39)   | 0 |
| Streptococcal sepsis (ICD10: A40)  | 0 |
| Other sepsis (ICD10: A41)  | 0 |
| Actinomycosis (ICD10: A42)   | 0 |
| Bartonellosis (ICD10: A44)   | 0 |
| Erysipelas (ICD10: A46)  | 0 |
| Other bacterial diseases, not elsewhere classified (ICD10: A48)                          | 0 |
| Bacterial infection of unspecified site (ICD10: A49)                                     | 0 |
| Early syphilis (ICD10: A51)  | 0 |
| Late syphilis (ICD10: A52)   | 0 |
| Other and unspecified syphilis (ICD10: A53)  | 0 |
| Gonococcal infection (ICD10: A54)  | 0 |
| Other sexually transmitted chlamydial diseases (ICD10: A56)                              | 0 |
| Anogenital herpesviral [herpes simplex] infection (ICD10: A60)                           | 0 |
| Other predominantly sexually transmitted diseases, not elsewhere classified (ICD10: A63) | 0 |
| Unspecified sexually transmitted disease (ICD10: A64)                                    | 0 |
| Yaws (ICD10: A66)  | 0 |
| Other spirochaetal infections (ICD10: A69)   | 0 |
| Other diseases caused by chlamydiae (ICD10: A74)   | 0 |
| Spotted fever [tick-borne rickettsioses] (ICD10: A77)                                    | 0 |
| Other rickettsioses (ICD10: A79)   | 0 |
| Acute poliomyelitis (ICD10: A80)   | 0 |
| Atypical virus infections of central nervous system (ICD10: A81)                         | 0 |
| Mosquito-borne viral encephalitis (ICD10: A83)   | 0 |
| Other viral encephalitis, not elsewhere classified (ICD10: A85)                          | 0 |

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| Unspecified viral encephalitis (ICD10: A86)   | 0 |
| Viral meningitis (ICD10: A87)   | 0 |
| Other viral infections of central nervous system, not elsewhere classified (ICD10: A88)                         | 0 |
| Unspecified viral infection of central nervous system (ICD10: A89)  | 0 |
| Dengue haemorrhagic fever (ICD10: A91)  | 0 |
| Herpesviral [herpes simplex] infections (ICD10: B00)  | 0 |
| Varicella [chickenpox] (ICD10: B01)   | 0 |
| Zoster [herpes zoster] (ICD10: B02)   | 0 |
| Measles (ICD10: B05)  | 0 |
| Viral warts (ICD10: B07)  | 0 |
| Other viral infections characterized by skin and mucous membrane lesions, not elsewhere classified (ICD10: B08) | 0 |
| Unspecified viral infection characterized by skin and mucous membrane lesions (ICD10: B09)                      | 0 |
| Acute hepatitis A (ICD10: B15)  | 0 |
| Acute hepatitis B (ICD10: B16)  | 0 |
| Other acute viral hepatitis (ICD10: B17)  | 0 |
| Chronic viral hepatitis (ICD10: B18)  | 0 |
| Unspecified viral hepatitis (ICD10: B19)  | 0 |
| Human immunodeficiency virus [HIV] disease resulting in infectious and parasitic diseases (ICD10: B20)          | 0 |
| Human immunodeficiency virus [HIV] disease resulting in malignant neoplasms (ICD10: B21)                        | 0 |
| Human immunodeficiency virus [HIV] disease resulting in other specified diseases (ICD10: B22)                   | 0 |
| Human immunodeficiency virus [HIV] disease resulting in other conditions (ICD10: B23)                           | 0 |
| Unspecified human immunodeficiency virus [HIV] disease (ICD10: B24)   | 0 |
| Cytomegaloviral disease (ICD10: B25)  | 0 |
| Mumps (ICD10: B26)  | 0 |
| Infectious mononucleosis (ICD10: B27)   | 0 |
| Viral conjunctivitis (ICD10: B30)   | 0 |
| Other viral diseases, not elsewhere classified (ICD10: B33)   | 0 |
| Viral infection of unspecified site (ICD10: B34)  | 0 |
| Dermatophytosis (ICD10: B35)  | 0 |
| Other superficial mycoses (ICD10: B36)  | 0 |
| Candidiasis (ICD10: B37)  | 0 |
| Aspergillosis (ICD10: B44)  | 0 |
| Cryptococcosis (ICD10: B45)   | 0 |
| Unspecified mycosis (ICD10: B49)  | 0 |
| Plasmodium falciparum malaria (ICD10: B50)  | 0 |
| Plasmodium vivax malaria (ICD10: B51)   | 0 |
| Plasmodium malariae malaria (ICD10: B52)  | 0 |
| Other parasitologically confirmed malaria (ICD10: B53)  | 0 |
| Unspecified malaria (ICD10: B54)  | 0 |
| Leishmaniasis (ICD10: B55)  | 0 |
| Toxoplasmosis (ICD10: B58)  | 0 |
| Pneumocystosis (ICD10: B59)   | 0 |
| Other protozoal diseases, not elsewhere classified (ICD10: B60)   | 0 |
| Schistosomiasis [bilharziasis] (ICD10: B65)   | 0 |

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| Echinococcosis (ICD10: B67)   | 0 |
| Taeniasis (ICD10: B68)  | 0 |
| Hookworm diseases (ICD10: B76)  | 0 |
| Strongyloidiasis (ICD10: B78)   | 0 |
| Enterobiasis (ICD10: B80)   | 0 |
| Other intestinal helminthiases, not elsewhere classified (ICD10: B81)                               | 0 |
| Unspecified intestinal parasitism (ICD10: B82)  | 0 |
| Other helminthiases (ICD10: B83)  | 0 |
| Pediculosis and phthiriasis (ICD10: B85)  | 0 |
| Scabies (ICD10: B86)  | 0 |
| Other infestations (ICD10: B88)   | 0 |
| Sequelae of tuberculosis (ICD10: B90)   | 0 |
| Sequelae of poliomyelitis (ICD10: B91)  | 0 |
| Sequelae of other and unspecified infectious and parasitic diseases (ICD10: B94)                    | 0 |
| Streptococcus and staphylococcus as the cause of diseases classified to other chapters (ICD10: B95) | 0 |
| Other specified bacterial agents as the cause of diseases classified to other chapters (ICD10: B96) | 0 |
| Viral agents as the cause of diseases classified to other chapters (ICD10: B97)                     | 0 |
| Other and unspecified infectious diseases (ICD10: B99)  | 0 |
| Malignant neoplasm of lip (ICD10: C00)  | 0 |
| Malignant neoplasm of base of tongue (ICD10: C01)   | 0 |
| Malignant neoplasm of other and unspecified parts of tongue (ICD10: C02)                            | 0 |
| Malignant neoplasm of gum (ICD10: C03)  | 0 |
| Malignant neoplasm of floor of mouth (ICD10: C04)   | 0 |
| Malignant neoplasm of palate (ICD10: C05)   | 0 |
| Malignant neoplasm of other and unspecified parts of mouth (ICD10: C06)                             | 0 |
| Malignant neoplasm of parotid gland (ICD10: C07)  | 0 |
| Malignant neoplasm of other and unspecified major salivary glands (ICD10: C08)                      | 0 |
| Malignant neoplasm of tonsil (ICD10: C09)   | 0 |
| Malignant neoplasm of oropharynx (ICD10: C10)   | 0 |
| Malignant neoplasm of nasopharynx (ICD10: C11)  | 0 |
| Malignant neoplasm of piriform sinus (ICD10: C12)   | 0 |
| Malignant neoplasm of hypopharynx (ICD10: C13)  | 0 |
| Malignant neoplasm of other and ill-defined sites in the lip, oral cavity and pharynx (ICD10: C14)  | 0 |
| Malignant neoplasm of oesophagus (ICD10: C15)   | 0 |
| Malignant neoplasm of stomach (ICD10: C16)  | 0 |
| Malignant neoplasm of small intestine (ICD10: C17)  | 0 |
| Malignant neoplasm of colon (ICD10: C18)  | 0 |
| Malignant neoplasm of rectosigmoid junction (ICD10: C19)  | 0 |
| Malignant neoplasm of rectum (ICD10: C20)   | 0 |
| Malignant neoplasm of anus and anal canal (ICD10: C21)  | 0 |
| Malignant neoplasm of liver and intrahepatic bile ducts (ICD10: C22)                                | 0 |
| Malignant neoplasm of gallbladder (ICD10: C23)  | 0 |
| Malignant neoplasm of other and unspecified parts of biliary tract (ICD10: C24)                     | 0 |
| Malignant neoplasm of pancreas (ICD10: C25)   | 0 |



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| Malignant neoplasm of other and ill-defined digestive organs (ICD10: C26)                                | 0 |
| Malignant neoplasm of nasal cavity and middle ear (ICD10: C30)   | 0 |
| Malignant neoplasm of accessory sinuses (ICD10: C31)   | 0 |
| Malignant neoplasm of larynx (ICD10: C32)  | 0 |
| Malignant neoplasm of trachea (ICD10: C33)   | 0 |
| Malignant neoplasm of bronchus and lung (ICD10: C34)   | 0 |
| Malignant neoplasm of thymus (ICD10: C37)  | 0 |
| Malignant neoplasm of heart, mediastinum and pleura (ICD10: C38)   | 0 |
| Malignant neoplasm of bone and articular cartilage of limbs (ICD10: C40)                                 | 0 |
| Malignant neoplasm of bone and articular cartilage of other and unspecified sites (ICD10: C41)           | 0 |
| Malignant melanoma of skin (ICD10: C43)  | 0 |
| Other malignant neoplasms of skin (ICD10: C44)   | 0 |
| Mesothelioma (ICD10: C45)  | 0 |
| Kaposi sarcoma (ICD10: C46)  | 0 |
| Malignant neoplasm of peripheral nerves and autonomic nervous system (ICD10: C47)                        | 0 |
| Malignant neoplasm of retroperitoneum and peritoneum (ICD10: C48)  | 0 |
| Malignant neoplasm of other connective and soft tissue (ICD10: C49)                                      | 0 |
| Malignant neoplasm of breast (ICD10: C50)  | 0 |
| Malignant neoplasm of vulva (ICD10: C51)   | 0 |
| Malignant neoplasm of vagina (ICD10: C52)  | 0 |
| Malignant neoplasm of cervix uteri (ICD10: C53)  | 0 |
| Malignant neoplasm of corpus uteri (ICD10: C54)  | 0 |
| Malignant neoplasm of uterus, part unspecified (ICD10: C55)  | 0 |
| Malignant neoplasm of ovary (ICD10: C56)   | 0 |
| Malignant neoplasm of other and unspecified female genital organs (ICD10: C57)                           | 0 |
| Malignant neoplasm of placenta (ICD10: C58)  | 0 |
| Malignant neoplasm of penis (ICD10: C60)   | 0 |
| Malignant neoplasm of prostate (ICD10: C61)  | 0 |
| Malignant neoplasm of testis (ICD10: C62)  | 0 |
| Malignant neoplasm of other and unspecified male genital organs (ICD10: C63)                             | 0 |
| Malignant neoplasm of kidney, except renal pelvis (ICD10: C64)   | 0 |
| Malignant neoplasm of renal pelvis (ICD10: C65)  | 0 |
| Malignant neoplasm of ureter (ICD10: C66)  | 0 |
| Malignant neoplasm of bladder (ICD10: C67)   | 0 |
| Malignant neoplasm of other and unspecified urinary organs (ICD10: C68)                                  | 0 |
| Malignant neoplasm of eye and adnexa (ICD10: C69)  | 0 |
| Malignant neoplasm of meninges (ICD10: C70)  | 0 |
| Malignant neoplasm of brain (ICD10: C71)   | 0 |
| Malignant neoplasm of spinal cord, cranial nerves and other parts of central nervous system (ICD10: C72) | 0 |
| Malignant neoplasm of thyroid gland (ICD10: C73)   | 0 |
| Malignant neoplasm of adrenal gland (ICD10: C74)   | 0 |
| Malignant neoplasm of other endocrine glands and related structures (ICD10: C75)                         | 0 |
| Malignant neoplasm of other and ill-defined sites (ICD10: C76)   | 0 |
| Secondary and unspecified malignant neoplasm of lymph nodes (ICD10: C77)                                 | 0 |

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| Secondary malignant neoplasm of respiratory and digestive organs (ICD10: C78)                         | 0 |
| Secondary malignant neoplasm of other and unspecified sites (ICD10: C79)                              | 0 |
| Malignant neoplasm, without specification of site (ICD10: C80)  | 0 |
| Hodgkin lymphoma (ICD10: C81)   | 0 |
| Follicular lymphoma (ICD10: C82)  | 0 |
| Mature T/NK-cell lymphomas (ICD10: C84)   | 0 |
| Other and unspecified types of non-Hodgkin lymphoma (ICD10: C85)                                      | 0 |
| Malignant immunoproliferative diseases (ICD10: C88)   | 0 |
| Multiple myeloma and malignant plasma cell neoplasms (ICD10: C90)                                     | 0 |
| Lymphoid leukaemia (ICD10: C91)   | 0 |
| Myeloid leukaemia (ICD10: C92)  | 0 |
| Monocytic leukaemia (ICD10: C93)  | 0 |
| Other leukaemias of specified cell type (ICD10: C94)  | 0 |
| Leukaemia of unspecified cell type (ICD10: C95)   | 0 |
| Other and unspecified malignant neoplasms of lymphoid, haematopoietic and related tissue (ICD10: C96) | 0 |
| Carcinoma in situ of oral cavity, oesophagus and stomach (ICD10: D00)                                 | 0 |
| Carcinoma in situ of other and unspecified digestive organs (ICD10: D01)                              | 0 |
| Carcinoma in situ of middle ear and respiratory system (ICD10: D02)                                   | 0 |
| Melanoma in situ (ICD10: D03)   | 0 |
| Carcinoma in situ of skin (ICD10: D04)  | 0 |
| Carcinoma in situ of breast (ICD10: D05)  | 0 |
| Carcinoma in situ of cervix uteri (ICD10: D06)  | 0 |
| Carcinoma in situ of other and unspecified genital organs (ICD10: D07)                                | 0 |
| Carcinoma in situ of other and unspecified sites (ICD10: D09)   | 0 |
| Benign neoplasm of mouth and pharynx (ICD10: D10)   | 0 |
| Benign neoplasm of major salivary glands (ICD10: D11)   | 0 |
| Benign neoplasm of colon, rectum, anus and anal canal (ICD10: D12)                                    | 0 |
| Benign neoplasm of other and ill-defined parts of digestive system (ICD10: D13)                       | 0 |
| Benign neoplasm of middle ear and respiratory system (ICD10: D14)                                     | 0 |
| Benign neoplasm of other and unspecified intrathoracic organs (ICD10: D15)                            | 0 |
| Benign neoplasm of bone and articular cartilage (ICD10: D16)  | 0 |
| Benign lipomatous neoplasm (ICD10: D17)   | 0 |
| Haemangioma and lymphangioma, any site (ICD10: D18)   | 0 |
| Benign neoplasm of mesothelial tissue (ICD10: D19)  | 0 |
| Benign neoplasm of soft tissue of retroperitoneum and peritoneum (ICD10: D20)                         | 0 |
| Other benign neoplasms of connective and other soft tissue (ICD10: D21)                               | 0 |
| Melanocytic naevi (ICD10: D22)  | 0 |
| Other benign neoplasms of skin (ICD10: D23)   | 0 |
| Benign neoplasm of breast (ICD10: D24)  | 0 |
| Leiomyoma of uterus (ICD10: D25)  | 0 |
| Other benign neoplasms of uterus (ICD10: D26)   | 0 |
| Benign neoplasm of ovary (ICD10: D27)   | 0 |
| Benign neoplasm of other and unspecified female genital organs (ICD10: D28)                           | 0 |
| Benign neoplasm of male genital organs (ICD10: D29)   | 0 |

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| Benign neoplasm of urinary organs (ICD10: D30)   | 0 |
| Benign neoplasm of eye and adnexa (ICD10: D31)   | 0 |
| Benign neoplasm of meninges (ICD10: D32)   | 0 |
| Benign neoplasm of brain and other parts of central nervous system (ICD10: D33)                                | 0 |
| Benign neoplasm of thyroid gland (ICD10: D34)  | 0 |
| Benign neoplasm of other and unspecified endocrine glands (ICD10: D35)   | 0 |
| Benign neoplasm of other and unspecified sites (ICD10: D36)  | 0 |
| Neoplasm of uncertain or unknown behaviour of oral cavity and digestive organs (ICD10: D37)                    | 0 |
| Neoplasm of uncertain or unknown behaviour of middle ear and respiratory and intrathoracic organs (ICD10: D38) | 0 |
| Neoplasm of uncertain or unknown behaviour of female genital organs (ICD10: D39)                               | 0 |
| Neoplasm of uncertain or unknown behaviour of male genital organs (ICD10: D40)                                 | 0 |
| Neoplasm of uncertain or unknown behaviour of urinary organs (ICD10: D41)                                      | 0 |
| Neoplasm of uncertain or unknown behaviour of meninges (ICD10: D42)  | 0 |
| Neoplasm of uncertain or unknown behaviour of brain and central nervous system (ICD10: D43)                    | 0 |
| Neoplasm of uncertain or unknown behaviour of endocrine glands (ICD10: D44)                                    | 0 |
| Polycythaemia vera (ICD10: D45)  | 0 |
| Myelodysplastic syndromes (ICD10: D46)   | 0 |
| Other neoplasms of uncertain or unknown behaviour of lymphoid, haematopoietic and related tissue (ICD10: D47)  | 0 |
| Neoplasm of uncertain or unknown behaviour of other and unspecified sites (ICD10: D48)                         | 0 |
| Iron deficiency anaemia (ICD10: D50)   | 0 |
| Vitamin B12 deficiency anaemia (ICD10: D51)  | 0 |
| Folate deficiency anaemia (ICD10: D52)   | 0 |
| Other nutritional anaemias (ICD10: D53)  | 0 |
| Anaemia due to enzyme disorders (ICD10: D55)   | 0 |
| Thalassaemia (ICD10: D56)  | 0 |
| Sickle-cell disorders (ICD10: D57)   | 0 |
| Other hereditary haemolytic anaemias (ICD10: D58)  | 0 |
| Acquired haemolytic anaemia (ICD10: D59)   | 0 |
| Other aplastic anaemias (ICD10: D61)   | 0 |
| Acute posthaemorrhagic anaemia (ICD10: D62)  | 0 |
| Anaemia in chronic diseases classified elsewhere (ICD10: D63)  | 0 |
| Other anaemias (ICD10: D64)  | 0 |
| Disseminated intravascular coagulation [defibrination syndrome] (ICD10: D65)                                   | 0 |
| Hereditary factor VIII deficiency (ICD10: D66)   | 0 |
| Hereditary factor IX deficiency (ICD10: D67)   | 0 |
| Other coagulation defects (ICD10: D68)   | 0 |
| Purpura and other haemorrhagic conditions (ICD10: D69)   | 0 |
| Agranulocytosis (ICD10: D70)   | 0 |
| Other disorders of white blood cells (ICD10: D72)  | 0 |
| Other diseases of blood and blood-forming organs (ICD10: D75)  | 0 |
| Other specified diseases with participation of lymphoreticular and reticulohistiocytic tissue (ICD10: D76)     | 0 |
| Other disorders of blood and blood-forming organs in diseases classified elsewhere (ICD10: D77)                | 0 |
| Immunodeficiency with predominantly antibody defects (ICD10: D80)  | 0 |
| Combined immunodeficiencies (ICD10: D81)   | 0 |

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| Immunodeficiency associated with other major defects (ICD10: D82)                     | 0 |
| Common variable immunodeficiency (ICD10: D83)   | 0 |
| Other immunodeficiencies (ICD10: D84)   | 0 |
| Sarcoidosis (ICD10: D86)  | 0 |
| Other disorders involving the immune mechanism, not elsewhere classified (ICD10: D89) | 0 |
| Iodine-deficiency-related thyroid disorders and allied conditions (ICD10: E01)        | 0 |
| Subclinical iodine-deficiency hypothyroidism (ICD10: E02)                             | 0 |
| Other hypothyroidism (ICD10: E03)   | 0 |
| Other nontoxic goitre (ICD10: E04)  | 0 |
| Thyrotoxicosis [hyperthyroidism] (ICD10: E05)   | 0 |
| Thyroiditis (ICD10: E06)  | 0 |
| Other disorders of thyroid (ICD10: E07)   | 0 |
| Insulin-dependent diabetes mellitus (ICD10: E10)                                      | 0 |
| Non-insulin-dependent diabetes mellitus (ICD10: E11)                                  | 0 |
| Malnutrition-related diabetes mellitus (ICD10: E12)                                   | 0 |
| Other specified diabetes mellitus (ICD10: E13)  | 0 |
| Unspecified diabetes mellitus (ICD10: E14)  | 0 |
| Hypoparathyroidism (ICD10: E20)   | 0 |
| Hyperparathyroidism and other disorders of parathyroid gland (ICD10: E21)             | 0 |
| Hyperfunction of pituitary gland (ICD10: E22)   | 0 |
| Hypofunction and other disorders of pituitary gland (ICD10: E23)                      | 0 |
| Cushing syndrome (ICD10: E24)   | 0 |
| Adrenogenital disorders (ICD10: E25)  | 0 |
| Hyperaldosteronism (ICD10: E26)   | 0 |
| Other disorders of adrenal gland (ICD10: E27)   | 0 |
| Ovarian dysfunction (ICD10: E28)  | 0 |
| Testicular dysfunction (ICD10: E29)   | 0 |
| Polyglandular dysfunction (ICD10: E31)  | 0 |
| Diseases of thymus (ICD10: E32)   | 0 |
| Other endocrine disorders (ICD10: E34)  | 0 |
| Disorders of endocrine glands in diseases classified elsewhere (ICD10: E35)           | 0 |
| Nutritional marasmus (ICD10: E41)   | 0 |
| Unspecified severe protein-energy malnutrition (ICD10: E43)                           | 0 |
| Protein-energy malnutrition of moderate and mild degree (ICD10: E44)                  | 0 |
| Retarded development following protein-energy malnutrition (ICD10: E45)               | 0 |
| Unspecified protein-energy malnutrition (ICD10: E46)                                  | 0 |
| Thiamine deficiency (ICD10: E51)  | 0 |
| Niacin deficiency [pellagra] (ICD10: E52)   | 0 |
| Deficiency of other B group vitamins (ICD10: E53)                                     | 0 |
| Ascorbic acid deficiency (ICD10: E54)   | 0 |
| Vitamin D deficiency (ICD10: E55)   | 0 |
| Other vitamin deficiencies (ICD10: E56)   | 0 |
| Dietary calcium deficiency (ICD10: E58)   | 0 |
| Dietary selenium deficiency (ICD10: E59)  | 0 |

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| Deficiency of other nutrient elements (ICD10: E61)  | 0 |
| Sequelae of malnutrition and other nutritional deficiencies (ICD10: E64)  | 0 |
| Localized adiposity (ICD10: E65)  | 0 |
| Obesity (ICD10: E66)  | 0 |
| Other hyperalimentation (ICD10: E67)  | 0 |
| Disorders of aromatic amino-acid metabolism (ICD10: E70)  | 0 |
| Disorders of branched-chain amino-acid metabolism and fatty-acid metabolism (ICD10: E71)                        | 0 |
| Other disorders of amino-acid metabolism (ICD10: E72)   | 0 |
| Lactose intolerance (ICD10: E73)  | 0 |
| Other disorders of carbohydrate metabolism (ICD10: E74)   | 0 |
| Disorders of sphingolipid metabolism and other lipid storage disorders (ICD10: E75)                             | 0 |
| Disorders of glycosaminoglycan metabolism (ICD10: E76)  | 0 |
| Disorders of glycoprotein metabolism (ICD10: E77)   | 0 |
| Disorders of lipoprotein metabolism and other lipidaemias (ICD10: E78)  | 0 |
| Disorders of purine and pyrimidine metabolism (ICD10: E79)  | 0 |
| Disorders of porphyrin and bilirubin metabolism (ICD10: E80)  | 0 |
| Disorders of mineral metabolism (ICD10: E83)  | 0 |
| Cystic fibrosis (ICD10: E84)  | 0 |
| Volume depletion (ICD10: E86)   | 0 |
| Other disorders of fluid, electrolyte and acid-base balance (ICD10: E87)  | 0 |
| Other metabolic disorders (ICD10: E88)  | 0 |
| Postprocedural endocrine and metabolic disorders, not elsewhere classified (ICD10: E89)                         | 0 |
| Dementia in Alzheimer disease (ICD10: F00)  | 0 |
| Vascular dementia (ICD10: F01)  | 0 |
| Dementia in other diseases classified elsewhere (ICD10: F02)  | 0 |
| Unspecified dementia (ICD10: F03)   | 0 |
| Organic amnesic syndrome, not induced by alcohol and other psychoactive substances (ICD10: F04)                 | 0 |
| Delirium, not induced by alcohol and other psychoactive substances (ICD10: F05)                                 | 0 |
| Other mental disorders due to brain damage and dysfunction and to physical disease (ICD10: F06)                 | 0 |
| Personality and behavioural disorders due to brain disease, damage and dysfunction (ICD10: F07)                 | 0 |
| Unspecified organic or symptomatic mental disorder (ICD10: F09)   | 0 |
| Mental and behavioural disorders due to use of alcohol (ICD10: F10)   | 0 |
| Mental and behavioural disorders due to use of opioids (ICD10: F11)   | 0 |
| Mental and behavioural disorders due to use of cannabinoids (ICD10: F12)  | 0 |
| Mental and behavioural disorders due to use of sedatives or hypnotics (ICD10: F13)                              | 0 |
| Mental and behavioural disorders due to use of cocaine (ICD10: F14)   | 0 |
| Mental and behavioural disorders due to use of other stimulants, including caffeine (ICD10: F15)                | 0 |
| Mental and behavioural disorders due to use of hallucinogens (ICD10: F16)                                       | 0 |
| Mental and behavioural disorders due to use of tobacco (ICD10: F17)   | 0 |
| Mental and behavioural disorders due to use of volatile solvents (ICD10: F18)                                   | 0 |
| Mental and behavioural disorders due to multiple drug use and use of other psychoactive substances (ICD10: F19) | 0 |
| Schizophrenia (ICD10: F20)  | 0 |
| Schizotypal disorder (ICD10: F21)   | 0 |
| Persistent delusional disorders (ICD10: F22)  | 0 |

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| Acute and transient psychotic disorders (ICD10: F23)   | 0 |
| Induced delusional disorder (ICD10: F24)   | 0 |
| Schizoaffective disorders (ICD10: F25)   | 0 |
| Unspecified nonorganic psychosis (ICD10: F29)  | 0 |
| Manic episode (ICD10: F30)   | 0 |
| Bipolar affective disorder (ICD10: F31)  | 0 |
| Depressive episode (ICD10: F32)  | 0 |
| Recurrent depressive disorder (ICD10: F33)   | 0 |
| Persistent mood [affective] disorders (ICD10: F34)   | 0 |
| Other mood [affective] disorders (ICD10: F38)  | 0 |
| Unspecified mood [affective] disorder (ICD10: F39)   | 0 |
| Phobic anxiety disorders (ICD10: F40)  | 0 |
| Other anxiety disorders (ICD10: F41)   | 0 |
| Obsessive-compulsive disorder (ICD10: F42)   | 0 |
| Reaction to severe stress, and adjustment disorders (ICD10: F43)   | 0 |
| Dissociative [conversion] disorders (ICD10: F44)   | 0 |
| Somatoform disorders (ICD10: F45)  | 0 |
| Other neurotic disorders (ICD10: F48)  | 0 |
| Eating disorders (ICD10: F50)  | 0 |
| Nonorganic sleep disorders (ICD10: F51)  | 0 |
| Sexual dysfunction, not caused by organic disorder or disease (ICD10: F52)                                       | 0 |
| Mental and behavioural disorders associated with the puerperium, not elsewhere classified (ICD10: F53)           | 0 |
| Psychological and behavioural factors associated with disorders or diseases classified elsewhere (ICD10: F54)    | 0 |
| Abuse of non-dependence-producing substances (ICD10: F55)  | 0 |
| Unspecified behavioural syndromes associated with physiological disturbances and physical factors (ICD10: F59)   | 0 |
| Specific personality disorders (ICD10: F60)  | 0 |
| Mixed and other personality disorders (ICD10: F61)   | 0 |
| Enduring personality changes, not attributable to brain damage and disease (ICD10: F62)                          | 0 |
| Habit and impulse disorders (ICD10: F63)   | 0 |
| Gender identity disorders (ICD10: F64)   | 0 |
| Disorders of sexual preference (ICD10: F65)  | 0 |
| Psychological and behavioural disorders associated with sexual development and orientation (ICD10: F66)          | 0 |
| Other disorders of adult personality and behaviour (ICD10: F68)  | 0 |
| Unspecified disorder of adult personality and behaviour (ICD10: F69)   | 0 |
| Mild mental retardation (ICD10: F70)   | 0 |
| Severe mental retardation (ICD10: F72)   | 0 |
| Unspecified mental retardation (ICD10: F79)  | 0 |
| Specific developmental disorders of speech and language (ICD10: F80)   | 0 |
| Specific developmental disorders of scholastic skills (ICD10: F81)   | 0 |
| Specific developmental disorder of motor function (ICD10: F82)   | 0 |
| Pervasive developmental disorders (ICD10: F84)   | 0 |
| Conduct disorders (ICD10: F91)   | 0 |
| Tic disorders (ICD10: F95)   | 0 |
| Other behavioural and emotional disorders with onset usually occurring in childhood and adolescence (ICD10: F98) | 0 |

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| Mental disorder, not otherwise specified (ICD10: F99)   | 0 |
| Bacterial meningitis, not elsewhere classified (ICD10: G00)   | 0 |
| Meningitis in bacterial diseases classified elsewhere (ICD10: G01)  | 0 |
| Meningitis in other infectious and parasitic diseases classified elsewhere (ICD10: G02)                     | 0 |
| Meningitis due to other and unspecified causes (ICD10: G03)   | 0 |
| Encephalitis, myelitis and encephalomyelitis (ICD10: G04)   | 0 |
| Encephalitis, myelitis and encephalomyelitis in diseases classified elsewhere (ICD10: G05)                  | 0 |
| Intracranial and intraspinal abscess and granuloma (ICD10: G06)   | 0 |
| Intracranial and intraspinal abscess and granuloma in diseases classified elsewhere (ICD10: G07)            | 0 |
| Intracranial and intraspinal phlebitis and thrombophlebitis (ICD10: G08)                                    | 0 |
| Sequelae of inflammatory diseases of central nervous system (ICD10: G09)                                    | 0 |
| Huntington disease (ICD10: G10)   | 0 |
| Hereditary ataxia (ICD10: G11)  | 0 |
| Spinal muscular atrophy and related syndromes (ICD10: G12)  | 0 |
| Systemic atrophies primarily affecting central nervous system in diseases classified elsewhere (ICD10: G13) | 0 |
| Parkinson disease (ICD10: G20)  | 0 |
| Secondary parkinsonism (ICD10: G21)   | 0 |
| Other degenerative diseases of basal ganglia (ICD10: G23)   | 0 |
| Dystonia (ICD10: G24)   | 0 |
| Other extrapyramidal and movement disorders (ICD10: G25)  | 0 |
| Alzheimer disease (ICD10: G30)  | 0 |
| Other degenerative diseases of nervous system, not elsewhere classified (ICD10: G31)                        | 0 |
| Other degenerative disorders of nervous system in diseases classified elsewhere (ICD10: G32)                | 0 |
| Multiple sclerosis (ICD10: G35)   | 0 |
| Other acute disseminated demyelination (ICD10: G36)   | 0 |
| Other demyelinating diseases of central nervous system (ICD10: G37)   | 0 |
| Epilepsy (ICD10: G40)   | 0 |
| Status epilepticus (ICD10: G41)   | 0 |
| Migraine (ICD10: G43)   | 0 |
| Other headache syndromes (ICD10: G44)   | 0 |
| Transient cerebral ischaemic attacks and related syndromes (ICD10: G45)                                     | 0 |
| Vascular syndromes of brain in cerebrovascular diseases (ICD10: G46)  | 0 |
| Sleep disorders (ICD10: G47)  | 0 |
| Disorders of trigeminal nerve (ICD10: G50)  | 0 |
| Facial nerve disorders (ICD10: G51)   | 0 |
| Disorders of other cranial nerves (ICD10: G52)  | 0 |
| Cranial nerve disorders in diseases classified elsewhere (ICD10: G53)                                       | 0 |
| Nerve root and plexus disorders (ICD10: G54)  | 0 |
| Nerve root and plexus compressions in diseases classified elsewhere (ICD10: G55)                            | 0 |
| Mononeuropathies of upper limb (ICD10: G56)   | 0 |
| Mononeuropathies of lower limb (ICD10: G57)   | 0 |
| Other mononeuropathies (ICD10: G58)   | 0 |
| Mononeuropathy in diseases classified elsewhere (ICD10: G59)  | 0 |
| Hereditary and idiopathic neuropathy (ICD10: G60)   | 0 |

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| Inflammatory polyneuropathy (ICD10: G61)   | 0 |
| Other polyneuropathies (ICD10: G62)  | 0 |
| Polyneuropathy in diseases classified elsewhere (ICD10: G63)                             | 0 |
| Other disorders of peripheral nervous system (ICD10: G64)                                | 0 |
| Myasthenia gravis and other myoneural disorders (ICD10: G70)                             | 0 |
| Primary disorders of muscles (ICD10: G71)  | 0 |
| Other myopathies (ICD10: G72)  | 0 |
| Disorders of myoneural junction and muscle in diseases classified elsewhere (ICD10: G73) | 0 |
| Cerebral palsy (ICD10: G80)  | 0 |
| Hemiplegia (ICD10: G81)  | 0 |
| Paraplegia and tetraplegia (ICD10: G82)  | 0 |
| Other paralytic syndromes (ICD10: G83)   | 0 |
| Disorders of autonomic nervous system (ICD10: G90)                                       | 0 |
| Hydrocephalus (ICD10: G91)   | 0 |
| Toxic encephalopathy (ICD10: G92)  | 0 |
| Other disorders of brain (ICD10: G93)  | 0 |
| Other disorders of brain in diseases classified elsewhere (ICD10: G94)                   | 0 |
| Other diseases of spinal cord (ICD10: G95)   | 0 |
| Other disorders of central nervous system (ICD10: G96)                                   | 0 |
| Postprocedural disorders of nervous system, not elsewhere classified (ICD10: G97)        | 0 |
| Other disorders of nervous system, not elsewhere classified (ICD10: G98)                 | 0 |
| Other disorders of nervous system in diseases classified elsewhere (ICD10: G99)          | 0 |
| Hordeolum and chalazion (ICD10: H00)   | 0 |
| Other inflammation of eyelid (ICD10: H01)  | 0 |
| Other disorders of eyelid (ICD10: H02)   | 0 |
| Disorders of eyelid in diseases classified elsewhere (ICD10: H03)                        | 0 |
| Disorders of lacrimal system (ICD10: H04)  | 0 |
| Disorders of orbit (ICD10: H05)  | 0 |
| Disorders of lacrimal system and orbit in diseases classified elsewhere (ICD10: H06)     | 0 |
| Conjunctivitis (ICD10: H10)  | 0 |
| Other disorders of conjunctiva (ICD10: H11)  | 0 |
| Disorders of conjunctiva in diseases classified elsewhere (ICD10: H13)                   | 0 |
| Disorders of sclera (ICD10: H15)   | 0 |
| Keratitis (ICD10: H16)   | 0 |
| Corneal scars and opacities (ICD10: H17)   | 0 |
| Other disorders of cornea (ICD10: H18)   | 0 |
| Disorders of sclera and cornea in diseases classified elsewhere (ICD10: H19)             | 0 |
| Iridocyclitis (ICD10: H20)   | 0 |
| Other disorders of iris and ciliary body (ICD10: H21)                                    | 0 |
| Disorders of iris and ciliary body in diseases classified elsewhere (ICD10: H22)         | 0 |
| Senile cataract (ICD10: H25)   | 0 |
| Other cataract (ICD10: H26)  | 0 |
| Other disorders of lens (ICD10: H27)   | 0 |
| Cataract and other disorders of lens in diseases classified elsewhere (ICD10: H28)       | 0 |



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| Chorioretinal inflammation (ICD10: H30)   | 0 |
| Other disorders of choroid (ICD10: H31)   | 0 |
| Chorioretinal disorders in diseases classified elsewhere (ICD10: H32)                   | 0 |
| Retinal detachments and breaks (ICD10: H33)   | 0 |
| Retinal vascular occlusions (ICD10: H34)  | 0 |
| Other retinal disorders (ICD10: H35)  | 0 |
| Retinal disorders in diseases classified elsewhere (ICD10: H36)                         | 0 |
| Glaucoma (ICD10: H40)   | 0 |
| Glaucoma in diseases classified elsewhere (ICD10: H42)                                  | 0 |
| Disorders of vitreous body (ICD10: H43)   | 0 |
| Disorders of globe (ICD10: H44)   | 0 |
| Disorders of vitreous body and globe in diseases classified elsewhere (ICD10: H45)      | 0 |
| Optic neuritis (ICD10: H46)   | 0 |
| Other disorders of optic [2nd] nerve and visual pathways (ICD10: H47)                   | 0 |
| Paralytic strabismus (ICD10: H49)   | 0 |
| Other strabismus (ICD10: H50)   | 0 |
| Other disorders of binocular movement (ICD10: H51)                                      | 0 |
| Disorders of refraction and accommodation (ICD10: H52)                                  | 0 |
| Visual disturbances (ICD10: H53)  | 0 |
| Visual impairment including blindness (binocular or monocular) (ICD10: H54)             | 0 |
| Nystagmus and other irregular eye movements (ICD10: H55)                                | 0 |
| Other disorders of eye and adnexa (ICD10: H57)  | 0 |
| Other disorders of eye and adnexa in diseases classified elsewhere (ICD10: H58)         | 0 |
| Postprocedural disorders of eye and adnexa, not elsewhere classified (ICD10: H59)       | 0 |
| Otitis externa (ICD10: H60)   | 0 |
| Other disorders of external ear (ICD10: H61)  | 0 |
| Disorders of external ear in diseases classified elsewhere (ICD10: H62)                 | 0 |
| Nonsuppurative otitis media (ICD10: H65)  | 0 |
| Suppurative and unspecified otitis media (ICD10: H66)                                   | 0 |
| Eustachian salpingitis and obstruction (ICD10: H68)                                     | 0 |
| Other disorders of Eustachian tube (ICD10: H69)   | 0 |
| Mastoiditis and related conditions (ICD10: H70)   | 0 |
| Cholesteatoma of middle ear (ICD10: H71)  | 0 |
| Perforation of tympanic membrane (ICD10: H72)   | 0 |
| Other disorders of tympanic membrane (ICD10: H73)                                       | 0 |
| Other disorders of middle ear and mastoid (ICD10: H74)                                  | 0 |
| Other disorders of middle ear and mastoid in diseases classified elsewhere (ICD10: H75) | 0 |
| Otosclerosis (ICD10: H80)   | 0 |
| Disorders of vestibular function (ICD10: H81)   | 0 |
| Other diseases of inner ear (ICD10: H83)  | 0 |
| Conductive and sensorineural hearing loss (ICD10: H90)                                  | 0 |
| Other hearing loss (ICD10: H91)   | 0 |
| Otalgia and effusion of ear (ICD10: H92)  | 0 |
| Other disorders of ear, not elsewhere classified (ICD10: H93)                           | 0 |

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| Other disorders of ear in diseases classified elsewhere (ICD10: H94)                       | 0 |
| Postprocedural disorders of ear and mastoid process, not elsewhere classified (ICD10: H95) | 0 |
| Rheumatic fever without mention of heart involvement (ICD10: I00)                          | 0 |
| Rheumatic fever with heart involvement (ICD10: I01)  | 0 |
| Rheumatic chorea (ICD10: I02)  | 0 |
| Rheumatic mitral valve diseases (ICD10: I05)   | 0 |
| Rheumatic aortic valve diseases (ICD10: I06)   | 0 |
| Rheumatic tricuspid valve diseases (ICD10: I07)  | 0 |
| Multiple valve diseases (ICD10: I08)   | 0 |
| Other rheumatic heart diseases (ICD10: I09)  | 0 |
| Essential (primary) hypertension (ICD10: I10)  | 0 |
| Hypertensive heart disease (ICD10: I11)  | 0 |
| Hypertensive renal disease (ICD10: I12)  | 0 |
| Hypertensive heart and renal disease (ICD10: I13)  | 0 |
| Secondary hypertension (ICD10: I15)  | 0 |
| Angina pectoris (ICD10: I20)   | 0 |
| Acute myocardial infarction (ICD10: I21)   | 0 |
| Subsequent myocardial infarction (ICD10: I22)  | 0 |
| Certain current complications following acute myocardial infarction (ICD10: I23)           | 0 |
| Other acute ischaemic heart diseases (ICD10: I24)  | 0 |
| Pulmonary embolism (ICD10: I26)  | 0 |
| Other pulmonary heart diseases (ICD10: I27)  | 0 |
| Other diseases of pulmonary vessels (ICD10: I28)   | 0 |
| Acute pericarditis (ICD10: I30)  | 0 |
| Other diseases of pericardium (ICD10: I31)   | 0 |
| Pericarditis in diseases classified elsewhere (ICD10: I32)                                 | 0 |
| Acute and subacute endocarditis (ICD10: I33)   | 0 |
| Nonrheumatic mitral valve disorders (ICD10: I34)   | 0 |
| Nonrheumatic aortic valve disorders (ICD10: I35)   | 0 |
| Nonrheumatic tricuspid valve disorders (ICD10: I36)  | 0 |
| Pulmonary valve disorders (ICD10: I37)   | 0 |
| Endocarditis, valve unspecified (ICD10: I38)   | 0 |
| Endocarditis and heart valve disorders in diseases classified elsewhere (ICD10: I39)       | 0 |
| Acute myocarditis (ICD10: I40)   | 0 |
| Cardiomyopathy in diseases classified elsewhere (ICD10: I43)                               | 0 |
| Atrioventricular and left bundle-branch block (ICD10: I44)                                 | 0 |
| Other conduction disorders (ICD10: I45)  | 0 |
| Cardiac arrest (ICD10: I46)  | 0 |
| Paroxysmal tachycardia (ICD10: I47)  | 0 |
| Other cardiac arrhythmias (ICD10: I49)   | 0 |
| Subarachnoid haemorrhage (ICD10: I60)  | 0 |
| Intracerebral haemorrhage (ICD10: I61)   | 0 |
| Other nontraumatic intracranial haemorrhage (ICD10: I62)                                   | 0 |
| Cerebral infarction (ICD10: I63)   | 0 |

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| Stroke, not specified as haemorrhage or infarction (ICD10: I64)                                   | 0 |
| Occlusion and stenosis of precerebral arteries, not resulting in cerebral infarction (ICD10: I65) | 0 |
| Occlusion and stenosis of cerebral arteries, not resulting in cerebral infarction (ICD10: I66)    | 0 |
| Other cerebrovascular diseases (ICD10: I67)   | 0 |
| Sequelae of cerebrovascular disease (ICD10: I69)  | 0 |
| Atherosclerosis (ICD10: I70)  | 0 |
| Aortic aneurysm and dissection (ICD10: I71)   | 0 |
| Other aneurysm and dissection (ICD10: I72)  | 0 |
| Other peripheral vascular diseases (ICD10: I73)   | 0 |
| Arterial embolism and thrombosis (ICD10: I74)   | 0 |
| Other disorders of arteries and arterioles (ICD10: I77)   | 0 |
| Diseases of capillaries (ICD10: I78)  | 0 |
| Disorders of arteries, arterioles and capillaries in diseases classified elsewhere (ICD10: I79)   | 0 |
| Phlebitis and thrombophlebitis (ICD10: I80)   | 0 |
| Portal vein thrombosis (ICD10: I81)   | 0 |
| Other venous embolism and thrombosis (ICD10: I82)   | 0 |
| Varicose veins of lower extremities (ICD10: I83)  | 0 |
| Haemorrhoids (ICD10: I84)   | 0 |
| Oesophageal varices (ICD10: I85)  | 0 |
| Varicose veins of other sites (ICD10: I86)  | 0 |
| Other disorders of veins (ICD10: I87)   | 0 |
| Nonspecific lymphadenitis (ICD10: I88)  | 0 |
| Other noninfective disorders of lymphatic vessels and lymph nodes (ICD10: I89)                    | 0 |
| Hypotension (ICD10: I95)  | 0 |
| Postprocedural disorders of circulatory system, not elsewhere classified (ICD10: I97)             | 0 |
| Other disorders of circulatory system in diseases classified elsewhere (ICD10: I98)               | 0 |
| Other and unspecified disorders of circulatory system (ICD10: I99)                                | 0 |
| Acute nasopharyngitis [common cold] (ICD10: J00)  | 0 |
| Acute sinusitis (ICD10: J01)  | 0 |
| Acute pharyngitis (ICD10: J02)  | 0 |
| Acute tonsillitis (ICD10: J03)  | 0 |
| Acute laryngitis and tracheitis (ICD10: J04)  | 0 |
| Acute obstructive laryngitis [croup] and epiglottitis (ICD10: J05)                                | 0 |
| Acute upper respiratory infections of multiple and unspecified sites (ICD10: J06)                 | 0 |
| Influenza due to other identified influenza virus (ICD10: J10)                                    | 0 |
| Influenza, virus not identified (ICD10: J11)  | 0 |
| Viral pneumonia, not elsewhere classified (ICD10: J12)  | 0 |
| Pneumonia due to Streptococcus pneumoniae (ICD10: J13)  | 0 |
| Pneumonia due to Haemophilus influenzae (ICD10: J14)  | 0 |
| Bacterial pneumonia, not elsewhere classified (ICD10: J15)  | 0 |
| Pneumonia due to other infectious organisms, not elsewhere classified (ICD10: J16)                | 0 |
| Pneumonia in diseases classified elsewhere (ICD10: J17)   | 0 |
| Pneumonia, organism unspecified (ICD10: J18)  | 0 |
| Acute bronchitis (ICD10: J20)   | 0 |

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| Acute bronchiolitis (ICD10: J21)   | 0 |
| Unspecified acute lower respiratory infection (ICD10: J22)                                   | 0 |
| Vasomotor and allergic rhinitis (ICD10: J30)   | 0 |
| Chronic rhinitis, nasopharyngitis and pharyngitis (ICD10: J31)                               | 0 |
| Chronic sinusitis (ICD10: J32)   | 0 |
| Nasal polyp (ICD10: J33)   | 0 |
| Other disorders of nose and nasal sinuses (ICD10: J34)                                       | 0 |
| Chronic diseases of tonsils and adenoids (ICD10: J35)  | 0 |
| Peritonsillar abscess (ICD10: J36)   | 0 |
| Chronic laryngitis and laryngotracheitis (ICD10: J37)  | 0 |
| Diseases of vocal cords and larynx, not elsewhere classified (ICD10: J38)                    | 0 |
| Other diseases of upper respiratory tract (ICD10: J39)                                       | 0 |
| Bronchitis, not specified as acute or chronic (ICD10: J40)                                   | 0 |
| Simple and mucopurulent chronic bronchitis (ICD10: J41)                                      | 0 |
| Unspecified chronic bronchitis (ICD10: J42)  | 0 |
| Emphysema (ICD10: J43)   | 0 |
| Other chronic obstructive pulmonary disease (ICD10: J44)                                     | 0 |
| Asthma (ICD10: J45)  | 0 |
| Status asthmaticus (ICD10: J46)  | 0 |
| Bronchiectasis (ICD10: J47)  | 0 |
| Coalworker pneumoconiosis (ICD10: J60)   | 0 |
| Pneumoconiosis due to asbestos and other mineral fibres (ICD10: J61)                         | 0 |
| Pneumoconiosis due to other inorganic dusts (ICD10: J63)                                     | 0 |
| Unspecified pneumoconiosis (ICD10: J64)  | 0 |
| Hypersensitivity pneumonitis due to organic dust (ICD10: J67)                                | 0 |
| Respiratory conditions due to inhalation of chemicals, gases, fumes and vapours (ICD10: J68) | 0 |
| Pneumonitis due to solids and liquids (ICD10: J69)   | 0 |
| Respiratory conditions due to other external agents (ICD10: J70)                             | 0 |
| Adult respiratory distress syndrome (ICD10: J80)   | 0 |
| Pulmonary oedema (ICD10: J81)  | 0 |
| Pulmonary eosinophilia, not elsewhere classified (ICD10: J82)                                | 0 |
| Other interstitial pulmonary diseases (ICD10: J84)   | 0 |
| Abscess of lung and mediastinum (ICD10: J85)   | 0 |
| Pyothorax (ICD10: J86)   | 0 |
| Pleural effusion, not elsewhere classified (ICD10: J90)                                      | 0 |
| Pleural effusion in conditions classified elsewhere (ICD10: J91)                             | 0 |
| Pleural plaque (ICD10: J92)  | 0 |
| Pneumothorax (ICD10: J93)  | 0 |
| Other pleural conditions (ICD10: J94)  | 0 |
| Postprocedural respiratory disorders, not elsewhere classified (ICD10: J95)                  | 0 |
| Respiratory failure, not elsewhere classified (ICD10: J96)                                   | 0 |
| Other respiratory disorders (ICD10: J98)   | 0 |
| Respiratory disorders in diseases classified elsewhere (ICD10: J99)                          | 0 |
| Disorders of tooth development and eruption (ICD10: K00)                                     | 0 |

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| Embedded and impacted teeth (ICD10: K01)                               | 0 |
| Dental caries (ICD10: K02)   | 0 |
| Other diseases of hard tissues of teeth (ICD10: K03)                   | 0 |
| Diseases of pulp and periapical tissues (ICD10: K04)                   | 0 |
| Gingivitis and periodontal diseases (ICD10: K05)                       | 0 |
| Other disorders of gingiva and edentulous alveolar ridge (ICD10: K06)  | 0 |
| Dentofacial anomalies [including malocclusion] (ICD10: K07)            | 0 |
| Other disorders of teeth and supporting structures (ICD10: K08)        | 0 |
| Cysts of oral region, not elsewhere classified (ICD10: K09)            | 0 |
| Other diseases of jaws (ICD10: K10)                                    | 0 |
| Diseases of salivary glands (ICD10: K11)                               | 0 |
| Stomatitis and related lesions (ICD10: K12)                            | 0 |
| Other diseases of lip and oral mucosa (ICD10: K13)                     | 0 |
| Diseases of tongue (ICD10: K14)  | 0 |
| Oesophagitis (ICD10: K20)  | 0 |
| Gastro-oesophageal reflux disease (ICD10: K21)                         | 0 |
| Other diseases of oesophagus (ICD10: K22)                              | 0 |
| Disorders of oesophagus in diseases classified elsewhere (ICD10: K23)  | 0 |
| Gastric ulcer (ICD10: K25)   | 0 |
| Duodenal ulcer (ICD10: K26)  | 0 |
| Peptic ulcer, site unspecified (ICD10: K27)                            | 0 |
| Gastrojejunal ulcer (ICD10: K28)                                       | 0 |
| Gastritis and duodenitis (ICD10: K29)                                  | 0 |
| Dyspepsia (ICD10: K30)   | 0 |
| Other diseases of stomach and duodenum (ICD10: K31)                    | 0 |
| Acute appendicitis (ICD10: K35)  | 0 |
| Other appendicitis (ICD10: K36)  | 0 |
| Unspecified appendicitis (ICD10: K37)                                  | 0 |
| Other diseases of appendix (ICD10: K38)                                | 0 |
| Inguinal hernia (ICD10: K40)   | 0 |
| Femoral hernia (ICD10: K41)  | 0 |
| Umbilical hernia (ICD10: K42)  | 0 |
| Ventral hernia (ICD10: K43)  | 0 |
| Diaphragmatic hernia (ICD10: K44)                                      | 0 |
| Other abdominal hernia (ICD10: K45)                                    | 0 |
| Unspecified abdominal hernia (ICD10: K46)                              | 0 |
| Crohn disease [regional enteritis] (ICD10: K50)                        | 0 |
| Ulcerative colitis (ICD10: K51)  | 0 |
| Other noninfective gastroenteritis and colitis (ICD10: K52)            | 0 |
| Vascular disorders of intestine (ICD10: K55)                           | 0 |
| Paralytic ileus and intestinal obstruction without hernia (ICD10: K56) | 0 |
| Diverticular disease of intestine (ICD10: K57)                         | 0 |
| Irritable bowel syndrome (ICD10: K58)                                  | 0 |
| Other functional intestinal disorders (ICD10: K59)                     | 0 |

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| Fissure and fistula of anal and rectal regions (ICD10: K60)  | 0 |
| Abscess of anal and rectal regions (ICD10: K61)  | 0 |
| Other diseases of anus and rectum (ICD10: K62)   | 0 |
| Other diseases of intestine (ICD10: K63)   | 0 |
| Peritonitis (ICD10: K65)   | 0 |
| Other disorders of peritoneum (ICD10: K66)   | 0 |
| Disorders of peritoneum in infectious diseases classified elsewhere (ICD10: K67)                   | 0 |
| Alcoholic liver disease (ICD10: K70)   | 0 |
| Toxic liver disease (ICD10: K71)   | 0 |
| Hepatic failure, not elsewhere classified (ICD10: K72)   | 0 |
| Chronic hepatitis, not elsewhere classified (ICD10: K73)   | 0 |
| Fibrosis and cirrhosis of liver (ICD10: K74)   | 0 |
| Other inflammatory liver diseases (ICD10: K75)   | 0 |
| Other diseases of liver (ICD10: K76)   | 0 |
| Liver disorders in diseases classified elsewhere (ICD10: K77)                                      | 0 |
| Cholelithiasis (ICD10: K80)  | 0 |
| Cholecystitis (ICD10: K81)   | 0 |
| Other diseases of gallbladder (ICD10: K82)   | 0 |
| Other diseases of biliary tract (ICD10: K83)   | 0 |
| Acute pancreatitis (ICD10: K85)  | 0 |
| Other diseases of pancreas (ICD10: K86)  | 0 |
| Disorders of gallbladder, biliary tract and pancreas in diseases classified elsewhere (ICD10: K87) | 0 |
| Intestinal malabsorption (ICD10: K90)  | 0 |
| Postprocedural disorders of digestive system, not elsewhere classified (ICD10: K91)                | 0 |
| Other diseases of digestive system (ICD10: K92)  | 0 |
| Disorders of other digestive organs in diseases classified elsewhere (ICD10: K93)                  | 0 |
| Staphylococcal scalded skin syndrome (ICD10: L00)  | 0 |
| Impetigo (ICD10: L01)  | 0 |
| Cutaneous abscess, furuncle and carbuncle (ICD10: L02)   | 0 |
| Cellulitis (ICD10: L03)  | 0 |
| Acute lymphadenitis (ICD10: L04)   | 0 |
| Pilonidal cyst (ICD10: L05)  | 0 |
| Other local infections of skin and subcutaneous tissue (ICD10: L08)                                | 0 |
| Pemphigus (ICD10: L10)   | 0 |
| Other acantholytic disorders (ICD10: L11)  | 0 |
| Pemphigoid (ICD10: L12)  | 0 |
| Other bullous disorders (ICD10: L13)   | 0 |
| Bullous disorders in diseases classified elsewhere (ICD10: L14)                                    | 0 |
| Atopic dermatitis (ICD10: L20)   | 0 |
| Seborrhoeic dermatitis (ICD10: L21)  | 0 |
| Diaper [napkin] dermatitis (ICD10: L22)  | 0 |
| Allergic contact dermatitis (ICD10: L23)   | 0 |
| Irritant contact dermatitis (ICD10: L24)   | 0 |
| Unspecified contact dermatitis (ICD10: L25)  | 0 |

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| Exfoliative dermatitis (ICD10: L26)   | 0 |
| Dermatitis due to substances taken internally (ICD10: L27)                        | 0 |
| Lichen simplex chronicus and prurigo (ICD10: L28)                                 | 0 |
| Pruritus (ICD10: L29)   | 0 |
| Other dermatitis (ICD10: L30)   | 0 |
| Psoriasis (ICD10: L40)  | 0 |
| Parapsoriasis (ICD10: L41)  | 0 |
| Pityriasis rosea (ICD10: L42)   | 0 |
| Lichen planus (ICD10: L43)  | 0 |
| Other papulosquamous disorders (ICD10: L44)                                       | 0 |
| Urticaria (ICD10: L50)  | 0 |
| Erythema multiforme (ICD10: L51)  | 0 |
| Erythema nodosum (ICD10: L52)   | 0 |
| Other erythematous conditions (ICD10: L53)  | 0 |
| Erythema in diseases classified elsewhere (ICD10: L54)                            | 0 |
| Sunburn (ICD10: L55)  | 0 |
| Other acute skin changes due to ultraviolet radiation (ICD10: L56)                | 0 |
| Skin changes due to chronic exposure to nonionizing radiation (ICD10: L57)        | 0 |
| Radiodermatitis (ICD10: L58)  | 0 |
| Other disorders of skin and subcutaneous tissue related to radiation (ICD10: L59) | 0 |
| Nail disorders (ICD10: L60)   | 0 |
| Alopecia areata (ICD10: L63)  | 0 |
| Androgenic alopecia (ICD10: L64)  | 0 |
| Other nonscarring hair loss (ICD10: L65)  | 0 |
| Cicatricial alopecia [scarring hair loss] (ICD10: L66)                            | 0 |
| Hypertrichosis (ICD10: L68)   | 0 |
| Acne (ICD10: L70)   | 0 |
| Rosacea (ICD10: L71)  | 0 |
| Follicular cysts of skin and subcutaneous tissue (ICD10: L72)                     | 0 |
| Other follicular disorders (ICD10: L73)   | 0 |
| Eccrine sweat disorders (ICD10: L74)  | 0 |
| Apocrine sweat disorders (ICD10: L75)   | 0 |
| Vitiligo (ICD10: L80)   | 0 |
| Other disorders of pigmentation (ICD10: L81)                                      | 0 |
| Seborrhoeic keratosis (ICD10: L82)  | 0 |
| Acanthosis nigricans (ICD10: L83)   | 0 |
| Corns and callosities (ICD10: L84)  | 0 |
| Other epidermal thickening (ICD10: L85)   | 0 |
| Transepidermal elimination disorders (ICD10: L87)                                 | 0 |
| Pyoderma gangrenosum (ICD10: L88)   | 0 |
| Decubitus ulcer and pressure area (ICD10: L89)                                    | 0 |
| Atrophic disorders of skin (ICD10: L90)   | 0 |
| Hypertrophic disorders of skin (ICD10: L91)                                       | 0 |
| Granulomatous disorders of skin and subcutaneous tissue (ICD10: L92)              | 0 |

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| Lupus erythematosus (ICD10: L93)  | 0 |
| Other localized connective tissue disorders (ICD10: L94)  | 0 |
| Vasculitis limited to skin, not elsewhere classified (ICD10: L95)                                 | 0 |
| Ulcer of lower limb, not elsewhere classified (ICD10: L97)  | 0 |
| Other disorders of skin and subcutaneous tissue, not elsewhere classified (ICD10: L98)            | 0 |
| Other disorders of skin and subcutaneous tissue in diseases classified elsewhere (ICD10: L99)     | 0 |
| Pyogenic arthritis (ICD10: M00)   | 0 |
| Direct infections of joint in infectious and parasitic diseases classified elsewhere (ICD10: M01) | 0 |
| Reactive arthropathies (ICD10: M02)   | 0 |
| Postinfective and reactive arthropathies in diseases classified elsewhere (ICD10: M03)            | 0 |
| Other rheumatoid arthritis (ICD10: M06)   | 0 |
| Psoriatic and enteropathic arthropathies (ICD10: M07)   | 0 |
| Juvenile arthritis (ICD10: M08)   | 0 |
| Gout (ICD10: M10)   | 0 |
| Other crystal arthropathies (ICD10: M11)  | 0 |
| Other specific arthropathies (ICD10: M12)   | 0 |
| Other arthritis (ICD10: M13)  | 0 |
| Arthropathies in other diseases classified elsewhere (ICD10: M14)                                 | 0 |
| Polyarthrosis (ICD10: M15)  | 0 |
| Coxarthrosis [arthrosis of hip] (ICD10: M16)  | 0 |
| Gonarthrosis [arthrosis of knee] (ICD10: M17)   | 0 |
| Arthrosis of first carpometacarpal joint (ICD10: M18)   | 0 |
| Other arthrosis (ICD10: M19)  | 0 |
| Acquired deformities of fingers and toes (ICD10: M20)   | 0 |
| Other acquired deformities of limbs (ICD10: M21)  | 0 |
| Disorders of patella (ICD10: M22)   | 0 |
| Internal derangement of knee (ICD10: M23)   | 0 |
| Other specific joint derangements (ICD10: M24)  | 0 |
| Other joint disorders, not elsewhere classified (ICD10: M25)                                      | 0 |
| Polyarteritis nodosa and related conditions (ICD10: M30)  | 0 |
| Other necrotizing vasculopathies (ICD10: M31)   | 0 |
| Systemic lupus erythematosus (ICD10: M32)   | 0 |
| Dermatopolymyositis (ICD10: M33)  | 0 |
| Systemic sclerosis (ICD10: M34)   | 0 |
| Other systemic involvement of connective tissue (ICD10: M35)                                      | 0 |
| Systemic disorders of connective tissue in diseases classified elsewhere (ICD10: M36)             | 0 |
| Kyphosis and lordosis (ICD10: M40)  | 0 |
| Scoliosis (ICD10: M41)  | 0 |
| Spinal osteochondrosis (ICD10: M42)   | 0 |
| Other deforming dorsopathies (ICD10: M43)   | 0 |
| Ankylosing spondylitis (ICD10: M45)   | 0 |
| Other inflammatory spondylopathies (ICD10: M46)   | 0 |
| Spondylosis (ICD10: M47)  | 0 |
| Other spondylopathies (ICD10: M48)  | 0 |



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| Spondylopathies in diseases classified elsewhere (ICD10: M49)                           | 0 |
| Cervical disc disorders (ICD10: M50)  | 0 |
| Other intervertebral disc disorders (ICD10: M51)  | 0 |
| Other dorsopathies, not elsewhere classified (ICD10: M53)                               | 0 |
| Dorsalgia (ICD10: M54)  | 0 |
| Myositis (ICD10: M60)   | 0 |
| Calcification and ossification of muscle (ICD10: M61)                                   | 0 |
| Other disorders of muscle (ICD10: M62)  | 0 |
| Disorders of muscle in diseases classified elsewhere (ICD10: M63)                       | 0 |
| Synovitis and tenosynovitis (ICD10: M65)  | 0 |
| Spontaneous rupture of synovium and tendon (ICD10: M66)                                 | 0 |
| Other disorders of synovium and tendon (ICD10: M67)                                     | 0 |
| Disorders of synovium and tendon in diseases classified elsewhere (ICD10: M68)          | 0 |
| Soft tissue disorders related to use, overuse and pressure (ICD10: M70)                 | 0 |
| Other bursopathies (ICD10: M71)   | 0 |
| Fibroblastic disorders (ICD10: M72)   | 0 |
| Enthesopathies of lower limb, excluding foot (ICD10: M76)                               | 0 |
| Other enthesopathies (ICD10: M77)   | 0 |
| Other soft tissue disorders, not elsewhere classified (ICD10: M79)                      | 0 |
| Osteoporosis with pathological fracture (ICD10: M80)                                    | 0 |
| Osteoporosis without pathological fracture (ICD10: M81)                                 | 0 |
| Osteoporosis in diseases classified elsewhere (ICD10: M82)                              | 0 |
| Adult osteomalacia (ICD10: M83)   | 0 |
| Disorders of continuity of bone (ICD10: M84)  | 0 |
| Other disorders of bone density and structure (ICD10: M85)                              | 0 |
| Osteomyelitis (ICD10: M86)  | 0 |
| Osteonecrosis (ICD10: M87)  | 0 |
| Paget disease of bone [osteitis deformans] (ICD10: M88)                                 | 0 |
| Other disorders of bone (ICD10: M89)  | 0 |
| Osteopathies in diseases classified elsewhere (ICD10: M90)                              | 0 |
| Juvenile osteochondrosis of hip and pelvis (ICD10: M91)                                 | 0 |
| Other juvenile osteochondrosis (ICD10: M92)   | 0 |
| Other osteochondropathies (ICD10: M93)  | 0 |
| Other disorders of cartilage (ICD10: M94)   | 0 |
| Other acquired deformities of musculoskeletal system and connective tissue (ICD10: M95) | 0 |
| Postprocedural musculoskeletal disorders, not elsewhere classified (ICD10: M96)         | 0 |
| Biomechanical lesions, not elsewhere classified (ICD10: M99)                            | 0 |
| Acute nephritic syndrome (ICD10: N00)   | 0 |
| Rapidly progressive nephritic syndrome (ICD10: N01)                                     | 0 |
| Recurrent and persistent haematuria (ICD10: N02)  | 0 |
| Chronic nephritic syndrome (ICD10: N03)   | 0 |
| Nephrotic syndrome (ICD10: N04)   | 0 |
| Unspecified nephritic syndrome (ICD10: N05)   | 0 |
| Isolated proteinuria with specified morphological lesion (ICD10: N06)                   | 0 |

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| Glomerular disorders in diseases classified elsewhere (ICD10: N08)                    | 0 |
| Acute tubulo-interstitial nephritis (ICD10: N10)                                      | 0 |
| Chronic tubulo-interstitial nephritis (ICD10: N11)                                    | 0 |
| Tubulo-interstitial nephritis, not specified as acute or chronic (ICD10: N12)         | 0 |
| Obstructive and reflux uropathy (ICD10: N13)  | 0 |
| Drug- and heavy-metal-induced tubulo-interstitial and tubular conditions (ICD10: N14) | 0 |
| Other renal tubulo-interstitial diseases (ICD10: N15)                                 | 0 |
| Renal tubulo-interstitial disorders in diseases classified elsewhere (ICD10: N16)     | 0 |
| Acute renal failure (ICD10: N17)  | 0 |
| Chronic kidney disease (ICD10: N18)   | 0 |
| Calculus of kidney and ureter (ICD10: N20)  | 0 |
| Calculus of lower urinary tract (ICD10: N21)  | 0 |
| Unspecified renal colic (ICD10: N23)  | 0 |
| Disorders resulting from impaired renal tubular function (ICD10: N25)                 | 0 |
| Unspecified contracted kidney (ICD10: N26)  | 0 |
| Small kidney of unknown cause (ICD10: N27)  | 0 |
| Other disorders of kidney and ureter, not elsewhere classified (ICD10: N28)           | 0 |
| Other disorders of kidney and ureter in diseases classified elsewhere (ICD10: N29)    | 0 |
| Cystitis (ICD10: N30)   | 0 |
| Neuromuscular dysfunction of bladder, not elsewhere classified (ICD10: N31)           | 0 |
| Other disorders of bladder (ICD10: N32)   | 0 |
| Bladder disorders in diseases classified elsewhere (ICD10: N33)                       | 0 |
| Urethritis and urethral syndrome (ICD10: N34)   | 0 |
| Urethral stricture (ICD10: N35)   | 0 |
| Other disorders of urethra (ICD10: N36)   | 0 |
| Urethral disorders in diseases classified elsewhere (ICD10: N37)                      | 0 |
| Other disorders of urinary system (ICD10: N39)  | 0 |
| Hyperplasia of prostate (ICD10: N40)  | 0 |
| Inflammatory diseases of prostate (ICD10: N41)  | 0 |
| Other disorders of prostate (ICD10: N42)  | 0 |
| Hydrocele and spermatocele (ICD10: N43)   | 0 |
| Torsion of testis (ICD10: N44)  | 0 |
| Orchitis and epididymitis (ICD10: N45)  | 0 |
| Male infertility (ICD10: N46)   | 0 |
| Redundant prepuce, phimosis and paraphimosis (ICD10: N47)                             | 0 |
| Other disorders of penis (ICD10: N48)   | 0 |
| Inflammatory disorders of male genital organs, not elsewhere classified (ICD10: N49)  | 0 |
| Other disorders of male genital organs (ICD10: N50)                                   | 0 |
| Disorders of male genital organs in diseases classified elsewhere (ICD10: N51)        | 0 |
| Benign mammary dysplasia (ICD10: N60)   | 0 |
| Inflammatory disorders of breast (ICD10: N61)   | 0 |
| Hypertrophy of breast (ICD10: N62)  | 0 |
| Unspecified lump in breast (ICD10: N63)   | 0 |
| Other disorders of breast (ICD10: N64)  | 0 |

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| Salpingitis and oophoritis (ICD10: N70)  | 0 |
| Inflammatory disease of uterus, except cervix (ICD10: N71)                                       | 0 |
| Inflammatory disease of cervix uteri (ICD10: N72)  | 0 |
| Other female pelvic inflammatory diseases (ICD10: N73)   | 0 |
| Diseases of Bartholin gland (ICD10: N75)   | 0 |
| Other inflammation of vagina and vulva (ICD10: N76)  | 0 |
| Vulvovaginal ulceration and inflammation in diseases classified elsewhere (ICD10: N77)           | 0 |
| Endometriosis (ICD10: N80)   | 0 |
| Female genital prolapse (ICD10: N81)   | 0 |
| Fistulae involving female genital tract (ICD10: N82)   | 0 |
| Noninflammatory disorders of ovary, fallopian tube and broad ligament (ICD10: N83)               | 0 |
| Polyp of female genital tract (ICD10: N84)   | 0 |
| Other noninflammatory disorders of uterus, except cervix (ICD10: N85)                            | 0 |
| Erosion and ectropion of cervix uteri (ICD10: N86)   | 0 |
| Dysplasia of cervix uteri (ICD10: N87)   | 0 |
| Other noninflammatory disorders of cervix uteri (ICD10: N88)                                     | 0 |
| Other noninflammatory disorders of vagina (ICD10: N89)   | 0 |
| Other noninflammatory disorders of vulva and perineum (ICD10: N90)                               | 0 |
| Absent, scanty and rare menstruation (ICD10: N91)  | 0 |
| Excessive, frequent and irregular menstruation (ICD10: N92)                                      | 0 |
| Other abnormal uterine and vaginal bleeding (ICD10: N93)   | 0 |
| Pain and other conditions associated with female genital organs and menstrual cycle (ICD10: N94) | 0 |
| Menopausal and other perimenopausal disorders (ICD10: N95)                                       | 0 |
| Habitual aborter (ICD10: N96)  | 0 |
| Female infertility (ICD10: N97)  | 0 |
| Complications associated with artificial fertilization (ICD10: N98)                              | 0 |
| Postprocedural disorders of genitourinary system, not elsewhere classified (ICD10: N99)          | 0 |
| Ectopic pregnancy (ICD10: O00)   | 0 |
| Hydatidiform mole (ICD10: O01)   | 0 |
| Other abnormal products of conception (ICD10: O02)   | 0 |
| Spontaneous abortion (ICD10: O03)  | 0 |
| Medical abortion (ICD10: O04)  | 0 |
| Unspecified abortion (ICD10: O06)  | 0 |
| Failed attempted abortion (ICD10: O07)   | 0 |
| Complications following abortion and ectopic and molar pregnancy (ICD10: O08)                    | 0 |
| Pre-existing hypertension complicating pregnancy, childbirth and the puerperium (ICD10: O10)     | 0 |
| Pre-existing hypertensive disorder with superimposed proteinuria (ICD10: O11)                    | 0 |
| Gestational [pregnancy-induced] oedema and proteinuria without hypertension (ICD10: O12)         | 0 |
| Gestational [pregnancy-induced] hypertension without significant proteinuria (ICD10: O13)        | 0 |
| Gestational [pregnancy-induced] hypertension with significant proteinuria (ICD10: O14)           | 0 |
| Eclampsia (ICD10: O15)   | 0 |
| Unspecified maternal hypertension (ICD10: O16)   | 0 |
| Haemorrhage in early pregnancy (ICD10: O20)  | 0 |
| Excessive vomiting in pregnancy (ICD10: O21)   | 0 |

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| Venous complications in pregnancy (ICD10: O22)  | 0 |
| Infections of genitourinary tract in pregnancy (ICD10: O23)                                       | 0 |
| Diabetes mellitus in pregnancy (ICD10: O24)   | 0 |
| Maternal care for other conditions predominantly related to pregnancy (ICD10: O26)                | 0 |
| Abnormal findings on antenatal screening of mother (ICD10: O28)                                   | 0 |
| Complications of anaesthesia during pregnancy (ICD10: O29)  | 0 |
| Multiple gestation (ICD10: O30)   | 0 |
| Complications specific to multiple gestation (ICD10: O31)   | 0 |
| Maternal care for known or suspected malpresentation of fetus (ICD10: O32)                        | 0 |
| Maternal care for known or suspected disproportion (ICD10: O33)                                   | 0 |
| Maternal care for known or suspected abnormality of pelvic organs (ICD10: O34)                    | 0 |
| Maternal care for known or suspected fetal abnormality and damage (ICD10: O35)                    | 0 |
| Maternal care for other known or suspected fetal problems (ICD10: O36)                            | 0 |
| Polyhydramnios (ICD10: O40)   | 0 |
| Other disorders of amniotic fluid and membranes (ICD10: O41)                                      | 0 |
| Premature rupture of membranes (ICD10: O42)   | 0 |
| Placental disorders (ICD10: O43)  | 0 |
| Placenta praevia (ICD10: O44)   | 0 |
| Premature separation of placenta [abruptio placentae] (ICD10: O45)                                | 0 |
| Antepartum haemorrhage, not elsewhere classified (ICD10: O46)                                     | 0 |
| False labour (ICD10: O47)   | 0 |
| Prolonged pregnancy (ICD10: O48)  | 0 |
| Preterm labour and delivery (ICD10: O60)  | 0 |
| Failed induction of labour (ICD10: O61)   | 0 |
| Abnormalities of forces of labour (ICD10: O62)  | 0 |
| Long labour (ICD10: O63)  | 0 |
| Obstructed labour due to malposition and malpresentation of fetus (ICD10: O64)                    | 0 |
| Obstructed labour due to maternal pelvic abnormality (ICD10: O65)                                 | 0 |
| Other obstructed labour (ICD10: O66)  | 0 |
| Labour and delivery complicated by intrapartum haemorrhage, not elsewhere classified (ICD10: O67) | 0 |
| Labour and delivery complicated by fetal stress [distress] (ICD10: O68)                           | 0 |
| Labour and delivery complicated by umbilical cord complications (ICD10: O69)                      | 0 |
| Perineal laceration during delivery (ICD10: O70)  | 0 |
| Other obstetric trauma (ICD10: O71)   | 0 |
| Postpartum haemorrhage (ICD10: O72)   | 0 |
| Retained placenta and membranes, without haemorrhage (ICD10: O73)                                 | 0 |
| Complications of anaesthesia during labour and delivery (ICD10: O74)                              | 0 |
| Other complications of labour and delivery, not elsewhere classified (ICD10: O75)                 | 0 |
| Single spontaneous delivery (ICD10: O80)  | 0 |
| Single delivery by forceps and vacuum extractor (ICD10: O81)                                      | 0 |
| Single delivery by caesarean section (ICD10: O82)   | 0 |
| Other assisted single delivery (ICD10: O83)   | 0 |
| Multiple delivery (ICD10: O84)  | 0 |
| Puerperal sepsis (ICD10: O85)   | 0 |

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| Other puerperal infections (ICD10: O86)  | 0 |
| Venous complications in the puerperium (ICD10: O87)  | 0 |
| Obstetric embolism (ICD10: O88)  | 0 |
| Complications of anaesthesia during the puerperium (ICD10: O89)  | 0 |
| Complications of the puerperium, not elsewhere classified (ICD10: O90)   | 0 |
| Infections of breast associated with childbirth (ICD10: O91)   | 0 |
| Other disorders of breast and lactation associated with childbirth (ICD10: O92)  | 0 |
| Maternal infectious and parasitic diseases classifiable elsewhere but complicating pregnancy, childbirth and the puerperium (ICD10: O98) | 0 |
| Other maternal diseases classifiable elsewhere but complicating pregnancy, childbirth and the puerperium (ICD10: O99)                    | 0 |
| Fetus and newborn affected by complications of placenta, cord and membranes (ICD10: P02)   | 0 |
| Slow fetal growth and fetal malnutrition (ICD10: P05)  | 0 |
| Other birth injuries (ICD10: P15)  | 0 |
| Congenital pneumonia (ICD10: P23)  | 0 |
| Congenital viral diseases (ICD10: P35)   | 0 |
| Other conditions of integument specific to fetus and newborn (ICD10: P83)  | 0 |
| Microcephaly (ICD10: Q02)  | 0 |
| Congenital hydrocephalus (ICD10: Q03)  | 0 |
| Other congenital malformations of brain (ICD10: Q04)   | 0 |
| Spina bifida (ICD10: Q05)  | 0 |
| Other congenital malformations of spinal cord (ICD10: Q06)   | 0 |
| Other congenital malformations of nervous system (ICD10: Q07)  | 0 |
| Congenital malformations of eyelid, lacrimal apparatus and orbit (ICD10: Q10)  | 0 |
| Anophthalmos, microphthalmos and macropthalmos (ICD10: Q11)  | 0 |
| Congenital lens malformations (ICD10: Q12)   | 0 |
| Congenital malformations of anterior segment of eye (ICD10: Q13)   | 0 |
| Congenital malformations of posterior segment of eye (ICD10: Q14)  | 0 |
| Other congenital malformations of eye (ICD10: Q15)   | 0 |
| Congenital malformations of ear causing impairment of hearing (ICD10: Q16)   | 0 |
| Other congenital malformations of ear (ICD10: Q17)   | 0 |
| Other congenital malformations of face and neck (ICD10: Q18)   | 0 |
| Congenital malformations of cardiac chambers and connections (ICD10: Q20)  | 0 |
| Congenital malformations of cardiac septa (ICD10: Q21)   | 0 |
| Congenital malformations of pulmonary and tricuspid valves (ICD10: Q22)  | 0 |
| Congenital malformations of aortic and mitral valves (ICD10: Q23)  | 0 |
| Other congenital malformations of heart (ICD10: Q24)   | 0 |
| Congenital malformations of great arteries (ICD10: Q25)  | 0 |
| Congenital malformations of great veins (ICD10: Q26)   | 0 |
| Other congenital malformations of peripheral vascular system (ICD10: Q27)  | 0 |
| Other congenital malformations of circulatory system (ICD10: Q28)  | 0 |
| Congenital malformations of nose (ICD10: Q30)  | 0 |
| Congenital malformations of larynx (ICD10: Q31)  | 0 |
| Congenital malformations of lung (ICD10: Q33)  | 0 |
| Other congenital malformations of respiratory system (ICD10: Q34)  | 0 |
| Cleft palate (ICD10: Q35)  | 0 |

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| Cleft lip (ICD10: Q36)   | 0 |
| Cleft palate with cleft lip (ICD10: Q37)   | 0 |
| Other congenital malformations of tongue, mouth and pharynx (ICD10: Q38)                           | 0 |
| Congenital malformations of oesophagus (ICD10: Q39)  | 0 |
| Other congenital malformations of upper alimentary tract (ICD10: Q40)                              | 0 |
| Congenital absence, atresia and stenosis of large intestine (ICD10: Q42)                           | 0 |
| Other congenital malformations of intestine (ICD10: Q43)   | 0 |
| Congenital malformations of gallbladder, bile ducts and liver (ICD10: Q44)                         | 0 |
| Other congenital malformations of digestive system (ICD10: Q45)                                    | 0 |
| Congenital malformations of ovaries, fallopian tubes and broad ligaments (ICD10: Q50)              | 0 |
| Congenital malformations of uterus and cervix (ICD10: Q51)   | 0 |
| Other congenital malformations of female genitalia (ICD10: Q52)                                    | 0 |
| Undescended testicle (ICD10: Q53)  | 0 |
| Hypospadias (ICD10: Q54)   | 0 |
| Other congenital malformations of male genital organs (ICD10: Q55)                                 | 0 |
| Renal agenesis and other reduction defects of kidney (ICD10: Q60)                                  | 0 |
| Cystic kidney disease (ICD10: Q61)   | 0 |
| Congenital obstructive defects of renal pelvis and congenital malformations of ureter (ICD10: Q62) | 0 |
| Other congenital malformations of kidney (ICD10: Q63)  | 0 |
| Other congenital malformations of urinary system (ICD10: Q64)                                      | 0 |
| Congenital deformities of hip (ICD10: Q65)   | 0 |
| Congenital deformities of feet (ICD10: Q66)  | 0 |
| Congenital musculoskeletal deformities of head, face, spine and chest (ICD10: Q67)                 | 0 |
| Other congenital musculoskeletal deformities (ICD10: Q68)  | 0 |
| Syndactyly (ICD10: Q70)  | 0 |
| Reduction defects of upper limb (ICD10: Q71)   | 0 |
| Reduction defects of lower limb (ICD10: Q72)   | 0 |
| Other congenital malformations of limb(s) (ICD10: Q74)   | 0 |
| Other congenital malformations of skull and face bones (ICD10: Q75)                                | 0 |
| Congenital malformations of spine and bony thorax (ICD10: Q76)                                     | 0 |
| Osteochondrodysplasia with defects of growth of tubular bones and spine (ICD10: Q77)               | 0 |
| Other osteochondrodysplasias (ICD10: Q78)  | 0 |
| Congenital malformations of the musculoskeletal system, not elsewhere classified (ICD10: Q79)      | 0 |
| Congenital ichthyosis (ICD10: Q80)   | 0 |
| Epidermolysis bullosa (ICD10: Q81)   | 0 |
| Other congenital malformations of skin (ICD10: Q82)  | 0 |
| Congenital malformations of breast (ICD10: Q83)  | 0 |
| Other congenital malformations of integument (ICD10: Q84)  | 0 |
| Phakomatoses, not elsewhere classified (ICD10: Q85)  | 0 |
| Other specified congenital malformation syndromes affecting multiple systems (ICD10: Q87)          | 0 |
| Other congenital malformations, not elsewhere classified (ICD10: Q89)                              | 0 |
| Down syndrome (ICD10: Q90)   | 0 |
| Edwards syndrome and Patau syndrome (ICD10: Q91)   | 0 |
| Turner syndrome (ICD10: Q96)   | 0 |

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| Other sex chromosome abnormalities, female phenotype, not elsewhere classified (ICD10: Q97) | 0 |
| Other sex chromosome abnormalities, male phenotype, not elsewhere classified (ICD10: Q98)   | 0 |
| Other chromosome abnormalities, not elsewhere classified (ICD10: Q99)                       | 0 |
| Abnormalities of heart beat (ICD10: R00)  | 0 |
| Cardiac murmurs and other cardiac sounds (ICD10: R01)                                       | 0 |
| Gangrene, not elsewhere classified (ICD10: R02)   | 0 |
| Abnormal blood-pressure reading, without diagnosis (ICD10: R03)                             | 0 |
| Haemorrhage from respiratory passages (ICD10: R04)  | 0 |
| Cough (ICD10: R05)  | 0 |
| Abnormalities of breathing (ICD10: R06)   | 0 |
| Pain in throat and chest (ICD10: R07)   | 0 |
| Other symptoms and signs involving the circulatory and respiratory systems (ICD10: R09)     | 0 |
| Abdominal and pelvic pain (ICD10: R10)  | 0 |
| Nausea and vomiting (ICD10: R11)  | 0 |
| Heartburn (ICD10: R12)  | 0 |
| Dysphagia (ICD10: R13)  | 0 |
| Flatulence and related conditions (ICD10: R14)  | 0 |
| Faecal incontinence (ICD10: R15)  | 0 |
| Hepatomegaly and splenomegaly, not elsewhere classified (ICD10: R16)                        | 0 |
| Unspecified jaundice (ICD10: R17)   | 0 |
| Ascites (ICD10: R18)  | 0 |
| Other symptoms and signs involving the digestive system and abdomen (ICD10: R19)            | 0 |
| Disturbances of skin sensation (ICD10: R20)   | 0 |
| Rash and other nonspecific skin eruption (ICD10: R21)                                       | 0 |
| Localized swelling, mass and lump of skin and subcutaneous tissue (ICD10: R22)              | 0 |
| Other skin changes (ICD10: R23)   | 0 |
| Abnormal involuntary movements (ICD10: R25)   | 0 |
| Abnormalities of gait and mobility (ICD10: R26)   | 0 |
| Other lack of coordination (ICD10: R27)   | 0 |
| Other symptoms and signs involving the nervous and musculoskeletal systems (ICD10: R29)     | 0 |
| Pain associated with micturition (ICD10: R30)   | 0 |
| Unspecified haematuria (ICD10: R31)   | 0 |
| Unspecified urinary incontinence (ICD10: R32)   | 0 |
| Retention of urine (ICD10: R33)   | 0 |
| Anuria and oliguria (ICD10: R34)  | 0 |
| Polyuria (ICD10: R35)   | 0 |
| Urethral discharge (ICD10: R36)   | 0 |
| Other symptoms and signs involving the urinary system (ICD10: R39)                          | 0 |
| Somnolence, stupor and coma (ICD10: R40)  | 0 |
| Dizziness and giddiness (ICD10: R42)  | 0 |
| Disturbances of smell and taste (ICD10: R43)  | 0 |
| Other symptoms and signs involving general sensations and perceptions (ICD10: R44)          | 0 |
| Symptoms and signs involving emotional state (ICD10: R45)                                   | 0 |
| Symptoms and signs involving appearance and behaviour (ICD10: R46)                          | 0 |

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| Speech disturbances, not elsewhere classified (ICD10: R47)                               | 0 |
| Dyslexia and other symbolic dysfunctions, not elsewhere classified (ICD10: R48)          | 0 |
| Voice disturbances (ICD10: R49)  | 0 |
| Fever of other and unknown origin (ICD10: R50)   | 0 |
| Headache (ICD10: R51)  | 0 |
| Pain, not elsewhere classified (ICD10: R52)  | 0 |
| Malaise and fatigue (ICD10: R53)   | 0 |
| Senility (ICD10: R54)  | 0 |
| Syncope and collapse (ICD10: R55)  | 0 |
| Convulsions, not elsewhere classified (ICD10: R56)                                       | 0 |
| Shock, not elsewhere classified (ICD10: R57)   | 0 |
| Haemorrhage, not elsewhere classified (ICD10: R58)                                       | 0 |
| Enlarged lymph nodes (ICD10: R59)  | 0 |
| Oedema, not elsewhere classified (ICD10: R60)  | 0 |
| Hyperhidrosis (ICD10: R61)   | 0 |
| Symptoms and signs concerning food and fluid intake (ICD10: R63)                         | 0 |
| Cachexia (ICD10: R64)  | 0 |
| Other general symptoms and signs (ICD10: R68)  | 0 |
| Unknown and unspecified causes of morbidity (ICD10: R69)                                 | 0 |
| Elevated erythrocyte sedimentation rate and abnormality of plasma viscosity (ICD10: R70) | 0 |
| Abnormality of red blood cells (ICD10: R71)  | 0 |
| Abnormality of white blood cells, not elsewhere classified (ICD10: R72)                  | 0 |
| Elevated blood glucose level (ICD10: R73)  | 0 |
| Abnormal serum enzyme levels (ICD10: R74)  | 0 |
| Other abnormal immunological findings in serum (ICD10: R76)                              | 0 |
| Other abnormalities of plasma proteins (ICD10: R77)                                      | 0 |
| Findings of drugs and other substances, not normally found in blood (ICD10: R78)         | 0 |
| Other abnormal findings of blood chemistry (ICD10: R79)                                  | 0 |
| Isolated proteinuria (ICD10: R80)  | 0 |
| Glycosuria (ICD10: R81)  | 0 |
| Other abnormal findings in urine (ICD10: R82)  | 0 |
| Abnormal findings in cerebrospinal fluid (ICD10: R83)                                    | 0 |
| Abnormal findings in specimens from respiratory organs and thorax (ICD10: R84)           | 0 |
| Abnormal findings in specimens from digestive organs and abdominal cavity (ICD10: R85)   | 0 |
| Abnormal findings in specimens from male genital organs (ICD10: R86)                     | 0 |
| Abnormal findings in specimens from female genital organs (ICD10: R87)                   | 0 |
| Abnormal findings in specimens from other organs, systems and tissues (ICD10: R89)       | 0 |
| Abnormal findings on diagnostic imaging of central nervous system (ICD10: R90)           | 0 |
| Abnormal findings on diagnostic imaging of lung (ICD10: R91)                             | 0 |
| Abnormal findings on diagnostic imaging of breast (ICD10: R92)                           | 0 |
| Abnormal findings on diagnostic imaging of other body structures (ICD10: R93)            | 0 |
| Abnormal results of function studies (ICD10: R94)  | 0 |
| Superficial injury of head (ICD10: S00)  | 0 |
| Open wound of head (ICD10: S01)  | 0 |



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| Fracture of skull and facial bones (ICD10: S02)   | 0 |
| Dislocation, sprain and strain of joints and ligaments of head (ICD10: S03)                     | 0 |
| Injury of cranial nerves (ICD10: S04)   | 0 |
| Injury of eye and orbit (ICD10: S05)  | 0 |
| Intracranial injury (ICD10: S06)  | 0 |
| Traumatic amputation of part of head (ICD10: S08)   | 0 |
| Other and unspecified injuries of head (ICD10: S09)   | 0 |
| Superficial injury of neck (ICD10: S10)   | 0 |
| Open wound of neck (ICD10: S11)   | 0 |
| Fracture of neck (ICD10: S12)   | 0 |
| Dislocation, sprain and strain of joints and ligaments at neck level (ICD10: S13)               | 0 |
| Injury of nerves and spinal cord at neck level (ICD10: S14)                                     | 0 |
| Injury of blood vessels at neck level (ICD10: S15)  | 0 |
| Injury of muscle and tendon at neck level (ICD10: S16)  | 0 |
| Other and unspecified injuries of neck (ICD10: S19)   | 0 |
| Superficial injury of thorax (ICD10: S20)   | 0 |
| Open wound of thorax (ICD10: S21)   | 0 |
| Fracture of rib(s), sternum and thoracic spine (ICD10: S22)                                     | 0 |
| Dislocation, sprain and strain of joints and ligaments of thorax (ICD10: S23)                   | 0 |
| Injury of nerves and spinal cord at thorax level (ICD10: S24)                                   | 0 |
| Injury of blood vessels of thorax (ICD10: S25)  | 0 |
| Injury of heart (ICD10: S26)  | 0 |
| Injury of other and unspecified intrathoracic organs (ICD10: S27)                               | 0 |
| Crushing injury of thorax and traumatic amputation of part of thorax (ICD10: S28)               | 0 |
| Other and unspecified injuries of thorax (ICD10: S29)   | 0 |
| Superficial injury of abdomen, lower back and pelvis (ICD10: S30)                               | 0 |
| Open wound of abdomen, lower back and pelvis (ICD10: S31)                                       | 0 |
| Fracture of lumbar spine and pelvis (ICD10: S32)  | 0 |
| Dislocation, sprain and strain of joints and ligaments of lumbar spine and pelvis (ICD10: S33)  | 0 |
| Injury of nerves and lumbar spinal cord at abdomen, lower back and pelvis level (ICD10: S34)    | 0 |
| Injury of blood vessels at abdomen, lower back and pelvis level (ICD10: S35)                    | 0 |
| Injury of intra-abdominal organs (ICD10: S36)   | 0 |
| Injury of urinary and pelvic organs (ICD10: S37)  | 0 |
| Crushing injury and traumatic amputation of part of abdomen, lower back and pelvis (ICD10: S38) | 0 |
| Other and unspecified injuries of abdomen, lower back and pelvis (ICD10: S39)                   | 0 |
| Superficial injury of shoulder and upper arm (ICD10: S40)                                       | 0 |
| Open wound of shoulder and upper arm (ICD10: S41)   | 0 |
| Fracture of shoulder and upper arm (ICD10: S42)   | 0 |
| Dislocation, sprain and strain of joints and ligaments of shoulder girdle (ICD10: S43)          | 0 |
| Injury of nerves at shoulder and upper arm level (ICD10: S44)                                   | 0 |
| Injury of blood vessels at shoulder and upper arm level (ICD10: S45)                            | 0 |
| Injury of muscle and tendon at shoulder and upper arm level (ICD10: S46)                        | 0 |
| Crushing injury of shoulder and upper arm (ICD10: S47)  | 0 |
| Traumatic amputation of shoulder and upper arm (ICD10: S48)                                     | 0 |

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| Other and unspecified injuries of shoulder and upper arm (ICD10: S49)                       | 0 |
| Superficial injury of forearm (ICD10: S50)  | 0 |
| Open wound of forearm (ICD10: S51)  | 0 |
| Fracture of forearm (ICD10: S52)  | 0 |
| Dislocation, sprain and strain of joints and ligaments of elbow (ICD10: S53)                | 0 |
| Injury of nerves at forearm level (ICD10: S54)  | 0 |
| Injury of blood vessels at forearm level (ICD10: S55)                                       | 0 |
| Injury of muscle and tendon at forearm level (ICD10: S56)                                   | 0 |
| Crushing injury of forearm (ICD10: S57)   | 0 |
| Traumatic amputation of forearm (ICD10: S58)  | 0 |
| Other and unspecified injuries of forearm (ICD10: S59)                                      | 0 |
| Superficial injury of wrist and hand (ICD10: S60)   | 0 |
| Open wound of wrist and hand (ICD10: S61)   | 0 |
| Fracture at wrist and hand level (ICD10: S62)   | 0 |
| Dislocation, sprain and strain of joints and ligaments at wrist and hand level (ICD10: S63) | 0 |
| Injury of nerves at wrist and hand level (ICD10: S64)                                       | 0 |
| Injury of blood vessels at wrist and hand level (ICD10: S65)                                | 0 |
| Injury of muscle and tendon at wrist and hand level (ICD10: S66)                            | 0 |
| Crushing injury of wrist and hand (ICD10: S67)  | 0 |
| Traumatic amputation of wrist and hand (ICD10: S68)   | 0 |
| Other and unspecified injuries of wrist and hand (ICD10: S69)                               | 0 |
| Superficial injury of hip and thigh (ICD10: S70)  | 0 |
| Open wound of hip and thigh (ICD10: S71)  | 0 |
| Fracture of femur (ICD10: S72)  | 0 |
| Dislocation, sprain and strain of joint and ligaments of hip (ICD10: S73)                   | 0 |
| Injury of nerves at hip and thigh level (ICD10: S74)  | 0 |
| Injury of blood vessels at hip and thigh level (ICD10: S75)                                 | 0 |
| Injury of muscle and tendon at hip and thigh level (ICD10: S76)                             | 0 |
| Crushing injury of hip and thigh (ICD10: S77)   | 0 |
| Other and specified injuries of hip and thigh (ICD10: S79)                                  | 0 |
| Superficial injury of lower leg (ICD10: S80)  | 0 |
| Open wound of lower leg (ICD10: S81)  | 0 |
| Fracture of lower leg, including ankle (ICD10: S82)   | 0 |
| Dislocation, sprain and strain of joints and ligaments of knee (ICD10: S83)                 | 0 |
| Injury of nerves at lower leg level (ICD10: S84)  | 0 |
| Injury of blood vessels at lower leg level (ICD10: S85)                                     | 0 |
| Injury of muscle and tendon at lower leg level (ICD10: S86)                                 | 0 |
| Crushing injury of lower leg (ICD10: S87)   | 0 |
| Traumatic amputation of lower leg (ICD10: S88)  | 0 |
| Other and unspecified injuries of lower leg (ICD10: S89)                                    | 0 |
| Superficial injury of ankle and foot (ICD10: S90)   | 0 |
| Open wound of ankle and foot (ICD10: S91)   | 0 |
| Fracture of foot, except ankle (ICD10: S92)   | 0 |
| Dislocation, sprain and strain of joints and ligaments at ankle and foot level (ICD10: S93) | 0 |

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| Injury of nerves at ankle and foot level (ICD10: S94)  | 0 |
| Injury of blood vessels at ankle and foot level (ICD10: S95)   | 0 |
| Injury of muscle and tendon at ankle and foot level (ICD10: S96)   | 0 |
| Crushing injury of ankle and foot (ICD10: S97)   | 0 |
| Traumatic amputation of ankle and foot (ICD10: S98)  | 0 |
| Other and unspecified injuries of ankle and foot (ICD10: S99)  | 0 |
| Superficial injuries involving multiple body regions (ICD10: T00)  | 0 |
| Open wounds involving multiple body regions (ICD10: T01)   | 0 |
| Fractures involving multiple body regions (ICD10: T02)   | 0 |
| Crushing injuries involving multiple body regions (ICD10: T04)   | 0 |
| Other injuries involving multiple body regions, not elsewhere classified (ICD10: T06)                        | 0 |
| Unspecified multiple injuries (ICD10: T07)   | 0 |
| Fracture of spine, level unspecified (ICD10: T08)  | 0 |
| Other injuries of spine and trunk, level unspecified (ICD10: T09)  | 0 |
| Fracture of upper limb, level unspecified (ICD10: T10)   | 0 |
| Other injuries of upper limb, level unspecified (ICD10: T11)   | 0 |
| Fracture of lower limb, level unspecified (ICD10: T12)   | 0 |
| Other injuries of lower limb, level unspecified (ICD10: T13)   | 0 |
| Injury of unspecified body region (ICD10: T14)   | 0 |
| Foreign body on external eye (ICD10: T15)  | 0 |
| Foreign body in ear (ICD10: T16)   | 0 |
| Foreign body in respiratory tract (ICD10: T17)   | 0 |
| Foreign body in alimentary tract (ICD10: T18)  | 0 |
| Foreign body in genitourinary tract (ICD10: T19)   | 0 |
| Burn and corrosion of head and neck (ICD10: T20)   | 0 |
| Burn and corrosion of trunk (ICD10: T21)   | 0 |
| Burn and corrosion of shoulder and upper limb, except wrist and hand (ICD10: T22)                            | 0 |
| Burn and corrosion of wrist and hand (ICD10: T23)  | 0 |
| Burn and corrosion of hip and lower limb, except ankle and foot (ICD10: T24)                                 | 0 |
| Burn and corrosion of ankle and foot (ICD10: T25)  | 0 |
| Burn and corrosion confined to eye and adnexa (ICD10: T26)   | 0 |
| Burn and corrosion of respiratory tract (ICD10: T27)   | 0 |
| Burn and corrosion of other internal organs (ICD10: T28)   | 0 |
| Burns and corrosions of multiple body regions (ICD10: T29)   | 0 |
| Burn and corrosion, body region unspecified (ICD10: T30)   | 0 |
| Burns classified according to extent of body surface involved (ICD10: T31)                                   | 0 |
| Corrosions classified according to extent of body surface involved (ICD10: T32)                              | 0 |
| Superficial frostbite (ICD10: T33)   | 0 |
| Frostbite involving multiple body regions and unspecified frostbite (ICD10: T35)                             | 0 |
| Poisoning by systemic antibiotics (ICD10: T36)   | 0 |
| Poisoning by other systemic anti-infectives and antiparasitics (ICD10: T37)                                  | 0 |
| Poisoning by hormones and their synthetic substitutes and antagonists, not elsewhere classified (ICD10: T38) | 0 |
| Poisoning by nonopioid analgesics, antipyretics and antirheumatics (ICD10: T39)                              | 0 |
| Poisoning by narcotics and psychodysleptics [hallucinogens] (ICD10: T40)                                     | 0 |

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| Poisoning by anaesthetics and therapeutic gases (ICD10: T41)   | 0 |
| Poisoning by antiepileptic, sedative-hypnotic and antiparkinsonism drugs (ICD10: T42)  | 0 |
| Poisoning by psychotropic drugs, not elsewhere classified (ICD10: T43)   | 0 |
| Poisoning by drugs primarily affecting the autonomic nervous system (ICD10: T44)   | 0 |
| Poisoning by primarily systemic and haematological agents, not elsewhere classified (ICD10: T45)   | 0 |
| Poisoning by agents primarily affecting the cardiovascular system (ICD10: T46)   | 0 |
| Poisoning by agents primarily affecting the gastrointestinal system (ICD10: T47)   | 0 |
| Poisoning by agents primarily acting on smooth and skeletal muscles and the respiratory system (ICD10: T48)  | 0 |
| Poisoning by topical agents primarily affecting skin and mucous membrane and by ophthalmological, otorhinolaryngological and dental drugs (ICD10: T49) | 0 |
| Poisoning by diuretics and other and unspecified drugs, medicaments and biological substances (ICD10: T50)   | 0 |
| Toxic effect of alcohol (ICD10: T51)   | 0 |
| Toxic effect of organic solvents (ICD10: T52)  | 0 |
| Toxic effect of halogen derivatives of aliphatic and aromatic hydrocarbons (ICD10: T53)  | 0 |
| Toxic effect of corrosive substances (ICD10: T54)  | 0 |
| Toxic effect of soaps and detergents (ICD10: T55)  | 0 |
| Toxic effect of metals (ICD10: T56)  | 0 |
| Toxic effect of other inorganic substances (ICD10: T57)  | 0 |
| Toxic effect of carbon monoxide (ICD10: T58)   | 0 |
| Toxic effect of other gases, fumes and vapours (ICD10: T59)  | 0 |
| Toxic effect of pesticides (ICD10: T60)  | 0 |
| Toxic effect of noxious substances eaten as seafood (ICD10: T61)   | 0 |
| Toxic effect of other noxious substances eaten as food (ICD10: T62)  | 0 |
| Toxic effect of contact with venomous animals (ICD10: T63)   | 0 |
| Toxic effect of other and unspecified substances (ICD10: T65)  | 0 |
| Unspecified effects of radiation (ICD10: T66)  | 0 |
| Effects of heat and light (ICD10: T67)   | 0 |
| Hypothermia (ICD10: T68)   | 0 |
| Other effects of reduced temperature (ICD10: T69)  | 0 |
| Effects of air pressure and water pressure (ICD10: T70)  | 0 |
| Asphyxiation (ICD10: T71)  | 0 |
| Effects of other deprivation (ICD10: T73)  | 0 |
| Maltreatment syndromes (ICD10: T74)  | 0 |
| Effects of other external causes (ICD10: T75)  | 0 |
| Adverse effects, not elsewhere classified (ICD10: T78)   | 0 |
| Certain early complications of trauma, not elsewhere classified (ICD10: T79)   | 0 |
| Complications following infusion, transfusion and therapeutic injection (ICD10: T80)   | 0 |
| Complications of procedures, not elsewhere classified (ICD10: T81)   | 0 |
| Complications of cardiac and vascular prosthetic devices, implants and grafts (ICD10: T82)   | 0 |
| Complications of genitourinary prosthetic devices, implants and grafts (ICD10: T83)  | 0 |
| Complications of internal orthopaedic prosthetic devices, implants and grafts (ICD10: T84)   | 0 |
| Complications of other internal prosthetic devices, implants and grafts (ICD10: T85)   | 0 |
| Failure and rejection of transplanted organs and tissues (ICD10: T86)  | 0 |
| Complications peculiar to reattachment and amputation (ICD10: T87)   | 0 |
| Other complications of surgical and medical care, not elsewhere classified (ICD10: T88)  | 0 |

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| Sequelae of injuries of head (ICD10: T90)  | 0 |
| Sequelae of injuries of neck and trunk (ICD10: T91)                                    | 0 |
| Sequelae of injuries of upper limb (ICD10: T92)  | 0 |
| Sequelae of injuries of lower limb (ICD10: T93)  | 0 |
| Sequelae of injuries involving multiple and unspecified body regions (ICD10: T94)      | 0 |
| Sequelae of burns, corrosions and frostbite (ICD10: T95)                               | 0 |
| Sequelae of poisoning by drugs, medicaments and biological substances (ICD10: T96)     | 0 |
| Sequelae of toxic effects of substances chiefly nonmedicinal as to source (ICD10: T97) | 0 |
| Sequelae of other and unspecified effects of external causes (ICD10: T98)              | 0 |
| Procedure: A01 Major excision of tissue of brain                                       | 0 |
| Procedure: A02 Excision of lesion of tissue of brain                                   | 0 |
| Procedure: A03 Stereotactic ablation of tissue of brain                                | 0 |
| Procedure: A04 Open biopsy of lesion of tissue of brain                                | 0 |
| Procedure: A05 Drainage of lesion of tissue of brain                                   | 0 |
| Procedure: A07 Other open operations on tissue of brain                                | 0 |
| Procedure: A08 Other biopsy of lesion of tissue of brain                               | 0 |
| Procedure: A09 Neurostimulation of brain   | 0 |
| Procedure: A10 Other operations on tissue of brain                                     | 0 |
| Procedure: A11 Operations on tissue of brain   | 0 |
| Procedure: A12 Creation of connection from ventricle of brain                          | 0 |
| Procedure: A13 Attention to component of connection from ventricle of brain            | 0 |
| Procedure: A14 Other operations on connection from ventricle of brain                  | 0 |
| Procedure: A16 Other open operations on ventricle of brain                             | 0 |
| Procedure: A17 Therapeutic endoscopic operations on ventricle of brain                 | 0 |
| Procedure: A18 Diagnostic endoscopic examination of ventricle of brain                 | 0 |
| Procedure: A20 Other operations on ventricle of brain                                  | 0 |
| Procedure: A22 Operations on subarachnoid space of brain                               | 0 |
| Procedure: A24 Graft to cranial nerve  | 0 |
| Procedure: A25 Intracranial transection of cranial nerve                               | 0 |
| Procedure: A26 Other intracranial destruction of cranial nerve                         | 0 |
| Procedure: A27 Extracranial extirpation of vagus nerve (x)                             | 0 |
| Procedure: A28 Extracranial extirpation of other cranial nerve                         | 0 |
| Procedure: A29 Excision of lesion of cranial nerve                                     | 0 |
| Procedure: A30 Repair of cranial nerve   | 0 |
| Procedure: A31 Intracranial stereotactic release of cranial nerve                      | 0 |
| Procedure: A32 Other decompression of cranial nerve                                    | 0 |
| Procedure: A33 Neurostimulation of cranial nerve                                       | 0 |
| Procedure: A34 Exploration of cranial nerve  | 0 |
| Procedure: A36 Other operations on cranial nerve                                       | 0 |
| Procedure: A38 Extirpation of lesion of meninges of brain                              | 0 |
| Procedure: A39 Repair of dura  | 0 |
| Procedure: A40 Drainage of extradural space  | 0 |
| Procedure: A41 Drainage of subdural space  | 0 |
| Procedure: A42 Other operations on meninges of brain                                   | 0 |

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| Procedure: A43 Other extirpation of lesion of meninges of brain                   | 0 |
| Procedure: A44 Partial extirpation of spinal cord                                 | 0 |
| Procedure: A45 Other open operations on spinal cord                               | 0 |
| Procedure: A47 Other destruction of spinal cord                                   | 0 |
| Procedure: A48 Other operations on spinal cord                                    | 0 |
| Procedure: A49 Repair of spina bifida   | 0 |
| Procedure: A51 Other operations on meninges of spinal cord                        | 0 |
| Procedure: A52 Therapeutic epidural injection                                     | 0 |
| Procedure: A53 Drainage of spinal canal   | 0 |
| Procedure: A54 Therapeutic spinal puncture  | 0 |
| Procedure: A55 Diagnostic spinal puncture   | 0 |
| Procedure: A57 Operations on spinal nerve root                                    | 0 |
| Procedure: A59 Excision of peripheral nerve                                       | 0 |
| Procedure: A60 Destruction of peripheral nerve                                    | 0 |
| Procedure: A61 Extirpation of lesion of peripheral nerve                          | 0 |
| Procedure: A62 Microsurgical repair of peripheral nerve                           | 0 |
| Procedure: A63 Other graft to peripheral nerve                                    | 0 |
| Procedure: A64 Other repair of peripheral nerve                                   | 0 |
| Procedure: A65 Release of entrapment of peripheral nerve at wrist                 | 0 |
| Procedure: A66 Release of entrapment of peripheral nerve at ankle                 | 0 |
| Procedure: A67 Release of entrapment of peripheral nerve at other site            | 0 |
| Procedure: A68 Other release of peripheral nerve                                  | 0 |
| Procedure: A69 Revision of release of peripheral nerve                            | 0 |
| Procedure: A70 Neurostimulation of peripheral nerve                               | 0 |
| Procedure: A73 Other operations on peripheral nerve                               | 0 |
| Procedure: A75 Excision of sympathetic nerve                                      | 0 |
| Procedure: A76 Chemical destruction of sympathetic nerve                          | 0 |
| Procedure: A77 Cryotherapy to sympathetic nerve                                   | 0 |
| Procedure: A78 Radiofrequency controlled thermal destruction of sympathetic nerve | 0 |
| Procedure: A79 Other destruction of sympathetic nerve                             | 0 |
| Procedure: A81 Other operations on sympathetic nerve                              | 0 |
| Procedure: A83 Electroconvulsive therapy  | 0 |
| Procedure: A84 Neurophysiological operations                                      | 0 |
| Procedure: B01 Excision of pituitary gland  | 0 |
| Procedure: B04 Other operations on pituitary gland                                | 0 |
| Procedure: B06 Operations on pineal gland   | 0 |
| Procedure: B08 Excision of thyroid gland  | 0 |
| Procedure: B09 Operations on aberrant thyroid tissue                              | 0 |
| Procedure: B10 Operations on thyroglossal tissue                                  | 0 |
| Procedure: B12 Other operations on thyroid gland                                  | 0 |
| Procedure: B14 Excision of parathyroid gland                                      | 0 |
| Procedure: B16 Other operations on parathyroid gland                              | 0 |
| Procedure: B18 Excision of thymus gland   | 0 |
| Procedure: B22 Excision of adrenal gland  | 0 |

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| Procedure: B23 Operations on aberrant adrenal tissue                  | 0 |
| Procedure: B25 Other operations on adrenal gland                      | 0 |
| Procedure: B27 Total excision of breast                               | 0 |
| Procedure: B28 Other excision of breast                               | 0 |
| Procedure: B29 Reconstruction of breast                               | 0 |
| Procedure: B30 Prosthesis for breast                                  | 0 |
| Procedure: B31 Other plastic operations on breast                     | 0 |
| Procedure: B32 Biopsy of breast                                       | 0 |
| Procedure: B33 Incision of breast                                     | 0 |
| Procedure: B34 Operations on duct of breast                           | 0 |
| Procedure: B35 Operations on nipple                                   | 0 |
| Procedure: B36 Reconstruction of nipple and areola                    | 0 |
| Procedure: B37 Other operations on breast                             | 0 |
| Procedure: B38 Reconstruction of breast using flap of skin of buttock | 0 |
| Procedure: B39 Reconstruction of breast using abdominal flap          | 0 |
| Procedure: C01 Excision of eye  | 0 |
| Procedure: C02 Extirpation of lesion of orbit                         | 0 |
| Procedure: C03 Insertion of prosthesis of eye                         | 0 |
| Procedure: C04 Attention to prosthesis of eye                         | 0 |
| Procedure: C05 Plastic repair of orbit                                | 0 |
| Procedure: C06 Incision of orbit                                      | 0 |
| Procedure: C08 Other operations on orbit                              | 0 |
| Procedure: C09 Replacement of canthal tendon                          | 0 |
| Procedure: C10 Operations on eyebrow                                  | 0 |
| Procedure: C11 Operations on canthus                                  | 0 |
| Procedure: C12 Extirpation of lesion of eyelid                        | 0 |
| Procedure: C13 Excision of redundant skin of eyelid                   | 0 |
| Procedure: C14 Reconstruction of eyelid                               | 0 |
| Procedure: C15 Correction of deformity of eyelid                      | 0 |
| Procedure: C16 Other plastic repair of eyelid                         | 0 |
| Procedure: C17 Other repair of eyelid                                 | 0 |
| Procedure: C18 Correction of ptosis of eyelid                         | 0 |
| Procedure: C19 Incision of eyelid                                     | 0 |
| Procedure: C22 Other operations on eyelid                             | 0 |
| Procedure: C24 Operations on lacrimal gland                           | 0 |
| Procedure: C25 Connection between lacrimal apparatus and nose         | 0 |
| Procedure: C26 Other operations on lacrimal sac                       | 0 |
| Procedure: C27 Operations on nasolacrimal duct                        | 0 |
| Procedure: C29 Other operations on lacrimal apparatus                 | 0 |
| Procedure: C31 Combined operations on muscles of eye                  | 0 |
| Procedure: C32 Recession of muscle of eye                             | 0 |
| Procedure: C33 Resection of muscle of eye                             | 0 |
| Procedure: C34 Partial division of tendon of muscle of eye            | 0 |
| Procedure: C35 Other adjustment to muscle of eye                      | 0 |

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| Procedure: C37 Other operations on muscle of eye               | 0 |
| Procedure: C39 Extirpation of lesion of conjunctiva            | 0 |
| Procedure: C40 Repair of conjunctiva                           | 0 |
| Procedure: C41 Incision of conjunctiva                         | 0 |
| Procedure: C43 Other operations on conjunctiva                 | 0 |
| Procedure: C44 Other plastic operations on cornea              | 0 |
| Procedure: C45 Extirpation of lesion of cornea                 | 0 |
| Procedure: C46 Plastic operations on cornea                    | 0 |
| Procedure: C47 Closure of cornea                               | 0 |
| Procedure: C48 Removal of foreign body from cornea             | 0 |
| Procedure: C49 Incision of cornea                              | 0 |
| Procedure: C51 Other operations on cornea                      | 0 |
| Procedure: C52 Excision of sclera                              | 0 |
| Procedure: C53 Extirpation of lesion of sclera                 | 0 |
| Procedure: C54 Buckling operations for attachment of retina    | 0 |
| Procedure: C55 Incision of sclera                              | 0 |
| Procedure: C57 Other operations on sclera                      | 0 |
| Procedure: C59 Excision of iris                                | 0 |
| Procedure: C60 Filtering operations on iris                    | 0 |
| Procedure: C61 Other operations on trabecular meshwork of eye  | 0 |
| Procedure: C62 Incision of iris                                | 0 |
| Procedure: C64 Other operations on iris                        | 0 |
| Procedure: C65 Operations following glaucoma surgery           | 0 |
| Procedure: C66 Extirpation of ciliary body                     | 0 |
| Procedure: C67 Other operations on ciliary body                | 0 |
| Procedure: C69 Other operations on anterior chamber of eye     | 0 |
| Procedure: C71 Extracapsular extraction of lens                | 0 |
| Procedure: C72 Intracapsular extraction of lens                | 0 |
| Procedure: C73 Incision of capsule of lens                     | 0 |
| Procedure: C74 Other extraction of lens                        | 0 |
| Procedure: C75 Prosthesis of lens                              | 0 |
| Procedure: C77 Other operations on lens                        | 0 |
| Procedure: C79 Operations on vitreous body                     | 0 |
| Procedure: C80 Operations on retinal membrane                  | 0 |
| Procedure: C81 Photocoagulation of retina for detachment       | 0 |
| Procedure: C84 Other operations on retina                      | 0 |
| Procedure: C85 Fixation of retina                              | 0 |
| Procedure: C86 Other operations on eye                         | 0 |
| Procedure: C88 Destruction of subretinal lesion                | 0 |
| Procedure: C89 Operations on posterior segment of eye          | 0 |
| Procedure: C90 Local anaesthetics for ophthalmology procedures | 0 |
| Procedure: D01 Excision of external ear                        | 0 |
| Procedure: D02 Extirpation of lesion of external ear           | 0 |
| Procedure: D03 Plastic operations on external ear              | 0 |



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| Procedure: D04 Drainage of external ear                                | 0 |
| Procedure: D05 Attachment of auricular prosthesis                      | 0 |
| Procedure: D06 Other operations on external ear                        | 0 |
| Procedure: D07 Clearance of external auditory canal                    | 0 |
| Procedure: D08 Other operations on external auditory canal             | 0 |
| Procedure: D10 Exenteration of mastoid air cells                       | 0 |
| Procedure: D12 Other operations on mastoid                             | 0 |
| Procedure: D13 Attachment of bone anchored hearing prosthesis          | 0 |
| Procedure: D14 Repair of eardrum                                       | 0 |
| Procedure: D15 Drainage of middle ear                                  | 0 |
| Procedure: D16 Reconstruction of ossicular chain                       | 0 |
| Procedure: D17 Other operations on ossicle of ear                      | 0 |
| Procedure: D19 Extirpation of lesion of middle ear                     | 0 |
| Procedure: D20 Other operations on middle ear                          | 0 |
| Procedure: D22 Operations on eustachian canal                          | 0 |
| Procedure: D24 Operations on cochlea                                   | 0 |
| Procedure: D26 Operations on vestibular apparatus                      | 0 |
| Procedure: D28 Other operations on ear                                 | 0 |
| Procedure: E01 Excision of nose  | 0 |
| Procedure: E02 Plastic operations on nose                              | 0 |
| Procedure: E03 Operations on septum of nose                            | 0 |
| Procedure: E04 Operations on turbinate of nose                         | 0 |
| Procedure: E05 Surgical arrest of bleeding from internal nose          | 0 |
| Procedure: E06 Packing of cavity of nose                               | 0 |
| Procedure: E07 Other plastic operations on nose                        | 0 |
| Procedure: E08 Other operations on internal nose                       | 0 |
| Procedure: E09 Operations on external nose                             | 0 |
| Procedure: E10 Other operations on nose                                | 0 |
| Procedure: E12 Operations on maxillary antrum using sublabial approach | 0 |
| Procedure: E13 Other operations on maxillary antrum                    | 0 |
| Procedure: E14 Operations on frontal sinus                             | 0 |
| Procedure: E15 Operations on sphenoid sinus                            | 0 |
| Procedure: E16 Other operations on frontal sinus                       | 0 |
| Procedure: E17 Operations on unspecified nasal sinus                   | 0 |
| Procedure: E19 Excision of pharynx                                     | 0 |
| Procedure: E20 Operations on adenoid                                   | 0 |
| Procedure: E21 Repair of pharynx                                       | 0 |
| Procedure: E23 Other open operations on pharynx                        | 0 |
| Procedure: E24 Therapeutic endoscopic operations on pharynx            | 0 |
| Procedure: E25 Diagnostic endoscopic examination of pharynx            | 0 |
| Procedure: E27 Other operations on pharynx                             | 0 |
| Procedure: E28 Operations on cricopharyngeus muscle                    | 0 |
| Procedure: E29 Excision of larynx                                      | 0 |
| Procedure: E30 Open extirpation of lesion of larynx                    | 0 |

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| Procedure: E31 Reconstruction of larynx  | 0 |
| Procedure: E33 Other open operations on larynx   | 0 |
| Procedure: E34 Microtherapeutic endoscopic operations on larynx                                      | 0 |
| Procedure: E35 Other therapeutic endoscopic operations on larynx                                     | 0 |
| Procedure: E36 Diagnostic endoscopic examination of larynx   | 0 |
| Procedure: E38 Other operations on larynx  | 0 |
| Procedure: E39 Partial excision of trachea   | 0 |
| Procedure: E40 Plastic operations on trachea   | 0 |
| Procedure: E41 Open placement of prosthesis in trachea   | 0 |
| Procedure: E42 Exteriorisation of trachea  | 0 |
| Procedure: E43 Other open operations on trachea  | 0 |
| Procedure: E44 Open operations on carina   | 0 |
| Procedure: E48 Therapeutic fiberoptic endoscopic operations on lower respiratory tract               | 0 |
| Procedure: E49 Diagnostic fiberoptic endoscopic examination of lower respiratory tract               | 0 |
| Procedure: E50 Therapeutic endoscopic operations on lower respiratory tract using rigid bronchoscope | 0 |
| Procedure: E51 Diagnostic endoscopic examination of lower respiratory tract using rigid bronchoscope | 0 |
| Procedure: E52 Other operations on bronchus  | 0 |
| Procedure: E53 Transplantation of lung   | 0 |
| Procedure: E54 Excision of lung  | 0 |
| Procedure: E55 Open extirpation of lesion of lung  | 0 |
| Procedure: E57 Other open operations on lung   | 0 |
| Procedure: E59 Other operations on lung  | 0 |
| Procedure: E61 Open operations on mediastinum  | 0 |
| Procedure: E62 Therapeutic endoscopic operations on mediastinum                                      | 0 |
| Procedure: E63 Diagnostic endoscopic examination of mediastinum                                      | 0 |
| Procedure: E85 Ventilation support   | 0 |
| Procedure: E87 Oxygen therapy support  | 0 |
| Procedure: E89 Other respiratory support   | 0 |
| Procedure: E91 Oximetry testing  | 0 |
| Procedure: E92 Respiratory tests   | 0 |
| Procedure: E93 Respiratory measurements  | 0 |
| Procedure: E95 Tuberculosis support  | 0 |
| Procedure: F01 Partial excision of lip   | 0 |
| Procedure: F02 Extirpation of lesion of lip  | 0 |
| Procedure: F03 Correction of deformity of lip  | 0 |
| Procedure: F04 Other reconstruction of lip   | 0 |
| Procedure: F05 Other repair of lip   | 0 |
| Procedure: F06 Other operations on lip   | 0 |
| Procedure: F08 Implantation of tooth   | 0 |
| Procedure: F09 Surgical removal of tooth   | 0 |
| Procedure: F10 Simple extraction of tooth  | 0 |
| Procedure: F11 Preprosthetic oral surgery  | 0 |
| Procedure: F12 Surgery on apex of tooth  | 0 |
| Procedure: F13 Restoration of tooth  | 0 |

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| Procedure: F14 Orthodontic operations   | 0 |
| Procedure: F15 Other orthodontic operations                                     | 0 |
| Procedure: F16 Other operations on tooth  | 0 |
| Procedure: F17 Operations on teeth using dental crown or bridge                 | 0 |
| Procedure: F18 Excision of dental lesion of jaw                                 | 0 |
| Procedure: F20 Operations on gingiva  | 0 |
| Procedure: F22 Excision of tongue   | 0 |
| Procedure: F23 Extirpation of lesion of tongue                                  | 0 |
| Procedure: F24 Incision of tongue   | 0 |
| Procedure: F26 Other operations on tongue                                       | 0 |
| Procedure: F28 Extirpation of lesion of palate                                  | 0 |
| Procedure: F29 Correction of deformity of palate                                | 0 |
| Procedure: F30 Other repair of palate   | 0 |
| Procedure: F32 Other operations on palate                                       | 0 |
| Procedure: F34 Excision of tonsil   | 0 |
| Procedure: F36 Other operations on tonsil                                       | 0 |
| Procedure: F38 Extirpation of lesion of other part of mouth                     | 0 |
| Procedure: F39 Reconstruction of other part of mouth                            | 0 |
| Procedure: F40 Other repair of other part of mouth                              | 0 |
| Procedure: F42 Other operations on mouth  | 0 |
| Procedure: F43 Other examinations of mouth                                      | 0 |
| Procedure: F44 Excision of salivary gland                                       | 0 |
| Procedure: F45 Extirpation of lesion of salivary gland                          | 0 |
| Procedure: F46 Incision of salivary gland                                       | 0 |
| Procedure: F48 Other operations on salivary gland                               | 0 |
| Procedure: F51 Open extraction of calculus from salivary duct                   | 0 |
| Procedure: F52 Ligation of salivary duct  | 0 |
| Procedure: F53 Other open operations on salivary duct                           | 0 |
| Procedure: F55 Dilation of salivary duct  | 0 |
| Procedure: F56 Manipulative removal of calculus from salivary duct              | 0 |
| Procedure: F58 Other operations on salivary duct                                | 0 |
| Procedure: F63 Insertion of dental prosthesis                                   | 0 |
| Procedure: G01 Excision of oesophagus and stomach                               | 0 |
| Procedure: G02 Total excision of oesophagus                                     | 0 |
| Procedure: G03 Partial excision of oesophagus                                   | 0 |
| Procedure: G04 Open extirpation of lesion of oesophagus                         | 0 |
| Procedure: G06 Attention to connection of oesophagus                            | 0 |
| Procedure: G07 Repair of oesophagus   | 0 |
| Procedure: G08 Artificial opening into oesophagus                               | 0 |
| Procedure: G09 Incision of oesophagus   | 0 |
| Procedure: G10 Open operations on varices of oesophagus                         | 0 |
| Procedure: G14 Fibreoptic endoscopic extirpation of lesion of oesophagus        | 0 |
| Procedure: G15 Other therapeutic fibreoptic endoscopic operations on oesophagus | 0 |
| Procedure: G16 Diagnostic fibreoptic endoscopic examination of oesophagus       | 0 |

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| Procedure: G17 Endoscopic extirpation of lesion of oesophagus using rigid oesophagoscope          | 0 |
| Procedure: G18 Other therapeutic endoscopic operations on oesophagus using rigid oesophagoscope   | 0 |
| Procedure: G19 Diagnostic endoscopic examination of oesophagus using rigid oesophagoscope         | 0 |
| Procedure: G21 Other operations on oesophagus   | 0 |
| Procedure: G23 Repair of diaphragmatic hernia   | 0 |
| Procedure: G24 Antireflux operations  | 0 |
| Procedure: G25 Revision of antireflux operations  | 0 |
| Procedure: G27 Total excision of stomach  | 0 |
| Procedure: G28 Partial excision of stomach  | 0 |
| Procedure: G29 Open extirpation of lesion of stomach  | 0 |
| Procedure: G30 Plastic operations on stomach  | 0 |
| Procedure: G31 Connection of stomach to duodenum  | 0 |
| Procedure: G32 Connection of stomach to transposed jejunum  | 0 |
| Procedure: G33 Other connection of stomach to jejunum   | 0 |
| Procedure: G34 Artificial opening into stomach  | 0 |
| Procedure: G35 Operations on ulcer of stomach   | 0 |
| Procedure: G36 Other repair of stomach  | 0 |
| Procedure: G38 Other open operations on stomach   | 0 |
| Procedure: G40 Incision of pylorus  | 0 |
| Procedure: G41 Other operations on pylorus  | 0 |
| Procedure: G42 Other fiberoptic endoscopic extirpation of lesion of upper gastrointestinal tract  | 0 |
| Procedure: G43 Fiberoptic endoscopic extirpation of lesion of upper gastrointestinal tract        | 0 |
| Procedure: G44 Other therapeutic fiberoptic endoscopic operations on upper gastrointestinal tract | 0 |
| Procedure: G45 Diagnostic fiberoptic endoscopic examination of upper gastrointestinal tract       | 0 |
| Procedure: G47 Intubation of stomach  | 0 |
| Procedure: G48 Other operations on stomach  | 0 |
| Procedure: G49 Excision of duodenum   | 0 |
| Procedure: G50 Open extirpation of lesion of duodenum   | 0 |
| Procedure: G51 Bypass of duodenum   | 0 |
| Procedure: G52 Operations on ulcer of duodenum  | 0 |
| Procedure: G53 Other open operations on duodenum  | 0 |
| Procedure: G54 Therapeutic endoscopic operations on duodenum                                      | 0 |
| Procedure: G55 Diagnostic endoscopic examination of duodenum                                      | 0 |
| Procedure: G58 Excision of jejunum  | 0 |
| Procedure: G59 Extirpation of lesion of jejunum   | 0 |
| Procedure: G60 Artificial opening into jejunum  | 0 |
| Procedure: G61 Bypass of jejunum  | 0 |
| Procedure: G63 Other open operations on jejunum   | 0 |
| Procedure: G64 Therapeutic endoscopic operations on jejunum                                       | 0 |
| Procedure: G65 Diagnostic endoscopic examination of jejunum                                       | 0 |
| Procedure: G67 Other operations on jejunum  | 0 |
| Procedure: G69 Excision of ileum  | 0 |
| Procedure: G70 Open extirpation of lesion of ileum  | 0 |
| Procedure: G71 Bypass of ileum  | 0 |

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| Procedure: G72 Other connection of ileum   | 0 |
| Procedure: G73 Attention to connection of ileum  | 0 |
| Procedure: G74 Creation of artificial opening into ileum   | 0 |
| Procedure: G75 Attention to artificial opening into ileum  | 0 |
| Procedure: G76 Intra-abdominal manipulation of ileum   | 0 |
| Procedure: G78 Other open operations on ileum  | 0 |
| Procedure: G79 Therapeutic endoscopic operations on ileum  | 0 |
| Procedure: G80 Diagnostic endoscopic examination of ileum  | 0 |
| Procedure: G82 Other operations on ileum   | 0 |
| Procedure: H01 Emergency excision of appendix  | 0 |
| Procedure: H02 Other excision of appendix  | 0 |
| Procedure: H03 Other operations on appendix  | 0 |
| Procedure: H04 Total excision of colon and rectum  | 0 |
| Procedure: H05 Total excision of colon   | 0 |
| Procedure: H06 Extended excision of right hemicolon  | 0 |
| Procedure: H07 Other excision of right hemicolon   | 0 |
| Procedure: H08 Excision of transverse colon  | 0 |
| Procedure: H09 Excision of left hemicolon  | 0 |
| Procedure: H10 Excision of sigmoid colon   | 0 |
| Procedure: H11 Other excision of colon   | 0 |
| Procedure: H12 Extirpation of lesion of colon  | 0 |
| Procedure: H13 Bypass of colon   | 0 |
| Procedure: H14 Exteriorisation of caecum   | 0 |
| Procedure: H15 Other exteriorisation of colon  | 0 |
| Procedure: H16 Incision of colon   | 0 |
| Procedure: H17 Intra-abdominal manipulation of colon   | 0 |
| Procedure: H18 Open endoscopic operations on colon   | 0 |
| Procedure: H19 Other open operations on colon  | 0 |
| Procedure: H20 Endoscopic extirpation of lesion of colon   | 0 |
| Procedure: H21 Other therapeutic endoscopic operations on colon                                      | 0 |
| Procedure: H22 Diagnostic endoscopic examination of colon  | 0 |
| Procedure: H23 Endoscopic extirpation of lesion of lower bowel using fiberoptic sigmoidoscope        | 0 |
| Procedure: H24 Other therapeutic endoscopic operations on lower bowel using fiberoptic sigmoidoscope | 0 |
| Procedure: H25 Diagnostic endoscopic examination of lower bowel using fiberoptic sigmoidoscope       | 0 |
| Procedure: H26 Endoscopic extirpation of lesion of sigmoid colon using rigid sigmoidoscope           | 0 |
| Procedure: H27 Other therapeutic endoscopic operations on sigmoid colon using rigid sigmoidoscope    | 0 |
| Procedure: H28 Diagnostic endoscopic examination of sigmoid colon using rigid sigmoidoscope          | 0 |
| Procedure: H29 Subtotal excision of colon  | 0 |
| Procedure: H30 Other operations on colon   | 0 |
| Procedure: H33 Excision of rectum  | 0 |
| Procedure: H34 Open extirpation of lesion of rectum  | 0 |
| Procedure: H35 Fixation of rectum for prolapse   | 0 |
| Procedure: H36 Other abdominal operations for prolapse of rectum                                     | 0 |
| Procedure: H40 Operations on rectum through anal sphincter   | 0 |

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| Procedure: H41 Other operations on rectum through anus   | 0 |
| Procedure: H42 Perineal operations for prolapse of rectum  | 0 |
| Procedure: H44 Manipulation of rectum  | 0 |
| Procedure: H46 Other operations on rectum  | 0 |
| Procedure: H47 Excision of anus  | 0 |
| Procedure: H48 Excision of lesion of anus  | 0 |
| Procedure: H49 Destruction of lesion of anus   | 0 |
| Procedure: H50 Repair of anus  | 0 |
| Procedure: H51 Excision of haemorrhoid   | 0 |
| Procedure: H52 Destruction of haemorrhoid  | 0 |
| Procedure: H53 Other operations on haemorrhoid   | 0 |
| Procedure: H54 Dilation of anal sphincter  | 0 |
| Procedure: H55 Other operations on perianal region   | 0 |
| Procedure: H56 Other operations on anus  | 0 |
| Procedure: H57 Other operations on the anal sphincter to control continence                      | 0 |
| Procedure: H58 Drainage through perineal region  | 0 |
| Procedure: H59 Excision of pilonidal sinus   | 0 |
| Procedure: H60 Other operations on pilonidal sinus   | 0 |
| Procedure: H62 Other operations on bowel   | 0 |
| Procedure: H66 Therapeutic operations on ileoanal pouch  | 0 |
| Procedure: H68 Diagnostic endoscopic examination of enteric pouch using colonoscope              | 0 |
| Procedure: H69 Diagnostic endoscopic examination of enteric pouch using fiberoptic sigmoidoscope | 0 |
| Procedure: H70 Diagnostic endoscopic examination of enteric pouch using rigid sigmoidoscope      | 0 |
| Procedure: J02 Partial excision of liver   | 0 |
| Procedure: J03 Extirpation of lesion of liver  | 0 |
| Procedure: J04 Repair of liver   | 0 |
| Procedure: J05 Incision of liver   | 0 |
| Procedure: J07 Other open operations on liver  | 0 |
| Procedure: J08 Therapeutic endoscopic operations on liver using laparoscope                      | 0 |
| Procedure: J09 Diagnostic endoscopic examination of liver using laparoscope                      | 0 |
| Procedure: J10 Transluminal operations on blood vessel of liver                                  | 0 |
| Procedure: J11 Transjugular intrahepatic operations on blood vessel of liver                     | 0 |
| Procedure: J12 Other therapeutic percutaneous operations on liver                                | 0 |
| Procedure: J13 Diagnostic percutaneous operations on liver                                       | 0 |
| Procedure: J14 Other puncture of liver   | 0 |
| Procedure: J16 Other operations on liver   | 0 |
| Procedure: J17 Endoscopic ultrasound examination of liver  | 0 |
| Procedure: J18 Excision of gall bladder  | 0 |
| Procedure: J19 Connection of gall bladder  | 0 |
| Procedure: J20 Repair of gall bladder  | 0 |
| Procedure: J21 Incision of gall bladder  | 0 |
| Procedure: J23 Other open operations on gall bladder   | 0 |
| Procedure: J24 Therapeutic percutaneous operations on gall bladder                               | 0 |
| Procedure: J26 Other operations on gall bladder  | 0 |

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| Procedure: J27 Excision of bile duct   | 0 |
| Procedure: J28 Extirpation of lesion of bile duct  | 0 |
| Procedure: J29 Connection of hepatic duct  | 0 |
| Procedure: J30 Connection of common bile duct  | 0 |
| Procedure: J31 Open introduction of prosthesis into bile duct                                | 0 |
| Procedure: J32 Repair of bile duct   | 0 |
| Procedure: J33 Incision of bile duct   | 0 |
| Procedure: J34 Plastic repair of sphincter of Oddi using duodenal approach                   | 0 |
| Procedure: J35 Incision of sphincter of Oddi using duodenal approach                         | 0 |
| Procedure: J36 Other operations on ampulla of Vater using duodenal approach                  | 0 |
| Procedure: J37 Other open operations on bile duct  | 0 |
| Procedure: J38 Endoscopic incision of sphincter of Oddi                                      | 0 |
| Procedure: J39 Other therapeutic endoscopic operations on ampulla of Vater                   | 0 |
| Procedure: J40 Endoscopic retrograde placement of prosthesis in bile duct                    | 0 |
| Procedure: J41 Other therapeutic endoscopic retrograde operations on bile duct               | 0 |
| Procedure: J42 Therapeutic endoscopic retrograde operations on pancreatic duct               | 0 |
| Procedure: J43 Diagnostic endoscopic retrograde examination of bile duct and pancreatic duct | 0 |
| Procedure: J44 Diagnostic endoscopic retrograde examination of bile duct                     | 0 |
| Procedure: J45 Diagnostic endoscopic retrograde examination of pancreatic duct               | 0 |
| Procedure: J46 Therapeutic percutaneous attention to connection of bile duct                 | 0 |
| Procedure: J47 Therapeutic percutaneous insertion of prosthesis into bile duct               | 0 |
| Procedure: J48 Other therapeutic percutaneous operations on bile duct                        | 0 |
| Procedure: J49 Therapeutic operations on bile duct along T tube track                        | 0 |
| Procedure: J50 Percutaneous examination of bile duct   | 0 |
| Procedure: J52 Other operations on bile duct   | 0 |
| Procedure: J53 Endoscopic ultrasound examination of bile duct                                | 0 |
| Procedure: J54 Transplantation of pancreas   | 0 |
| Procedure: J55 Total excision of pancreas  | 0 |
| Procedure: J56 Excision of head of pancreas  | 0 |
| Procedure: J57 Other partial excision of pancreas  | 0 |
| Procedure: J58 Extirpation of lesion of pancreas   | 0 |
| Procedure: J59 Connection of pancreatic duct   | 0 |
| Procedure: J61 Open drainage of lesion of pancreas   | 0 |
| Procedure: J62 Incision of pancreas  | 0 |
| Procedure: J65 Other open operations on pancreas   | 0 |
| Procedure: J66 Therapeutic percutaneous operations on pancreas                               | 0 |
| Procedure: J67 Diagnostic percutaneous operations on pancreas                                | 0 |
| Procedure: J69 Total excision of spleen  | 0 |
| Procedure: J70 Other excision of spleen  | 0 |
| Procedure: J72 Other operations on spleen  | 0 |
| Procedure: J74 Endoscopic ultrasound examination of pancreas                                 | 0 |
| Procedure: K01 Transplantation of heart and lung   | 0 |
| Procedure: K04 Repair of tetralogy of Fallot   | 0 |
| Procedure: K07 Correction of total anomalous pulmonary venous connection                     | 0 |

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| Procedure: K09 Repair of defect of atrioventricular septum                      | 0 |
| Procedure: K10 Repair of defect of interatrial septum                           | 0 |
| Procedure: K11 Repair of defect of interventricular septum                      | 0 |
| Procedure: K12 Repair of defect of unspecified septum of heart                  | 0 |
| Procedure: K13 Transluminal repair of defect of septum                          | 0 |
| Procedure: K16 Other therapeutic transluminal operations on septum of heart     | 0 |
| Procedure: K18 Creation of valved cardiac conduit                               | 0 |
| Procedure: K20 Refashioning of atrium   | 0 |
| Procedure: K22 Other operations on wall of atrium                               | 0 |
| Procedure: K23 Other operations of wall of heart                                | 0 |
| Procedure: K25 Plastic repair of mitral valve                                   | 0 |
| Procedure: K26 Plastic repair of aortic valve                                   | 0 |
| Procedure: K27 Plastic repair of tricuspid valve                                | 0 |
| Procedure: K28 Plastic repair of pulmonary valve                                | 0 |
| Procedure: K29 Plastic repair of unspecified valve of heart                     | 0 |
| Procedure: K30 Revision of plastic repair of valve of heart                     | 0 |
| Procedure: K33 Operations on aortic root  | 0 |
| Procedure: K34 Other open operations on valve of heart                          | 0 |
| Procedure: K35 Therapeutic transluminal operations on valve of heart            | 0 |
| Procedure: K37 Removal of obstruction from structure adjacent to valve of heart | 0 |
| Procedure: K38 Other operations on structure adjacent to valve of heart         | 0 |
| Procedure: K40 Saphenous vein graft replacement of coronary artery              | 0 |
| Procedure: K41 Other autograft replacement of coronary artery                   | 0 |
| Procedure: K42 Allograft replacement of coronary artery                         | 0 |
| Procedure: K43 Prosthetic replacement of coronary artery                        | 0 |
| Procedure: K44 Other replacement of coronary artery                             | 0 |
| Procedure: K45 Connection of thoracic artery to coronary artery                 | 0 |
| Procedure: K46 Other bypass of coronary artery                                  | 0 |
| Procedure: K48 Other open operations on coronary artery                         | 0 |
| Procedure: K49 Transluminal balloon angioplasty of coronary artery              | 0 |
| Procedure: K50 Other therapeutic transluminal operations on coronary artery     | 0 |
| Procedure: K51 Diagnostic transluminal operations on coronary artery            | 0 |
| Procedure: K52 Open operations on conducting system of heart                    | 0 |
| Procedure: K56 Transluminal heart assist operations                             | 0 |
| Procedure: K57 Other therapeutic transluminal operations on heart               | 0 |
| Procedure: K58 Diagnostic transluminal operations on heart                      | 0 |
| Procedure: K59 Cardioverter defibrillator introduced through the vein           | 0 |
| Procedure: K60 Cardiac pacemaker system introduced through vein                 | 0 |
| Procedure: K61 Other cardiac pacemaker system                                   | 0 |
| Procedure: K62 Therapeutic transluminal operations on heart                     | 0 |
| Procedure: K63 Contrast radiology of heart                                      | 0 |
| Procedure: K65 Catheterisation of heart   | 0 |
| Procedure: K66 Other operations on heart  | 0 |
| Procedure: K67 Excision of pericardium  | 0 |



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| Procedure: K68 Drainage of pericardium   | 0 |
| Procedure: K69 Incision of pericardium   | 0 |
| Procedure: K71 Other operations on pericardium   | 0 |
| Procedure: K75 Percutaneous transluminal balloon angioplasty and insertion of stent into coronary artery | 0 |
| Procedure: L03 Transluminal operations on abnormality of great vessel                                    | 0 |
| Procedure: L04 Open operations on pulmonary arterial tree  | 0 |
| Procedure: L06 Other connection to pulmonary artery from aorta   | 0 |
| Procedure: L13 Transluminal operations on pulmonary artery   | 0 |
| Procedure: L16 Extra-anatomic bypass of aorta  | 0 |
| Procedure: L18 Emergency replacement of aneurysmal segment of aorta                                      | 0 |
| Procedure: L19 Other replacement of aneurysmal segment of aorta  | 0 |
| Procedure: L20 Other emergency bypass of segment of aorta  | 0 |
| Procedure: L21 Other bypass of segment of aorta  | 0 |
| Procedure: L22 Attention to prosthesis of aorta  | 0 |
| Procedure: L23 Plastic repair of aorta   | 0 |
| Procedure: L25 Other open operations on aorta  | 0 |
| Procedure: L26 Transluminal operations on aorta  | 0 |
| Procedure: L27 Transluminal insertion of stent graft for aneurysmal segment of aorta                     | 0 |
| Procedure: L28 Transluminal operations on aneurysmal segment of aorta                                    | 0 |
| Procedure: L29 Reconstruction of carotid artery  | 0 |
| Procedure: L30 Other open operations on carotid artery   | 0 |
| Procedure: L31 Transluminal operations on carotid artery   | 0 |
| Procedure: L33 Operations on aneurysm of cerebral artery   | 0 |
| Procedure: L34 Other open operations on cerebral artery  | 0 |
| Procedure: L35 Transluminal operations on cerebral artery  | 0 |
| Procedure: L37 Reconstruction of subclavian artery   | 0 |
| Procedure: L38 Other open operations on subclavian artery  | 0 |
| Procedure: L39 Transluminal operations on subclavian artery  | 0 |
| Procedure: L41 Reconstruction of renal artery  | 0 |
| Procedure: L42 Other open operations on renal artery   | 0 |
| Procedure: L43 Transluminal operations on renal artery   | 0 |
| Procedure: L45 Reconstruction of other visceral branch of abdominal aorta                                | 0 |
| Procedure: L46 Other open operations on other visceral branch of abdominal aorta                         | 0 |
| Procedure: L47 Transluminal operations on other visceral branch of abdominal aorta                       | 0 |
| Procedure: L49 Other replacement of aneurysmal iliac artery  | 0 |
| Procedure: L50 Other emergency bypass of iliac artery  | 0 |
| Procedure: L51 Other bypass of iliac artery  | 0 |
| Procedure: L52 Reconstruction of iliac artery  | 0 |
| Procedure: L53 Other open operations on iliac artery   | 0 |
| Procedure: L54 Transluminal operations on iliac artery   | 0 |
| Procedure: L56 Emergency replacement of aneurysmal femoral artery  | 0 |
| Procedure: L57 Other replacement of aneurysmal femoral artery  | 0 |
| Procedure: L58 Other emergency bypass of femoral artery  | 0 |
| Procedure: L59 Other bypass of femoral artery  | 0 |

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| Procedure: L60 Reconstruction of femoral artery                        | 0 |
| Procedure: L62 Other open operations on femoral artery                 | 0 |
| Procedure: L63 Transluminal operations on femoral artery               | 0 |
| Procedure: L65 Revision of reconstruction of artery                    | 0 |
| Procedure: L66 Other therapeutic transluminal operations on artery     | 0 |
| Procedure: L67 Excision of other artery                                | 0 |
| Procedure: L68 Repair of other artery                                  | 0 |
| Procedure: L70 Other open operations on other artery                   | 0 |
| Procedure: L71 Therapeutic transluminal operations on other artery     | 0 |
| Procedure: L72 Diagnostic transluminal operations on other artery      | 0 |
| Procedure: L74 Arteriovenous shunt                                     | 0 |
| Procedure: L75 Other arteriovenous operations                          | 0 |
| Procedure: L77 Connection of vena cava or branch of vena cava          | 0 |
| Procedure: L79 Other operations on vena cava                           | 0 |
| Procedure: L81 Other bypass operations on vein                         | 0 |
| Procedure: L82 Repair of valve of vein                                 | 0 |
| Procedure: L83 Other operations for venous insufficiency               | 0 |
| Procedure: L84 Combined operations on varicose vein of leg             | 0 |
| Procedure: L85 Ligation of varicose vein of leg                        | 0 |
| Procedure: L86 Injection into varicose vein of leg                     | 0 |
| Procedure: L87 Other operations on varicose vein of leg                | 0 |
| Procedure: L88 Transluminal operations on varicose vein of leg         | 0 |
| Procedure: L90 Open removal of thrombus from vein                      | 0 |
| Procedure: L91 Other vein related operations                           | 0 |
| Procedure: L92 Unblocking of access catheter                           | 0 |
| Procedure: L93 Other open operations on vein                           | 0 |
| Procedure: L94 Therapeutic transluminal operations on vein             | 0 |
| Procedure: L95 Diagnostic transluminal operations on vein              | 0 |
| Procedure: L96 Percutaneous removal of thrombus from vein              | 0 |
| Procedure: L97 Other operations on blood vessel                        | 0 |
| Procedure: L98 Operations on microvascular vessel                      | 0 |
| Procedure: L99 Other therapeutic transluminal operations on vein       | 0 |
| Procedure: M01 Transplantation of kidney                               | 0 |
| Procedure: M02 Total excision of kidney                                | 0 |
| Procedure: M03 Partial excision of kidney                              | 0 |
| Procedure: M04 Open extirpation of lesion of kidney                    | 0 |
| Procedure: M05 Open repair of kidney                                   | 0 |
| Procedure: M06 Incision of kidney                                      | 0 |
| Procedure: M08 Other open operations on kidney                         | 0 |
| Procedure: M09 Therapeutic endoscopic operations on calculus of kidney | 0 |
| Procedure: M10 Other therapeutic endoscopic operations on kidney       | 0 |
| Procedure: M11 Diagnostic endoscopic examination of kidney             | 0 |
| Procedure: M13 Percutaneous puncture of kidney                         | 0 |
| Procedure: M14 Extracorporeal fragmentation of calculus of kidney      | 0 |

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| Procedure: M15 Operations on kidney along nephrostomy tube track                             | 0 |
| Procedure: M16 Other operations on kidney  | 0 |
| Procedure: M17 Interventions associated with transplantation of kidney                       | 0 |
| Procedure: M18 Excision of ureter  | 0 |
| Procedure: M19 Urinary diversion   | 0 |
| Procedure: M20 Replantation of ureter  | 0 |
| Procedure: M22 Repair of ureter  | 0 |
| Procedure: M23 Incision of ureter  | 0 |
| Procedure: M25 Other open operations on ureter   | 0 |
| Procedure: M26 Therapeutic nephroscopic operations on ureter                                 | 0 |
| Procedure: M27 Therapeutic ureteroscopic operations on ureter                                | 0 |
| Procedure: M28 Other endoscopic removal of calculus from ureter                              | 0 |
| Procedure: M29 Other therapeutic endoscopic operations on ureter                             | 0 |
| Procedure: M30 Diagnostic endoscopic examination of ureter                                   | 0 |
| Procedure: M31 Extracorporeal fragmentation of calculus of ureter                            | 0 |
| Procedure: M32 Operations on ureteric orifice  | 0 |
| Procedure: M33 Percutaneous ureteric stent procedures  | 0 |
| Procedure: M34 Total excision of bladder   | 0 |
| Procedure: M35 Partial excision of bladder   | 0 |
| Procedure: M36 Enlargement of bladder  | 0 |
| Procedure: M37 Other repair of bladder   | 0 |
| Procedure: M38 Open drainage of bladder  | 0 |
| Procedure: M39 Other open operations on contents of bladder                                  | 0 |
| Procedure: M41 Other open operations on bladder  | 0 |
| Procedure: M42 Endoscopic extirpation of lesion of bladder                                   | 0 |
| Procedure: M43 Endoscopic operations to increase capacity of bladder                         | 0 |
| Procedure: M44 Other therapeutic endoscopic operations on bladder                            | 0 |
| Procedure: M45 Diagnostic endoscopic examination of bladder                                  | 0 |
| Procedure: M47 Urethral catheterisation of bladder   | 0 |
| Procedure: M48 Operations on bladder   | 0 |
| Procedure: M49 Other operations on bladder   | 0 |
| Procedure: M51 Combined abdominal and vaginal operations to support outlet of female bladder | 0 |
| Procedure: M52 Abdominal operations to support outlet of female bladder                      | 0 |
| Procedure: M53 Vaginal operations to support outlet of female bladder                        | 0 |
| Procedure: M54 Open operations on outlet of female bladder                                   | 0 |
| Procedure: M55 Other open operations on outlet of female bladder                             | 0 |
| Procedure: M56 Therapeutic endoscopic operations on outlet of female bladder                 | 0 |
| Procedure: M58 Other operations on outlet of female bladder                                  | 0 |
| Procedure: M61 Open excision of prostate   | 0 |
| Procedure: M62 Other open operations on prostate   | 0 |
| Procedure: M64 Other open operations on outlet of male bladder                               | 0 |
| Procedure: M65 Endoscopic resection of outlet of male bladder                                | 0 |
| Procedure: M66 Other therapeutic endoscopic operations on outlet of male bladder             | 0 |
| Procedure: M67 Other therapeutic endoscopic operations on prostate                           | 0 |

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| Procedure: M70 Other operations on outlet of male bladder                                       | 0 |
| Procedure: M71 Other operations on prostate   | 0 |
| Procedure: M72 Excision of urethra  | 0 |
| Procedure: M73 Repair of urethra  | 0 |
| Procedure: M75 Other open operations on urethra   | 0 |
| Procedure: M76 Therapeutic endoscopic operations on urethra                                     | 0 |
| Procedure: M77 Diagnostic endoscopic examination of urethra                                     | 0 |
| Procedure: M79 Other operations on urethra  | 0 |
| Procedure: M81 Operations on urethral orifice   | 0 |
| Procedure: M83 Other operations on urinary tract  | 0 |
| Procedure: M85 Diagnostic endoscopic examination of urinary diversion                           | 0 |
| Procedure: M86 Therapeutic endoscopic operations on urinary diversion                           | 0 |
| Procedure: N01 Extirpation of scrotum   | 0 |
| Procedure: N03 Other operations on scrotum  | 0 |
| Procedure: N05 Bilateral excision of testes   | 0 |
| Procedure: N06 Other excision of testis   | 0 |
| Procedure: N07 Extirpation of lesion of testis  | 0 |
| Procedure: N08 Bilateral placement of testes in scrotum   | 0 |
| Procedure: N09 Other placement of testis in scrotum   | 0 |
| Procedure: N10 Prosthesis of testis   | 0 |
| Procedure: N11 Operations on hydrocele sac  | 0 |
| Procedure: N13 Other operations on testis   | 0 |
| Procedure: N15 Operations on epididymis   | 0 |
| Procedure: N17 Excision of vas deferens   | 0 |
| Procedure: N18 Repair of spermatic cord   | 0 |
| Procedure: N19 Operations on varicocele   | 0 |
| Procedure: N20 Other operations on spermatic cord   | 0 |
| Procedure: N22 Operations on seminal vesicle  | 0 |
| Procedure: N24 Operations on male perineum  | 0 |
| Procedure: N26 Amputation of penis  | 0 |
| Procedure: N27 Extirpation of lesion of penis   | 0 |
| Procedure: N28 Plastic operations on penis  | 0 |
| Procedure: N29 Prosthesis of penis  | 0 |
| Procedure: N30 Operations on prepuce  | 0 |
| Procedure: N32 Other operations on penis  | 0 |
| Procedure: N34 Other operations on male genital tract   | 0 |
| Procedure: N35 Non-operative interventions to male genitalia                                    | 0 |
| Procedure: O01 Transluminal coil embolisation of aneurysm of artery                             | 0 |
| Procedure: O02 Transluminal balloon assisted coil embolisation of aneurysm of artery            | 0 |
| Procedure: O03 Transluminal stent assisted coil embolisation of aneurysm of artery              | 0 |
| Procedure: O05 Operations on dural arteriovenous fistula  | 0 |
| Procedure: O06 Hybrid prosthetic replacement of shoulder joint using cemented humeral component | 0 |
| Procedure: O07 Hybrid prosthetic replacement of shoulder joint using cemented glenoid component | 0 |
| Procedure: O10 Complex reconstruction of shoulder   | 0 |

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| Procedure: O15 Operations on blood vessel   | 0 |
| Procedure: O17 Secondary closed reduction of fracture of bone and internal fixation | 0 |
| Procedure: O18 Hybrid prosthetic replacement of knee joint using cement             | 0 |
| Procedure: O23 Total prosthetic replacement of elbow joint                          | 0 |
| Procedure: O25 Prosthetic replacement of head of radius not using cement            | 0 |
| Procedure: O27 Other stabilising operations on joint                                | 0 |
| Procedure: O29 Excision of bone   | 0 |
| Procedure: P01 Operations on clitoris   | 0 |
| Procedure: P03 Operations on Bartholin gland  | 0 |
| Procedure: P05 Excision of vulva  | 0 |
| Procedure: P06 Extirpation of lesion of vulva                                       | 0 |
| Procedure: P07 Repair of vulva  | 0 |
| Procedure: P09 Other operations on vulva  | 0 |
| Procedure: P11 Extirpation of lesion of female perineum                             | 0 |
| Procedure: P13 Other operations on female perineum                                  | 0 |
| Procedure: P14 Incision of introitus of vagina                                      | 0 |
| Procedure: P15 Other operations on introitus of vagina                              | 0 |
| Procedure: P17 Excision of vagina   | 0 |
| Procedure: P18 Other obliteration of vagina   | 0 |
| Procedure: P19 Excision of band of vagina   | 0 |
| Procedure: P20 Extirpation of lesion of vagina                                      | 0 |
| Procedure: P21 Plastic operations on vagina   | 0 |
| Procedure: P22 Repair of prolapse of vagina and amputation of cervix uteri          | 0 |
| Procedure: P23 Other repair of prolapse of vagina                                   | 0 |
| Procedure: P24 Repair of vault of vagina  | 0 |
| Procedure: P25 Other repair of vagina   | 0 |
| Procedure: P26 Introduction of supporting pessary into vagina                       | 0 |
| Procedure: P27 Exploration of vagina  | 0 |
| Procedure: P29 Other operations on vagina   | 0 |
| Procedure: P31 Operations on pouch of Douglas                                       | 0 |
| Procedure: P32 Other plastic operations on vagina                                   | 0 |
| Procedure: Q01 Excision of cervix uteri   | 0 |
| Procedure: Q02 Destruction of lesion of cervix uteri                                | 0 |
| Procedure: Q03 Biopsy of cervix uteri   | 0 |
| Procedure: Q05 Other operations on cervix uteri                                     | 0 |
| Procedure: Q07 Abdominal excision of uterus   | 0 |
| Procedure: Q08 Vaginal excision of uterus   | 0 |
| Procedure: Q09 Other open operations on uterus                                      | 0 |
| Procedure: Q10 Curettage of uterus  | 0 |
| Procedure: Q11 Other evacuation of contents of uterus                               | 0 |
| Procedure: Q12 Intrauterine contraceptive device                                    | 0 |
| Procedure: Q13 Introduction of gamete into uterine cavity                           | 0 |
| Procedure: Q14 Introduction of abortifacient into uterine cavity                    | 0 |
| Procedure: Q15 Introduction of other substance into uterine cavity                  | 0 |

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| Procedure: Q16 Other vaginal operations on uterus                        | 0 |
| Procedure: Q17 Therapeutic endoscopic operations on uterus               | 0 |
| Procedure: Q18 Diagnostic endoscopic examination of uterus               | 0 |
| Procedure: Q20 Other operations on uterus                                | 0 |
| Procedure: Q22 Bilateral excision of adnexa of uterus                    | 0 |
| Procedure: Q23 Unilateral excision of adnexa of uterus                   | 0 |
| Procedure: Q24 Other excision of adnexa of uterus                        | 0 |
| Procedure: Q25 Partial excision of fallopian tube                        | 0 |
| Procedure: Q27 Open bilateral occlusion of fallopian tubes               | 0 |
| Procedure: Q28 Other open occlusion of fallopian tube                    | 0 |
| Procedure: Q29 Open reversal of female sterilisation                     | 0 |
| Procedure: Q30 Other repair of fallopian tube                            | 0 |
| Procedure: Q31 Incision of fallopian tube                                | 0 |
| Procedure: Q32 Operations on fimbria                                     | 0 |
| Procedure: Q34 Other open operations on fallopian tube                   | 0 |
| Procedure: Q35 Endoscopic bilateral occlusion of fallopian tubes         | 0 |
| Procedure: Q36 Other endoscopic occlusion of fallopian tube              | 0 |
| Procedure: Q37 Endoscopic reversal of female sterilisation               | 0 |
| Procedure: Q38 Other therapeutic endoscopic operations on fallopian tube | 0 |
| Procedure: Q39 Diagnostic endoscopic examination of fallopian tube       | 0 |
| Procedure: Q41 Other operations on fallopian tube                        | 0 |
| Procedure: Q43 Partial excision of ovary                                 | 0 |
| Procedure: Q44 Open destruction of lesion of ovary                       | 0 |
| Procedure: Q45 Repair of ovary   | 0 |
| Procedure: Q47 Other open operations on ovary                            | 0 |
| Procedure: Q48 Oocyte recovery   | 0 |
| Procedure: Q49 Therapeutic endoscopic operations on ovary                | 0 |
| Procedure: Q50 Diagnostic endoscopic examination of ovary                | 0 |
| Procedure: Q51 Other operations on ovary                                 | 0 |
| Procedure: Q52 Operations on broad ligament of uterus                    | 0 |
| Procedure: Q54 Operations on other ligament of uterus                    | 0 |
| Procedure: Q55 Other examination of female genital tract                 | 0 |
| Procedure: Q56 Other operations on female genital tract                  | 0 |
| Procedure: R02 Diagnostic endoscopic examination of fetus                | 0 |
| Procedure: R03 Selective destruction of fetus                            | 0 |
| Procedure: R04 Therapeutic percutaneous operations on fetus              | 0 |
| Procedure: R05 Diagnostic percutaneous examination of fetus              | 0 |
| Procedure: R10 Other operations on amniotic cavity                       | 0 |
| Procedure: R12 Operations on gravid uterus                               | 0 |
| Procedure: R14 Surgical induction of labour                              | 0 |
| Procedure: R15 Other induction of labour                                 | 0 |
| Procedure: R17 Elective caesarean delivery                               | 0 |
| Procedure: R18 Other caesarean delivery                                  | 0 |
| Procedure: R19 Breech extraction delivery                                | 0 |

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| Procedure: R20 Other breech delivery   | 0 |
| Procedure: R21 Forceps cephalic delivery   | 0 |
| Procedure: R22 Vacuum delivery   | 0 |
| Procedure: R23 Cephalic vaginal delivery with abnormal presentation of head at delivery without instrument | 0 |
| Procedure: R24 Normal delivery   | 0 |
| Procedure: R25 Other methods of delivery   | 0 |
| Procedure: R27 Other operations to facilitate delivery   | 0 |
| Procedure: R28 Instrumental removal of products of conception from delivered uterus                        | 0 |
| Procedure: R29 Manual removal of products of conception from delivered uterus                              | 0 |
| Procedure: R30 Other operations on delivered uterus  | 0 |
| Procedure: R32 Repair of obstetric laceration  | 0 |
| Procedure: R34 Other obstetric operations  | 0 |
| Procedure: R36 Routine obstetric scan  | 0 |
| Procedure: R37 Non-routine obstetric scan for fetal observations   | 0 |
| Procedure: R38 Other non-routine obstetric scan  | 0 |
| Procedure: R40 Other maternal physiological assessments  | 0 |
| Procedure: R43 Ultrasound monitoring   | 0 |
| Procedure: S01 Plastic excision of skin of head or neck  | 0 |
| Procedure: S02 Plastic excision of skin of abdominal wall  | 0 |
| Procedure: S03 Plastic excision of skin of other site  | 0 |
| Procedure: S04 Other excision of skin  | 0 |
| Procedure: S05 Microscopically controlled excision of lesion of skin                                       | 0 |
| Procedure: S06 Other excision of lesion of skin  | 0 |
| Procedure: S07 Photodynamic therapy of skin  | 0 |
| Procedure: S08 Curettage of lesion of skin   | 0 |
| Procedure: S09 Photodestruction of lesion of skin  | 0 |
| Procedure: S10 Other destruction of lesion of skin of head or neck   | 0 |
| Procedure: S11 Other destruction of lesion of skin of other site   | 0 |
| Procedure: S12 Phototherapy to skin  | 0 |
| Procedure: S13 Punch biopsy of skin  | 0 |
| Procedure: S14 Shave biopsy of skin  | 0 |
| Procedure: S15 Other biopsy of skin  | 0 |
| Procedure: S17 Distant flap of skin and muscle   | 0 |
| Procedure: S18 Distant flap of skin and fascia   | 0 |
| Procedure: S19 Distant pedicle flap of skin  | 0 |
| Procedure: S20 Other distant flap of skin  | 0 |
| Procedure: S22 Sensory flap of skin  | 0 |
| Procedure: S23 Flap operations to relax contracture of skin  | 0 |
| Procedure: S24 Local flap of skin and muscle   | 0 |
| Procedure: S25 Local flap of skin and fascia   | 0 |
| Procedure: S26 Local subcutaneous pedicle flap of skin   | 0 |
| Procedure: S27 Other local flap of skin  | 0 |
| Procedure: S30 Other operations on flap of skin to head or neck  | 0 |
| Procedure: S31 Other operations on flap of skin to other site  | 0 |

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| Procedure: S35 Split autograft of skin  | 0 |
| Procedure: S36 Other autograft of skin  | 0 |
| Procedure: S37 Other graft of skin  | 0 |
| Procedure: S39 Graft of other tissue to skin                                  | 0 |
| Procedure: S40 Other closure of skin  | 0 |
| Procedure: S41 Suture of skin of head or neck                                 | 0 |
| Procedure: S42 Suture of skin of other site                                   | 0 |
| Procedure: S43 Removal of repair material from skin                           | 0 |
| Procedure: S44 Removal of other inorganic substance from skin                 | 0 |
| Procedure: S45 Removal of other substance from skin                           | 0 |
| Procedure: S47 Opening of skin  | 0 |
| Procedure: S48 Insertion of skin expander into subcutaneous tissue            | 0 |
| Procedure: S49 Attention to skin expander in subcutaneous tissue              | 0 |
| Procedure: S50 Introduction of other inert substance into subcutaneous tissue | 0 |
| Procedure: S51 Introduction of destructive substance into subcutaneous tissue | 0 |
| Procedure: S52 Introduction of therapeutic substance into subcutaneous tissue | 0 |
| Procedure: S53 Introduction of substance into skin                            | 0 |
| Procedure: S54 Exploration of burnt skin of head or neck                      | 0 |
| Procedure: S55 Exploration of burnt skin of other site                        | 0 |
| Procedure: S56 Exploration of other skin of head or neck                      | 0 |
| Procedure: S57 Exploration of other skin of other site                        | 0 |
| Procedure: S58 Larvae therapy of skin   | 0 |
| Procedure: S60 Other operations on skin                                       | 0 |
| Procedure: S62 Other operations on subcutaneous tissue                        | 0 |
| Procedure: S64 Extirpation of nail bed  | 0 |
| Procedure: S66 Other operations on nail bed                                   | 0 |
| Procedure: S68 Excision of nail   | 0 |
| Procedure: S70 Other operations on nail                                       | 0 |
| Procedure: T01 Partial excision of chest wall                                 | 0 |
| Procedure: T02 Reconstruction of chest wall                                   | 0 |
| Procedure: T03 Opening of chest   | 0 |
| Procedure: T05 Other operations on chest wall                                 | 0 |
| Procedure: T07 Open excision of pleura  | 0 |
| Procedure: T08 Open drainage of pleural cavity                                | 0 |
| Procedure: T09 Other open operations on pleura                                | 0 |
| Procedure: T10 Therapeutic endoscopic operations on pleura                    | 0 |
| Procedure: T11 Diagnostic endoscopic examination of pleura                    | 0 |
| Procedure: T12 Puncture of pleura   | 0 |
| Procedure: T13 Introduction of substance into pleural cavity                  | 0 |
| Procedure: T14 Other operations on pleura                                     | 0 |
| Procedure: T15 Repair of rupture of diaphragm                                 | 0 |
| Procedure: T16 Other repair of diaphragm                                      | 0 |
| Procedure: T17 Other operations on diaphragm                                  | 0 |
| Procedure: T19 Simple excision of inguinal hernial sac                        | 0 |



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| Procedure: T20 Primary repair of inguinal hernia               | 0 |
| Procedure: T21 Repair of recurrent inguinal hernia             | 0 |
| Procedure: T22 Primary repair of femoral hernia                | 0 |
| Procedure: T23 Repair of recurrent femoral hernia              | 0 |
| Procedure: T24 Primary repair of umbilical hernia              | 0 |
| Procedure: T25 Primary repair of incisional hernia             | 0 |
| Procedure: T26 Repair of recurrent incisional hernia           | 0 |
| Procedure: T27 Repair of other hernia of abdominal wall        | 0 |
| Procedure: T28 Other repair of anterior abdominal wall         | 0 |
| Procedure: T29 Operations on umbilicus                         | 0 |
| Procedure: T30 Opening of abdomen                              | 0 |
| Procedure: T31 Other operations on anterior abdominal wall     | 0 |
| Procedure: T33 Open extirpation of lesion of peritoneum        | 0 |
| Procedure: T34 Open drainage of peritoneum                     | 0 |
| Procedure: T36 Operations on omentum                           | 0 |
| Procedure: T37 Operations on mesentery of small intestine      | 0 |
| Procedure: T38 Operations on mesentery of colon                | 0 |
| Procedure: T39 Operations on posterior peritoneum              | 0 |
| Procedure: T41 Other open operations on peritoneum             | 0 |
| Procedure: T42 Therapeutic endoscopic operations on peritoneum | 0 |
| Procedure: T43 Diagnostic endoscopic examination of peritoneum | 0 |
| Procedure: T45 Image controlled operations on abdominal cavity | 0 |
| Procedure: T46 Other drainage of peritoneal cavity             | 0 |
| Procedure: T48 Other operations on peritoneum                  | 0 |
| Procedure: T50 Transplantation of fascia                       | 0 |
| Procedure: T52 Excision of other fascia                        | 0 |
| Procedure: T53 Extirpation of lesion of fascia                 | 0 |
| Procedure: T54 Division of fascia                              | 0 |
| Procedure: T55 Release of fascia                               | 0 |
| Procedure: T56 Other excision of other fascia                  | 0 |
| Procedure: T57 Other operations on fascia                      | 0 |
| Procedure: T59 Excision of ganglion                            | 0 |
| Procedure: T60 Re-excision of ganglion                         | 0 |
| Procedure: T62 Operations on bursa                             | 0 |
| Procedure: T64 Transposition of tendon                         | 0 |
| Procedure: T65 Excision of tendon                              | 0 |
| Procedure: T67 Primary repair of tendon                        | 0 |
| Procedure: T68 Secondary repair of tendon                      | 0 |
| Procedure: T69 Freeing of tendon                               | 0 |
| Procedure: T70 Adjustment to length of tendon                  | 0 |
| Procedure: T71 Excision of sheath of tendon                    | 0 |
| Procedure: T72 Other operations on sheath of tendon            | 0 |
| Procedure: T74 Other operations on tendon                      | 0 |
| Procedure: T76 Transplantation of muscle                       | 0 |

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| Procedure: T77 Excision of muscle                           | 0 |
| Procedure: T79 Repair of muscle                             | 0 |
| Procedure: T80 Release of contracture of muscle             | 0 |
| Procedure: T81 Biopsy of muscle                             | 0 |
| Procedure: T83 Other operations on muscle                   | 0 |
| Procedure: T85 Block dissection of lymph nodes              | 0 |
| Procedure: T86 Sampling of lymph nodes                      | 0 |
| Procedure: T87 Excision or biopsy of lymph node             | 0 |
| Procedure: T88 Drainage of lesion of lymph node             | 0 |
| Procedure: T90 Contrast radiology of lymphatic tissue       | 0 |
| Procedure: T91 Operations on sentinel lymph node            | 0 |
| Procedure: T92 Other operations on lymphatic tissue         | 0 |
| Procedure: T94 Operations on branchial cleft                | 0 |
| Procedure: T96 Other operations on soft tissue              | 0 |
| Procedure: T97 Repair of recurrent umbilical hernia         | 0 |
| Procedure: U01 Diagnostic imaging of whole body             | 0 |
| Procedure: U05 Diagnostic imaging of central nervous system | 0 |
| Procedure: U06 Diagnostic imaging of face and neck          | 0 |
| Procedure: U07 Diagnostic imaging of chest                  | 0 |
| Procedure: U08 Diagnostic imaging of abdomen                | 0 |
| Procedure: U09 Diagnostic imaging of pelvis                 | 0 |
| Procedure: U10 Diagnostic imaging of heart                  | 0 |
| Procedure: U11 Diagnostic imaging of vascular system        | 0 |
| Procedure: U12 Diagnostic imaging of genitourinary system   | 0 |
| Procedure: U13 Diagnostic imaging of musculoskeletal system | 0 |
| Procedure: U14 Nuclear bone scan                            | 0 |
| Procedure: U15 Diagnostic imaging of respiratory system     | 0 |
| Procedure: U16 Diagnostic imaging of hepatobiliary system   | 0 |
| Procedure: U17 Diagnostic imaging of digestive tract        | 0 |
| Procedure: U19 Diagnostic electrocardiography               | 0 |
| Procedure: U20 Diagnostic echocardiography                  | 0 |
| Procedure: U21 Diagnostic imaging procedures                | 0 |
| Procedure: U22 Neuropsychology tests                        | 0 |
| Procedure: U25 Breath tests                                 | 0 |
| Procedure: U26 Diagnostic testing of genitourinary system   | 0 |
| Procedure: U27 Diagnostic application tests on skin         | 0 |
| Procedure: U28 Other diagnostic tests on skin               | 0 |
| Procedure: U29 Diagnostic endocrinology                     | 0 |
| Procedure: U30 Autonomic cardiovascular testing             | 0 |
| Procedure: U31 Pacemaker testing                            | 0 |
| Procedure: U32 Diagnostic blood tests                       | 0 |
| Procedure: U33 Other diagnostic tests                       | 0 |
| Procedure: U35 Other diagnostic imaging of vascular system  | 0 |
| Procedure: U36 Other diagnostic imaging procedures          | 0 |

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| Procedure: U37 Other diagnostic imaging of genitourinary system      | 0 |
| Procedure: U50 Rehabilitation for musculoskeletal disorders          | 0 |
| Procedure: U51 Rehabilitation for neurological disorders             | 0 |
| Procedure: U52 Rehabilitation for psychiatric disorders              | 0 |
| Procedure: U53 Rehabilitation for trauma and reconstructive surgery  | 0 |
| Procedure: U54 Rehabilitation for other disorders                    | 0 |
| Procedure: V01 Plastic repair of cranium                             | 0 |
| Procedure: V03 Opening of cranium                                    | 0 |
| Procedure: V05 Other operations on cranium                           | 0 |
| Procedure: V06 Excision of maxilla                                   | 0 |
| Procedure: V07 Excision of bone of face                              | 0 |
| Procedure: V08 Reduction of fracture of maxilla                      | 0 |
| Procedure: V09 Reduction of fracture of other bone of face           | 0 |
| Procedure: V10 Division of bone of face                              | 0 |
| Procedure: V11 Fixation of bone of face                              | 0 |
| Procedure: V13 Other operations on bone of face                      | 0 |
| Procedure: V14 Excision of mandible                                  | 0 |
| Procedure: V15 Reduction of fracture of mandible                     | 0 |
| Procedure: V16 Division of mandible                                  | 0 |
| Procedure: V17 Fixation of mandible                                  | 0 |
| Procedure: V19 Other operations on mandible                          | 0 |
| Procedure: V20 Reconstruction of temporomandibular joint             | 0 |
| Procedure: V21 Other operations on temporomandibular joint           | 0 |
| Procedure: V22 Primary decompression operations on cervical spine    | 0 |
| Procedure: V23 Revisional decompression operations on cervical spine | 0 |
| Procedure: V24 Decompression operations on thoracic spine            | 0 |
| Procedure: V25 Primary decompression operations on lumbar spine      | 0 |
| Procedure: V26 Revisional decompression operations on lumbar spine   | 0 |
| Procedure: V27 Decompression operations on unspecified spine         | 0 |
| Procedure: V28 Insertion of lumbar interspinous process spacer       | 0 |
| Procedure: V29 Primary excision of cervical intervertebral disc      | 0 |
| Procedure: V30 Revisional excision of cervical intervertebral disc   | 0 |
| Procedure: V31 Primary excision of thoracic intervertebral disc      | 0 |
| Procedure: V33 Primary excision of lumbar intervertebral disc        | 0 |
| Procedure: V34 Revisional excision of lumbar intervertebral disc     | 0 |
| Procedure: V35 Excision of unspecified intervertebral disc           | 0 |
| Procedure: V36 Prosthetic replacement of intervertebral disc         | 0 |
| Procedure: V37 Primary fusion of joint of cervical spine             | 0 |
| Procedure: V38 Primary fusion of other joint of spine                | 0 |
| Procedure: V39 Revisional fusion of joint of spine                   | 0 |
| Procedure: V40 Stabilisation of spine                                | 0 |
| Procedure: V41 Instrumental correction of deformity of spine         | 0 |
| Procedure: V42 Other correction of deformity of spine                | 0 |
| Procedure: V43 Extirpation of lesion of spine                        | 0 |

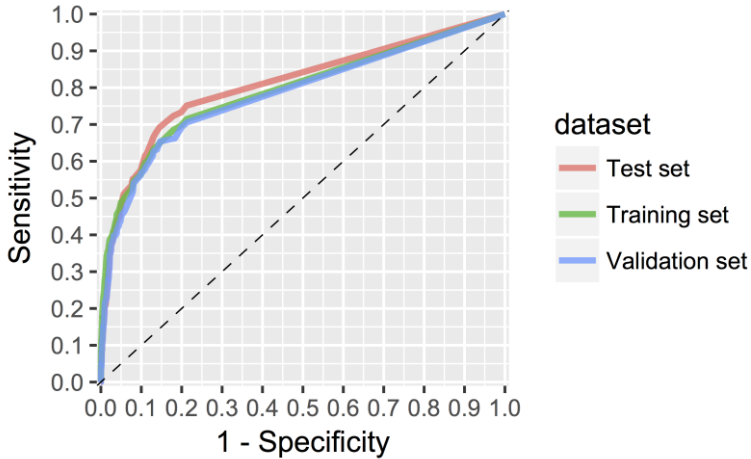
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| Procedure: V44 Decompression of fracture of spine   | 0 |
| Procedure: V45 Other reduction of fracture of spine   | 0 |
| Procedure: V46 Fixation of fracture of spine  | 0 |
| Procedure: V47 Biopsy of spine  | 0 |
| Procedure: V48 Denervation of spinal facet joint of vertebra  | 0 |
| Procedure: V49 Exploration of spine   | 0 |
| Procedure: V50 Manipulation of spine  | 0 |
| Procedure: V52 Other operations on intervertebral disc  | 0 |
| Procedure: V54 Other operations on spine  | 0 |
| Procedure: V60 Primary percutaneous decompression using coblation to intervertebral disc                | 0 |
| Procedure: V62 Primary percutaneous intradiscal radiofrequency thermocoagulation to intervertebral disc | 0 |
| Procedure: V67 Other primary decompression operations on lumbar spine                                   | 0 |
| Procedure: W01 Complex reconstruction of thumb  | 0 |
| Procedure: W02 Other complex reconstruction of hand   | 0 |
| Procedure: W03 Complex reconstruction of forefoot   | 0 |
| Procedure: W04 Complex reconstruction of hindfoot   | 0 |
| Procedure: W05 Prosthetic replacement of bone   | 0 |
| Procedure: W06 Total excision of bone   | 0 |
| Procedure: W07 Excision of ectopic bone   | 0 |
| Procedure: W08 Other excision of bone   | 0 |
| Procedure: W09 Extirpation of lesion of bone  | 0 |
| Procedure: W10 Open surgical fracture of bone   | 0 |
| Procedure: W12 Angulation periarticular division of bone  | 0 |
| Procedure: W13 Other periarticular division of bone   | 0 |
| Procedure: W14 Diaphyseal division of bone  | 0 |
| Procedure: W15 Division of bone of foot   | 0 |
| Procedure: W16 Other division of bone   | 0 |
| Procedure: W17 Other reconstruction of bone   | 0 |
| Procedure: W18 Drainage of bone   | 0 |
| Procedure: W19 Primary open reduction of fracture of bone and intramedullary fixation                   | 0 |
| Procedure: W20 Primary open reduction of fracture of bone and extramedullary fixation                   | 0 |
| Procedure: W21 Primary open reduction of intra-articular fracture of bone                               | 0 |
| Procedure: W22 Other primary open reduction of fracture of bone   | 0 |
| Procedure: W23 Secondary open reduction of fracture of bone   | 0 |
| Procedure: W24 Closed reduction of fracture of bone and internal fixation                               | 0 |
| Procedure: W25 Closed reduction of fracture of bone and external fixation                               | 0 |
| Procedure: W26 Other closed reduction of fracture of bone   | 0 |
| Procedure: W27 Fixation of epiphysis  | 0 |
| Procedure: W28 Other internal fixation of bone  | 0 |
| Procedure: W29 Skeletal traction of bone  | 0 |
| Procedure: W30 Other external fixation of bone  | 0 |
| Procedure: W31 Other autograft of bone  | 0 |
| Procedure: W32 Other graft of bone  | 0 |
| Procedure: W33 Other open operations on bone  | 0 |

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| Procedure: W34 Graft of bone marrow  | 0 |
| Procedure: W35 Therapeutic puncture of bone  | 0 |
| Procedure: W36 Diagnostic puncture of bone   | 0 |
| Procedure: W37 Total prosthetic replacement of hip joint using cement                | 0 |
| Procedure: W38 Total prosthetic replacement of hip joint not using cement            | 0 |
| Procedure: W39 Other total prosthetic replacement of hip joint                       | 0 |
| Procedure: W40 Total prosthetic replacement of knee joint using cement               | 0 |
| Procedure: W41 Total prosthetic replacement of knee joint not using cement           | 0 |
| Procedure: W42 Other total prosthetic replacement of knee joint                      | 0 |
| Procedure: W43 Total prosthetic replacement of other joint using cement              | 0 |
| Procedure: W44 Total prosthetic replacement of other joint not using cement          | 0 |
| Procedure: W45 Other total prosthetic replacement of other joint                     | 0 |
| Procedure: W46 Prosthetic replacement of head of femur using cement                  | 0 |
| Procedure: W47 Prosthetic replacement of head of femur not using cement              | 0 |
| Procedure: W48 Other prosthetic replacement of head of femur                         | 0 |
| Procedure: W49 Prosthetic replacement of head of humerus using cement                | 0 |
| Procedure: W50 Prosthetic replacement of head of humerus not using cement            | 0 |
| Procedure: W51 Other prosthetic replacement of head of humerus                       | 0 |
| Procedure: W52 Prosthetic replacement of articulation of other bone using cement     | 0 |
| Procedure: W53 Prosthetic replacement of articulation of other bone not using cement | 0 |
| Procedure: W54 Other prosthetic replacement of articulation of other bone            | 0 |
| Procedure: W55 Prosthetic interposition reconstruction of joint                      | 0 |
| Procedure: W56 Other interposition reconstruction of joint                           | 0 |
| Procedure: W57 Excision reconstruction of joint                                      | 0 |
| Procedure: W58 Other reconstruction of joint   | 0 |
| Procedure: W59 Fusion of joint of toe  | 0 |
| Procedure: W60 Fusion of other joint and extra-articular bone graft                  | 0 |
| Procedure: W61 Fusion of other joint and other articular bone graft                  | 0 |
| Procedure: W62 Other primary fusion of other joint                                   | 0 |
| Procedure: W63 Revisional fusion of other joint                                      | 0 |
| Procedure: W64 Conversion to fusion of other joint                                   | 0 |
| Procedure: W65 Primary open reduction of traumatic dislocation of joint              | 0 |
| Procedure: W66 Primary closed reduction of traumatic dislocation of joint            | 0 |
| Procedure: W67 Secondary reduction of traumatic dislocation of joint                 | 0 |
| Procedure: W69 Open operations on synovial membrane of joint                         | 0 |
| Procedure: W70 Open operations on semilunar cartilage                                | 0 |
| Procedure: W71 Other open operations on intra-articular structure                    | 0 |
| Procedure: W72 Prosthetic replacement of ligament                                    | 0 |
| Procedure: W73 Prosthetic reinforcement of ligament                                  | 0 |
| Procedure: W74 Other reconstruction of ligament                                      | 0 |
| Procedure: W75 Other open repair of ligament   | 0 |
| Procedure: W76 Other operations on ligament  | 0 |
| Procedure: W77 Stabilising operations on joint                                       | 0 |
| Procedure: W78 Release of contracture of joint                                       | 0 |

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| Procedure: W79 Soft tissue operations on joint of toe   | 0 |
| Procedure: W80 Debridement and irrigation of joint  | 0 |
| Procedure: W81 Other open operations on joint   | 0 |
| Procedure: W82 Therapeutic endoscopic operations on semilunar cartilage                       | 0 |
| Procedure: W83 Therapeutic endoscopic operations on other articular cartilage                 | 0 |
| Procedure: W84 Therapeutic endoscopic operations on other joint structure                     | 0 |
| Procedure: W85 Therapeutic endoscopic operations on cavity of knee joint                      | 0 |
| Procedure: W86 Therapeutic endoscopic operations on cavity of other joint                     | 0 |
| Procedure: W87 Diagnostic endoscopic examination of knee joint                                | 0 |
| Procedure: W88 Diagnostic endoscopic examination of other joint                               | 0 |
| Procedure: W89 Other therapeutic endoscopic operations on other articular cartilage           | 0 |
| Procedure: W90 Puncture of joint  | 0 |
| Procedure: W91 Other manipulation of joint  | 0 |
| Procedure: W92 Other operations on joint  | 0 |
| Procedure: W93 Hybrid prosthetic replacement of hip joint using cemented acetabular component | 0 |
| Procedure: W94 Hybrid prosthetic replacement of hip joint using cemented femoral component    | 0 |
| Procedure: W95 Hybrid prosthetic replacement of hip joint using cement                        | 0 |
| Procedure: W96 Total prosthetic replacement of shoulder joint using cement                    | 0 |
| Procedure: W97 Total prosthetic replacement of shoulder joint not using cement                | 0 |
| Procedure: W98 Total prosthetic replacement of shoulder joint                                 | 0 |
| Procedure: X01 Replantation of upper limb   | 0 |
| Procedure: X02 Replantation of lower limb   | 0 |
| Procedure: X07 Amputation of arm  | 0 |
| Procedure: X08 Amputation of hand   | 0 |
| Procedure: X09 Amputation of leg  | 0 |
| Procedure: X10 Amputation of foot   | 0 |
| Procedure: X11 Amputation of toe  | 0 |
| Procedure: X12 Operations on amputation stump   | 0 |
| Procedure: X14 Clearance of pelvis  | 0 |
| Procedure: X15 Operations for sexual transformation   | 0 |
| Procedure: X19 Correction of congenital deformity of shoulder or upper arm                    | 0 |
| Procedure: X21 Correction of congenital deformity of hand                                     | 0 |
| Procedure: X22 Correction of congenital deformity of hip                                      | 0 |
| Procedure: X23 Correction of congenital deformity of leg                                      | 0 |
| Procedure: X24 Primary correction of congenital deformity of foot                             | 0 |
| Procedure: X25 Other correction of congenital deformity of foot                               | 0 |
| Procedure: X27 Correction of minor congenital deformity of foot                               | 0 |
| Procedure: X28 Intermittent infusion of therapeutic substance                                 | 0 |
| Procedure: X29 Continuous infusion of therapeutic substance                                   | 0 |
| Procedure: X30 Injection of therapeutic substance   | 0 |
| Procedure: X31 Injection of radiocontrast material  | 0 |
| Procedure: X32 Exchange blood transfusion   | 0 |
| Procedure: X33 Other blood transfusion  | 0 |
| Procedure: X34 Other intravenous transfusion  | 0 |

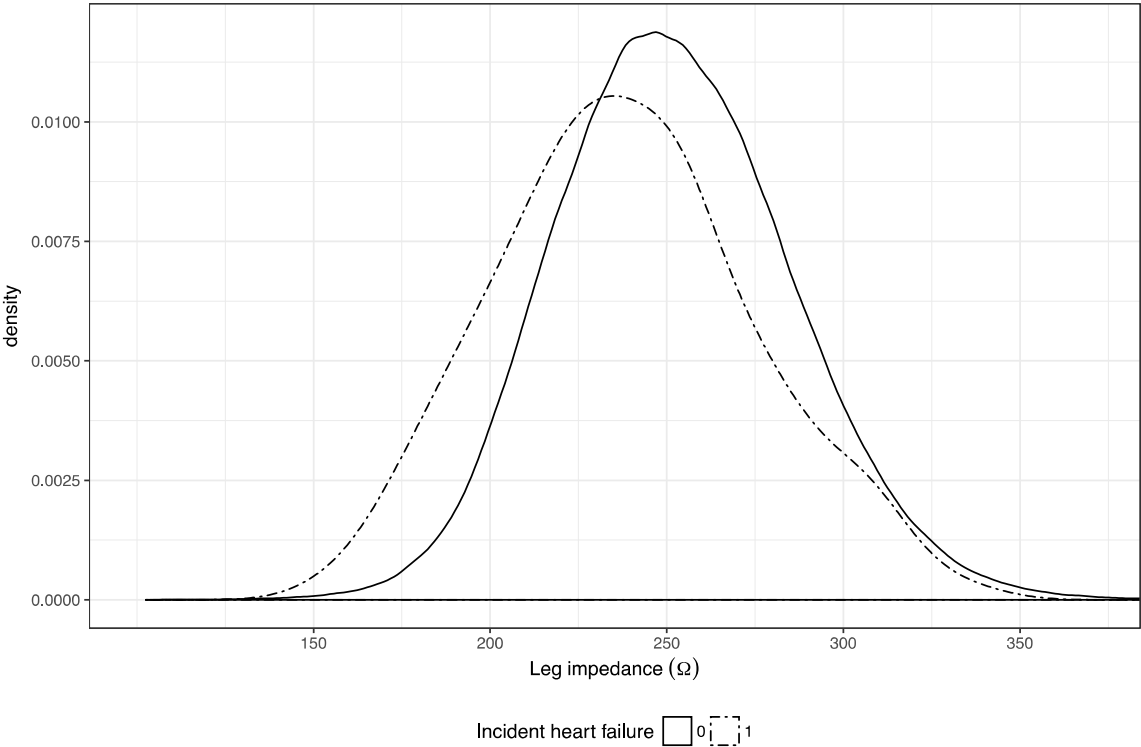
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| Procedure: X35 Other intravenous injection  | 0 |
| Procedure: X36 Blood withdrawal   | 0 |
| Procedure: X37 Intramuscular injection  | 0 |
| Procedure: X38 Subcutaneous injection   | 0 |
| Procedure: X39 Other route of administration of therapeutic substance               | 0 |
| Procedure: X40 Compensation for renal failure                                       | 0 |
| Procedure: X41 Placement of ambulatory apparatus for compensation for renal failure | 0 |
| Procedure: X42 Placement of other apparatus for compensation for renal failure      | 0 |
| Procedure: X44 Administration of vaccine  | 0 |
| Procedure: X45 Donation of organ  | 0 |
| Procedure: X46 Donation of other tissue   | 0 |
| Procedure: X48 Immobilisation using plaster cast                                    | 0 |
| Procedure: X49 Other external support of limb                                       | 0 |
| Procedure: X50 External resuscitation   | 0 |
| Procedure: X52 Oxygen therapy   | 0 |
| Procedure: X53 Extirpation of unspecified organ                                     | 0 |
| Procedure: X55 Other operations on unspecified organ                                | 0 |
| Procedure: X56 Intubation of trachea  | 0 |
| Procedure: X59 Anaesthetic without surgery  | 0 |
| Procedure: X60 Rehabilitation assessment  | 0 |
| Procedure: X61 Complementary therapy  | 0 |
| Procedure: X63 Category retired - refer to introduction                             | 0 |
| Procedure: X65 Radiotherapy delivery  | 0 |
| Procedure: X66 Cognitive behavioural therapy  | 0 |
| Procedure: X67 Preparation for external beam radiotherapy                           | 0 |
| Procedure: X68 Preparation for brachytherapy  | 0 |
| Procedure: X70 Procurement of drugs for chemotherapy for neoplasm in Bands 1-5      | 0 |
| Procedure: X71 Procurement of drugs for chemotherapy for neoplasm in Bands 6-10     | 0 |
| Procedure: X72 Delivery of chemotherapy for neoplasm                                | 0 |
| Procedure: X73 Delivery of oral chemotherapy for neoplasm                           | 0 |
| Procedure: X82 High cost hypertension drugs   | 0 |
| Procedure: X83 High cost other cardiovascular drugs                                 | 0 |
| Procedure: X85 High cost neurology drugs  | 0 |
| Procedure: X86 High cost anti-infective drugs                                       | 0 |
| Procedure: X89 High cost immunosuppressant drugs                                    | 0 |
| Procedure: X90 High cost haematology and nutrition drugs                            | 0 |
| Procedure: X91 High cost metabolic drugs  | 0 |
| Procedure: X92 High cost musculoskeletal drugs                                      | 0 |
| Procedure: X93 High cost ophthalmology drugs  | 0 |
| Procedure: X96 High cost immunology drugs   | 0 |
| Procedure: Y32 Re-exploration of organ NOC  | 0 |
| Procedure: Y82 Local anaesthetic  | 0 |
| Procedure: Z49 Skin of trunk  | 0 |
| Procedure: Z94 Laterality of operation  | 0 |

Figure S1. ROC curves for the GBM model in the training, validation and test sets.

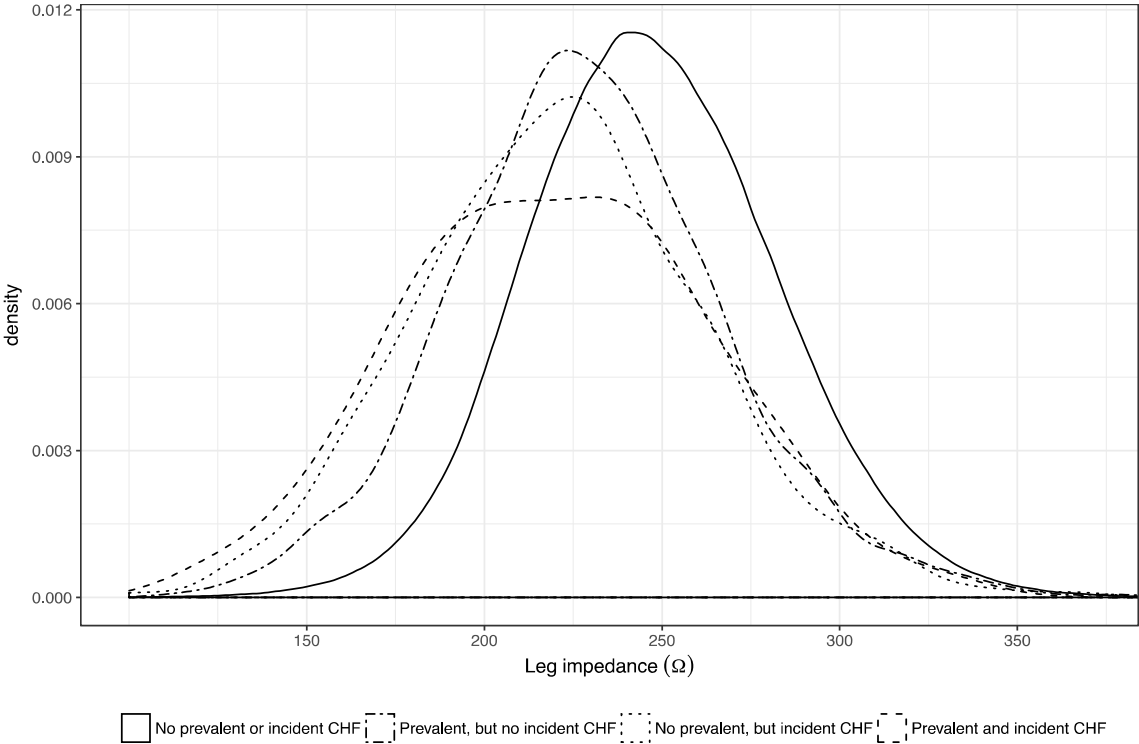




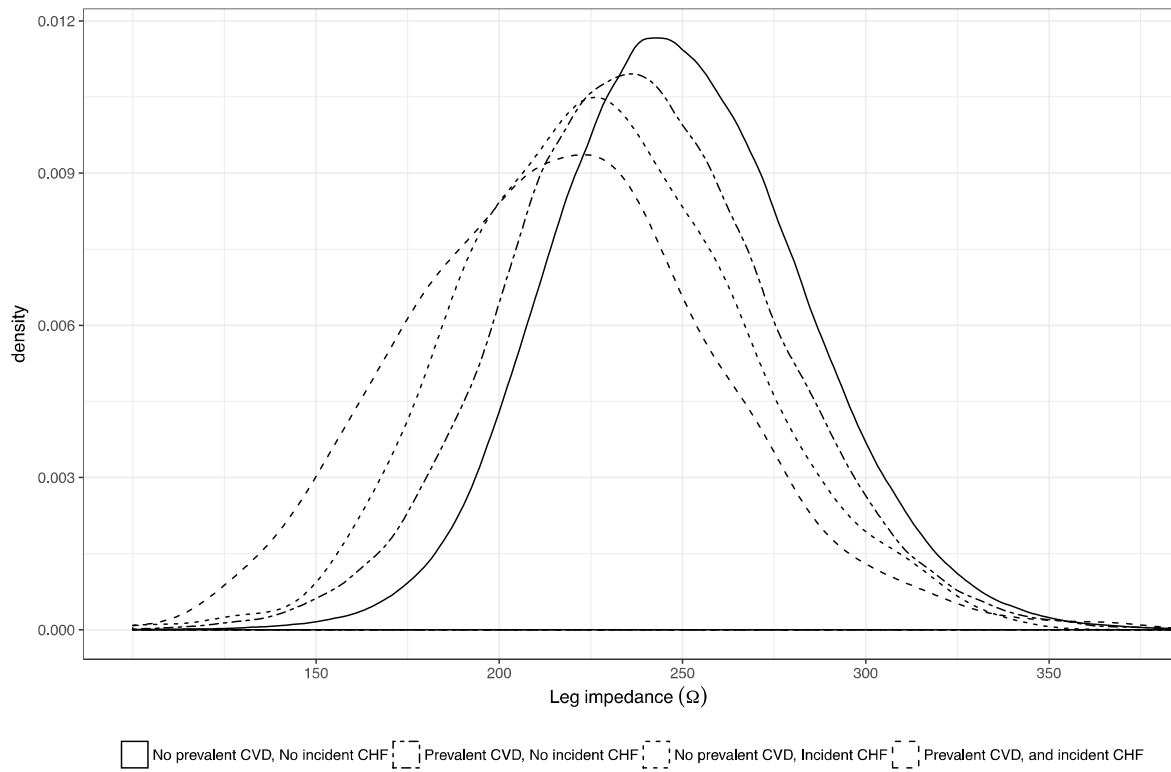
**Figure S2. Distribution of leg bioimpedance in relation to incident heart failure in the subset of individuals who did not have any prior hospitalization for cardiovascular disease (i.e. any primary or secondary diagnosis in ICD10 Chapter 9 – “Diseases of the circulatory system”), nor any self-reported history of hypertension, stroke, TIA, high cholesterol, diabetes, angina pectoris, myocardial infarction, or heart failure. (n = 309,079)**



**Figure S3. Distributions of leg bioimpedance in full population (n = 502,636) in relation to prevalent (primary or secondary I50 diagnosis or self-reported heart failure) and incident (primary I50 diagnosis) heart failure.**



**Figure S4. Distributions of leg bioimpedance in full population (n = 502,636) in relation to prevalent cardiovascular disease (any primary or secondary diagnosis in ICD-10 Chapter 9 – “Diseases of the circulatory system”) and incident (primary I50 diagnosis) heart failure.**



**Figure S5. Distributions of leg bioimpedance in individuals with known prevalent heart failure at inclusion (Primary or secondary ICD10 I50 diagnosis or self-reported history of heart failure; n = 2,188). A total of 41 individuals experienced 5 or more hospitalizations for heart failure during follow-up, and had lower leg bioimpedance than those with 0-4 hospitalizations.**

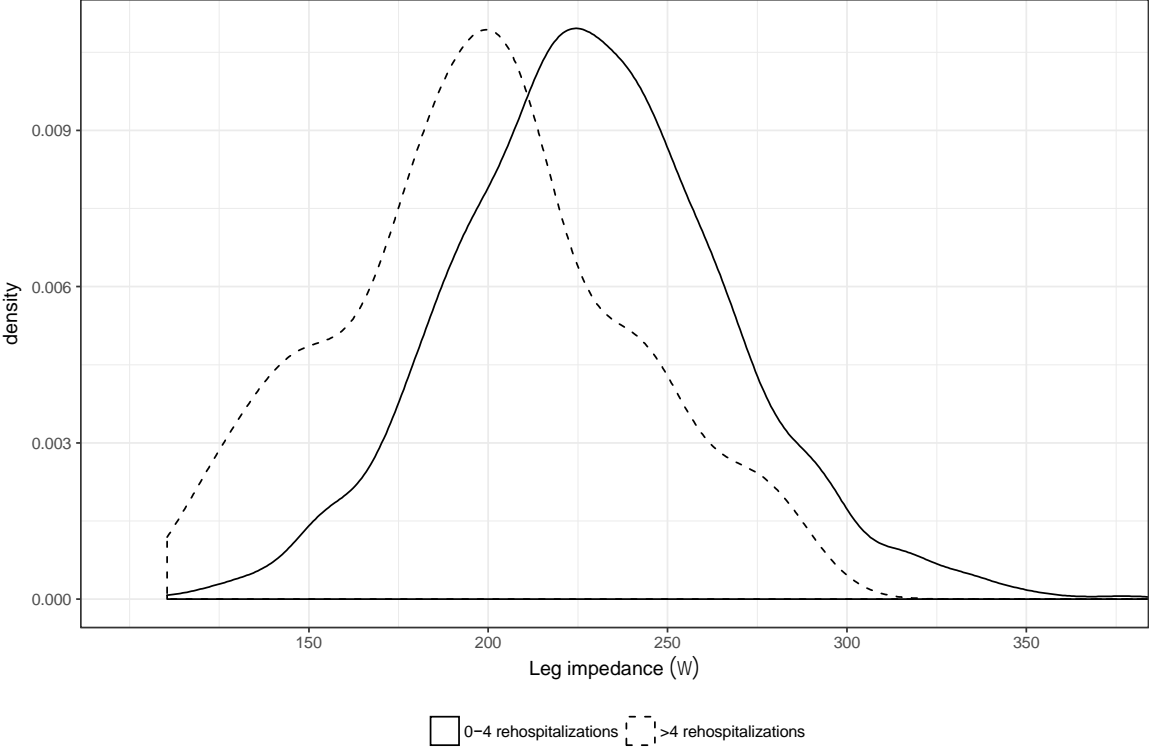


Figure S6. Calibration of small Cox model (age + sex + history of MI + leg bioimpedance).

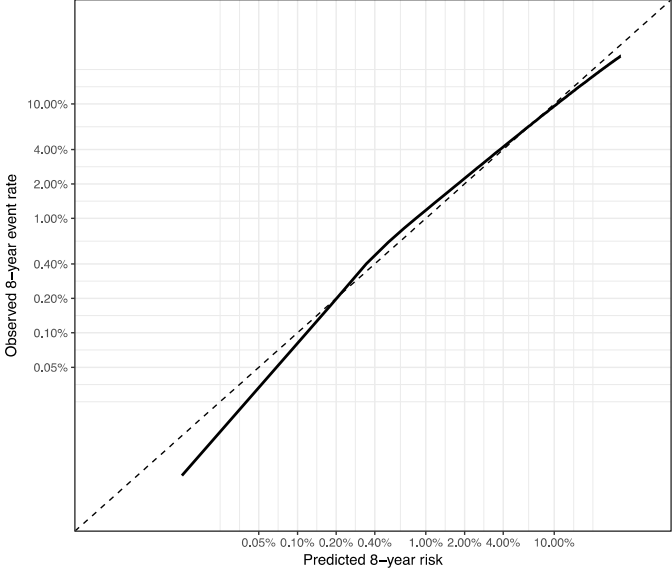
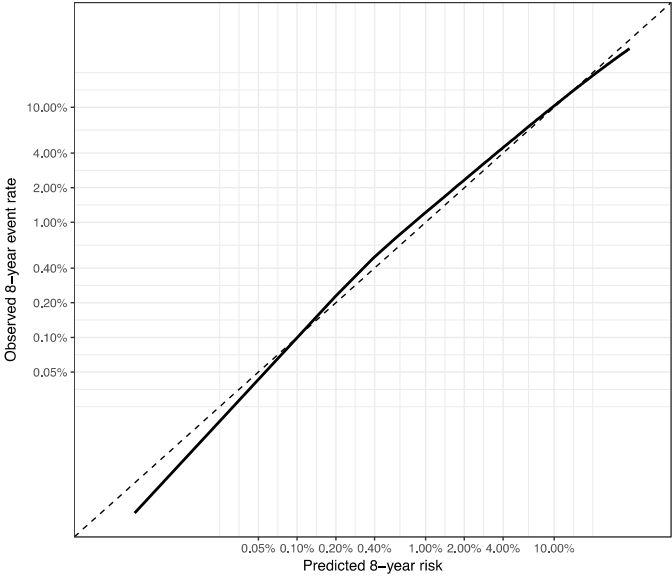


Figure S7. Calibration of fully adjusted Cox model.



**Supplemental References:**

1. Friedman JH. Greedy Function Approximation: A Gradient Boosting Machine. *Ann Stat.* 2001;29:1189–1232.
2. Weiss GM. Mining with Rarity: A Unifying Framework. *SIGKDD Explor.* 2004;6:7–19.