

Prevalence of health conditions in Jersey and their multi-morbidity

Statistics Jersey: www.gov.je/statistics

Headlines

- Of all GP patients in Jersey, 75,020 (71%) had none of the 13 long-term conditions considered in this report; 17,765 (17%) had a single long-term condition and 12,705 (12%) had two or more long-term conditions.
- Three-quarters (75%) of patients with a long-term condition had either hypertension, obesity, diabetes or a combination of the three.
- Multi-morbidity increases with age: the average age of a patient with 1 of the long-term conditions was 53 years, 2 long-term conditions - 65 years, 3 long-term conditions - 71 years and 4 or more long-term conditions - 76 years.
- Patients with no long-term conditions see their GP on average 3 times per year; patients with 4 or more long-term conditions see their GP on average 15 times per year.

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Introduction

Multi-morbidity is commonly defined as the presence of two or more chronic medical conditions in a patient. These are conditions that currently have no cure, and may be managed with drugs and other treatment. As populations age, the level of multi-morbidity is likely to increase, which will have implications for health and social care provision.

Key definitions

Morbidity: the state of having a long-term medical condition. In this report both **the terms morbidity and condition refer specifically to the 13 conditions listed in the following section.**

Prevalence: The proportion of a population having a condition at a given point in time¹.

Morbidities included in the analysis

The analysis of multi-morbidity will depend on the number and type of morbidities to be included. Jersey incentivises GPs to record patients with 12 long-term conditions as part of the Jersey Quality Improvement Framework (JQIF). These 12 conditions are a good basis for multi-morbidity analysis: they are agreed amongst clinicians as being important, and the data is robustly recorded on the General Practitioner Central Server (GPCS).

The JQIF conditions are:

- Atrial Fibrillation (AF)
- Asthma (AST)
- Coronary Heart Disease (CHD)
- Chronic Kidney Disease (CKD)
- Chronic Obstructive Pulmonary Disease (COPD)
- Dementia (DEM)
- Diabetes (DIA)
- Heart Failure (HF)
- Hypertension (HYP)
- Mental Health Problems (MH)
- Obesity (OB)
- Stroke and Transient Ischemic Attack (STIA)

In addition to these 12 conditions, cancer (with the exception of non-melanoma skin cancer) was also included in the analysis as a serious long-term condition. For definitions of the search terms used to identify the patients on each register, please see Annex 2.

The data searches were conducted with reference to 31 December 2017.

GP patient population

Historically, the number of patients registered on the GPCS system exceeded the estimated population of the Island. This was due to some duplication when patients moved between GP practices, and a lag in identifying patients as no longer resident if they moved off-Island. More recently accuracy has improved as surgeries have focussed on removing redundant records from their databases. To further improve data quality, only those 'active' patients are included in the analysis – that is, any patient registered with a Jersey GP practice who has had a consultation within the previous 4 years, or who has registered with a GP surgery in the previous 6 months.

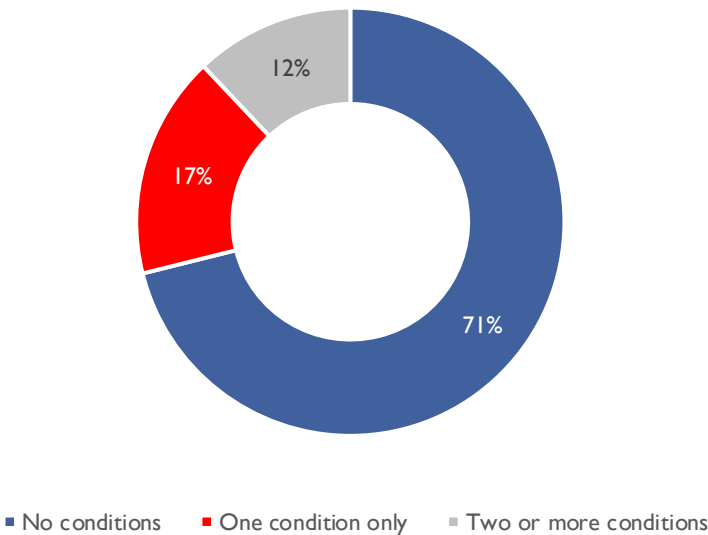
This GPCS 'active' population size and distribution was compared to Statistics Jersey's population projections. Figure 19 in Annex 3 shows Statistics Jersey's 2017 year-end population profile plotted against the GPCS active patient population from 31 December 2017. This comparison shows the overall population counts being very similar; there are some small differences in the way counts are spread between ages and sexes.

¹ Throughout this report, the date of reference is 31 December 2017; the date to which all GP Central Server (GPCS) searches were related.

All patients by number of long-term conditions

Figures from the GPCS showed 105,490 people as registered with a Jersey GP and active on 31 December 2017. Of these, 75,020 (71%) had none of the 13 long-term conditions considered in this report; 17,765 (17%) had a single long-term condition and 12,705 (12%) had two or more long-term conditions.

Figure 1: Percentage of Jersey patients with no conditions, a single condition and multiple conditions



Progressively fewer patients had a higher number of the conditions: 17,765 (17% of all patients) had a single condition; 7,545 (7%) 2 conditions; 3,175 (3%) 3 conditions and 1,985 (2%) had 4 or more conditions.

Figure 2: Count of GP registered patients in Jersey with 0, 1, 2, 3 and 4+ conditions

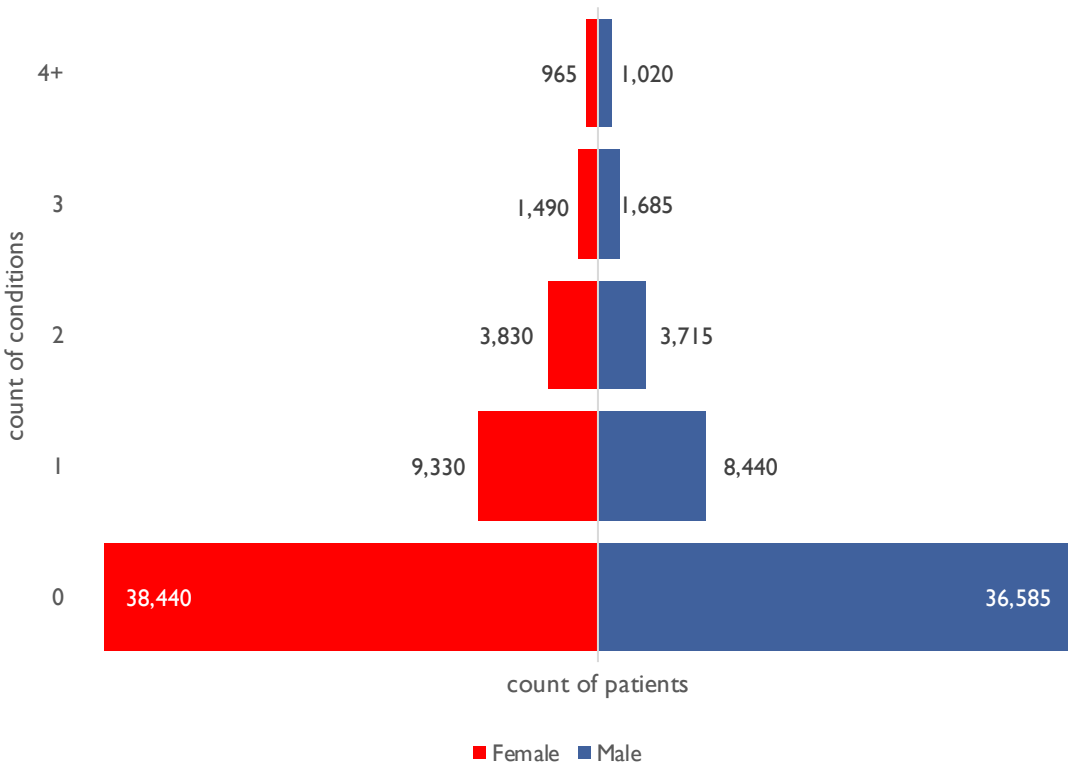


Figure 3 shows that hypertension was the most prevalent of the 13 long-term conditions analysed (15,795 patients were recorded as meeting the JQIF hypertension criteria), and dementia the least prevalent (650 patients were recorded as meeting the JQIF dementia criteria).

The lowest mean average age was seen for asthma (44 years) and mental health (53 years); dementia (83 years), heart failure (78 years) and chronic kidney disease (76 years) were the conditions with the highest.

While many long-term conditions affected males and females fairly equally, some affected one sex more than the other. Of the analysed conditions, those that were more likely to affect female patients were dementia (62% were female and 38% male) and chronic kidney disease (60% female, 40% male), whereas coronary heart disease (66% male, 34% female), diabetes (60% male, 40% female) and atrial fibrillation (59% male, 41% female) were more likely to affect males. In some of these cases, the difference in sex inequality could be attributed to the age profile of the condition (e.g. both dementia and chronic kidney disease were most prevalent amongst older patients, where there were more females than males).

Figure 3: Count and average age of Jersey GP patients with each type of morbidity
(note: patients with multi-morbidity are linked to more than one condition)

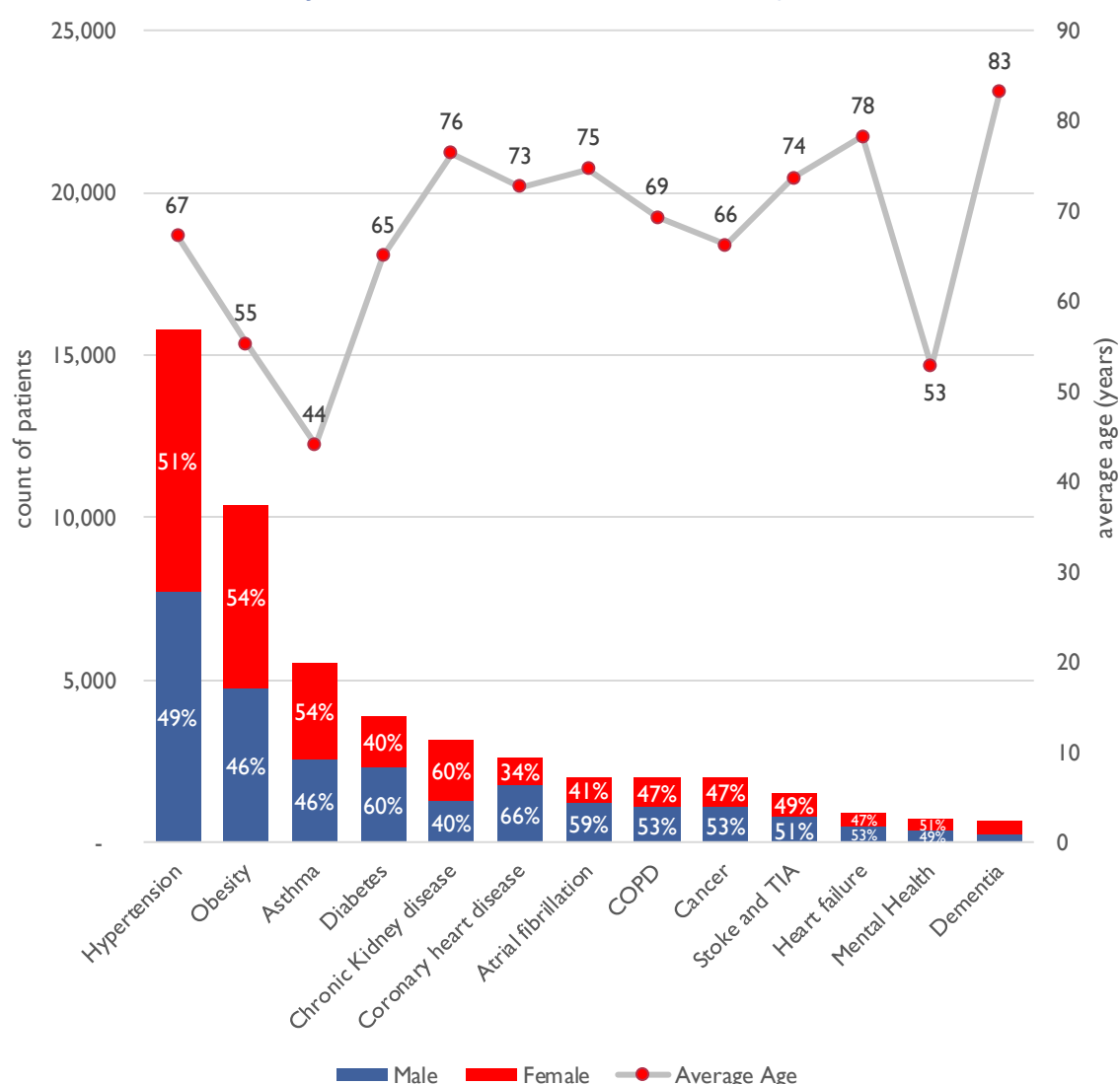
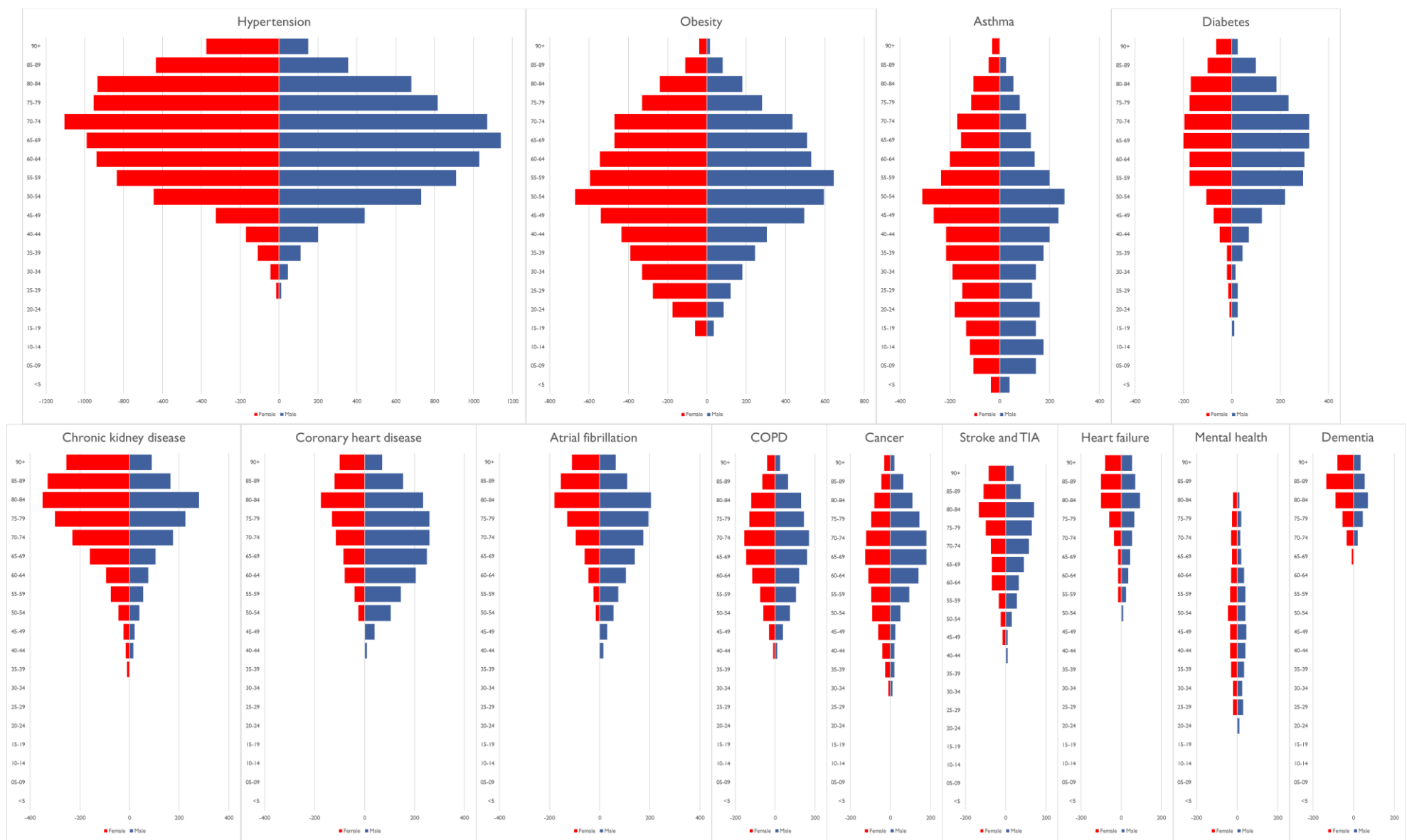


Figure 4 (overleaf) shows a detailed age-sex profile for each long-term condition. Asthma was seen to affect patients in all age bands from 0-90+, with a fairly even split between males and females. In contrast, chronic kidney disease generally became prevalent after the age of 40, peaking in the 80-84 age band and affecting more females than males.

Figure 4: Age and sex profiles of patients – per condition (note: includes both single condition and multiple condition patients)



Counts below 10 have been suppressed, and all counts rounded to the nearest 5: see the data in Annex 4

Patients with a single morbidity

The majority (60%) of patients with one of the 13 conditions under consideration, had only one condition (a single morbidity). However, some conditions were more likely to occur in isolation than others. Figure 5 shows the percentage of patients with each condition only having that condition (i.e. they are singly morbid). For example, 63% of patients with asthma, only had asthma, whereas 4% of patients that had heart failure had no other conditions.

Figure 5: Percentage of patients with each condition having no other conditions

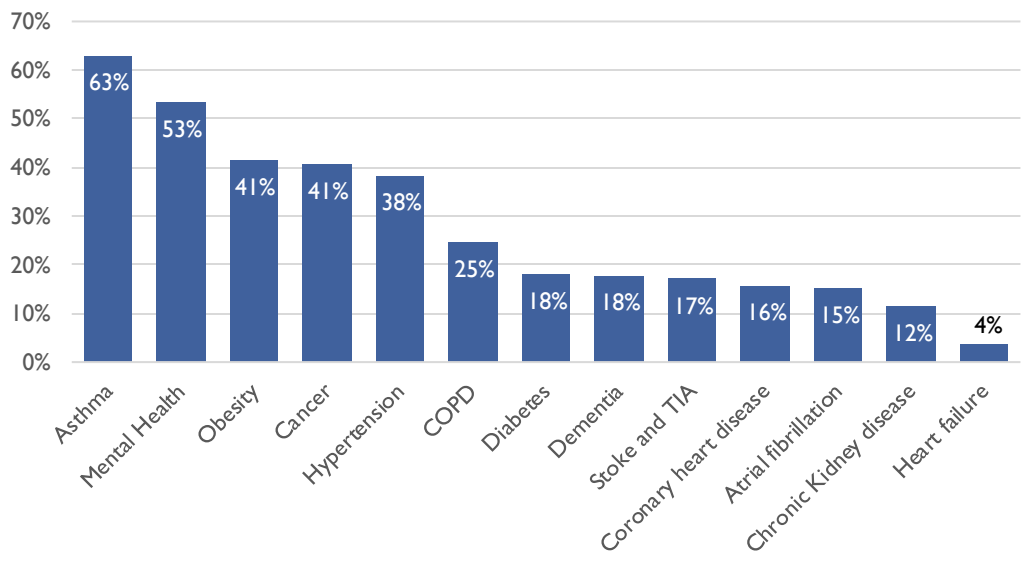


Figure 6 shows the counts and average ages of patients with each condition and no additional conditions. 6,060 patients had hypertension only, more than any other single condition. Only 35 patients that had heart failure had no other conditions. The age-sex profiles of single conditions are shown overleaf in Figure 7.

Figure 6: Number and average age of patients with one condition only

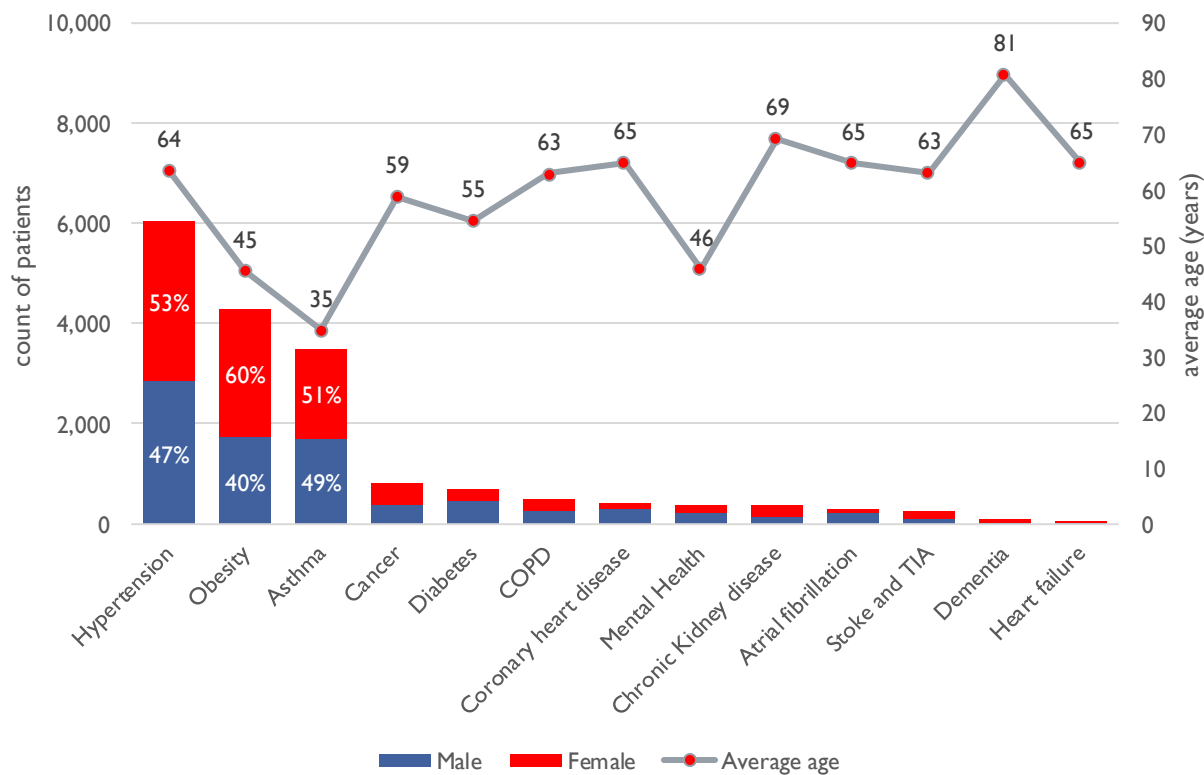
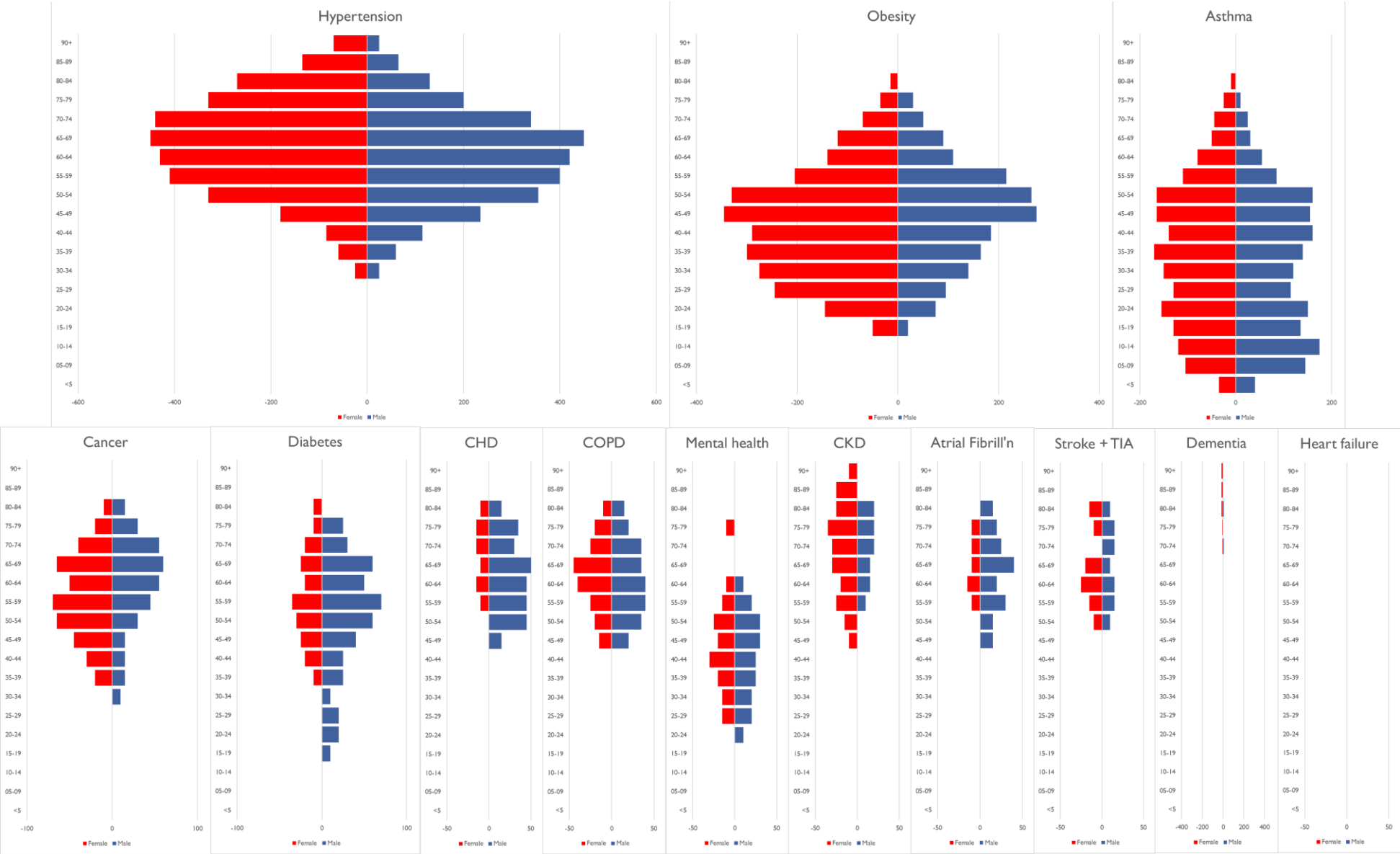


Figure 7: Age and sex profiles of patients with a single condition



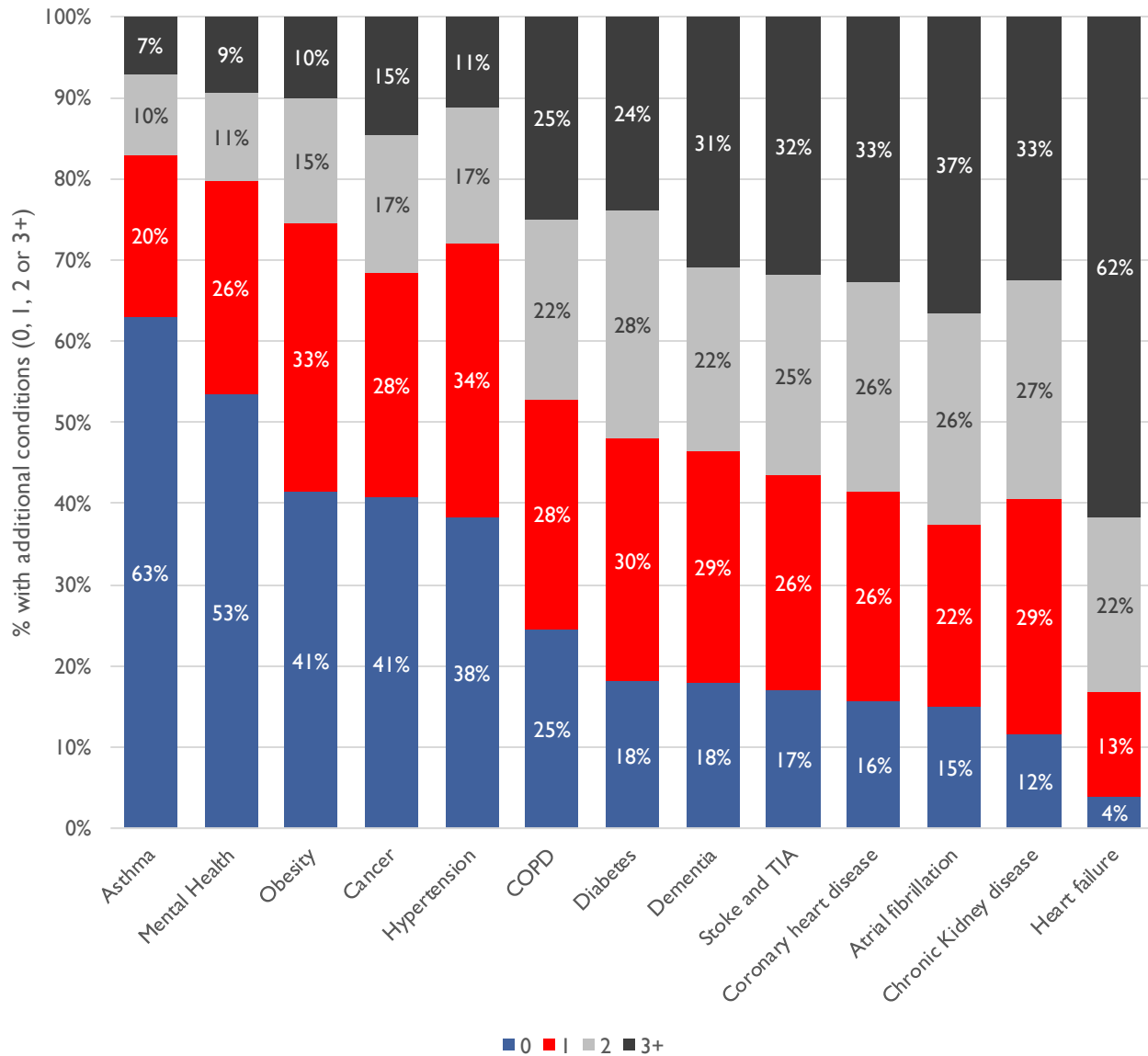
Counts below 10 have been suppressed, and all counts rounded to the nearest 5: see the data in Annex 5

Patients with more than one condition

Conditions likely to occur in combination with other conditions

While some conditions were more likely to occur in isolation, others were more likely to occur in combination with at least one other. Figure 8 shows the percentage of patients with each condition that had 0, 1, 2 or 3 or more other conditions. E.g. while only 36% of patients with asthma had additional conditions, 96% of people that had heart failure had additional conditions (i.e. had multi-morbidity).

Figure 8: Percentage of patients with each condition having 0, 1, 2 or 3+ additional conditions



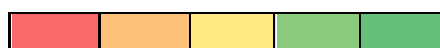
Combinations of two conditions (pairs)

Considering 13 conditions gives 78 possible pairs of condition. Table 1 shows the count of patients with each pair. Note: the table includes patients with two or more conditions, therefore patients with more than two conditions will appear multiple times in the table (e.g. a patient with diabetes, obesity and cancer will appear in the diabetes / obesity, obesity / cancer and diabetes / cancer pairings).

Table 1: Count of patients with at least two morbidities (rounded to nearest 5)

	atrial fibrillation	asthma	coronary heart disease	chronic kidney disease	COPD	dementia	diabetes	heart failure	hypertension	mental health	obesity	stroke + TIA	cancer
atrial fibrillation		155	425	510	180	95	315	425	1,270	15	445	280	160
asthma	155		180	210	425	35	285	95	1,120	50	895	90	105
coronary heart disease	425	180		570	300	120	565	335	1,650	25	600	280	180
chronic kidney disease	510	210	570		270	175	635	380	2,150	55	610	315	200
COPD	180	425	300	270		60	240	185	1,000	35	410	145	130
dementia	95	35	120	175	60		95	70	390	15	50	110	25
diabetes	315	285	565	635	240	95		230	2,480	65	1,490	255	195
heart failure	425	95	335	380	185	70	230		640	10	235	150	70
hypertension	1,270	1,120	1,650	2,150	1,000	390	2,480	640		155	4,110	970	815
mental health	15	50	25	55	35	15	65	10	155		125	20	20
obesity	445	895	600	610	410	50	1,490	235	4,110	125		255	255
stroke + TIA	280	90	280	315	145	110	255	150	970	20	255		90
cancer	160	105	180	200	130	25	195	70	815	20	255	90	

Highest number of patients



Lowest number of patients

Note – patients with 3 or more conditions will be included in more than one cell

Combinations of three conditions (triads)

Considering 13 conditions gives 286 possible condition triads. Table 3 shows the ten triads containing the largest count of patients. These triads include patients that have three or more conditions. Patients with more than three conditions will appear in more than one triad (*e.g. a patient with hypertension, obesity, diabetes and CKD would appear in four triad groups: the hypertension / obesity / diabetes, hypertension / diabetes / CKD, hypertension / obesity / CKD and obesity / diabetes / CKD*).

Table 2: Combinations of three conditions most likely to occur together

Condition triad	Count of patients
hypertension, obesity, diabetes	1,050
hypertension, obesity, chronic kidney disease	565
hypertension, diabetes, chronic kidney disease	525
hypertension, obesity, coronary heart disease	440
hypertension, chronic kidney disease, coronary heart disease	435
hypertension, diabetes, coronary heart disease	400
hypertension, obesity, asthma	395
hypertension, chronic kidney disease, atrial fibrillation	395
hypertension, obesity, atrial fibrillation	350
hypertension, coronary heart disease, atrial fibrillation	295

(a list of all triads with patient counts over 100 can be found in Annex 7)

Figures 9, 10 and 11 (below and overleaf) show the largest 3 triads, with the count of patients in each of the constituent conditions of that triad. In total, 22,775 patients have either hypertension, obesity, diabetes or any combination of these: this represents three-quarters (75%) of all patients with at least one condition.

Figure 9: Patients with hypertension, obesity or diabetes

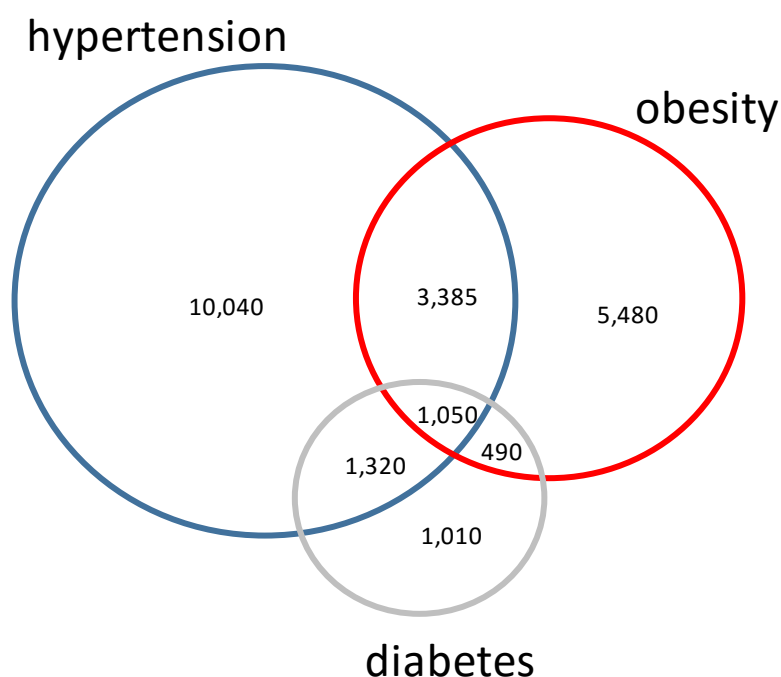


Figure 10: Combination of patients with hypertension, diabetes or chronic kidney disease

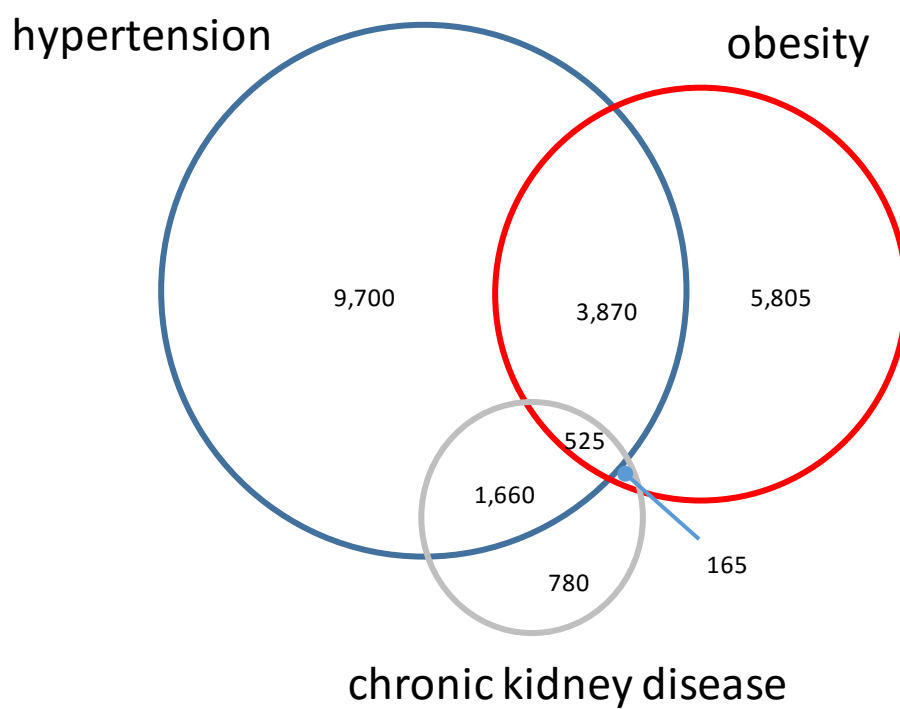


Figure 11: Combination of patients with hypertension, obesity or chronic kidney disease

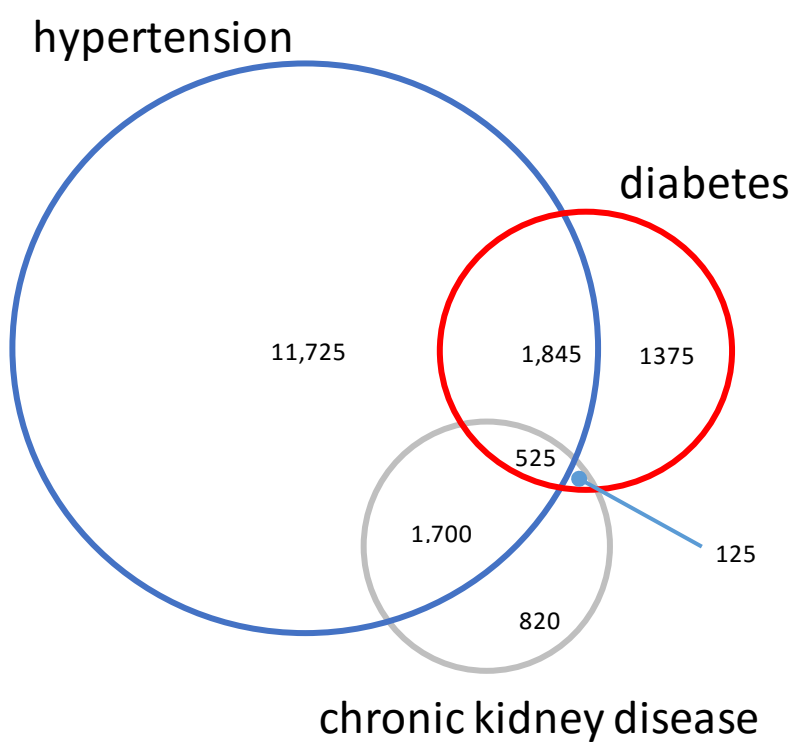
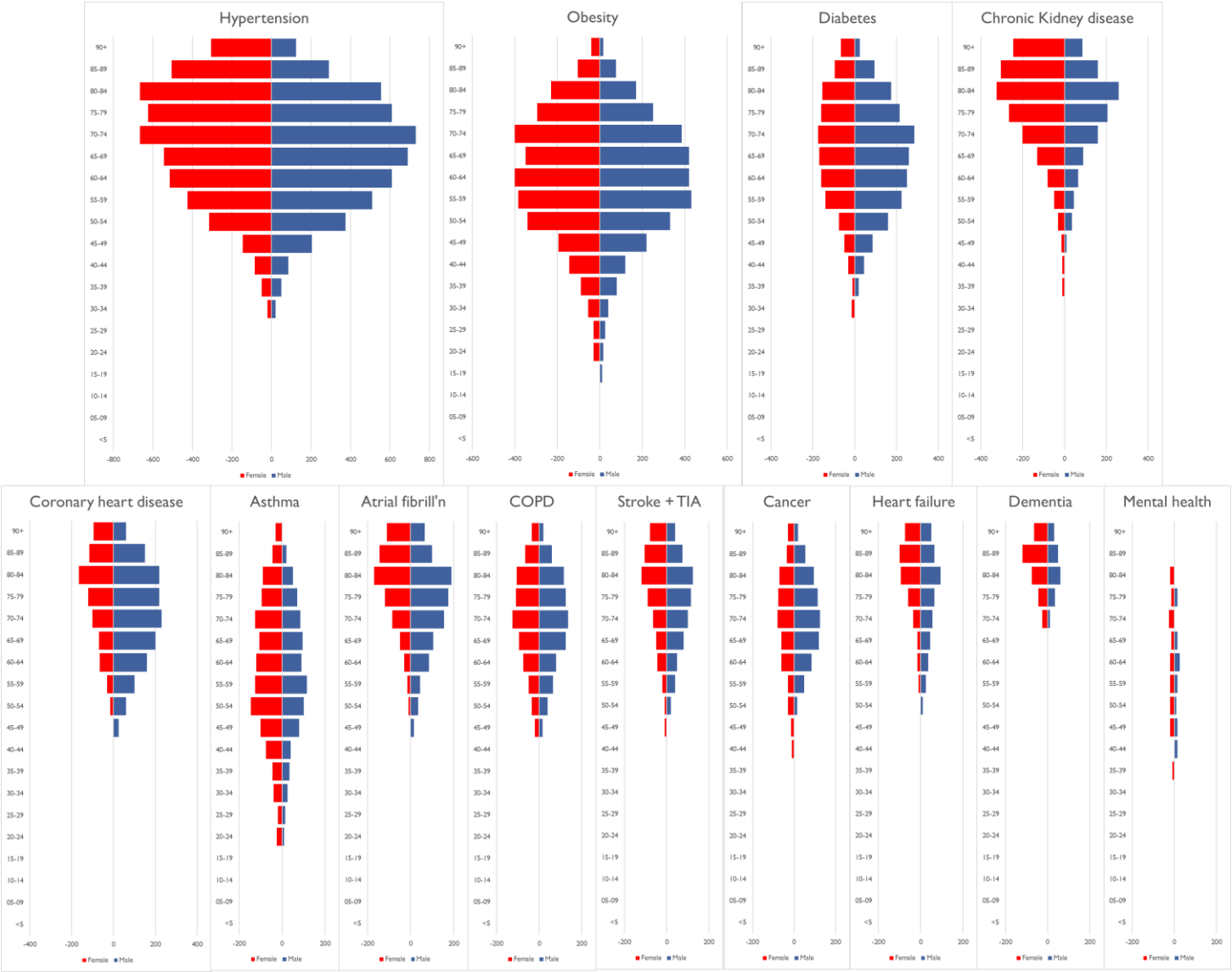


Figure 12 (overleaf) shows an age-sex profile for each condition, counting only patients with 2 or more (multiple) conditions.

Figure 12: Age and sex profiles of patients with more than one condition only (i.e. excluding patients with just one of the conditions) – per condition



Counts below 10 have been suppressed, and all counts rounded to the nearest 5: see the data in Annex 6

Patients with four or more conditions

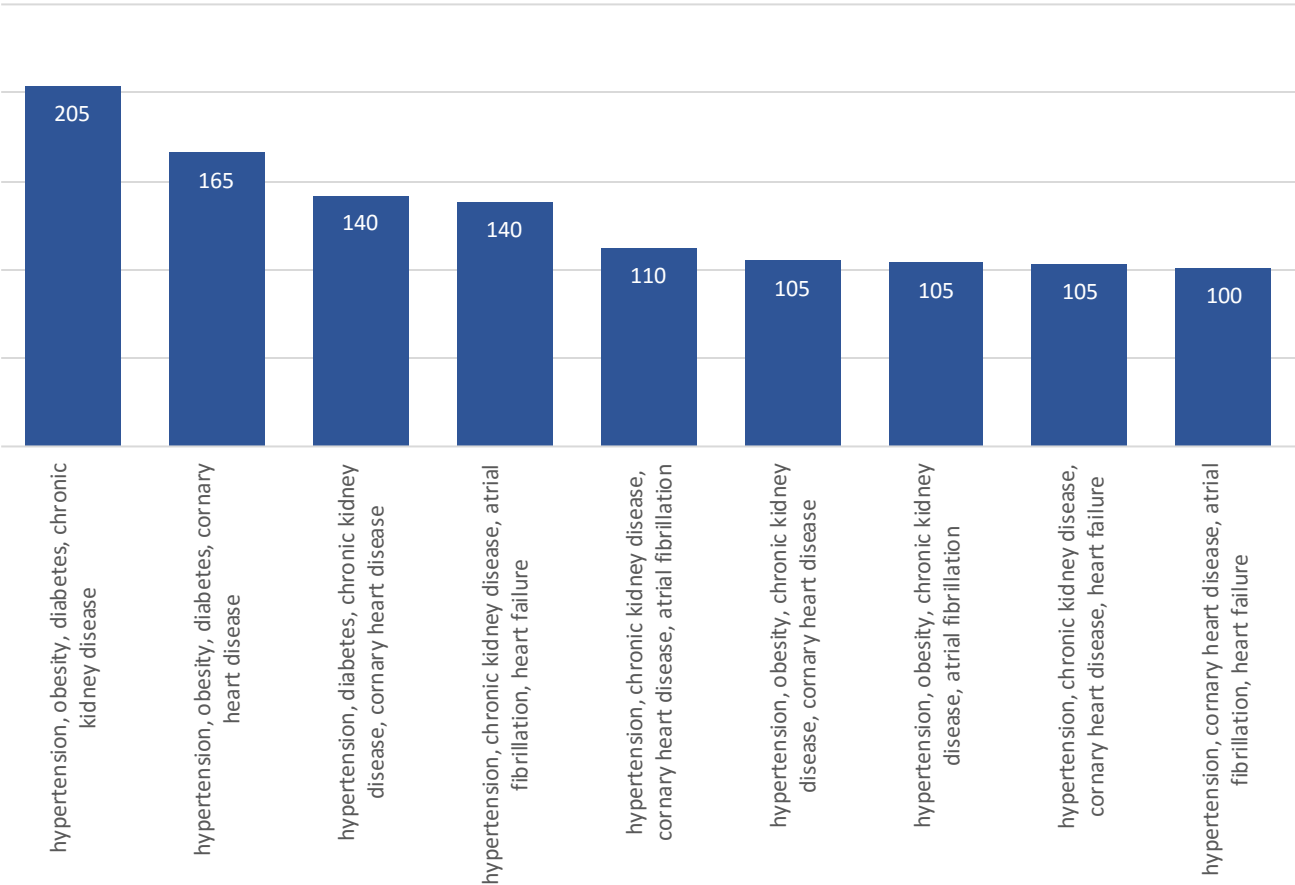
Almost 2,000 patients (see Table 3) had 4 or more of the 13 conditions under analysis.

Table 3: Count of patients with 4 or more conditions

	Female	Male	All
Patients with 4 or more conditions	965	1,020	1,985

Considering 13 conditions gives 715 possible combinations of 4 conditions (quads); 554 of these ‘quads’ were found in at least one patient. Figure 13 shows the ten quad combinations with the largest count of patients. These quads included patients with four or more conditions so some patients (those with more than 4 conditions) will appear in more than one quad (e.g. a patient with 5 conditions will appear in 5 quads, a patient with 6 conditions will appear in 15 quads).

Figure 13: Most prevalent combinations of four morbidities



Multi-morbidity by age

Figures 14 and 15 show how the extent of patients' multi-morbidity was related to age. While 5% of 5-9 year olds had a single condition, the percentage of patients with 2 morbidities reached 5% at age 45-49 and the percentage of patients with 4 or more conditions reached 6% at age band 70-74. Table 4 shows the mean average age of patients with each number of conditions.

Figure 14: Number of conditions by age (as count of patients)

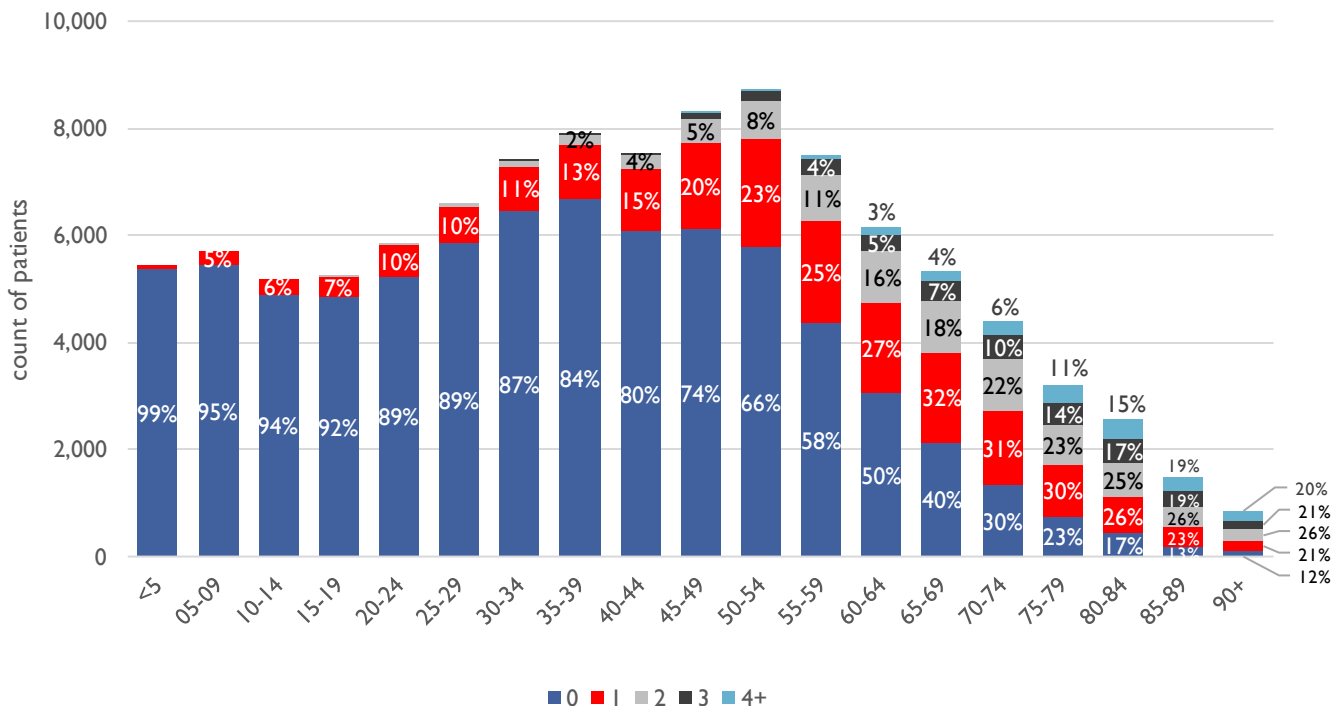


Figure 15: Number of conditions by age (as percentage of age band)

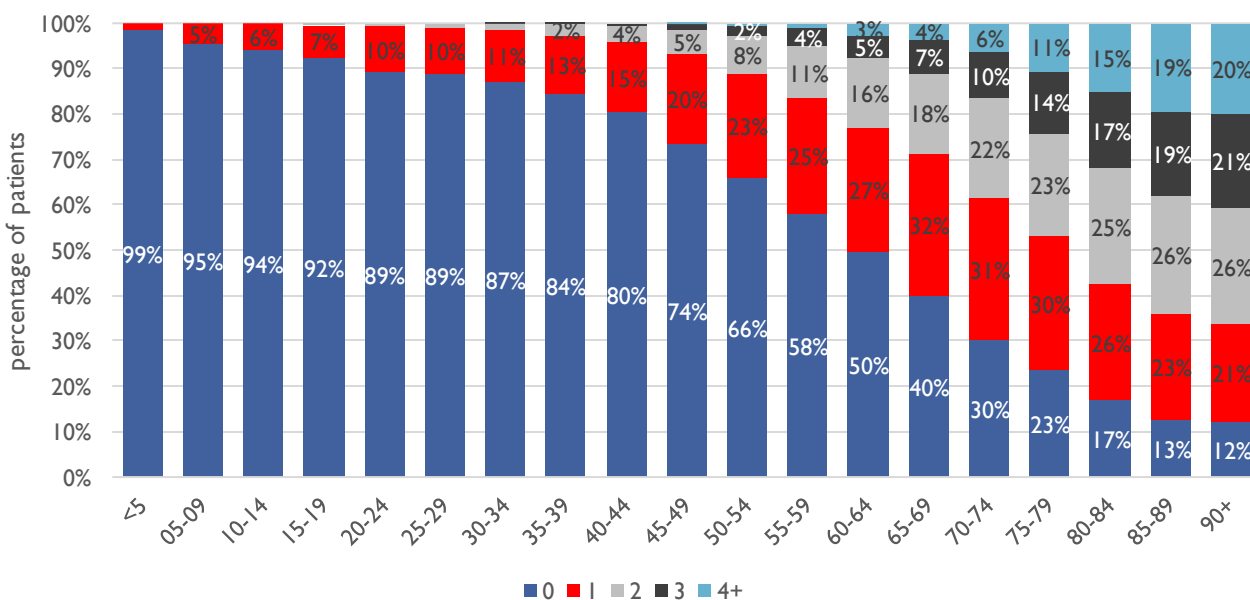


Table 4: Average age of patients with different numbers of conditions

Number of conditions	0	1	2	3	4+
Mean average age (years)	34	53	65	71	76

Multi-morbidity: individual

The sections on pairs, triads and quads of conditions counted a patient if they fell into a particular pair, triad or quad, irrespective of whether or not they had any additional conditions; this meant that patients with additional conditions fell into more than one pair, triad or quad and were therefore counted multiple times.

A different way to analyse the data is to count each patient only once (e.g. a patient with heart disease, asthma and diabetes would only be counted in the combination of heart disease / asthma / diabetes: they would not be counted in any of the pairs (heart disease / asthma, asthma / diabetes etc.) or single conditions.

The largest groups of condition combinations are as shown in Figures 16 and 17.

Figure 16: Breakdown of all patients actively registered with a Jersey GP

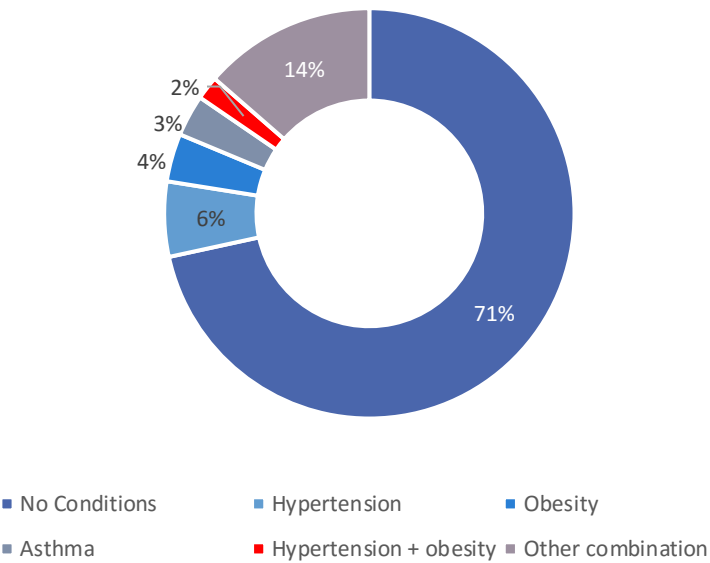
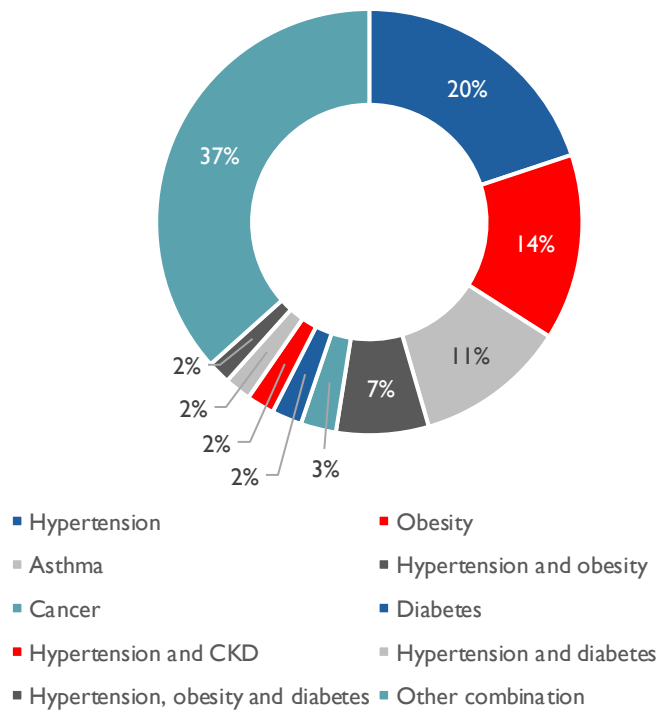


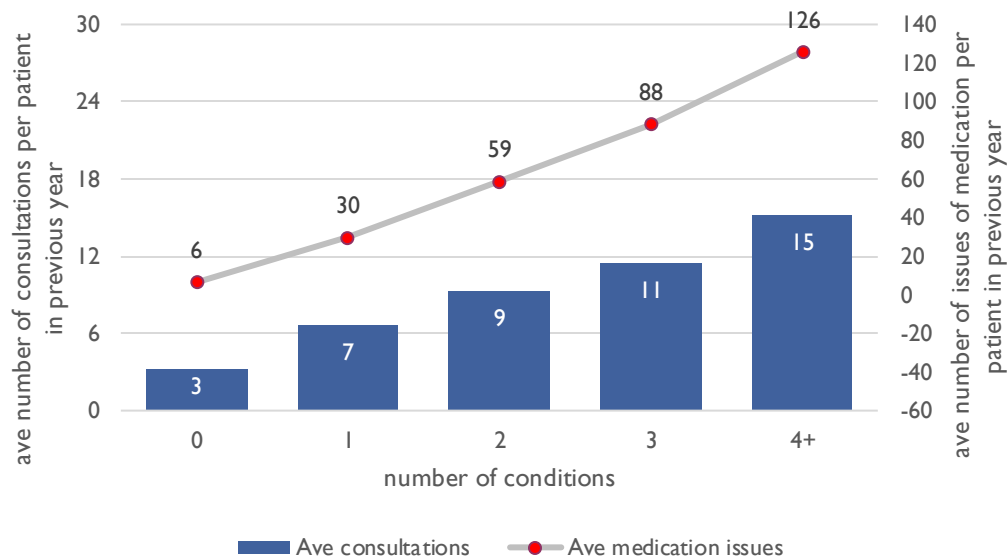
Figure 17: Breakdown of patients with at least one condition



GP consultations and medication by morbidity

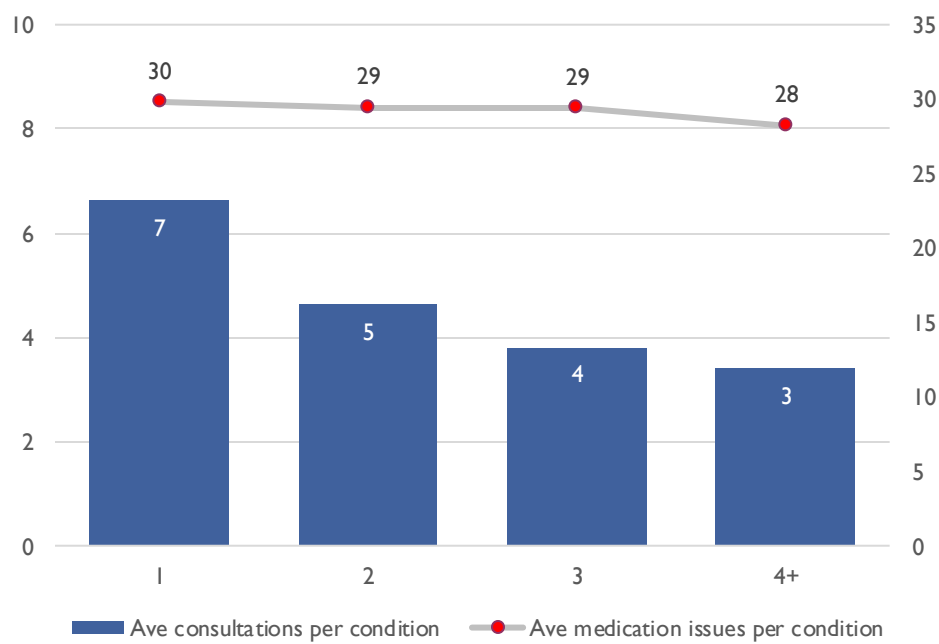
The mean average number of face to face consultations that patients had with their GP, and the mean average number of medication issues² to patients over the previous year were analysed. The search criteria used to specify what counted as a consultation and issues of medication can be found in Annex 2. Patients with more conditions tend to have more consultations with their GP, and are issued more medication (Figure 18).

Figure 18: Mean average number of consultations and issues of medication per patient, by number of conditions



However, if the number of consultations and issues of medication are divided by the number of conditions the patient has, the count of consultations per condition falls as the number of conditions increases (Figure 19). The number of issues of medication stays reasonably flat with increasing conditions count.

Figure 19: Mean average number of consultations and issues of medication per patient per condition



² Medication issues are the GPCS term for a course of medication being issued to a patient. The issues are restricted to a month's course, so for a patient with ongoing prescriptions, they will have 12 medication issues per drug per year.

Annexes

Annex 1: Methodology

Throughout this report, counts below 10 are suppressed (and represented with a ~ symbol).

Counts are rounded to the nearest 5.

Annex 2: GPCS search criteria

The GPCS search criteria used are as follows:

POPULATION

The search to return those currently 'active' patients is

Practice list size estimate JQIF2018 (4 years):

Includes patients from within the 'Registered Patients' parent search where:

EITHER Patients have had a consultation in the 4 years before the search date

OR Patient has a **registration history** where **GP Links Registration Status** is patient has presented, medical card received etc... and the date status added is within 6 months before the search date.

CONDITIONS

Atrial Fibrillation: AF001 - Patients are included on the atrial fibrillation register

Asthma AST001 - Patients included on the asthma register

CHD CHD001 - Patients are included on Coronary Heart Disease Register

CKD CKD005 - Patients are included on CKD register

COPD COPD001 - Patients on the COPD register

Dementia DEM001 - Patients on the Dementia Register

Diabetes DM017 - Patients on Diabetic Register

Heart Failure HF001 - Patients on Heart Failure Register

Hypertension HYP001 - Patients on hypertension register

Mental Health MH001 - Patients on Mental Health Register

Obesity OB002 - Patients on Obesity register

Stroke and TIA STIA - Patients on Stroke / TIA Register

Cancer Clinical code is B0, B1, B2, B3, B4, B5, B6, Byu, Byu0, Byu1, Byu2, Byu3, Byu4, Byu5, Byu6, Byu7, Byu8, Byu9, ByuA, ByuB, ByuC, ByuD, ByuE, K1323, K01w1, 68W24, C184

Order by date and check that the latest date is after or on 5 years before search date.

CONSULTATIONS and MEDICATION

Consultation

Include **Consultations** where:

The **Date** is after 1 year before the search date and before the search date
AND

the **Type of Consultation** is Emergency consultation; Extended hours consultation; face to face consultation; face to face consultation with relative / carer; GP surgery; Home visit note or Routine Consultation

Medication Issues

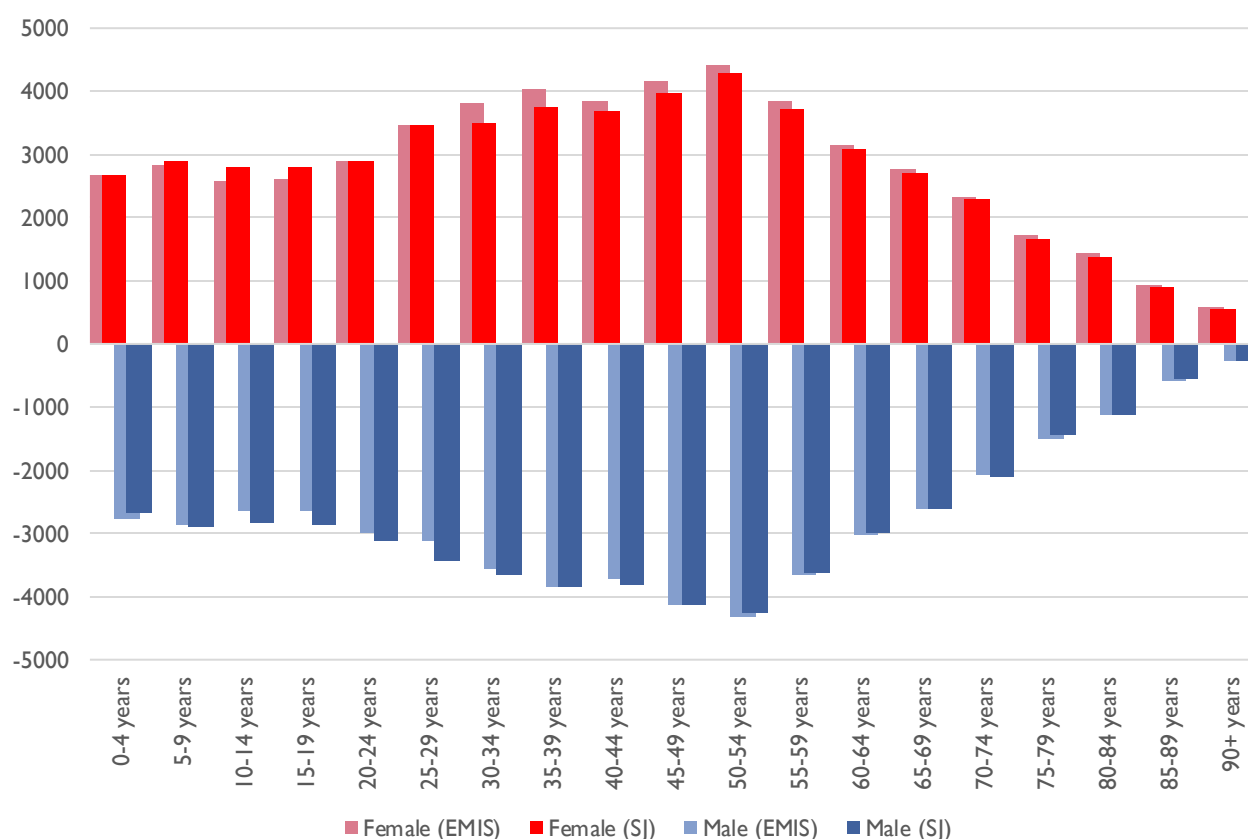
Include **Medication Issues** where:

The **Date of Issue** is after 1 year before the search date and before the search date

Annex 3: comparison of populations (denominators): GPCS and Statistics Jersey Projections

Figure 19 shows the comparison of the Jersey population profile as estimated by Statistics Jersey, against the age - sex profile of Jersey patients held on the GPCS.

Figure 19: Comparison of age profiles from GPCS and Statistics Jersey Projections at end of year 2017



Annex 4: all morbidity profiles

These tables contain the data behind the charts in Figure 4: they are counts of patients that have the 13 conditions under analysis (either as a single condition, or one of a number of conditions). Counts below 10 have been suppressed and numbers rounded to the nearest 5.

STIA		<5	05-09	10-14	15-19	20-24	25-29	30-34	35-39	40-44	45-49	50-54	55-59	60-64	65-69	70-74	75-79	80-84	85-89	90+	Total
	Male	~	~	~	~	~	~	~	~	10	10	30	55	65	90	115	130	140	75	40	775
	Female	~	~	~	~	~	~	~	~	~	15	25	35	70	70	75	100	135	110	85	745
	All	~	~	~	~	~	~	~	~	15	30	55	90	130	160	190	230	275	190	130	1,520
OB		<5	05-09	10-14	15-19	20-24	25-29	30-34	35-39	40-44	45-49	50-54	55-59	60-64	65-69	70-74	75-79	80-84	85-89	90+	Total
	Male	~	~	~	35	85	120	180	245	305	495	595	645	530	510	435	280	180	80	15	4,735
	Female	~	~	~	60	175	275	330	390	435	540	670	595	545	470	470	330	240	110	40	5,670
	All	~	~	~	95	260	395	510	635	740	1,030	1,260	1,240	1,070	980	910	610	425	190	60	10,405
MH		<5	05-09	10-14	15-19	20-24	25-29	30-34	35-39	40-44	45-49	50-54	55-59	60-64	65-69	70-74	75-79	80-84	85-89	90+	Total
	Male	~	~	~	~	10	30	25	35	40	45	40	40	35	20	15	20	10	~	~	365
	Female	~	~	~	~	~	20	20	30	35	35	45	35	30	25	30	25	20	~	~	375
	All	~	~	~	~	20	50	40	65	75	80	85	75	65	45	45	45	30	10	~	740
HYP		<5	05-09	10-14	15-19	20-24	25-29	30-34	35-39	40-44	45-49	50-54	55-59	60-64	65-69	70-74	75-79	80-84	85-89	90+	Total
	Male	~	~	~	~	~	10	45	110	200	440	730	910	1,030	1,140	1,070	815	680	355	150	7,700
	Female	~	~	~	~	~	15	45	110	170	325	645	835	940	990	1,105	955	935	635	375	8,090
	All	~	~	~	~	15	30	90	220	370	765	1,375	1,745	1,975	2,135	2,175	1,765	1,615	990	525	15,795
HF		<5	05-09	10-14	15-19	20-24	25-29	30-34	35-39	40-44	45-49	50-54	55-59	60-64	65-69	70-74	75-79	80-84	85-89	90+	Total
	Male	~	~	~	~	~	~	~	~	~	~	10	25	35	45	55	65	95	70	55	475
	Female	~	~	~	~	~	~	~	~	~	~	~	15	15	15	35	60	100	100	80	425
	All	~	~	~	~	~	~	~	~	~	~	15	40	50	65	90	125	195	170	130	900
DIA		<5	05-09	10-14	15-19	20-24	25-29	30-34	35-39	40-44	45-49	50-54	55-59	60-64	65-69	70-74	75-79	80-84	85-89	90+	Total
	Male	~	~	~	10	25	25	15	45	70	125	220	295	300	320	320	235	185	100	25	2,315
	Female	~	~	~	~	10	15	20	20	50	75	105	175	175	200	195	175	170	100	65	1,555
	All	~	~	~	20	35	40	35	65	120	205	330	465	475	515	510	410	355	200	90	3,870
DEM		<5	05-09	10-14	15-19	20-24	25-29	30-34	35-39	40-44	45-49	50-54	55-59	60-64	65-69	70-74	75-79	80-84	85-89	90+	Total
	Male	~	~	~	~	~	~	~	~	~	~	~	~	~	~	20	45	70	55	35	235
	Female	~	~	~	~	~	~	~	~	~	~	~	~	~	10	35	55	90	135	80	410
	All	~	~	~	~	~	~	~	~	~	~	~	~	~	15	55	100	160	190	115	650

COPD		<5	05-09	10-14	15-19	20-24	25-29	30-34	35-39	40-44	45-49	50-54	55-59	60-64	65-69	70-74	75-79	80-84	85-89	90+	Total
	Male	~	~	~	~	~	~	~	~	10	40	75	105	120	160	170	145	130	65	25	1,065
	Female	~	~	~	~	~	~	~	~	10	30	60	75	115	145	155	130	120	65	40	950
	All	~	~	~	~	~	~	~	10	20	70	135	185	240	305	320	275	250	130	65	2,015
CKD		<5	05-09	10-14	15-19	20-24	25-29	30-34	35-39	40-44	45-49	50-54	55-59	60-64	65-69	70-74	75-79	80-84	85-89	90+	Total
	Male	~	~	~	~	~	~	~	~	15	20	40	55	75	105	175	225	280	165	90	1,255
	Female	~	~	~	~	~	~	~	10	15	25	45	75	95	160	230	300	350	330	255	1,910
	All	~	~	~	~	~	~	~	15	30	45	85	130	175	265	410	525	630	500	345	3,165
CHD		<5	05-09	10-14	15-19	20-24	25-29	30-34	35-39	40-44	45-49	50-54	55-59	60-64	65-69	70-74	75-79	80-84	85-89	90+	Total
	Male	~	~	~	~	~	~	~	~	10	40	105	145	205	250	260	260	235	155	70	1,740
	Female	~	~	~	~	~	~	~	~	~	~	25	40	80	85	115	130	175	120	100	890
	All	~	~	~	~	~	~	~	~	15	50	130	185	285	335	370	390	410	275	170	2,630
AST		<5	05-09	10-14	15-19	20-24	25-29	30-34	35-39	40-44	45-49	50-54	55-59	60-64	65-69	70-74	75-79	80-84	85-89	90+	Total
	Male	40	145	175	145	160	130	145	175	200	235	260	200	140	125	105	80	55	25	~	2,560
	Female	35	105	120	135	180	150	190	215	215	265	310	235	200	155	170	115	105	45	30	2,985
	All	75	250	295	280	345	280	340	390	420	500	570	435	340	285	275	195	160	75	40	5,545
AF		<5	05-09	10-14	15-19	20-24	25-29	30-34	35-39	40-44	45-49	50-54	55-59	60-64	65-69	70-74	75-79	80-84	85-89	90+	Total
	Male	~	~	~	~	~	~	~	~	15	30	55	75	105	140	175	195	205	110	65	1,190
	Female	~	~	~	~	~	~	~	~	~	~	15	25	45	60	95	130	180	155	110	830
	All	~	~	~	~	~	~	~	~	20	35	70	100	150	200	275	325	385	265	175	2,025
Cancer		<5	05-09	10-14	15-19	20-24	25-29	30-34	35-39	40-44	45-49	50-54	55-59	60-64	65-69	70-74	75-79	80-84	85-89	90+	Total
	Male	~	~	~	~	~	~	10	20	20	25	50	95	140	180	180	145	110	65	20	1,075
	Female	~	~	~	~	~	~	10	25	40	60	90	95	110	125	120	95	80	45	30	940
	All	~	~	~	~	10	10	20	40	65	80	140	190	250	305	300	240	190	105	50	2,015

Annex 5: single morbidity profiles

These tables contain the data behind the charts in Figure 7: they are counts of patients that have the 13 conditions under analysis as a single condition only (patients with the conditions as one of a number of conditions are excluded). Counts below 10 have been suppressed and numbers rounded to the nearest 5.

STIA	<5	05-09	10-14	15-19	20-24	25-29	30-34	35-39	40-44	45-49	50-54	55-59	60-64	65-69	70-74	75-79	80-84	85-89	90+	Total
Male	~	~	~	~	~	~	~	~	~	~	10	15	15	10	15	15	10	~	~	120
Female	~	~	~	~	~	~	~	~	~	~	10	15	25	20	~	10	15	~	~	140
All	~	~	~	~	~	~	~	~	10	10	20	30	40	30	25	25	30	~	~	260

OB	<5	05-09	10-14	15-19	20-24	25-29	30-34	35-39	40-44	45-49	50-54	55-59	60-64	65-69	70-74	75-79	80-84	85-89	90+	Total
Male	~	~	~	20	75	95	140	165	185	275	265	215	110	90	50	30	~	~	~	1,730
Female	~	~	~	50	145	245	275	300	290	345	330	205	140	120	70	35	15	~	~	2,575
All	~	~	~	75	215	345	420	465	475	620	590	420	250	210	125	65	20	10	~	4,305

MH	<5	05-09	10-14	15-19	20-24	25-29	30-34	35-39	40-44	45-49	50-54	55-59	60-64	65-69	70-74	75-79	80-84	85-89	90+	Total
Male	~	~	~	~	10	20	20	25	25	30	30	20	10	~	~	~	~	~	~	210
Female	~	~	~	~	~	15	15	20	30	20	25	15	10	~	~	10	~	~	~	185
All	~	~	~	~	15	35	40	45	55	45	50	35	20	15	10	10	~	~	~	395

HYP	<5	05-09	10-14	15-19	20-24	25-29	30-34	35-39	40-44	45-49	50-54	55-59	60-64	65-69	70-74	75-79	80-84	85-89	90+	Total
Male	~	~	~	~	~	~	25	60	115	235	355	400	420	450	340	200	130	65	25	2,840
Female	~	~	~	~	~	~	25	60	85	180	330	410	430	450	440	330	270	135	70	3,225
All	~	~	~	~	~	15	50	120	195	415	690	810	845	900	780	530	395	200	95	6,060

HF	<5	05-09	10-14	15-19	20-24	25-29	30-34	35-39	40-44	45-49	50-54	55-59	60-64	65-69	70-74	75-79	80-84	85-89	90+	Total
Male	~	~	~	~	~	~	~	~	~	~	~	~	~	~	~	~	~	~	~	20
Female	~	~	~	~	~	~	~	~	~	~	~	~	~	~	~	~	~	~	~	15
All	~	~	~	~	~	~	~	~	~	~	~	~	~	~	~	~	~	~	~	35

DIA	<5	05-09	10-14	15-19	20-24	25-29	30-34	35-39	40-44	45-49	50-54	55-59	60-64	65-69	70-74	75-79	80-84	85-89	90+	Total
Male	~	~	~	10	20	20	10	25	25	40	60	70	50	60	30	25	~	~	~	460
Female	~	~	~	~	~	~	~	10	20	25	30	35	20	25	20	10	10	~	~	240
All	~	~	~	20	25	25	20	35	40	65	90	105	65	85	50	35	20	10	~	700

DEM	<5	05-09	10-14	15-19	20-24	25-29	30-34	35-39	40-44	45-49	50-54	55-59	60-64	65-69	70-74	75-79	80-84	85-89	90+	Total
Male	~	~	~	~	~	~	~	~	~	~	~	~	~	~	10	~	10	~	~	40
Female	~	~	~	~	~	~	~	~	~	~	~	~	~	~	10	10	15	15	15	75
All	~	~	~	~	~	~	~	~	~	~	~	~	~	~	20	20	25	20	20	115

COPD		<5	05-09	10-14	15-19	20-24	25-29	30-34	35-39	40-44	45-49	50-54	55-59	60-64	65-69	70-74	75-79	80-84	85-89	90+	Total
	Male	~	~	~	~	~	~	~	~	~	20	35	40	40	35	35	20	15	~	~	275
	Female	~	~	~	~	~	~	~	~	~	15	20	25	40	45	25	20	10	~	~	220
	All	~	~	~	~	~	~	~	~	10	35	60	65	85	80	65	40	25	~	~	495

CKD		<5	05-09	10-14	15-19	20-24	25-29	30-34	35-39	40-44	45-49	50-54	55-59	60-64	65-69	70-74	75-79	80-84	85-89	90+	Total
	Male	~	~	~	~	~	~	~	~	~	~	~	10	15	15	20	20	20	~	~	130
	Female	~	~	~	~	~	~	~	~	~	10	15	25	20	30	30	35	25	25	10	235
	All	~	~	~	~	~	~	~	~	10	20	20	35	30	45	50	55	45	35	15	365

CHD		<5	05-09	10-14	15-19	20-24	25-29	30-34	35-39	40-44	45-49	50-54	55-59	60-64	65-69	70-74	75-79	80-84	85-89	90+	Total
	Male	~	~	~	~	~	~	~	~	~	15	45	45	45	50	30	35	15	~	~	310
	Female	~	~	~	~	~	~	~	~	~	~	~	10	15	10	15	15	10	~	~	105
	All	~	~	~	~	~	~	~	~	~	20	55	55	65	60	45	50	25	15	10	415

AST		<5	05-09	10-14	15-19	20-24	25-29	30-34	35-39	40-44	45-49	50-54	55-59	60-64	65-69	70-74	75-79	80-84	85-89	90+	Total
	Male	40	145	175	135	150	115	120	140	160	155	160	85	55	30	25	10	~	~	~	1,710
	Female	35	105	120	130	155	130	150	170	140	165	165	110	80	50	45	25	10	~	~	1,785
	All	75	250	295	265	305	245	270	310	300	320	325	195	130	80	70	35	15	~	~	3,495

AF		<5	05-09	10-14	15-19	20-24	25-29	30-34	35-39	40-44	45-49	50-54	55-59	60-64	65-69	70-74	75-79	80-84	85-89	90+	Total
	Male	~	~	~	~	~	~	~	~	~	15	15	30	20	40	25	20	15	~	~	215
	Female	~	~	~	~	~	~	~	~	~	~	~	10	15	10	10	10	~	~	~	90
	All	~	~	~	~	~	~	~	~	10	20	20	40	35	50	35	30	25	20	~	305

Cancer		<5	05-09	10-14	15-19	20-24	25-29	30-34	35-39	40-44	45-49	50-54	55-59	60-64	65-69	70-74	75-79	80-84	85-89	90+	Total
	Male	~	~	~	~	~	~	10	15	15	15	30	45	55	60	55	30	15	~	~	380
	Female	~	~	~	~	~	~	~	20	30	45	65	70	50	65	40	20	10	~	~	440
	All	~	~	~	~	~	~	20	35	45	60	95	110	110	125	95	50	25	15	~	820

Annex 6: multi-morbidity profiles

These tables contain the data behind the charts in Figure 14: they are counts of patients that have the 13 conditions under analysis as part of a multi-morbidity (patients with only one condition are excluded). Counts below 10 have been suppressed and numbers rounded to the nearest 5.

STIA		<5	05-09	10-14	15-19	20-24	25-29	30-34	35-39	40-44	45-49	50-54	55-59	60-64	65-69	70-74	75-79	80-84	85-89	90+	Total
	Male	~	~	~	~	~	~	~	~	~	~	20	40	50	80	100	115	125	75	40	655
	Female	~	~	~	~	~	~	~	~	~	10	10	20	45	50	65	90	120	105	80	600
	All	~	~	~	~	~	~	~	~	~	20	30	60	90	130	165	205	245	180	120	1,255
OB		<5	05-09	10-14	15-19	20-24	25-29	30-34	35-39	40-44	45-49	50-54	55-59	60-64	65-69	70-74	75-79	80-84	85-89	90+	Total
	Male	~	~	~	10	15	25	40	80	120	220	330	430	420	420	385	250	170	75	15	3,005
	Female	~	~	~	~	30	30	55	90	145	195	340	385	400	350	400	295	230	105	40	3,095
	All	~	~	~	20	45	55	95	170	265	410	670	820	820	770	785	545	400	180	55	6,100
MH		<5	05-09	10-14	15-19	20-24	25-29	30-34	35-39	40-44	45-49	50-54	55-59	60-64	65-69	70-74	75-79	80-84	85-89	90+	Total
	Male	~	~	~	~	~	~	~	~	15	15	10	15	25	15	~	15	~	~	~	155
	Female	~	~	~	~	~	~	~	10	~	20	20	20	20	15	25	15	20	~	~	190
	All	~	~	~	~	~	10	~	20	25	35	30	35	45	30	35	35	30	~	~	345
HYP		<5	05-09	10-14	15-19	20-24	25-29	30-34	35-39	40-44	45-49	50-54	55-59	60-64	65-69	70-74	75-79	80-84	85-89	90+	Total
	Male	~	~	~	~	~	~	20	50	85	205	375	510	610	690	730	610	555	290	125	4,865
	Female	~	~	~	~	~	~	20	50	85	145	315	425	515	545	665	625	665	505	305	4,870
	All	~	~	~	~	~	15	40	100	175	350	685	935	1,125	1,230	1,395	1,235	1,220	795	430	9,730
HF		<5	05-09	10-14	15-19	20-24	25-29	30-34	35-39	40-44	45-49	50-54	55-59	60-64	65-69	70-74	75-79	80-84	85-89	90+	Total
	Male	~	~	~	~	~	~	~	~	~	~	10	25	35	45	55	65	95	65	50	455
	Female	~	~	~	~	~	~	~	~	~	~	~	10	15	15	35	60	95	100	75	410
	All	~	~	~	~	~	~	~	~	~	~	10	35	45	60	90	120	195	165	130	865
DIA		<5	05-09	10-14	15-19	20-24	25-29	30-34	35-39	40-44	45-49	50-54	55-59	60-64	65-69	70-74	75-79	80-84	85-89	90+	Total
	Male	~	~	~	~	~	~	~	20	45	85	160	225	250	260	285	215	175	95	25	1,855
	Female	~	~	~	~	~	~	15	10	30	50	75	140	160	170	175	160	155	95	65	1,315
	All	~	~	~	~	~	10	20	30	75	135	235	365	410	430	460	375	335	190	90	3,170
DEM		<5	05-09	10-14	15-19	20-24	25-29	30-34	35-39	40-44	45-49	50-54	55-59	60-64	65-69	70-74	75-79	80-84	85-89	90+	Total
	Male	~	~	~	~	~	~	~	~	~	~	~	~	~	~	10	35	60	50	30	200
	Female	~	~	~	~	~	~	~	~	~	~	~	~	~	~	25	45	75	120	65	335
	All	~	~	~	~	~	~	~	~	~	~	~	~	~	10	35	75	135	170	95	535

COPD	<5	05-09	10-14	15-19	20-24	25-29	30-34	35-39	40-44	45-49	50-54	55-59	60-64	65-69	70-74	75-79	80-84	85-89	90+	Total
	Male	~	~	~	~	~	~	~	~	15	40	65	80	125	135	125	115	60	20	790
	Female	~	~	~	~	~	~	~	~	20	35	50	75	95	125	110	105	65	35	730
	All	~	~	~	~	~	~	~	10	35	75	120	155	225	260	230	220	125	55	1,520

CKD	<5	05-09	10-14	15-19	20-24	25-29	30-34	35-39	40-44	45-49	50-54	55-59	60-64	65-69	70-74	75-79	80-84	85-89	90+	Total
	Male	~	~	~	~	~	~	~	~	10	35	45	65	90	160	205	260	160	85	1,125
	Female	~	~	~	~	~	~	10	10	15	30	50	80	130	200	265	325	305	245	1,675
	All	~	~	~	~	~	~	15	15	30	65	95	145	220	360	470	585	465	330	2,800

CHD	<5	05-09	10-14	15-19	20-24	25-29	30-34	35-39	40-44	45-49	50-54	55-59	60-64	65-69	70-74	75-79	80-84	85-89	90+	Total
	Male	~	~	~	~	~	~	~	~	25	60	100	160	200	230	220	220	150	60	1,425
	Female	~	~	~	~	~	~	~	~	~	15	30	65	70	100	120	165	115	95	790
	All	~	~	~	~	~	~	~	10	35	75	130	220	275	325	340	385	265	155	2,215

AST	<5	05-09	10-14	15-19	20-24	25-29	30-34	35-39	40-44	45-49	50-54	55-59	60-64	65-69	70-74	75-79	80-84	85-89	90+	Total
	Male	~	~	~	10	15	25	35	40	80	100	115	90	95	85	70	50	20	~	850
	Female	~	~	~	25	20	40	45	75	100	145	125	120	105	125	95	90	45	30	1,200
	All	~	~	~	15	35	65	80	115	180	245	245	210	205	210	160	145	65	35	2,050

AF	<5	05-09	10-14	15-19	20-24	25-29	30-34	35-39	40-44	45-49	50-54	55-59	60-64	65-69	70-74	75-79	80-84	85-89	90+	Total
	Male	~	~	~	~	~	~	~	~	15	35	45	85	105	155	175	190	100	65	980
	Female	~	~	~	~	~	~	~	~	~	10	15	30	50	85	120	170	145	110	740
	All	~	~	~	~	~	~	~	~	20	50	60	115	155	240	295	360	245	170	1,720

Cancer	<5	05-09	10-14	15-19	20-24	25-29	30-34	35-39	40-44	45-49	50-54	55-59	60-64	65-69	70-74	75-79	80-84	85-89	90+	Total
	Male	~	~	~	~	~	~	~	~	~	15	50	85	120	125	115	95	55	20	695
	Female	~	~	~	~	~	~	~	10	15	30	30	60	60	80	75	70	35	30	500
	All	~	~	~	~	~	~	~	15	20	45	80	140	180	205	190	165	90	45	1,195

Annex 7: Triad groups containing over 100 patients

Triad combination	Count of patients
Hypertension, Obesity, Diabetes	1,050
Hypertension, Obesity, Chronic kidney disease	565
Hypertension, Diabetes, Chronic kidney disease	525
Hypertension, Obesity, Coronary heart disease	440
Hypertension, Chronic kidney disease, Coronary heart disease	435
Hypertension, Diabetes, Coronary heart disease	400
Hypertension, Obesity, Asthma	395
Hypertension, Chronic kidney disease, Atrial fibrillation	395
Hypertension, Obesity, Atrial fibrillation	350
Hypertension, Coronary heart disease, Atrial fibrillation	295
Hypertension, Atrial fibrillation, Heart failure	280
Hypertension, Obesity, COPD	270
Hypertension, Chronic kidney disease, Heart failure	260
Hypertension, Chronic kidney disease, Stroke and TIA	255
Obesity, Diabetes, Chronic kidney disease	240
Hypertension, Diabetes, Atrial fibrillation	225

Triad combination	Count of patients
Hypertension, Obesity, Stroke and TIA	220
Hypertension, Coronary heart disease, Heart failure	220
Obesity, Diabetes, Coronary heart disease	220
Hypertension, Coronary heart disease, Stroke and TIA	215
Hypertension, Atrial fibrillation, Stroke and TIA	195
Hypertension, Obesity, Cancer	195
Hypertension, Asthma, COPD	190
Chronic kidney disease, Atrial fibrillation, Heart failure	185
Hypertension, Chronic kidney disease, COPD	185
Hypertension, Coronary heart disease, COPD	185
Hypertension, Diabetes, Asthma	185
Hypertension, Obesity, Heart failure	180
Hypertension, Diabetes, Stroke and TIA	180
Hypertension, Diabetes, COPD	175
Diabetes, Chronic kidney disease, Coronary heart disease	170
Chronic kidney disease, Coronary heart disease, Atrial fibrillation	155

Triad combination	Count of patients
Hypertension, Chronic kidney disease, Cancer	155
Hypertension, Diabetes, Heart failure	150
Chronic kidney disease, Coronary heart disease, Heart failure	145
Hypertension, Chronic kidney disease, Asthma	140
Coronary heart disease, Atrial fibrillation, Heart failure	140
Obesity, Chronic kidney disease, Coronary heart disease	130
Hypertension, Diabetes, Cancer	130
Hypertension, Coronary heart disease, Cancer	130
Obesity, Diabetes, Asthma	125
Obesity, Chronic kidney disease, Atrial fibrillation	125
Hypertension, Chronic kidney disease, Dementia	125
Obesity, Diabetes, Atrial fibrillation	125

Triad combination	Count of patients
Obesity, Atrial fibrillation, Heart failure	120
Hypertension, Atrial fibrillation, COPD	120
Diabetes, Chronic kidney disease, Atrial fibrillation	110
Obesity, Diabetes, COPD	105
Hypertension, COPD, Heart failure	105
Chronic kidney disease, Atrial fibrillation, Stroke and TIA	105
Obesity, Chronic kidney disease, Heart failure	105
Diabetes, Chronic kidney disease, Heart failure	105
Obesity, Asthma, COPD	105
Obesity, Coronary heart disease, Atrial fibrillation	100
Hypertension, Stroke and TIA, Heart failure	100
Hypertension, Coronary heart disease, Asthma	100