Strategic Policy, Planning and Performance Report
Public Health Intelligence

Subject:	Multi-morbidity 2022
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Introduction

Morbidity is the state of having a long-term (chronic) medical condition. Multi-morbidity is defined as the presence of <u>two or more</u> long-term medical conditions in a patient.

Studies show that people with multiple chronic conditions (those with multi-morbidity) typically suffer a lower quality of life[1], have more frequent and lengthy hospital admissions[2], and may be more likely to die prematurely[3], than those who do not have multi-morbidity.

This report assesses the burden of multi-morbidity experienced by Jersey's population. It summarises the prevalence of certain long-term conditions amongst Jersey residents, as recorded by GP's. The analysis shows the prevalence of patients with more than one of these conditions (multi-morbidity), and which diseases are most commonly co-occurring. The analysis presented refers to prevalence of conditions and multi-morbidities as at year end 2022, and trends over time are shown where appropriate.

Long-term conditions (morbidities)

There are 12 long-term conditions which form the basis of the multi-morbidity analysis presented. The Government of Jersey incentivises GPs to record patients with any of these long-term conditions through the Quality Improvement Framework (JQIF).

The 12 long-term morbidities 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)

See Appendix 1 for the definitions of the criteria used in order to identify patients recorded as having any of the above conditions

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[1]Fortin et al., 2004. Health and Quality of Life Outcomes
[2] Vogeli et al., 2007. Journal of General Internal Medicine
[3] Menotti et al., 2001. Journal of Clinical Epidemiology

Multi-morbidity 2022

Approximately **13%** of individuals are living with multiple morbidities.

Hypertension was the most common morbidity affecting **17%** of the population.

Morbidities become more common with age

By age 85, over half of the population is suffering from **2 or more long-term conditions**

The same **10 pairs** of co-occurring morbidities have remained the most common over the **last 6 years**
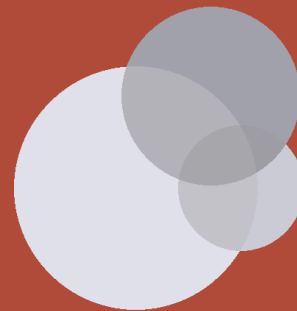
The **most commonly co-occurring** morbidities are **Hypertension & Obesity**

The **most commonly co-occurring** set of three morbidities are **Hypertension, Diabetes & Obesity**

Long-term conditions (morbidities) amongst the population

Prevalence of long-term conditions

As at the end of 2022, there were more than 31,850 individuals who had at least one of the 12 long-term conditions considered in this report who were registered, and considered active, with a GP in Jersey.

The number and proportion of the population[4] suffering from each of the long-term conditions is shown in Table 1.

The most common long-term condition was hypertension (with 17,635 patients registered), whilst dementia was the least prevalent long-term condition (with 765 patients registered) (Figure 2).

Table 1. The number of patients on each long-term condition register as at year end 2022. "All patients" include everyone who is on the register, regardless of what other conditions they may have, whilst "patients (single condition)" includes patients who have only that single condition. The number of patients on the register as a proportion of the total population is shown, as well as the average age of patients on the register.

Condition	All Patients	Proportion of Population	Average Age	Patients (Single condition)	Average Age (Single condition)
Hypertension (HYP)	17,635	17%	68	7,235	65
Obesity (OB)	9,915	10%	56	3,980	46
Asthma (AST)	6,055	6%	48	3,605	39
Diabetes (DIA)	4,840	5%	66	890	56
Coronary Heart Disease (CHD)	2,915	3%	73	530	66
Chronic Kidney Disease (CKD)	2,720	3%	77	300	70
Atrial Fibrillation (AF)	2,695	3%	75	455	66
Chronic Obstructive Pulmonary Disease (COPD)	2,305	2%	70	560	63
Stroke and Transient Ischemic Attack (STIA)	1,850	2%	74	325	64
Heart Failure (HF)	1,125	1%	79	50	70
Mental Health Problems (MH)	770	1%	52	405	46
Dementia (DEM)	765	1%	84	140	81

*Patient numbers rounded to the nearest 5

While many long-term conditions affected males and females relatively equally, some conditions affected one sex more than the other (Figure 1).

Of the 12 conditions considered:

- those conditions that were more likely to affect <u>female</u> patients were dementia (62% female and 38% male) and chronic kidney disease (60% female, 40% male)

- those conditions that were more likely to affect <u>male</u> patients were: coronary heart disease (67% male, 33% female), atrial fibrillation (60% male, 40% female) and diabetes (60% male, 40% female)

For some conditions, the sex difference was largely attributable to the age profile of the condition. For example, there are more females than males overall in older age groups[4], so there is expected to be a higher proportion of female patients for conditions affecting primarily older patients such as dementia and chronic kidney disease (average age is 84 amongst dementia patients, and 77 amongst chronic kidney disease patients, Table 1).

[4]Interim population estimates used – see Notes

Figure 1. *Prevalence of 12 long-term conditions amongst males and females in Jersey*
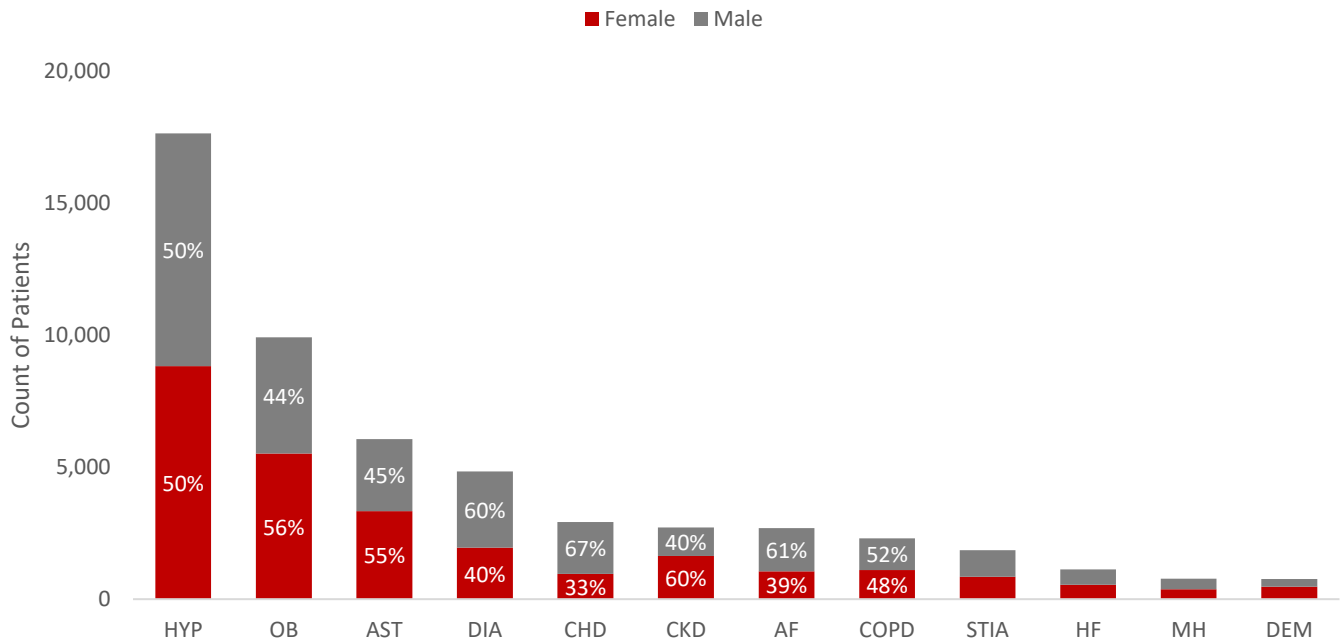
Each long-term condition could affect people of any age, but some conditions are found more commonly in certain age groups. For example, dementia, heart failure and chronic kidney disease affect mainly older people, whilst asthma and mental health problems affect a much broader range of age groups (Figure 2 & Figure 3).

The average age for patients with only a single condition is lower than the average age of all patients (including those with other co-morbidities) (Table 1), because multiple morbidities become more common with age (see section on "Multi-morbidity by age", Figure 8).

Figure 2. *Box and whisker plot showing the average age and interquartile range of ages for each disease register (inclusive of all patients on each register regardless of whether they have other conditions)*
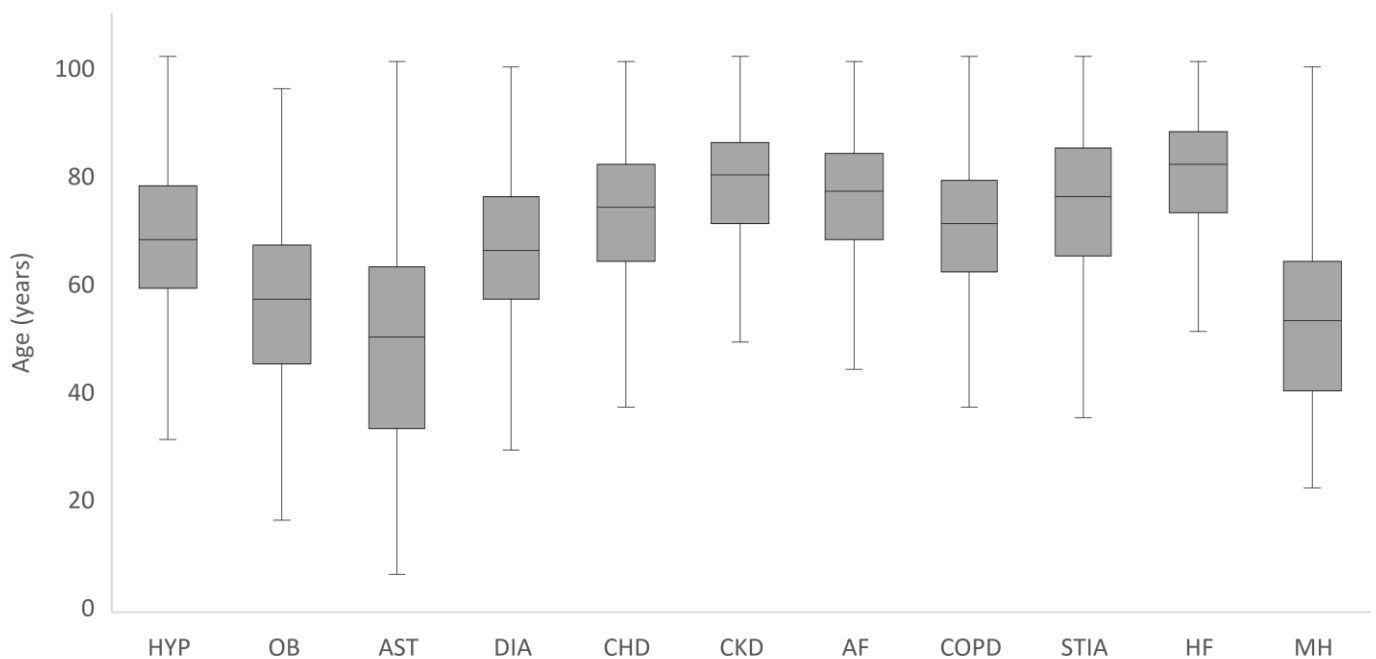
Age-Gender Profiles

Figure 3. *Counts of patients on each disease register, split by age and gender. Counts below 10 have been suppressed, and all counts rounded to the nearest 5*
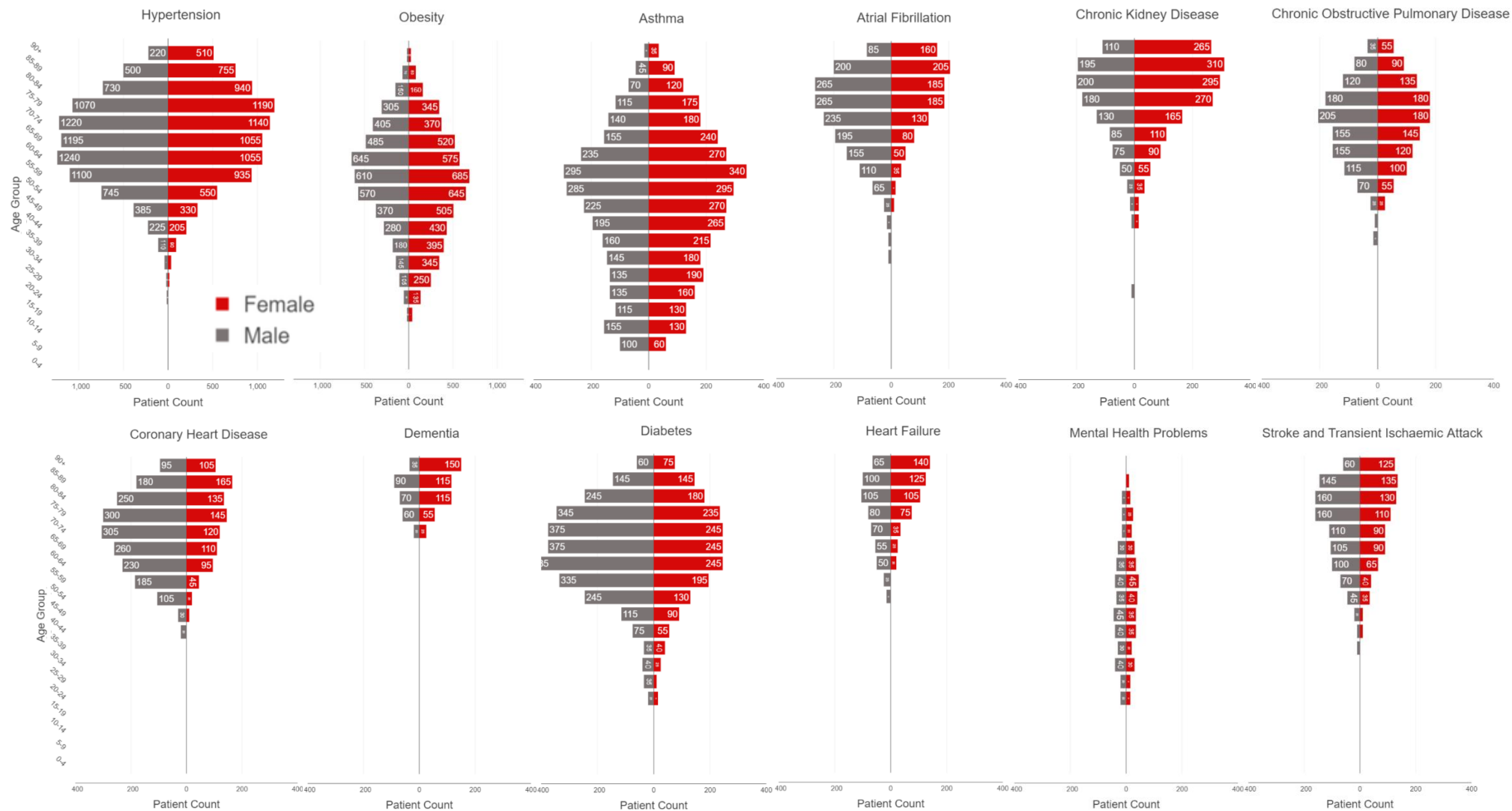
Patients with multiple morbidities

Of the 31,850 individuals who had at least one of the 12 long-term conditions as at the end of 2022:

- 18,475 individuals had a *single* long-term condition

- 13,375 individuals had *two or more* long-term conditions (multi-morbidity). This means that approximately 13% of Jersey's overall population[5] were living with multiple morbidities

Of those individuals having two or more long-term conditions, progressively fewer had a higher number of long-term conditions:

- 7,985 individuals had two conditions, equivalent to 8% of the population

- 3,410 individuals had three conditions, equivalent to 3% of the population

- 1,980 individuals had four *or more* conditions, equivalent to 2% of the population

Figure 4. *The numbers of long-term conditions amongst Jersey's population, by gender, as recorded by GP's. The number of people with 0 long-term conditions is estimated by subtracted the number of patients on long-term condition registers from the total population estimate*
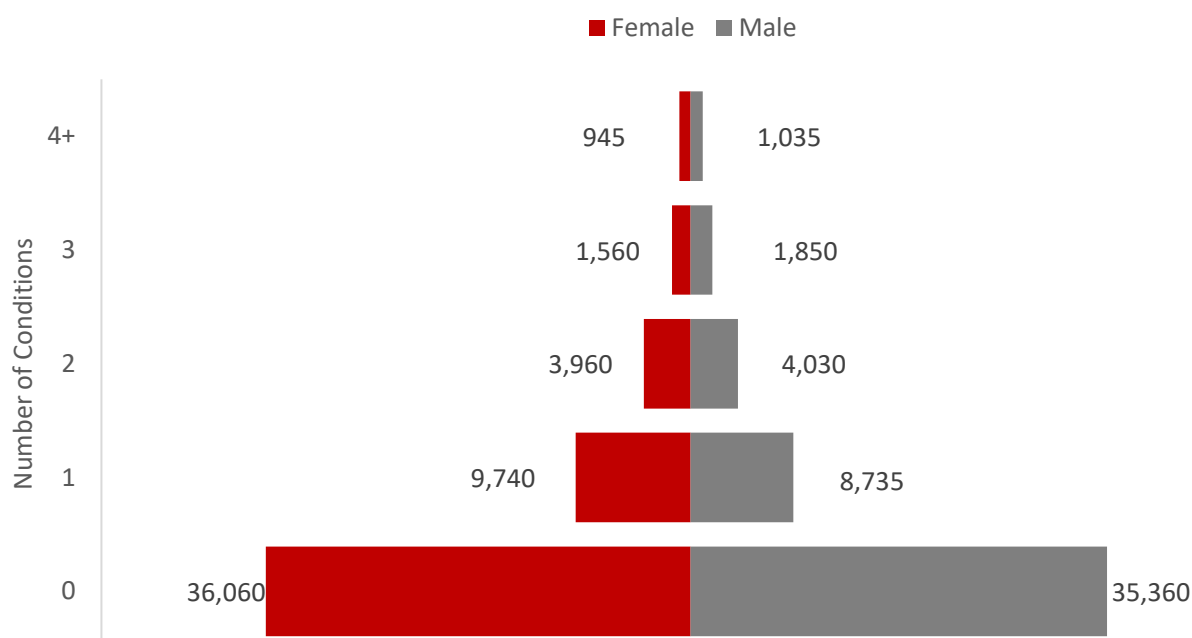
Some long-term conditions are more commonly found to co-occur with other diseases, and Figure 5 shows the number of _additional_ conditions people on each of the disease registers are suffering from. For example:

- of those on the asthma register, 60% have only this *single* morbidity, whilst the other 40% have *at least one other* morbidity
- of those on the heart failure register, just 4% had only this *single* morbidity, and the other 96% had at least one other morbidity. Over half (60%) of patients on the heart failure register had 3 or more additional morbidities

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[5] Interim population estimates used – see Notes

Figure 5. *Percentage of patients with each condition having 0, 1, 2 or 3+ <u>additional</u> conditions*

Number of addition conditions: ☐ 0 ☐ 1 ■ 2 ■ 3+

Condition	0	1	2	3+
AST	60%	22%	11%	8%
MH	52%	27%	11%	9%
HYP	41%	33%	16%	10%
OB	40%	34%	17%	10%
COPD	24%	29%	22%	24%
DIA	18%	32%	28%	21%
CHD	18%	26%	26%	30%
DEM	18%	30%	24%	29%
STIA	18%	28%	25%	29%
AF	17%	25%	26%	32%
CKD	11%	29%	27%	32%
HF	4%	13%	22%	61%
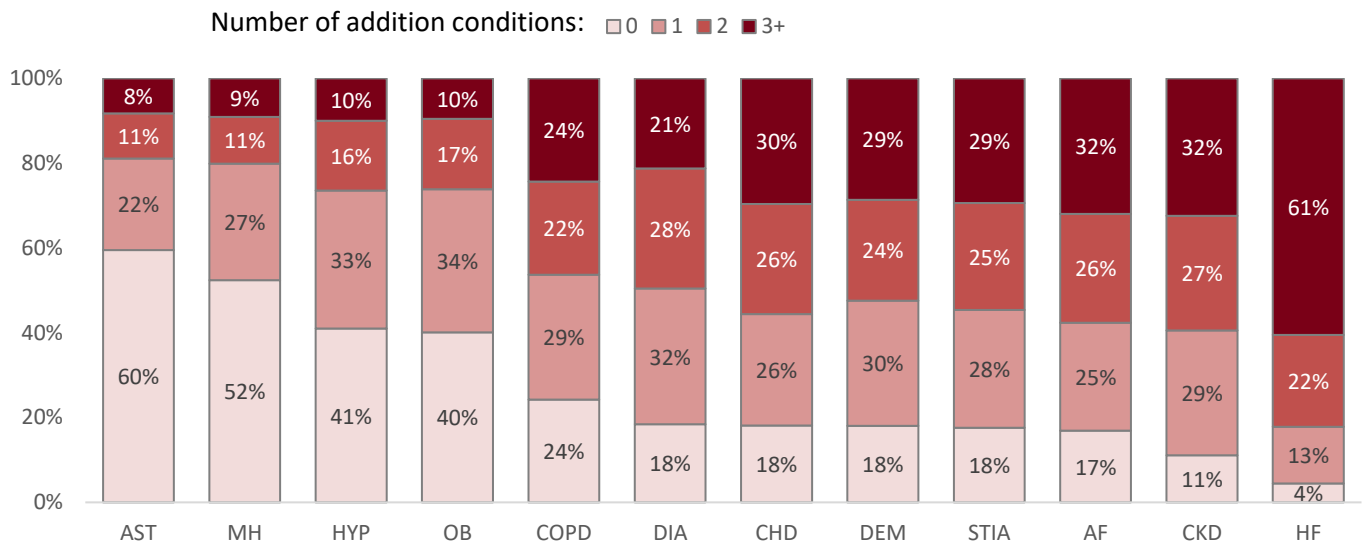
Combinations of two conditions (pairs)

The most commonly co-occurring pairs of morbidities are shown in Table 2. Hypertension and obesity were the most commonly co-occurring morbidities, being present in over 4,380 people. Note that the analysis of co-occurring conditions is *inclusive*, meaning the patient count includes all patients with those two conditions, including those who may have other additional conditions.

Table 2. *Count of patients with each combination of co-occurring disease pairs*

	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)
Asthma (AST)	205										
Coronary Heart Disease (CHD)	505	215									
Chronic Kidney Disease (CKD)	535	220	490								
Chronic Obstructive Pulmonary Disease (COPD)	240	565	320	270							
Dementia (DEM)	135	40	125	175	60						
Diabetes (DIA)	475	395	700	600	315	130					
Heart Failure (HF)	570	140	390	375	200	80	310				
Hypertension (HYP)	1,650	1,380	1,765	1,970	1,145	465	2,940	760			
Mental Health Problems (MH)	25	65	25	45	35	10	85	10	155		
Obesity (OB)	540	1,030	610	520	420	40	1,735	265	4,380	155	
Stroke and Transient Ischemic Attack (STIA)	405	130	310	325	185	150	340	190	1,140	20	280

The same 10 pairs of co-occurring morbidities have remained the most common over the last 6 years (Figure 6):

- the disease pairs ranked in positions 1 to 7 have remained in the same order of ranking
- there has been some movement amongst the pairs ranked in positions 8, 9 and 10

Figure 6. *Ranking of the most commonly co-occurring disease pairs from (2016 to 2022)*
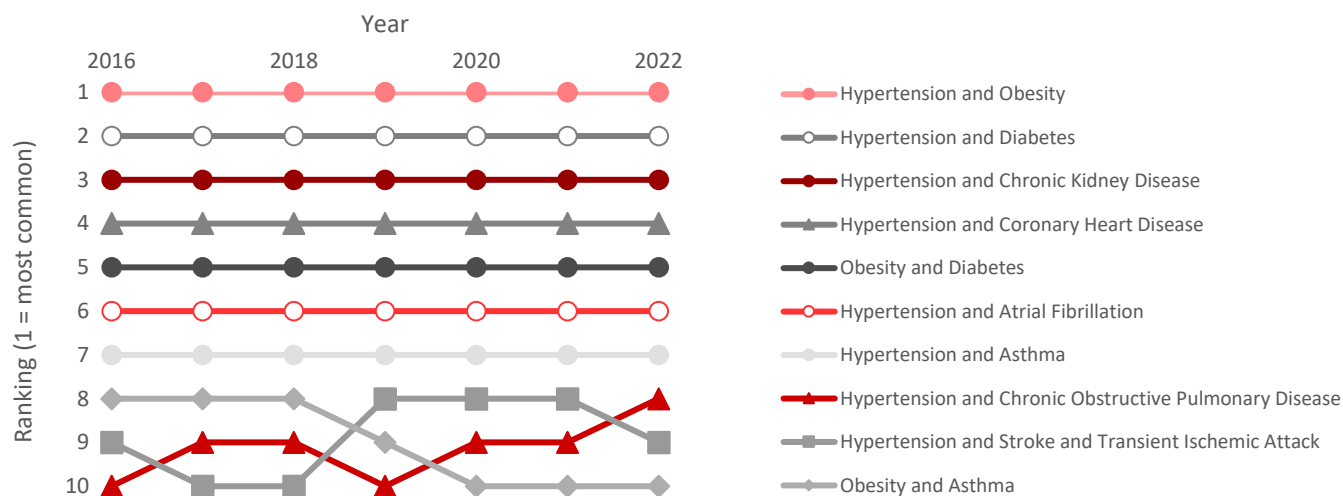
Combinations of three conditions (triads)

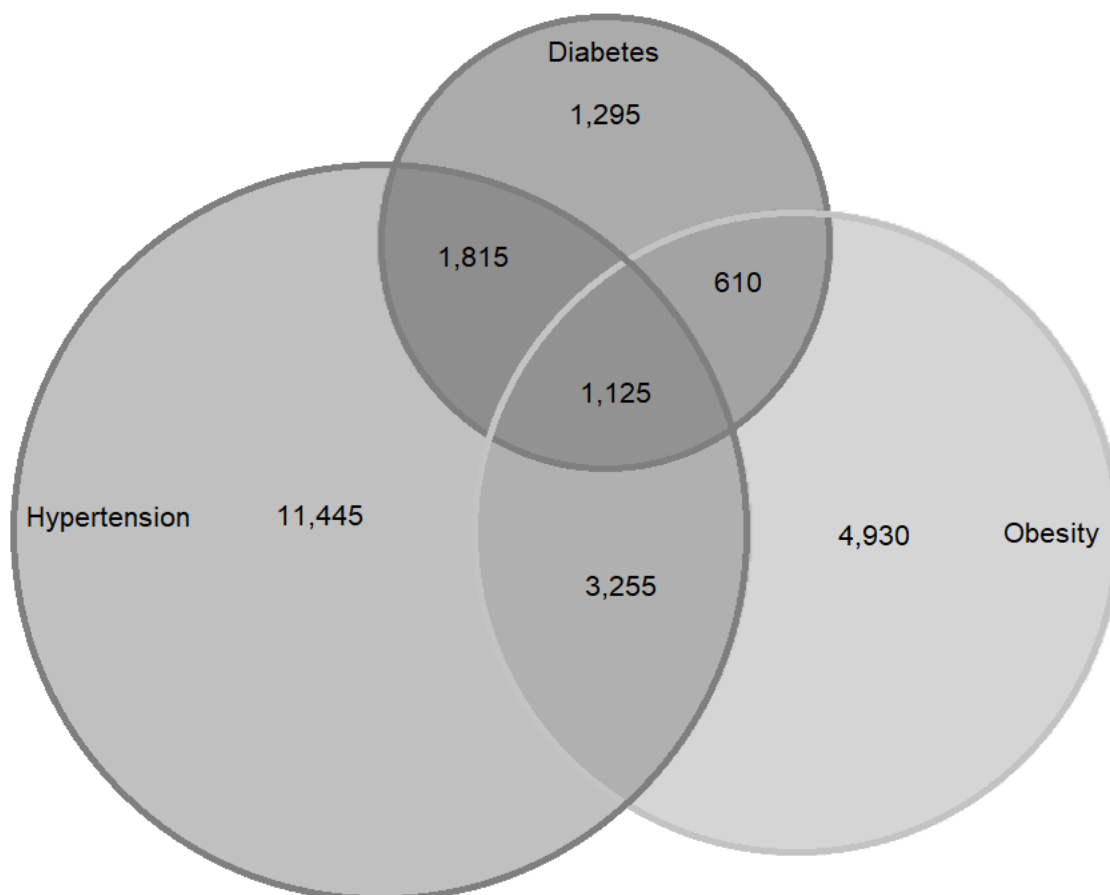The most commonly co-occurring triads of morbidities are shown in Table 3

- hypertension, diabetes and obesity were the most commonly occurring triad of diseases, being present in 1,125 people
- hypertension and diabetes also commonly co-occurred with coronary heart disease (in 505 people) and with chronic kidney disease (in 490 people)

Table 3. Count of patients with different combinations of co-occurring disease triads, top 10

Rank	Condition	Patients
1	Diabetes, Hypertension and Obesity	1,125
2	Coronary Heart Disease, Diabetes and Hypertension	505
3	Chronic Kidney Disease, Diabetes and Hypertension	490
4	Asthma, Hypertension and Obesity	440
5	Atrial Fibrillation, Chronic Kidney Disease and Hypertension	430
6	Coronary Heart Disease, Hypertension and Obesity	420
7	Chronic Kidney Disease, Hypertension and Obesity	400
8	Atrial Fibrillation, Heart Failure and Hypertension	390
9	Coronary Heart Disease, Chronic Kidney Disease and Hypertension	390
10	Atrial Fibrillation, Hypertension and Obesity	380

Figure 7. Most common occurring triad of disease (Hypertension, Obesity and Diabetes)

There has been some movement amongst the ranking of most common disease triads over the past 6 years. However, the same 12 disease triads have been the most commonly co-occurring in Jersey's population over time, each occurring in at least 250 patients at each year-end between 2016 and 2022.

Combinations of four conditions (quads)

The most commonly co-occurring quads of morbidities are shown in Table 4:

- coronary heart disease, diabetes, hypertension and obesity were the most commonly occurring quad of diseases, being present in over 165 people
- diabetes, hypertension and obesity also commonly co-occurred with chronic kidney disease (in 160 people)

Table 4. Count of patients with different combinations of co-occurring disease quads, top 10

Rank	Condition	Patients
1	Coronary Heart Disease, Diabetes, Hypertension and Obesity	165
2	Atrial Fibrillation, Chronic Kidney Disease, Heart Failure and Hypertension	160
3	Chronic Kidney Disease, Diabetes, Hypertension and Obesity	160
4	Coronary Heart Disease, Chronic Kidney Disease, Diabetes and Hypertension	145
5	Atrial Fibrillation, Coronary Heart Disease, Heart Failure and Hypertension	135
6	Atrial Fibrillation, Diabetes, Hypertension and Obesity	125
7	Atrial Fibrillation, Chronic Kidney Disease, Diabetes and Hypertension	120
8	Atrial Fibrillation, Diabetes, Heart Failure and Hypertension	120
9	Atrial Fibrillation, Coronary Heart Disease, Chronic Kidney Disease and Hypertension	115
10	Coronary Heart Disease, Chronic Kidney Disease, Heart Failure and Hypertension	115

Multi-morbidity by age

The number of morbidities people suffer from generally increases with age. The average age of someone who has one morbidity is 55 years, whereas the average age of those with 4 or more morbidities is 77 years (Table 5).

Table 5. Average age of people with 1, 2, 3 or 4+ morbidities

Number of Conditions	1	2	3	4+
Average Age (years)	55	65	71	77

Figure 8a shows the distribution of multi-morbidity with age (by five-year age bands), and Figure 8b shows this expressed as a proportion of the population within each age band. The data shows that:

- most people aged under 30 years do not suffer from any long-term conditions
- by age 65 over half of the population is suffering from <u>1 or more</u> long-term conditions
- by age 85 over half of the population is suffering from <u>2 or more</u> long-term conditions

Figure 8a. Number of long-term conditions by age; count of individual patients and b) proportion of population
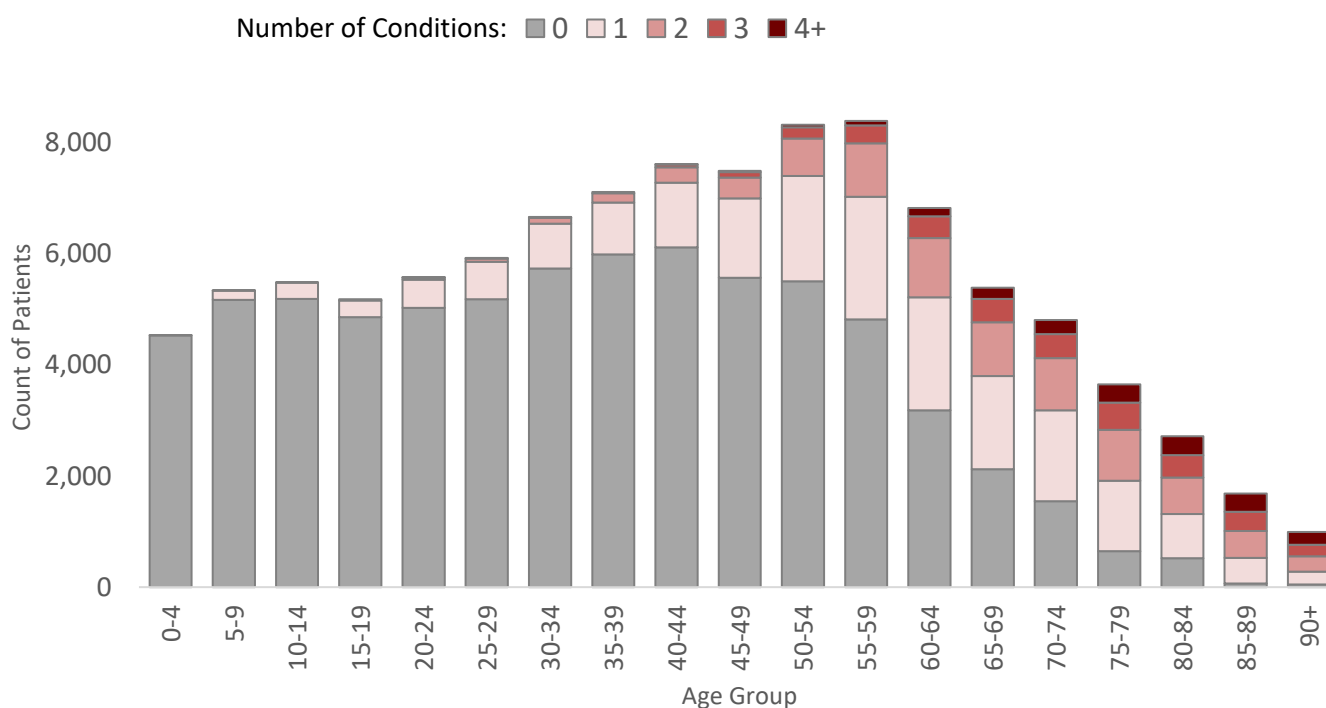
Figure 8b. Number of long-term conditions by age at year end 2022; proportion of population[6]
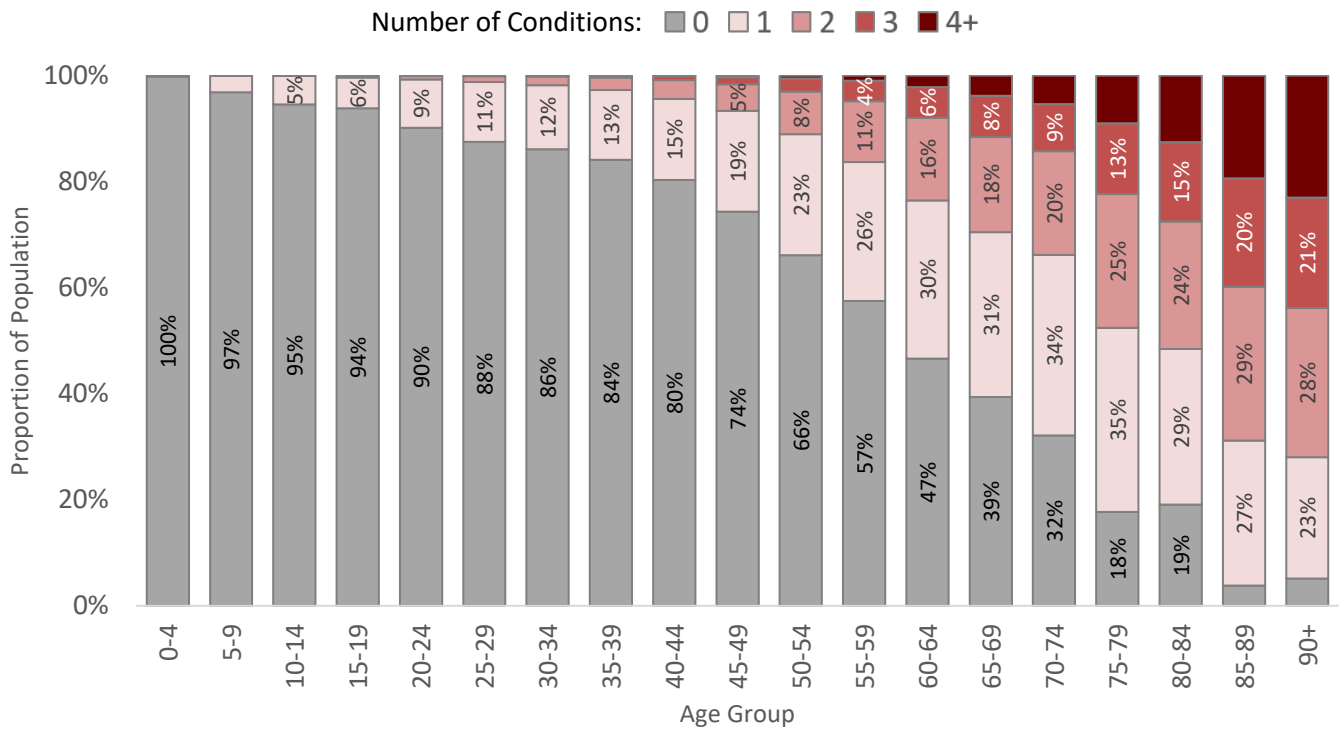
Overall, there has been a slight increase in the estimated proportion of the population living with multi-morbidity, from 11% in 2016 to 13% in 2022. This increase is mostly driven by an increase in the proportion of those aged 85 or over living with multi-morbidities, from 63% in 2016 to 70% in 2022 (Figure 9).

Figure 9. Proportion of Jersey's population[6] in different age bands with multiple morbidities (2 or more long term conditions) between 2016 and 2022

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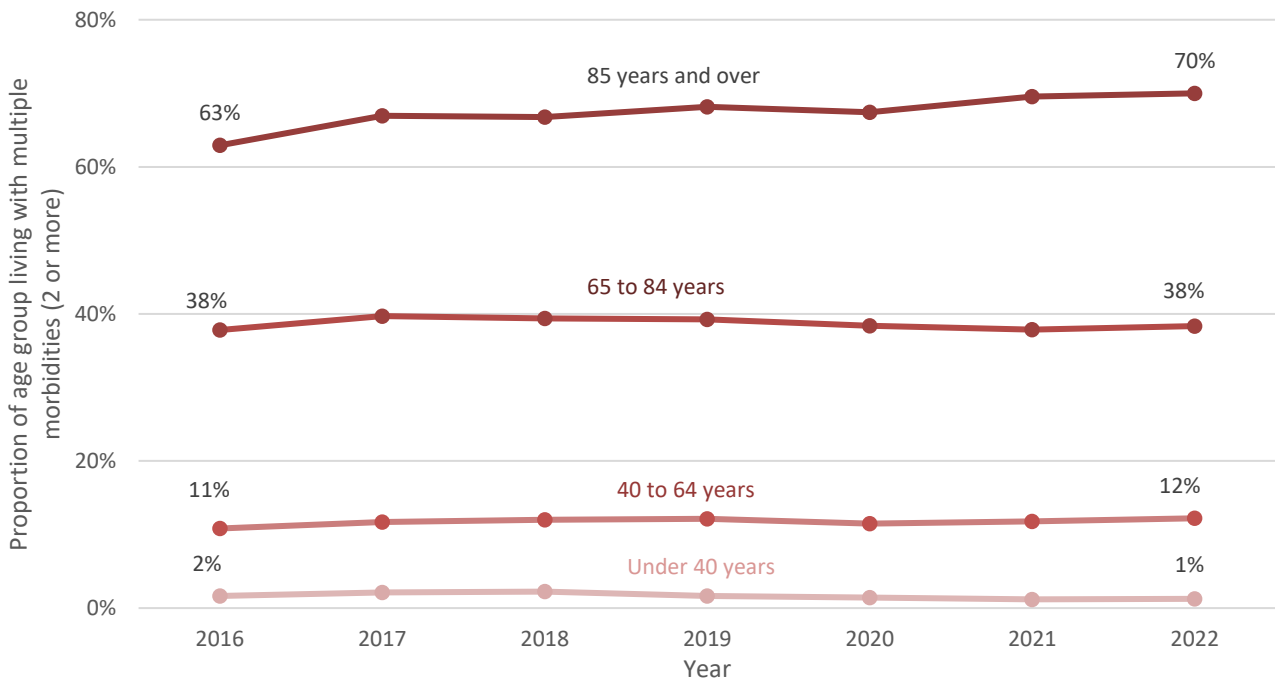
[6] Interim population estimates used – see Notes

Notes

Methods

The data used in this report is extracted from the General Practitioner Central Server (GPCS). The registers are calculated based on patients considered 'active' at year end – that is, any patient registered with a Jersey GP practice who had had a consultation within the previous five years, or who had registered with a GP surgery in the previous six months. Appendix 1 details the criteria used to identify patients on each of the 12 long-term conditions. The criteria are defined as per the Jersey Quality Improvement Framework (JQIF).

Patient counts below 5 are suppressed, and all counts are rounded to the nearest 5 throughout the report.

Disease combinations (e.g. pairs, triads, quads) are _inclusive,_ meaning for each combination _all patients_ with that set of morbidities is included regardless of whether they have other additional conditions.

For example, somebody with 3 conditions (obesity, hypertension and diabetes) would be counted in all 3 of the following disease pairs:

- Obesity and hypertension
- Hypertension and diabetes
- Diabetes and obesity

The number of possible disease pair combinations is **66**, for disease triad combinations is **220** and for disease quad combinations is **715**. Not all disease combinations are found amongst Jersey's population. Analysis for this report looked at all combinations, and the report summarises those which were found to be most commonly co-occurring.

Where figures are expressed as a proportion of the population, interim estimates for yearly population figures between 2011 and 2022 have been used as denominators, in lieu of official estimates being published by Statistics Jersey. The population estimates were produced by Public Health Intelligence; annual births and death numbers were used to interpolate between the 2011 and 2021 census figures. When official population estimates are published by Statistics Jersey for the 2011 to 2021 inter-census period, rates and population adjustments for the metrics presented in this report will be updated accordingly.

Appendix 1: Jersey Quality Improvement Framework (JQIF) disease register descriptions:

Code	Condition	Definition
AST001	Asthma	A register of patients with asthma, excluding patients with asthma who have been prescribed no asthma-related drugs in the preceding 12 months
AF007	Atrial fibrillation	A register of those with atrial fibrillation whose latest record of a CHA2DS2-VASc score is greater than 1, the number of patients who are currently treated with anti-coagulation therapy
CHD001	Coronary Heart Disease	A register of patients with coronary heart disease
CKD005	Chronic Kidney Disease	A register of patients aged 18 years or over with CKD with classification of categories G3a to G5 (previously stage 3 to 5)
COPD001	Chronic Obstructive Pulmonary Disease	A register of patients with COPD
DEM001	Dementia	A register of patients diagnosed with dementia
DM017	Diabetes mellitus	A register of all patients aged 17 or over with diabetes mellitus, which specifies the type of diabetes
HF001	Heart Failure	A register of patients with heart failure
HYP001	Hypertension	A register of patients with established hypertension
MH001	Mental Health	A register of people with schizophrenia, bipolar disorder and other psychoses and other patients on lithium therapy
OB002	Obesity	A register of patients aged 16 or over with a BMI greater than or equal to 30 in the preceding 12 months.
STIA001	Stroke and Transient Ischemic Attack	A register of patients with stroke and TIA

Appendix 2:

Appendix 2.1 shows numbers of patients on the long-term condition registers at year end over the last 6 years. Numbers are rounded to the nearest 5. Please note that slight changes in the register totals can occur as and when changes are made in the GP system (GPCS), and that such changes may not be accounted for as the data is held outside of Government of Jersey.

Note that crude changes in the overall number of patients on a given register may reflect overall changes in the Jersey's demographics, rather than an increase or decrease in the prevalence of the condition itself. Population normalisation will be carried out when updated population estimates for the period between the 2011 and the 2021 censuses become available[7]. Changes in the crude numbers of patients on a register may also reflect improvements in detection or treatment of conditions (e.g., as a result of awareness campaigns or population screening) and may not always indicate an improvement or worsening in the prevalence of the condition itself.

Appendix 2.1. Numbers of patients on the JQIF registers (data held in GPCS), at year end between 2016 and 2022. Patient numbers rounded to the nearest 5.

Condition	2016	2017	2018	2019	2020	2021	2022
Atrial Fibrillation (AF)	1,865	2,015	2,120	2,255	2,375	2,510	2,695
Asthma (AST)	5,595	5,555	5,570	5,625	6,985	5,725	6,055
Coronary Heart Disease (CHD)	2,550	2,620	2,675	2,770	2,830	2,890	2,915
Chronic Kidney Disease (CKD)	2,900	3,140	3,035	2,965	2,875	2,815	2,720
Chronic Obstructive Pulmonary Disease (COPD)	1,915	1,995	2,055	2,105	2,160	2,215	2,305
Dementia (DEM)	600	670	685	685	715	715	765
Diabetes (DIA)	3,705	3,840	4,015	4,165	4,415	4,670	4,840
Heart Failure (HF)	825	895	945	1,025	1,040	1,105	1,125
Hypertension (HYP)	15,525	15,870	16,275	16,610	16,880	17,380	17,635
Mental Health Problems (MH)		740	755	785	825	825	770
Obesity (OB)	9,740	10,570	10,900	10,790	8,455	9,380	9,915
Stroke and Transient Ischemic Attack (STIA)	1,515	1,540	1,590	1,650	1,730	1,780	1,850

Appendices 2.2, 2.3 and 2.4 show a complete list of all disease pairs, triads and quads that occurred in at least 125 people in Jersey at year end (2022).

Appendix 2.2. Pair groups (inclusive) containing over 125 patients, JQIF year end 2022

Rank	Condition	Patients
1	Obesity and Hypertension	4,380
2	Diabetes and Hypertension	2,940
3	Hypertension and Chronic Kidney Disease	1,970
4	Hypertension and Coronary Heart Disease	1,765
5	Obesity and Diabetes	1,735
6	Hypertension and Atrial Fibrillation	1,650
7	Asthma and Hypertension	1,380
8	Hypertension and Chronic Obstructive Pulmonary Disease	1,145
9	Hypertension and Stroke and Transient Ischemic Attack	1,140
10	Heart Failure and Heart Failure	1,125
11	Asthma and Obesity	1,030
12	Heart Failure and Hypertension	760
13	Coronary Heart Disease and Diabetes	700
14	Coronary Heart Disease and Obesity	610

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[7] Population estimates due to be published by Statistics Jersey in 2023

15	Chronic Kidney Disease and Diabetes	600
16	Heart Failure and Atrial Fibrillation	570
17	Chronic Obstructive Pulmonary Disease and Asthma	565
18	Atrial Fibrillation and Obesity	540
19	Atrial Fibrillation and Chronic Kidney Disease	535
20	Chronic Kidney Disease and Obesity	520
21	Atrial Fibrillation and Coronary Heart Disease	505
22	Chronic Kidney Disease and Coronary Heart Disease	490
23	Atrial Fibrillation and Diabetes	475
24	Dementia and Hypertension	465
25	Chronic Obstructive Pulmonary Disease and Obesity	420
26	Stroke and Transient Ischemic Attack and Atrial Fibrillation	405
27	Diabetes and Asthma	395
28	Heart Failure and Coronary Heart Disease	390
29	Heart Failure and Chronic Kidney Disease	375
30	Stroke and Transient Ischemic Attack and Diabetes	340
31	Stroke and Transient Ischemic Attack and Chronic Kidney Disease	325
32	Chronic Obstructive Pulmonary Disease and Coronary Heart Disease	320
33	Chronic Obstructive Pulmonary Disease and Diabetes	315
34	Heart Failure and Diabetes	310
35	Stroke and Transient Ischemic Attack and Coronary Heart Disease	310
36	Stroke and Transient Ischemic Attack and Obesity	280
37	Chronic Obstructive Pulmonary Disease and Chronic Kidney Disease	270
38	Heart Failure and Obesity	265
39	Atrial Fibrillation and Chronic Obstructive Pulmonary Disease	240
40	Chronic Kidney Disease and Asthma	220
41	Coronary Heart Disease and Asthma	215
42	Atrial Fibrillation and Asthma	205
43	Heart Failure and Chronic Obstructive Pulmonary Disease	200
44	Heart Failure and Stroke and Transient Ischemic Attack	190
45	Stroke and Transient Ischemic Attack and Chronic Obstructive Pulmonary Disease	185
46	Dementia and Chronic Kidney Disease	175
47	Mental Health Problems and Hypertension	155
48	Mental Health Problems and Obesity	155
49	Dementia and Stroke and Transient Ischemic Attack	150
50	Heart Failure and Asthma	140
51	Dementia and Atrial Fibrillation	135
52	Stroke and Transient Ischemic Attack and Asthma	130
53	Dementia and Diabetes	130
54	Dementia and Coronary Heart Disease	125

Patient counts rounded to the nearest 5

Appendix 2.3. Triad groups containing over 125 patients, JQIF year end 2022

Rank	Condition	Patients
1	Diabetes, Hypertension and Obesity	1125
2	Coronary Heart Disease, Diabetes and Hypertension	505
3	Chronic Kidney Disease, Diabetes and Hypertension	490
4	Asthma, Hypertension and Obesity	435
5	Atrial Fibrillation, Chronic Kidney Disease and Hypertension	425
6	Coronary Heart Disease, Hypertension and Obesity	420
7	Chronic Kidney Disease, Hypertension and Obesity	400
8	Atrial Fibrillation, Heart Failure and Hypertension	390
9	Coronary Heart Disease, Chronic Kidney Disease and Hypertension	385
10	Atrial Fibrillation, Hypertension and Obesity	380
11	Atrial Fibrillation, Diabetes and Hypertension	360
12	Atrial Fibrillation, Coronary Heart Disease and Hypertension	350
13	Chronic Kidney Disease, Heart Failure and Hypertension	300
14	Atrial Fibrillation, Hypertension and Stroke and Transient Ischemic Attack	285
15	Coronary Heart Disease, Heart Failure and Hypertension	275
16	Asthma, Chronic Obstructive Pulmonary Disease and Hypertension	270
17	Chronic Kidney Disease, Hypertension and Stroke and Transient Ischemic Attack	260
18	Chronic Obstructive Pulmonary Disease, Hypertension and Obesity	260
19	Asthma, Diabetes and Hypertension	250
20	Diabetes, Hypertension and Stroke and Transient Ischemic Attack	245
21	Chronic Obstructive Pulmonary Disease, Diabetes and Hypertension	240
22	Coronary Heart Disease, Hypertension and Stroke and Transient Ischemic Attack	235
23	Diabetes, Heart Failure and Hypertension	230
24	Coronary Heart Disease, Diabetes and Obesity	215
25	Coronary Heart Disease, Chronic Obstructive Pulmonary Disease and Hypertension	210
26	Hypertension, Obesity and Stroke and Transient Ischemic Attack	205
27	Atrial Fibrillation, Chronic Kidney Disease and Heart Failure	200
28	Chronic Kidney Disease, Chronic Obstructive Pulmonary Disease and Hypertension	190
29	Chronic Kidney Disease, Diabetes and Obesity	190
30	Heart Failure, Hypertension and Obesity	190
31	Atrial Fibrillation, Coronary Heart Disease and Heart Failure	180
32	Asthma, Diabetes and Obesity	175
33	Atrial Fibrillation, Diabetes and Obesity	170
34	Coronary Heart Disease, Chronic Kidney Disease and Diabetes	170
35	Atrial Fibrillation, Chronic Obstructive Pulmonary Disease and Hypertension	165
36	Atrial Fibrillation, Diabetes and Heart Failure	155
37	Asthma, Chronic Kidney Disease and Hypertension	155
38	Coronary Heart Disease, Chronic Kidney Disease and Heart Failure	150
39	Heart Failure, Hypertension and Stroke and Transient Ischemic Attack	145
40	Atrial Fibrillation, Heart Failure and Obesity	145
41	Chronic Obstructive Pulmonary Disease, Heart Failure and Hypertension	140
42	Atrial Fibrillation, Coronary Heart Disease and Chronic Kidney Disease	140
43	Atrial Fibrillation, Chronic Kidney Disease and Diabetes	135
44	Chronic Kidney Disease, Dementia and Hypertension	135
45	Asthma, Coronary Heart Disease and Hypertension	130
46	Coronary Heart Disease, Diabetes and Heart Failure	130
47	Asthma, Chronic Obstructive Pulmonary Disease and Obesity	125

*Patient counts rounded to the nearest 5

Appendix 2.4. Quad groups containing over 125 patients, JQIF year end 2022

Rank	Condition	Patients
1	Coronary Heart Disease, Diabetes, Hypertension and Obesity	165
2	Atrial Fibrillation, Chronic Kidney Disease, Heart Failure and Hypertension	160
3	Chronic Kidney Disease, Diabetes, Hypertension and Obesity	160
4	Coronary Heart Disease, Chronic Kidney Disease, Diabetes and Hypertension	145
5	Atrial Fibrillation, Coronary Heart Disease, Heart Failure and Hypertension	135
6	Atrial Fibrillation, Diabetes, Hypertension and Obesity	125

*Patient counts rounded to the nearest 5