

4 Multimorbidity

4.1 Introduction

Multimorbidity is a term used to describe the presence of more than one long-term health condition. The number of people affected by multimorbidity is rising rapidly nationally, linked to increased life expectancy and growing prevalence of preventable risk factors (such as obesity). For example, research based on the English Longitudinal Study of Ageing, found that the number of people over the age of 50 with multiple conditions recorded rose from 32% to 43% over the decade from 2002/13. [1] However, it is worth noting that there is no single definition of multimorbidity, as discussed below.

Multimorbidity is more common in older people and is linked to frailty (see Box 1) – for more information on frailty, see the ‘Older people’ section of this JSNA chapter. However, there are significant numbers of younger people affected by multimorbidity (who would not necessarily be defined as ‘frail’), particularly those living in socio-economically deprived circumstances.

People with multiple conditions have a particularly high need for health services – for example, alongside socio-economic deprivation, multimorbidity is considered to be a major risk factor for use of emergency health services in East London. [2] Rates of GP consultation are also high in this group – a review of data from across England found that the majority of GP consultations were for people with multiple conditions. [3]

Multimorbidity is increasingly recognised as a specific issue requiring a holistic response from health and care services, rather than treating each condition separately. In particular, the National Institute for Health and Care Excellence (NICE) recommends that care should be optimised by reducing the need for multiple appointments, unplanned care and polypharmacy (see Box 1 for definition). [4]

Box 1: Definitions used in this section

Frailty – there is no single medical definition for frailty; however, it is characterised by unintentional weight loss, loss of muscle mass and strength, exhaustion and loss of mental capacity. It is often associated with ageing. [5]

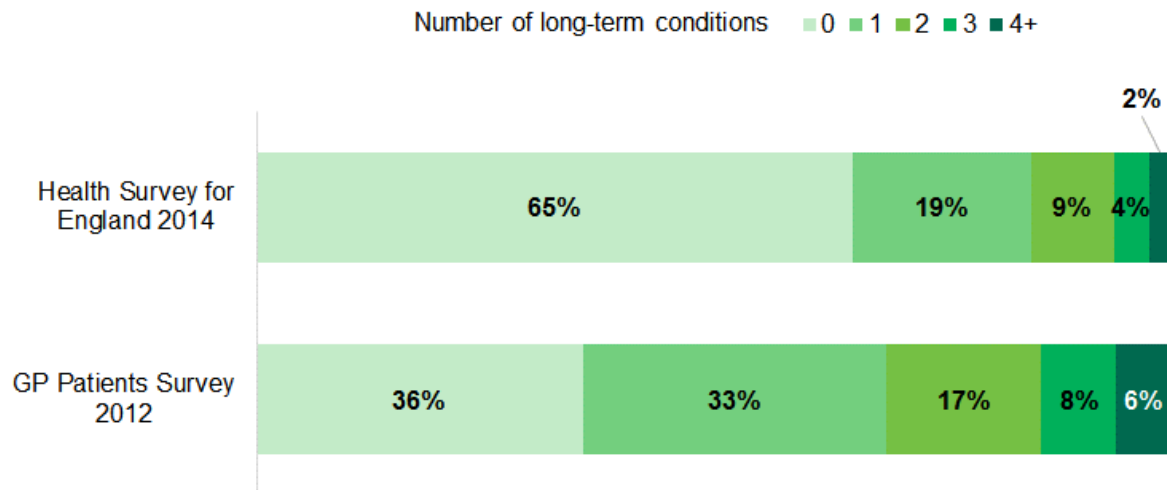
Long-term conditions – conditions that cannot at present be cured, though they can be controlled by medication or other care. Examples include diabetes, heart disease and chronic obstructive pulmonary disease (COPD).

Multimorbidity – for the purpose of the JSNA, this is defined as the presence of two or more long-term health conditions in the same person.

Polypharmacy – the concurrent use of multiple medications by one individual. When taking multiple medicines, the absolute benefit of each additional medicine is likely to reduce, while the risk of harm is likely to increase. Rather than being defined by a specific number of medications, it is considered that polypharmacy can be ‘appropriate’ or ‘inappropriate’. [6] [7]

Despite the increasing concern about multimorbidity, there is no universally agreed definition. Estimated prevalence of multimorbidity in the wider population varies significantly depending on the definition used, as well as differing samples and methodologies – an example of this is provided in Figure 1 which shows data from two different surveys.

Figure 1: Percentage of respondents in the GP Patient Survey (age 16+, 2012) and the Health Survey for England (age 16+, 2014), by number of long-term conditions



Source: Aiden, 2018. [8] Results are weighted to the populations.

The proportion of the population affected by multimorbidity depends on how many conditions are included – it is generally agreed that having two or more conditions constitutes multimorbidity. [9] [10]

NICE guidelines propose that the definition should be based on the presence of two or more of the following long-term health conditions: [4]

- defined physical and mental health conditions (e.g. diabetes, schizophrenia)
- ongoing conditions (e.g. learning disability)
- symptom complexes (e.g. frailty, chronic pain)
- sensory impairment (e.g. sight loss, hearing loss)
- alcohol and substance misuse.

Local data presented in this section come close to this NICE definition by including the list of conditions shown in Box 2.

Box 2: Conditions counted in multimorbidity data definition used in this section

Active asthma; atrial fibrillation; alcohol problems; anxiety/low mood/depression; blindness/low vision; cancer; coronary heart disease (CHD); chronic kidney disease (CKD); chronic obstructive pulmonary disease (COPD); deaf affected/profoundly deaf; dementia; diabetes; epilepsy; glaucoma; heart failure; HIV or viral hepatitis; high cholesterol; hypertension; inflammatory bowel disease; learning disability; liver disease; motor neurone disease; multiple sclerosis;

muscular dystrophy; musculoskeletal pain (specifically back pain or gout); osteoporosis; Parkinson's disease; peripheral arterial disease (PAD); rheumatoid arthritis; severe mental illness; sickle cell disease; stroke/transient ischemic attack (TIA); substance misuse disorders; and thyroid disorders.

These conditions generally use definitions from the Quality Outcomes Framework (the annual reward and incentive programme to promote GP practice achievement of results in particular areas), although active asthma is defined as currently receiving medications, and others are based on definitions developed by the Clinical Effectiveness Group (CEG), part of the Blizard Institute at Queen Mary University of London.

Within multimorbidity, there are differing groups or 'clusters' of conditions (see Table 2 in Section 4.3.1). It is likely that patients within different multimorbidity clusters (i.e. with different combinations of conditions) experience differing individual prognoses, impact and healthcare utilisation. [9] A summary of research discussing ways to cluster multimorbidities is included in a 2018 report commissioned by the Richmond Group of Charities. [8]

4.2 Causes and risk factors

The risk factors for multimorbidity are primarily linked to risk factors for individual conditions – see the 'Lifestyle and behaviour' and 'Adult health' chapters of the JSNA for information on risk factors for various long-term conditions. As risk factors for individual long-term conditions accumulate over time, and are generally linked to lower socio-economic status, older age and deprivation are associated with higher prevalence of multimorbidity. At a population level, the growth in prevalence of multimorbidity is primarily associated with increasing life expectancy. [9]

A large scale study in 2016 identified physical activity as a protective factor in preventing the occurrence of multiple conditions in older people. [1]

4.3 Local data and unmet need

4.3.1 Numbers affected – known to services

Table 1 shows that around a quarter of adults in Hackney (24%) and the City of London (27%) have two or more conditions recorded, based on the list of conditions in Box 2 (Section 4.1). The rate of multimorbidity in each age group is slightly lower in City of London residents, although the overall rate is higher due to the older population.

Table 1: Number of adults in Hackney and the City with GP-recorded multimorbidity, by age band (age 18+, 2017)

AGE	City of London			Hackney		
	Total residents	Number with 2+ conditions	% with 2+ conditions	Total residents	Number with 2+ conditions	% with 2+ conditions
18–24	480	9	2%	23,563	725	3%
25–39	2,280	128	6%	100,158	7,273	7%
40–54	1,598	392	25%	55,583	17,736	32%
55–64	794	412	52%	21,542	12,784	59%
65–74	618	402	65%	10,904	8,219	75%
75–84	304	222	73%	6,010	5,175	86%
85+	129	112	87%	2,114	1,917	91%
Total	6,203	1,677	27%	219,874	53,829	24%

Source: Extracted from the GP register by CEG, Blizard Institute, April 2017. Data cover Hackney and the City residents registered with a GP in Hackney, the City of London, Tower Hamlets and Newham.

The most common conditions were musculoskeletal pain (20% of the total population), high cholesterol (13%) and hypertension (9%) – see Table 2. For more information on these conditions individually, see the ‘Musculoskeletal disease’ and ‘Cardiovascular disease’ sections of the ‘Adult health’ JSNA chapter.

Figure 2 shows the average number of additional conditions in adults with specific long-term health problems. People with health problems associated with older age (such as cardiovascular disease and dementia) have a greater number of additional conditions. People with sickle cell disease or alcohol problems, which affect a younger age group on average, tend to have fewer additional conditions recorded.

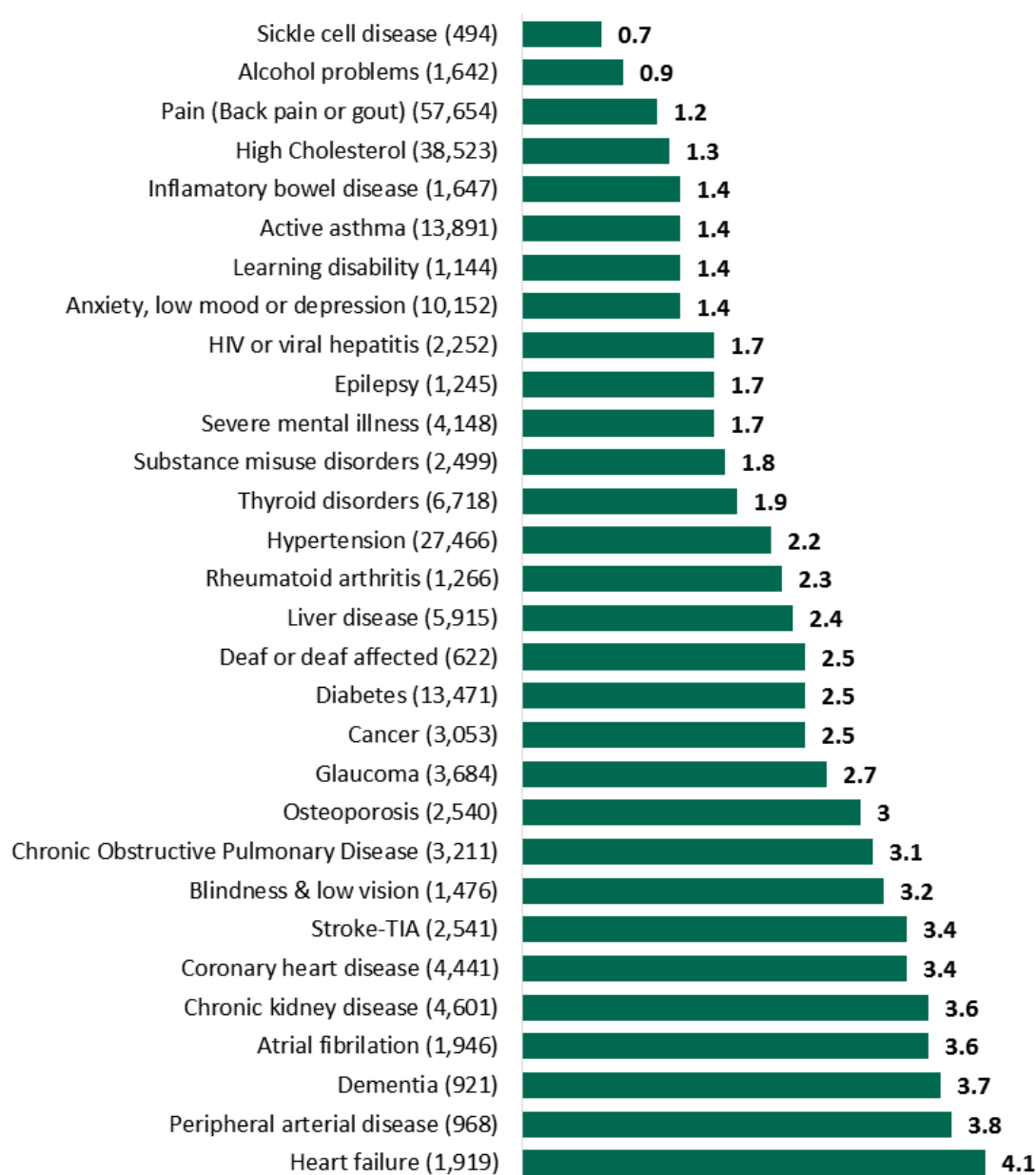
Other clusters of conditions are evident in Table 2 (a larger version of this table is available on request). For example, as would be expected, comorbidity of cardiovascular conditions is quite common. Other specific clusters include epilepsy and learning disability, and asthma and COPD.

For more information on people in Hackney and the City of London who have physical illnesses along with mental health conditions, see the ‘Mental health and substance misuse’ chapter of the JSNA.

Conditions are often related, with one condition increasing the likelihood of another developing – for example, diabetes and chronic kidney disease (CKD). Similarly, many long-term health conditions can increase the likelihood of painful conditions or depression. Other conditions share common risk factors – for example, obesity increases the risk of developing type 2 diabetes, heart disease and cancer. In some cases, there may be no connection between the development of two particular long-term conditions in the same individual.

It is likely that patients within different multimorbidity ‘clusters’ (i.e. with different combinations of conditions) have differing individual prognoses, impact, and healthcare utilisation. [9] A summary of research discussing ways to cluster multimorbidities is included in Aiden (2018). [8]

Figure 2: Average number of additional long-term conditions in residents of Hackney and the City, by specific condition (all ages, 2017)



Source: Extracted from the GP register by CEG, Blizard Institute, April 2017. Data cover Hackney and the City residents registered with a GP in Hackney, the City of London, Tower Hamlets and Newham.
 Note: Number of patients is shown in brackets.

Table 2: Proportion of residents in Hackney and the City with GP-recorded multimorbidity, by individual condition (all ages, 2017)

	Anxiety / low mood / depression	Severe mental illness	Dementia	Learning disability	Epilepsy	Substance misuse disorders	HIV or viral hepatitis	Alcohol problems	Liver disease	Active asthma	COPD	Cancer	Pain (Back pain or gout)	Rheumatoid arthritis	Osteoporosis	Inflammatory Bowel Disease	Thyroid disorders	Sickle cell disease	Diabetes	Atrial fibrillation	CHD	CKD	Heart failure	PAD	Stroke-TIA	Hypertension	High Cholesterol	Deaf affected / profoundly deaf	Blindness / low vision	Glaucoma	NONE OF THESE CONDITIONS
Anxiety / low mood / depression		4	0	1	1	4	2	2	6	11	3	2	40	1	2	1	5	0	7	1	2	2	1	1	1	13	25	0	1	2	34
Severe mental illness	9		1	4	2	7	2	1	6	7	3	2	31	1	1	1	5	0	15	1	3	4	1	0	2	21	32	0	1	3	23
Dementia	5	6		1	3	1	1	0	4	8	7	9	47	3	17	1	9	0	34	10	22	30	11	4	21	68	27	5	8	15	2
Learning disability	5	13	1		13	1	1	0	3	8	1	1	16	0	1	1	5	0	11	1	1	3	1	0	1	13	24	5	2	2	35
Epilepsy	8	6	2	12		3	2	1	5	11	4	2	30	0	4	1	5	0	8	2	4	4	2	1	8	18	26	1	1	3	29
Substance misuse disorders	18	12	0	1	2		5	2	17	14	8	2	37	1	2	0	4	0	6	1	3	2	1	1	1	13	22	0	1	1	23
HIV or viral hepatitis	8	4	0	1	1	5		1	45	6	2	2	33	0	2	1	2	0	8	1	2	3	1	0	2	17	22	0	1	2	22
Alcohol problems	10	3	0	0	1	4	1		4	7	3	1	19	0	0	0	1	0	4	1	2	1	1	0	1	10	16	0	0	1	53
Liver disease	10	4	1	1	1	7	17	1		11	6	3	49	1	3	1	6	0	23	2	6	5	2	2	3	34	32	1	2	4	10
Active asthma	8	2	1	1	1	2	1	1	5		6	2	35	1	2	1	5	0	9	1	4	3	2	1	2	19	22	1	1	2	41
COPD	8	4	2	1	2	7	2	1	11	28		8	55	3	9	1	9	0	21	7	18	12	9	6	7	46	33	1	4	6	5
Cancer	6	2	3	0	1	2	2	1	7	8	8		45	2	7	1	7	0	21	5	10	11	5	3	6	44	30	1	3	7	15
Pain (Back pain or gout)	7	2	1	0	1	2	1	1	5	9	3	2		1	2	1	5	0	11	2	4	4	2	1	2	22	27	0	1	3	42
Rheumatoid arthritis	7	2	2	0	0	1	1	0	6	11	6	4	42		12	1	9	0	15	4	9	10	4	2	4	35	30	1	2	7	21
Osteoporosis	6	2	6	1	2	2	2	0	8	13	11	8	56	6		3	14	0	17	7	11	14	7	3	7	47	38	2	6	6	6
Inflammatory Bowel Disease	6	1	1	0	0	1	1	0	4	7	2	2	28	1	4		3	0	6	1	4	4	1	1	2	13	18	0	1	2	46
Thyroid disorders	7	3	1	1	1	1	1	0	5	10	4	3	42	2	5	1		0	14	4	6	8	3	1	3	29	33	1	2	4	24
Sickle cell disease	4	2	0	1	0	0	1	0	3	4	0	1	19	0	1	1	1		3	0	1	3	1	0	4	9	6	1	1	2	61
Diabetes	6	5	2	1	1	1	1	1	10	10	5	5	47	1	3	1	7	0		4	13	15	6	3	6	64	21	1	4	8	8
Atrial fibrillation	4	2	5	0	1	1	1	1	6	10	11	9	50	2	9	1	12	0	28		27	24	28	5	18	68	21	1	6	8	5
CHD	6	3	5	0	1	2	1	1	8	12	13	7	54	3	7	1	9	0	39	12		22	8	11	66	20	2	5	8	4	
CKD	4	4	6	1	1	1	1	0	7	10	8	7	52	3	8	1	12	0	45	10	21		15	6	12	82	26	2	6	11	1
Heart failure	5	3	5	1	1	1	1	1	7	13	16	8	55	2	9	1	11	0	42	29	47	36		9	15	73	20	2	7	10	2
PAD	7	2	4	1	1	3	1	1	9	11	20	9	54	2	7	1	8	0	41	10	36	28	17		14	69	22	2	5	10	4
Stroke-TIA	6	4	8	1	4	1	1	1	7	10	9	8	48	2	7	1	9	1	34	14	19	21	11	5		70	23	1	5	9	4
Hypertension	5	3	2	1	1	1	1	1	7	9	5	5	47	2	4	1	7	0	31	5	11	14	5	2	6		35	1	3	7	10
High Cholesterol	7	3	1	1	1	1	1	1	5	8	3	2	40	1	3	1	6	0	7	1	2	3	1	1	1	25		0	1	3	31
Deaf affected / profoundly deaf	7	3	7	9	2	1	1	1	6	12	5	6	46	2	8	1	8	1	18	4	13	13	5	3	6	38	26		5	6	19
Blindness / low vision	5	3	5	1	1	1	2	0	7	10	9	7	50	2	10	1	9	0	38	8	14	19	9	3	9	59	28	2		16	6
Glaucoma	5	3	4	1	1	1	1	1	6	9	5	6	48	2	4	1	7	0	30	4	10	14	5	3	6	55	30	1	6		11
POPULATION PREVALENCE	4	1	0	0	0	1	1	1	2	5	1	1	20	0	1	1	2	0	5	1	2	2	1	0	1	9	13	0	1	1	61
NUMBER (total = 289,993)	10,152	4,148	921	1,144	1,245	2,499	2,252	1,642	5,915	13,891	3,211	3,053	57,654	1,266	2,540	1,647	6,718	494	13,471	1,946	4,441	4,601	1,919	968	2,541	27,466	38,523	622	1,476	3,684	175,840

Source: Extracted from the GP register by CEG, Blizard Institute, April 2017. Data cover Hackney and the City residents registered with a GP in Hackney, the City of London, Tower Hamlets and Newham.

4.3.2 Unmet need

Research carried out by the Clinical Effectiveness Group at Queen Mary University, published in 2018 showed that multimorbidity is a key predictor of attendance at accident and emergency (A&E) services in Newham, Tower Hamlets, Hackney and the City of London. [2] For example, A&E attendance rates among people with four or more conditions are six times higher compared to ‘healthy’ people (i.e. with no long-term condition). [2]

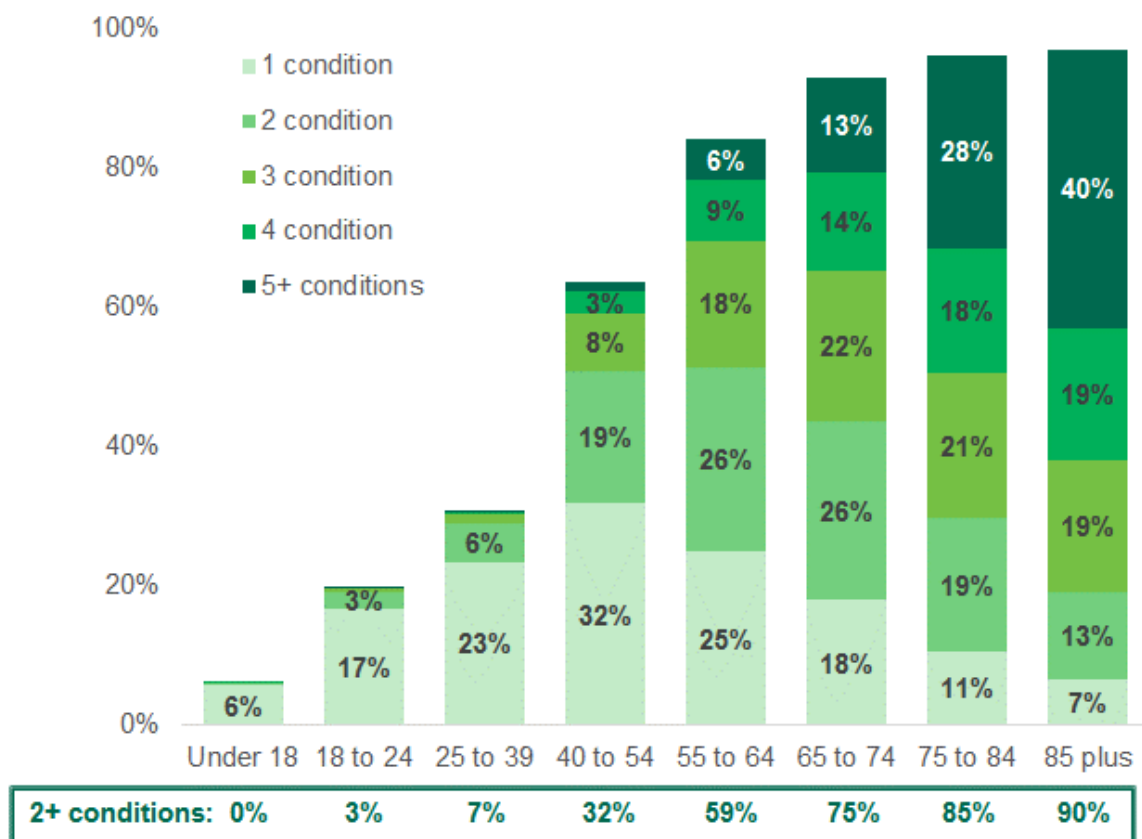
The high use of emergency services among people with multimorbidity suggests a potential opportunity to better manage these patients in primary and planned care services. Rates of GP attendance are also higher among this patient group. [2]

4.4 Inequalities

4.4.1 Age

The proportion of residents with multiple long-term conditions increases with age, as does the number of conditions overall (see Figure 33). Rates of multimorbidity are higher among older people in particular, with 59% affected by age 55–64.

Figure 3: Percentage of residents in Hackney and the City with GP-recorded long-term conditions, by age and number of conditions (all ages, 2017)



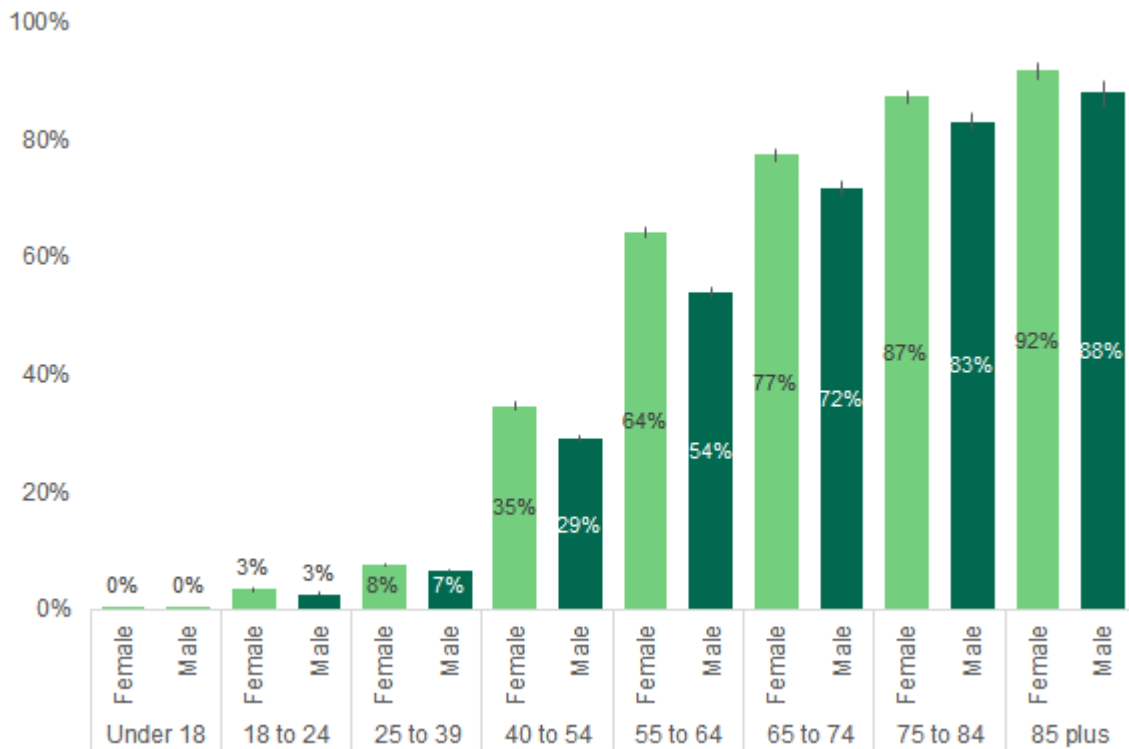
Source: Extracted from the GP register by CEG, Blizard Institute, April 2017. Data cover Hackney and the City residents registered with a GP in Hackney, the City of London, Tower Hamlets and Newham.

4.4.2 Gender

Local data show that, in common with other research, rates of multimorbidity are higher in women in Hackney and the City (see Figure 4). [11]

Much of the difference in gender identified in local data is due to higher recorded prevalence among females of the two most common conditions – high cholesterol and pain. However, underlying prevalence of high cholesterol related morbidity is likely to be higher in males than females. [12] Similarly, while local data show that hypertension is reported with similar frequency in males and females, again underlying rates would be expected to be higher in males. [13] This suggests that the definition of multimorbidity used here may be under-recording prevalence among men in Hackney and the City.

Figure 4: Percentage of adult residents in Hackney and the City with two or more health conditions as recorded by their GP, by age and gender (age 18+, 2017)



Source: Extracted from the GP register by CEG, Blizard Institute, April 2017. Data cover Hackney and the City residents registered with a GP in Hackney, the City of London, Tower Hamlets and Newham.

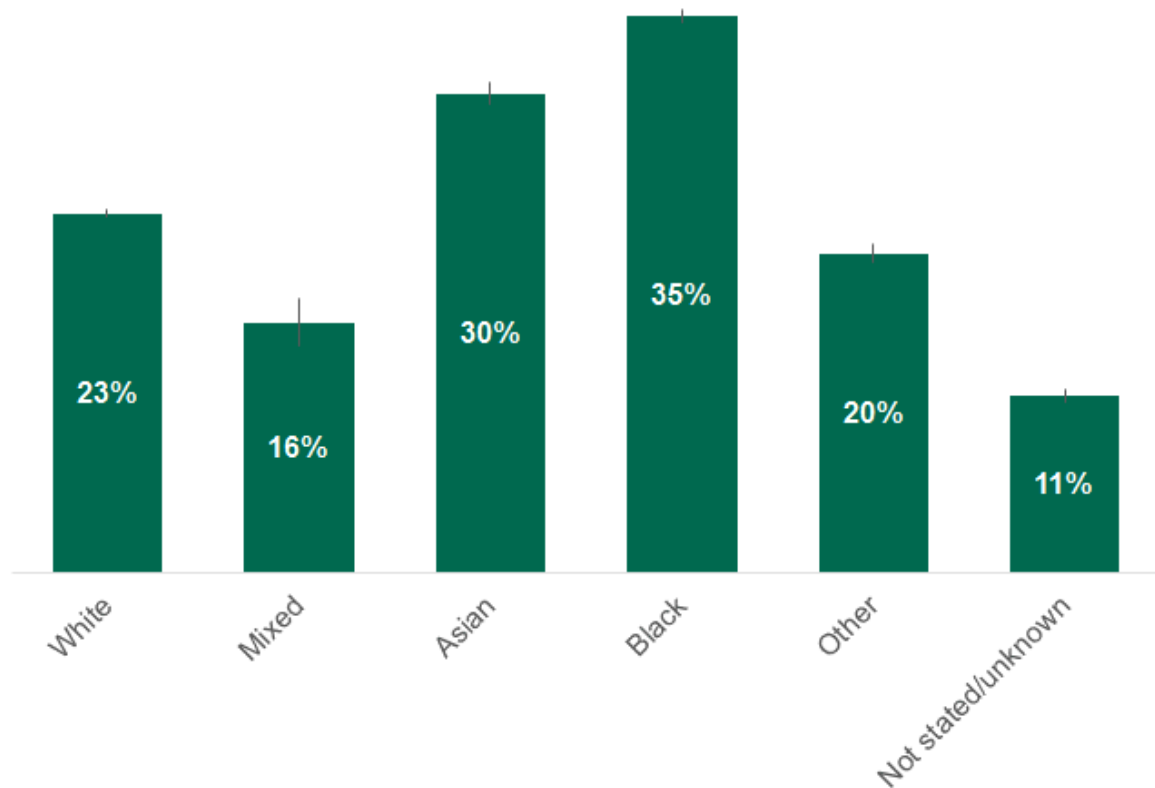
4.4.3 Ethnicity

Age-specific rates of multimorbidity are generally highest in people of Black ethnicity in Hackney and the City of London (see Figure 5). Rates are lower in people of Asian ethnicity, and lower still in people recorded by their GP as White. This is likely to reflect the older age profile of the Black population in Hackney.

In the 40–64 year old age group in particular, rates of multimorbidity are highest among people of Asian ethnicity. This is generally in line with the age-standardised rate of long-term limiting illness reported in the 2011 Census – rates in Hackney were lowest in those who stated they were White British, and highest in those who stated they were Asian. [14]

It is likely that patients who have an unclassified/unrecorded ethnicity have had less contact with their GP overall, which may explain the relatively low rates of recorded multimorbidity in this group.

Figure 5: Percentage of adult residents in Hackney and the City with two or more health conditions as recorded by their GP, by ethnicity (age 18+, 2017)



Source: Extracted from the GP register by CEG, Blizard Institute, April 2017. Data cover Hackney and the City residents registered with a GP in Hackney, the City of London, Tower Hamlets and Newham.

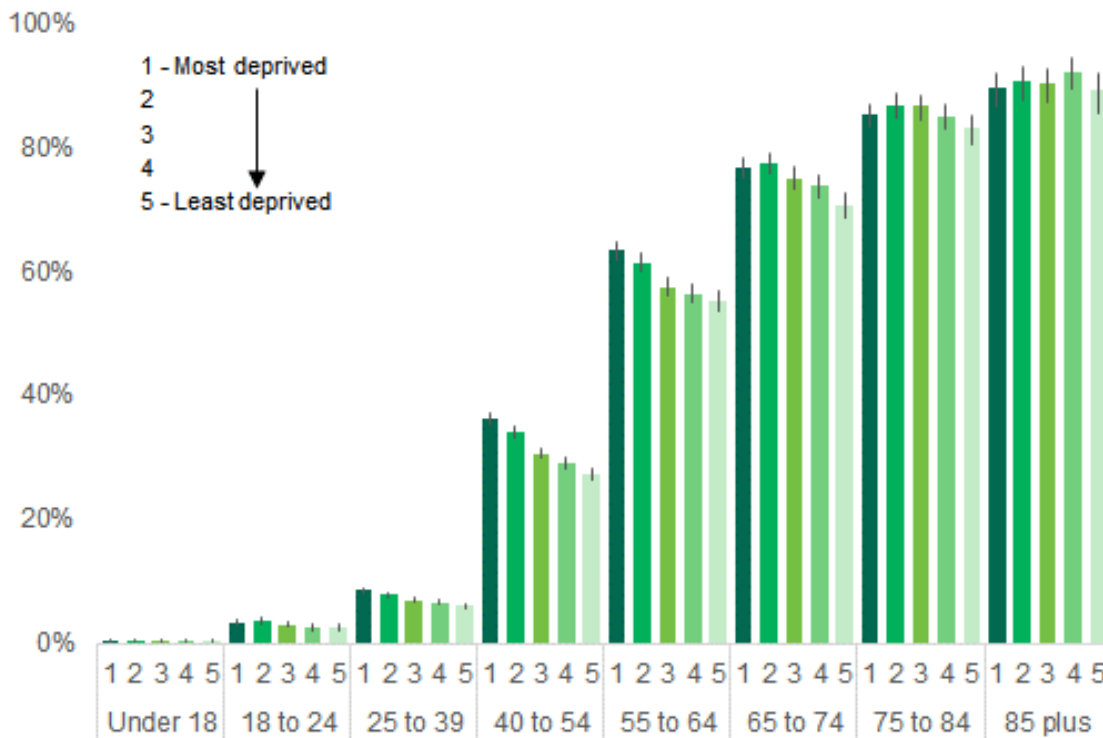
4.4.4 Disability

Additional long-term conditions affecting people with learning disability, severe mental illness and sensory impairments (blindness and low vision, deaf or deaf affected) are reported in Figure 2 and Table 2. These residents are affected by an average of 1.4 (learning disability), 1.7 (severe mental illness), 2.5 (deaf or deaf affected) and 3.2 (blind or low vision) additional conditions – this compares with an average of 1.8 additional conditions in other people with a long-term condition.

4.4.5 Socio-economic disadvantage

Age-specific rates of multimorbidity are generally highest in adults who live in the most socio-economically deprived parts of Hackney and the City, although these patterns generally disappear among the oldest age groups (see Figure 5). This trend is apparent in most individual conditions, and is also evident in national research. [11]

Figure 6: Percentage of residents in Hackney and the City with two or more health conditions as recorded by their GP, by age and socio-economic deprivation (all ages, April 2017)



Source: Extracted from the GP register by CEG, Blizard Institute, April 2017. Data cover Hackney and the City residents registered with a GP in Hackney, the City of London, Tower Hamlets and Newham. Note: Deprivation is defined using the Index of Multiple Deprivation (IMD). IMD is a measure of relative deprivation for small areas that combines 37 separate indicators, each reflecting a different aspect of deprivation experienced by individuals living in an area. Deprivation groupings are reported from 1 (most deprived) to 5 (least deprived). [15]

4.4.6 Location with Hackney and the City

Rates of multimorbidity in Hackney and the City are strongly associated with age in particular, as well as socio-economic deprivation. It is therefore likely to be more prevalent in areas with older and more deprived populations such as in the south east of Hackney. In the City of London, socioeconomic deprivation is relatively high in the Portsoken area, though other parts of the City have older populations. For further information, see the Hackney Ward Health and Wellbeing Profiles.

4.5 Comparisons with other areas and over time

Comparative data on multimorbidity are not available.

4.6 Evidence and good practice

See other relevant sections of the JSNA for evidence and good practice relevant to the prevention and management of specific long-term conditions.

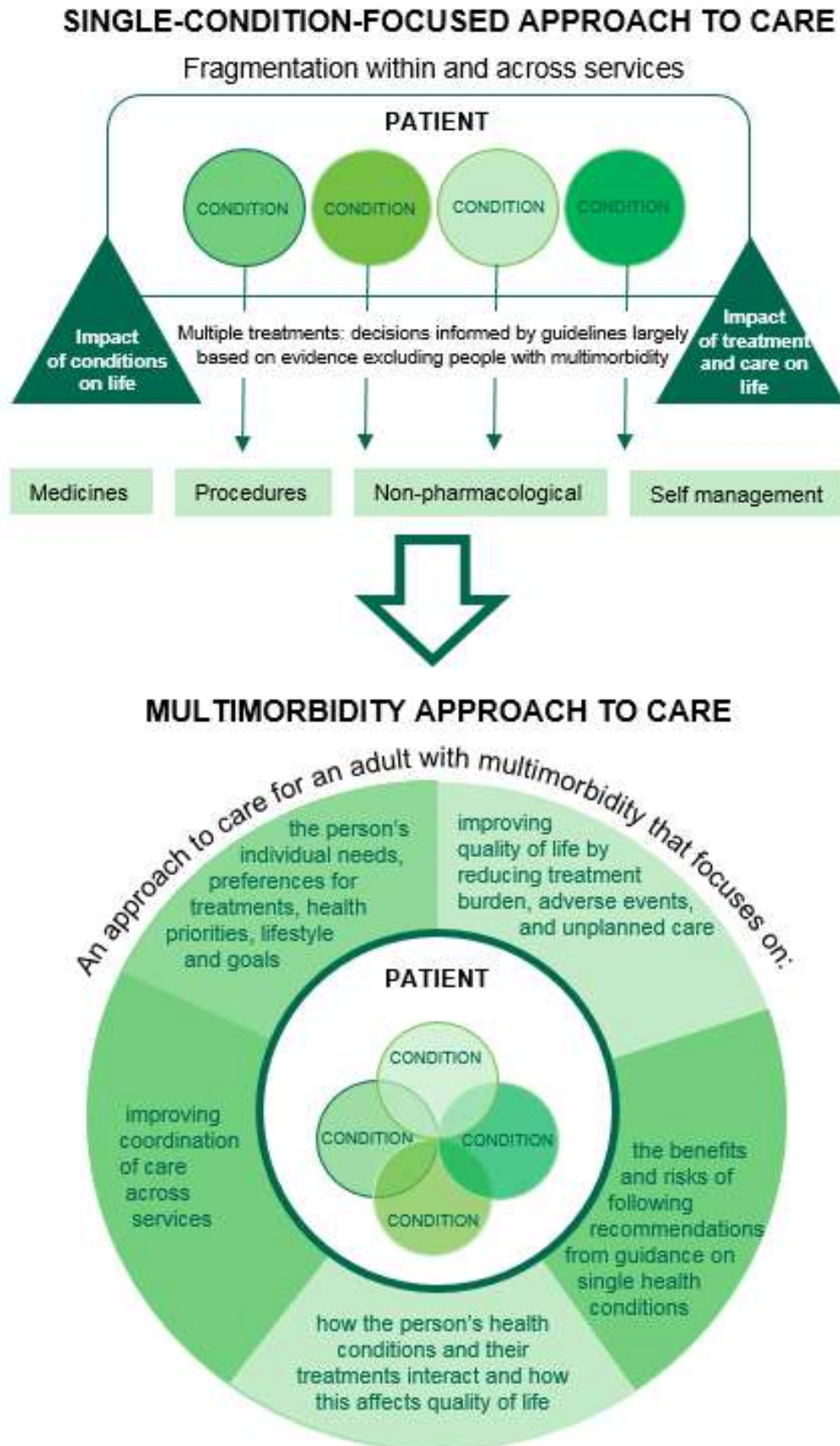
A recommended approach to optimising care for people with multiple long-term conditions is outlined in NICE guideline NG56. [4] A primary goal is to reduce treatment burden in terms of polypharmacy, multiple appointments for different conditions, and use of unplanned care. The following steps are recommended.

- Step 1: Discuss the purpose of an approach to care that takes account of multimorbidity.
- Step 2: Establish disease and treatment burden.
- Step 3: Establish patient goals, values and priorities.
- Step 4: Review medicines and other treatments, taking into account evidence of likely harms and benefits, and in particular outcomes important to the person.
- Step 5: Agree an individualised management plan.

NICE has also produced a pathway for social care services for older people with multiple conditions. [16]

The 'multimorbidity approach' to patient care is summarised in Figure 6, with similar guidelines also outlined elsewhere. [17] [18] There is also strong evidence for longer general practice appointments for people with multimorbidity. [19]

Figure 6: The single condition versus multimorbidity approach to patient management



Source: Farmer et al 2016 [20]

A systematic review published in 2012 identified a small number of studies that tested system-level interventions specific to improving outcomes for patients with multimorbidity. [21] All of these interventions were complex and multifaceted, and the authors concluded that the more effective approaches are those that target specific problems or risk factors, rather than trying to address a broader range of targets.

4.7 Services and support available locally

'Time to Talk' is a service commissioned by City and Hackney Clinical Commissioning Group (CCG), which incentivises GP practices to offer extended consultations (normally 30 minutes) to adult patients who have been proactively identified as having two or more of the following long-term conditions:

- asthma
- atrial fibrillation
- chronic kidney disease
- chronic obstructive pulmonary disease (COPD)
- coronary heart disease
- dementia
- diabetes
- heart failure
- hypertension
- learning disability
- severe mental illness
- stroke/transient ischaemic attack
- peripheral arterial disease.

Other conditions (such as hypothyroidism, epilepsy, rheumatoid arthritis, osteoporosis, and multiple sclerosis) can be included at the discretion of the clinician. Sickle cell patients are eligible for a 'Time to Talk' consultation irrespective of whether they have any other condition.

GPs in Hackney and the City undertook 9,910 'Time to Talk' consultations between 1 April 2017 and 31 March 2018.

City and Hackney CCG also incentivises local GPs to ensure effective management of the physical health of people with mental health problems.

4.8 Service gaps and opportunities

As elsewhere, the populations of both Hackney and the City are ageing, which is likely to contribute to a continued upward trend in the prevalence of multimorbidity in the future.

The new City and Hackney Integrated Commissioning System provides an opportunity to bring a better coordinated approach to managing multimorbidity across local health and care services. A major focus of the new system is to shift

activity and resources towards prevention, and redesign health and care services to support people to better manage their own health. The new ‘Neighbourhood’ model (which involves the organisation of health and care services within areas covering populations of 25,000–55,000 people) has a particular focus on integrating and designing services to meet the needs of patients with complex needs.

Within this new system, there is an opportunity to develop predictive modelling approaches to better identify groups of people who are at increased risk of developing multimorbidity in future. This could help inform targeted approaches for prevention, earlier intervention and improved condition management. [22] [23]

Internationally, a need for further research in the area of multimorbidity has been highlighted. [9] [24] This could help to achieve consensus on appropriate care models, as well as improve understanding of the impact of multimorbidity on families and carers (which is currently poorly understood). [21] [8]

5 References

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