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# LEICESTERSHIRE JOINT STRATEGIC NEEDS ASSESSMENT 2018-2021

## MULTIMORBIDITY AND FRAILITY

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Whilst every effort has been made to ensure the accuracy of the information contained within this report, Leicestershire County Council cannot be held responsible for any errors or omission relating to the data contained within the report.

## FOREWORD

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The purpose of the Joint Strategic Needs Assessment (JSNA) is to:

- To improve the health and wellbeing of the local community and reduce inequalities for all ages.
- To determine what actions the local authority, the local NHS and other partners need to take to meet health and social care needs, and to address the wider determinants that impact on health and wellbeing.
- To provide a source of relevant reference to the Local Authority, Clinical Commissioning Groups (CCGs) and NHS England for the commissioning of any future services.

The Local Authority and CCGs have equal and joint statutory responsibility to prepare a Joint Strategic Needs Assessment (JSNA) for Leicestershire, through the Health and Wellbeing Board. The Health and Social Care Act 2012 amended the Local Government and Public Involvement in Health Act 2007 to introduce duties and powers for Health and Wellbeing Boards in relation to JSNAs. The JSNA offers an opportunity for the Local Authority, CCGs and NHS England's plans for commissioning services to be informed by up to date information on the population that use their services. Where commissioning plans are not in line with the JSNA, the Local Authority, CCGs and NHS England must be able to explain why.

The Health and Wellbeing Board has agreed that the JSNA will be published in subject-specific chapters throughout a three-year time period. Chapters will be developed in line with CCG and local authority commissioning cycles. As many of the relationships required for the JSNA in Leicestershire are wide ranging, involving representation from NHS England, CCGs, Leicestershire Partnership Trust, University Hospitals of Leicester, District Councils and the voluntary sector, a JSNA Reference Group has been established. This Reference Group supports the JSNA work across the Health and Wellbeing Board. To examine the detail of the chapters, Task and Finish groups have been established to bring together local professionals, where they can share their expert knowledge on the work area being examined.

This JSNA chapter has reviewed the population health needs of the people of Leicestershire in relation to multimorbidity in adults. This has involved looking at the determinants of multimorbidity, the health needs of the population in Leicestershire, the impact of multimorbidity, the policy and guidance supporting multimorbidity, existing services and the breadth of services that are currently provided. The unmet needs and recommendations that have arisen from this needs assessment are discussed.

Please note, the majority of analysis presented in this needs assessment is based on local data

sources. Where possible, comparisons have been made to national averages and local context has been included. The term significance is used throughout the report and refers to statistical significance. This examines if the result presented is different to the national result, due to something other than chance. Most often, this is calculated using 95% confidence intervals.

## EXECUTIVE SUMMARY

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Multimorbidity is defined as having two or more chronic conditions, where at least one of these conditions is a physical health condition. Frailty is defined as a distinctive health state who's risk increases with age in which multiple body systems gradually lose their inbuilt reserves.

The prevalence of multimorbidity increases with age. Current data for Leicestershire shows that 87% of those aged 85 years or older have more than one long-term condition (i.e. are multimorbid) and 23% of that age group have eight or more long term condition.\* If the same proportions are applied to those aged over 85 years in ten years' time there will be 22,660 people who are multimorbid and aged 85 years or above and (within that figure) 5,931 people who are aged 85 years and above with 8 or more long term conditions. This is equivalent to a 58% increase in those aged 85 years or above with multimorbidity.

Both national and local evidence presented in this JSNA chapter suggest that multimorbidity more than age is a key driver of cost, activity and future risk. Nationally, the respiratory and circulatory systems have the most impact on the risk of ACSC, increasing the risk by 8.72 (95% Confidence Intervals [8.58;8.86]) and 3.01 (95 % CI [2.95;3.06]), respectively. Frailty is known to exacerbate pre-existing conditions and increase the likelihood of developing more comorbidities. However, ageing does not necessarily mean you become frail, although prevalence does increase with age.

Predictive risk models or risk stratification are one method to help identify patients at risk of hospital admission and A&E attendance. Analysing the Johns Hopkins ACG results across Leicestershire illustrates that around 5% of the population (c. 30,500 people) accounts for around half (51%) of all secondary care costs over a year. Furthermore, almost a fifth (19%) of secondary care costs are concentrated in just 0.5% of the population of Leicestershire (c.3,000 people), whilst the vast majority of the population (80%) account for just 13% of costs. A more pronounced pattern is evident for emergency admission costs with around 0.5% of the population of Leicestershire (c.3,000 people) accounting for 42% of all emergency admission costs in one year and 5% of the population accounting for over 91% of emergency admission costs.

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\* Please note, the data included in the ACG risk stratification tools used to analyse multimorbidity in Leicestershire excludes those patients who have opted out of having their data used in analysis and excludes those GP practices who have opted out of using the ACG tool. Thus, figures presented here are likely to be a slight underestimate of the true figures.

As seen nationally, local evidence shows that the average number of A&E attendances, outpatient attendances and elective admissions all increase as the number of LTCs a person has increases. For those with 8 or more long term conditions the risk of emergency admission and the risk of persistent high costs in the next 12 months is 60% and 55%. A population health management approach to risk stratification across LLR is needed to define how the risk stratification and wider PCN data is fully utilised to ensure the greatest impact to improving patient outcomes and reducing system costs.

The most prevalent Long-Term Condition (LTC) across Leicestershire is hypertension, followed by persistent asthma and diabetes. The chapter has also reviewed the distribution of six key long-term conditions and the predictability of the second long-term condition across Leicestershire to inform any future risk stratification and intervention prioritisation. The chapter identified that if the strategy was to target the greatest proportion of people with a LTC, priorities include primary and secondary prevention for hypertension, ischaemic heart condition, chronic renal failure and diabetes. However, if average secondary care cost over a 12month period is the driver then specifically people aged 18-44years with multimorbidity (especially 5 and over LTCs), chronic heart failure, 14% of the population who are frail, high cost and risk of A&E admission, followed by depression, schizophrenia and seizure disorders should be prioritised for care coordination and prevention interventions.

There is a comprehensive prevention offer available across Leicestershire, using First Contract Plus as the prevention front door. Local initiatives such as Making Every Contact Count (MECC) Plus training could be utilised across the system to ensure all staff are aware of the prevention services available and to know where to refer patients. Other interventions identified as having a positive effect on reducing admissions include continuity of care with a GP, hospital at home, early senior review on A&E, MDT interventions, integration of primary and secondary care.

The following recommendations have been made to prioritise addressing the gaps identified in service provision:

- Develop a Leicestershire and wider LLR strategy for population health management, utilising risk stratification, care coordination and social prescribing approaches within local neighbourhood teams.
- Complete a further evidence review on the clustering of LTCs and define the key preventative interventions that should be prioritised across the system in line with the agreed priorities for risk stratification as part of the population health management approach. This may take a different approach depending on the number of LTCs the patient already has such as primary prevention for the wider population, secondary prevention for those with 2-3 LTCs

or moderate frailty, and more tertiary prevention for those with 5+ LTCs.

- Triangulate the results from this JSNA with those from the Right Care national evidence. In particular the falls and fragility pathway and long-term conditions work.
- Complete further analysis exploring different cohorts of high risk patients to develop appropriate interventions at the system, place and neighbourhood level of population health management.
- Primary Care Networks (PCNs) to review LTC disease segmentation within their own practices to identify local priorities for commissioning and care coordination.
- Agree one, system-wide classification of frailty for LLR.
- Work with academic partners to evaluate the impact of risk stratification and care coordination across Leicester, Leicestershire and Rutland (LLR). This may be locally by reviewing the evaluation matrix and more formally through bidding for national funding and academic support.
- Multimorbidity is now the norm, hence there is a need to ensure appropriate primary and secondary care services to address these needs holistically through implementation of the NICE guidance to ensure high quality care plans are completed at scale and accessible across organisations. UHL may therefore consider how it may treat multimorbid and frail patients more holistically in the longer term. Support medical education to consider a multimorbidity approach to workforce training.
- Embed MECC Plus across the system to ensure all professionals are aware of the prevention services and referral pathways available across Leicestershire.
- LLR prevention board to consider the implications for frail and multimorbid patients as part of the self-care management workstream including use of assistive technologies.

In order to respond to these recommendations, a partnership approach will be needed to develop and implement an action plan across the healthcare system.

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## **1. Introduction**

### **1.1. Definitions**

This Joint Strategic Needs Assessment (JSNA) chapter reviews the latest data and evidence with regards to those at risk and having commissioning needs for long term conditions, multimorbidity and frailty across Leicestershire.

#### **Long Term Conditions**

The Department of Health (DH) define Long-Term Conditions (LTC) as “those conditions that cannot, at present, be cured, but can be controlled by medication and other therapies. The life of a person with a LTC is forever altered – there is no return to ‘normal’”.<sup>1</sup> There are a range of LTCs but the most common of these conditions are asthma, diabetes, coronary heart disease, stroke, heart failure, severe mental health conditions and epilepsy, these will be the focus of this JSNA chapter. Multimorbidity builds on the LTC definition and is defined by the National Institute for Health and Care Excellence (NICE) as ‘adults aged 18 years and over with two or more long-term health conditions (multimorbidity). At least one of these conditions must be a physical health condition.’<sup>1</sup> Locally, multimorbidity has been operationally defined for clinical intervention as having five or more LTCs.

#### **Frailty**

Frailty is also a LTC, however it can be defined in a number of ways. The British Geriatrics Society describes frailty as a distinctive health state related to the ageing process in which multiple body systems gradually lose their inbuilt reserves. Older people with frailty are at risk of unpredictable deterioration in their health resulting from minor stressor events.<sup>2</sup> Though frailty results from ageing it is not an inevitable part of the ageing process; someone can grow old and die without ever being frail. It is estimated that around 10% of people aged 65 years have frailty, rising to between a quarter and a half of those aged over 85 years. Thus, the growing population aged over 85 years is likely to drive an increase in resource use and cost for health and care services unless there is effective prevention and population health management services in place. Like other long-term conditions such as diabetes or persistent asthma, frailty can be made better or worse through how well it is prevented and managed. Furthermore, there is also evidence that poor oral health can contribute to frailty and therefore the identification and management of poor oral health in older people could be important in preventing and also exacerbating frailty.<sup>3,4</sup>

Several models exist to help quantify ‘frailty’ locally. These include;

- The electronic Frailty Index (eFI) was developed by Dr Andrew Clegg and Professor John Young, (Academic Unit of Elderly Care & Rehabilitation, University of Leeds), to identify frailty using routine data held on primary care databases.<sup>5</sup> The eFI is based on the Rockwood deficiency model and uses around 200 Read codes, taken from GP based electronic patient records, to construct a score which is converted into a classification of four groups: without frailty, mild, moderate and severe frailty .
- The ACG risk stratification tool applies a flag for frailty for everyone over the age of 18 where they have a diagnosis, documented in the GP based electronic patient record, falling within any one of the following ten clusters that represent medical problems associated with frailty:
  - **(MAL) Malnutrition and/or Catabolic Illness.** Nutritional Marasmus; other severe protein-calorie malnutrition
  - **(DEM) Dementia.** Senile dementia with delusional or depressive features; senile dementia with delirium
  - **(VIS) Severe Vision Impairment.** Profound impairment, both eyes; moderate or severe impairment, better eye/lesser eye: profound
  - **(DEC) Decubitus Ulcer.** Decubitus Ulcer
  - **(URC) Major Problems of Urine Retention or Control.** Incontinence without sensory awareness; continuous leakage
  - **(WEI) Loss of Weight.** Abnormal loss of weight and underweight; feeding difficulties and mismanagement
  - **(AFC) Absence of Faecal Control.** Incontinence of faeces
  - **(SSN) Social Support Needs.** Lack of Housing; inadequate housing; inadequate material resources
  - **(WLK) Difficulty in Walking.** Difficulty in walking; abnormality of gait
  - **(FAL) Fall.** Fall on stairs or steps; fall from wheelchair
- Rockwood scale

N.B. these classifications will only include those patients that have accessed healthcare services. It is therefore useful to also consider national prevalence modelling when reviewing unmet need.

## **1.2. Approaches to identifying and responding to high health burden across a population**

Recent evidence from Integrated Care System early implementor sites across England outline the advantages of developing personalised care and support planning approaches for patients at risk of high health and social care costs. The key stages to this personalised care approach,

at a population health level, include<sup>6</sup>;

- **Case finding and risk stratification** – Segmenting the population to identify those at most need for person-centred care, recognising resource constraints. This will be part of a wider LLR population health management approach.
- **Multi-disciplinary team (MDT) approach** – Health and care professionals work together to support people with the most complex care needs that have been identified through case finding and risk stratification. Locally this occurs through Integrated Locality/ Neighbourhood Teams (IL/NTs).
- **Personalised care and support planning** – Using care coordinators/ navigators to support the MDT to work together with patients and carers to meet their individual care needs. It should be noted that there are different arrangements across the County. East Leicestershire and Rutland (ELR) uses a Clinical Case Manager from Leicestershire Partnership Trust to manage clinical care coordination and work closely with the Integrated Care Coordinators (known as link workers) provided by adult social care, while West Leicestershire is piloting a hybrid Local Area Coordinator/ Care Coordinator role.

This JSNA will concentrate on reviewing the latest risk stratification data across Leicestershire to provide evidence of cohorts of patients that are likely to benefit the most from personalised care and support planning approaches. Section 1.3. details the local approach to risk stratification used across Leicester, Leicestershire and Rutland (LLR).

### **1.3. Risk stratification of the Leicestershire population using the ACG System**

The NHS Long Term Plan published in January 2019, discusses the needs to develop a Population Health Management (PHM) approach to commissioning health and care services. NHS England define PHM as improving the population's health 'by data driven planning and delivery of care to achieve maximum impact. It includes segmentation, stratification and impactability modelling to identify local 'at risk' cohorts-and, in turn, designing and targeting interventions to prevent ill health and improve care and support for people with ongoing health conditions and reducing unwarranted variations in outcomes.'<sup>7</sup>

Risk stratification is one tool in developing the PHM approach, specifically at Primary Care Network (PCN) and GP practice level. It is a concept used to help understand the needs of the population so that services can be better planned and delivered. Risk stratification involves segmenting the local population into groups by the type of care they need as well as how often they might need it. It then examines who, within each segment, has the greatest risk of needing intense care such as a hospital admission and emergency attendance.

The Johns Hopkins Adjusted Clinical Groups (ACG) System is used to identify patients in LLR with the highest burden of health needs and then identify those most likely to use health services. This approach is commonly used and based on widely available GP practice data and Secondary Uses Service data (SUS). The variables used in the ACG system fall into the eight categories, as identified in figure 1, below.

**Figure 1: Overview of the ACG System Predictive Modelling Process (taken from 'Predictive Models in the ACG System' by Johns Hopkins)<sup>8</sup>**



It is important to note, the modelling processes to identify these cohorts of individuals most likely to use health services are driven primarily by the concept of overall disease burden, the nature of individual diseases and co-morbidity combinations. Thus, it offers a useful analytical tool to create insight about multimorbidity in Leicestershire. The weights associated with prior utilisation and prior costs are very low, as admissions (for example) in the previous year are not the key determinant of high cost or admission in the future. This contrasts with the ethos behind other predictive models that assign very high weights to the number of emergency admissions in the last year and/or secondary care use.

## **2. Who is at risk?**

### **2.1. Age**

Although multimorbidity is known to be associated with increasing age and present in those aged 65 years and over, a Scottish population-based study found that the actual number of people with multimorbidity was higher amongst those aged below 65.<sup>9</sup>

Frailty increases steadily with age from 4% in those aged 65-69 years up to 26% in persons aged over 85 years.<sup>10</sup>

### **2.2. Gender**

A study on the epidemiology of multimorbidity in primary care in England reported that the prevalence of multimorbidity was significantly higher in females than males (30.0% versus 24.4% respectively).<sup>11</sup>

Additionally, Frailty is known to be more prevalent in women (9.6%) who are at double the risk of developing frailty in comparison to men (5.2%).<sup>10</sup>

### **2.3. Deprivation**

Deprivation is known to be associated with multimorbidity. A study on the epidemiology of multimorbidity in primary care in England found that greater socioeconomic deprivation was associated with significantly higher levels of multimorbidity — 30.0% in the most deprived quintile versus 25.8% in the least deprived quintile.<sup>11</sup> Another study on patterns of multimorbidity and their association with health outcomes found that deprivation was strongly linked to multimorbidity with 47% of participants from the most deprived areas experiencing multimorbidity.<sup>12</sup>

### **2.4. Associated patterns of disease**

To nationally identify the key groups of people at risk of frailty and multimorbidity that result in hospital admission, a literature search was completed using google scholar. The terms 'hospital admission preventable', 'hospital admission prevention', 'hospital admission risk profile', 'ambulatory care sensitive admission' were searched. The following section identifies the key literature that was identified through this rapid literature review. It should be noted that there will be limitations to the review results due to the rapid nature of the review i.e. not being a full systematic literature review.

Hospital admitted patient care activity 2016-17 confirmed that the leading primary diagnoses

for hospital admission include complications of labour, neoplasms (benign and malignant), arthropathies, intestinal disease, reproductive complications, disorders of digestive tract, lens and circulatory system. The data also confirmed the most common diagnoses were hypertension, diabetes, mental health due to tobacco harm, substance misuse, asthma, atrial fibrillation, circulatory disease, ischaemic heart disease and depression.<sup>13</sup>

A set of “Ambulatory care-sensitive conditions (ACSCs)” have been defined. These are conditions for which effective management and treatment in primary care should limit the requirement for emergency admission into hospital. Nevertheless, ACSCs currently account for more than one in six emergency hospital admissions in England. These emergency admissions cost the NHS £1.42 billion each year.<sup>7,13</sup> Table 1 considers the key causes of ambulatory care sensitive conditions identified to cause hospital admission and costs. Influenza and pneumonia and Chronic Obstructive Pulmonary Disease (COPD) contribute to the greatest percentage of ASCS causes and costs. Some of these ASCSs are vaccine preventable, some chronic and some acute.

**Table 1: Leading causes of ambulatory care sensitive conditions (ACSCs)<sup>13</sup>**

<b>Disease</b>	<b>Percentage</b>	<b>Proportion Cost</b>
Influenza and pneumonia	13	20
COPD	13	14
ENT infections	10	4
Dehydration and gastroenteritis	10	9
Convulsions and epilepsy	10	8
Asthma	8	5
Angina	8	4
Cellulitis	7	8
Chronic Heart Failure	7	10
Diabetic complications	6	8

There are a range of factors that may influence an individual’s risk for emergency admission. These include gender, age, lower socioeconomic status, number of visits and access to healthcare, mental and physical health status.<sup>14</sup> For all ages, there was a clear socioeconomic gradient, particularly for emergency admissions, with the rate of admissions increasing with neighbourhood deprivation. Practices serving the most deprived populations have emergency admission rates that are around 60–90 per cent higher than those serving the least deprived populations.<sup>15</sup> The costs to the NHS associated with this inequality were partially offset by lower life expectancy in more deprived groups, but remained substantial: £4.8 billion per year

at 2011/2012 levels.<sup>17</sup> When comparing deprivation with ACSC rates, deprivation was most strongly associated with alcohol related diseases and COPD admission rates, while continuity of primary care was most strongly associated with admission rates for chronic diseases such as hypertension and iron-deficiency anaemia.<sup>16</sup> Further evidence also suggested that in 2015 there were over 250,000 Avoidable Emergency Admissions (AEAs) linked to living in poorer neighbourhoods in England. The cost to the NHS of health inequalities is substantial, with one study estimating that at least £12.5 billion a year is due to excess hospital and primary care costs because of the excess burden of illness in disadvantaged groups.<sup>17</sup>

As seen in the section above people at risk of multimorbidity are not homogenous in their clinical make-up and therefore they will require different types of interventions. Further work is needed to be able to segment a population into homogeneous groups (and where possible mutually exclusive, homogenous groups) to ensure the right services are commissioned and targeted at the right people.<sup>18</sup> Section 3 below starts to complete some of this analysis.

### **3. Level of need across Leicestershire**

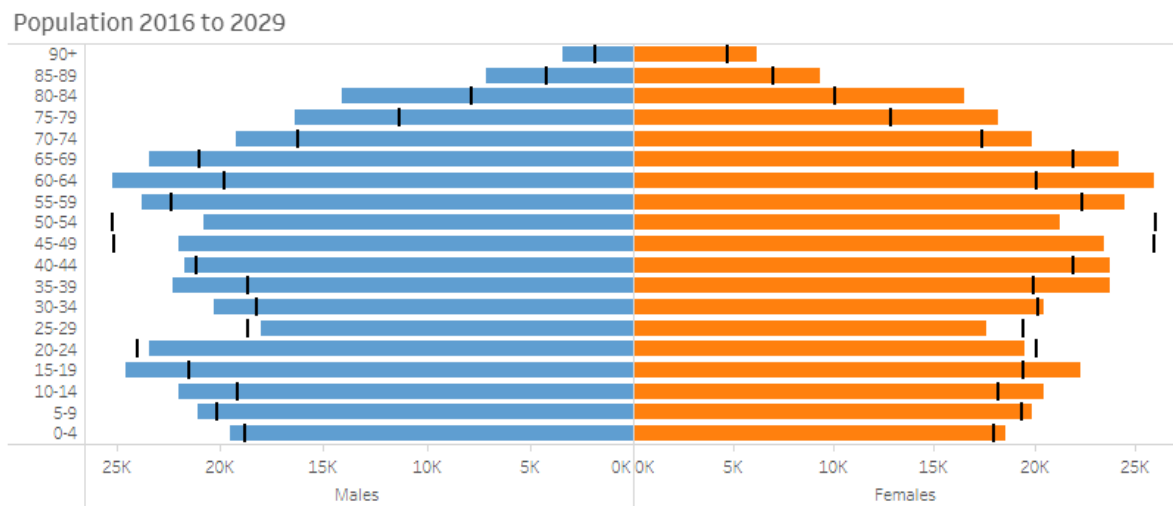
#### **3.1. Population Profile and Projections**

The population of Leicestershire in 2018 was 698,268, up by 8,056 people (1.2%) from the previous year. The profile of population indicates a higher proportion of middle-aged and older people compared to the UK average.<sup>19</sup> Neighbouring Leicester City has a much higher proportion of young people in its population, whilst Rutland has an older population.

Figure 2 below shows the population projections for Leicestershire by sex and quinary-age band up to 2029, based on the population in 2016. The length of the bars represents the number of people projected to be in Leicestershire in that age group and sex in 2029 and the black marker shows the equivalent figure in 2016.



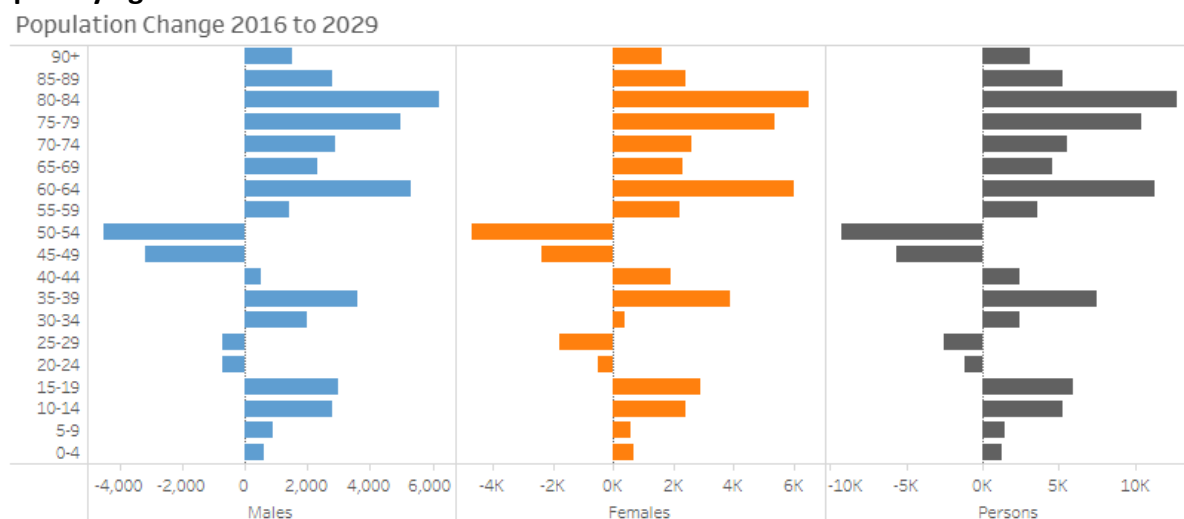
**Figure 2: 2016-based population pyramid projections for Leicestershire by sex and quinary age**



Source: Office for National Statistics (ONS), Population Projections, 2016.

Figure 3 (below) shows the overall population change from 2016 to 2019 by quinary age band. It is projected that the population of Leicestershire will see a large increase in older people, an increase in children and a reduction in middle-aged people. Every five-year aged band from 55 years and above will see an increase in population over this period. Similarly, each quinary age band below 19 years will also see an increase in population over this period. There are projected to be slight falls in the number of people in their twenties, and large reductions of people in their late-forties and early fifties.

**Figure 3: 2016-based population projections for Leicestershire – change by sex and quinary age**



Source: Office for National Statistics (ONS), Population Projections, 2016.

In ten years' time (by 2029) it is projected that there will be an additional 41,500 people in Leicestershire who are aged 65 years or older and, within that, an additional 8,300 that are aged 85 years or older. Current data for Leicestershire shows that 87% of those aged 85 years or older (c. 14,317 people) have more than one long-term condition (i.e. are multimorbid) and 23% of that age group (c.3,747 people) have 8 or more long term condition.<sup>†</sup> If the same proportions are applied to those aged over 85 years in ten years' time there will be 22,660 people who are multimorbid and aged 85 years or above and (within that figure) 5,931 people who are aged 85 years and above with 8 or more long term conditions. This is equivalent to a 58% increase those aged 85 years or above with multimorbidity. This highlights the need to identify, through case finding, and deliver appropriate clinical management and preventative health care to at risk adults in order to stem the tide on conversion from single or multiple LTCs in the next decade.

### **3.2. Frailty in Leicestershire**

As described above, the risk of frailty and multiple long-term conditions (LTCs) increases with age, but older age does not necessarily mean you become frail. However, it is known that frailty also increases the risk and complications of multimorbidity. With the increasing older and multimorbid population, the health and care needs of an expanding population with frailty, and with multiple long-term conditions (LTCs), is a pertinent public health and health policy concern. This section sets out in further detail what we know about the scale and nature of frailty in Leicestershire.

N.B. this chapter has not considered the data available in the Right Care Falls and Fragility Fractures Pathway, which defines the core components of an optimal service for people who have suffered a fall or are at risk of falls and fragility fractures. Further work is needed to triangulate these two pieces of work.<sup>20</sup>

Table 2 (below) shows the profile of people in Leicestershire by locality according to the eFI measure of frailty. Overall, using this measure, there are around 16,000 people classed as moderately or severely frail, which is equivalent to a rate of around 26.9 people per thousand population. Of this, around 6,000 people (9.8 per thousand population) are flagged in primary care as severely frail. Table 2 shows a large degree of variance by locality. It is not known to

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<sup>†</sup> Please note, the data included in the ACG risk stratification tools used to analyse multimorbidity in Leicestershire excludes those patients who have opted out of having their data used in analysis and excludes those GP practices who have opted out of using the ACG tool. Thus, figures presented here are likely to be a slight underestimate of the true figures.

what extent this reflects variance of recording and coding of data at practices, rather than variance of frailty. Anecdotally, it has been suggested that ‘mild’ frailty may be under-recorded as it is of limited use in relation to provision of health and care services/interventions. It may be that coding of moderate and severe frailty also varies by practice.

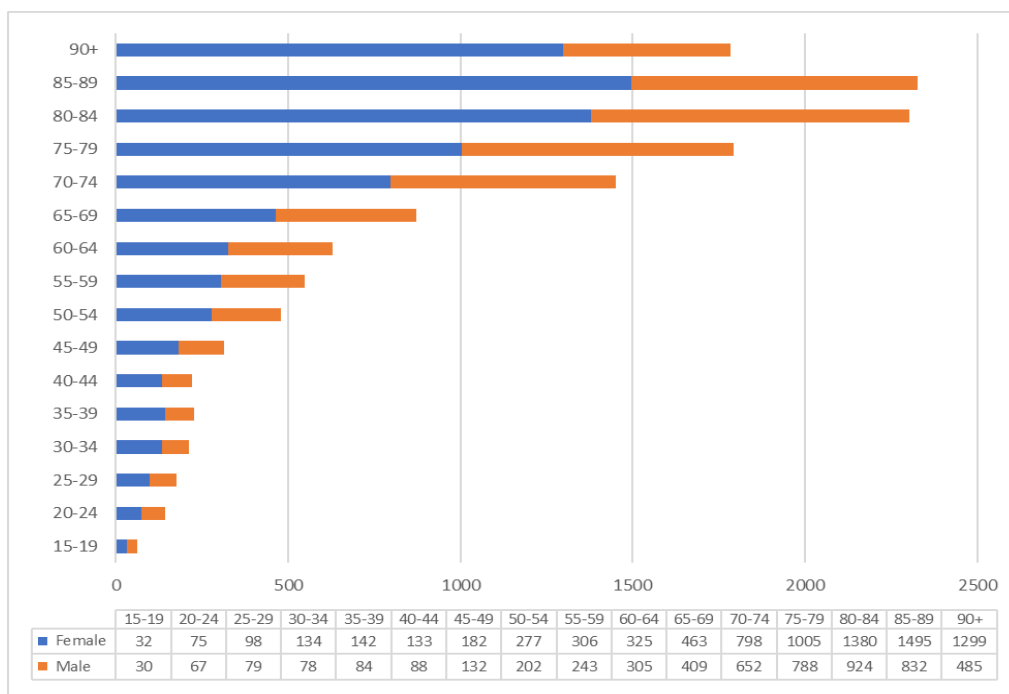
**Table 2: Number of people in each locality in Leicestershire according to the electronic Frailty Index (eFI), 2018/19.**

Locality	eFI description					Moderate or Severe	Rate per 1,000 population
	<null>	Mild	Moderate	Severe	All people		
Hinckley & Bosworth	100,350	406	2,898	1,455	105,109	4,353	41.4
North Charnwood	72,501	16	1,685	1,042	75,244	2,727	36.2
Harborough Hub	54,427	2,840	1,489	648	59,404	2,137	36.0
North West Leicestershire	100,050	494	2,052	1,107	103,703	3,159	30.5
South Charnwood	76,818	2,002	1,080	781	80,681	1,861	23.1
South Blaby & Lutterworth Hub	45,331	38	628	234	46,231	862	18.6
Oadby & Wigston Hub	55,771	51	356	276	56,454	632	11.2
Syston, Long Clawson & Melton (SLAM) Hub	23,111	11	45	161	23,328	206	8.8
North Blaby Hub	59,149	39	190	278	59,656	468	7.8
All people	587,508	5,897	10,423	5,982	609,810	16,405	26.9

*Source: Adjusted Clinical Group (ACG) Risk Stratification Tool, 2019*

In comparison, when using the ACG classification of frailty, there are 13,542 people identified as frail in Leicestershire as at March 2019, which is equivalent to 22.1 per thousand population. Thus, the ACG frailty flag identifies a larger proportion of people than the eFI measure of ‘severe’ frailty. The number of people who are frail increase with age and more females are frail than males in every age band. As shown in Figure 4 (below), although, as would be expected, there are higher numbers of older people who are frail, it is not exclusively an issue for older people. In Leicestershire there are around 3,012 people with frailty below the age of 65 years, with 819 of those under 40 years old.

**Figure 4: ACG Frailty flag by quinary age band and sex for Leicestershire, 2018/19.**



Source: Adjusted Clinical Group (ACG) Risk Stratification Tool, 2019

As shown in Table 3 (below) the locality of Leicestershire with the highest number of frail people is North West Leicestershire (2,402) and the highest rate of frailty (per thousand population) is in South Blaby and Lutterworth Hub (25.9 per 1,000 population).

**Table 3 – Number of people flagged by ACG risk stratification tool for frailty by locality area in Leicestershire, 2018/19**

Locality	Number of people	Rate per 1,000 population	Total population
South Blaby & Lutterworth Hub	1,196	25.9	46,231
Oadby & Wigston Hub	1,435	25.4	56,454
North West Leicestershire	2,402	23.2	103,703
Syston, Long Clawson & Melton (SLAM) Hub	540	23.1	23,328
Hinckley & Bosworth	2,290	21.8	105,109
South Charnwood	1,684	20.9	80,681
Harborough Hub	1,232	20.7	59,404
North Blaby Hub	1,281	20.7	61,806
North Charnwood	1,482	19.7	75,244
All people	13,542	22.1	611,960

Source: Adjusted Clinical Group (ACG) Risk Stratification Tool, 2019

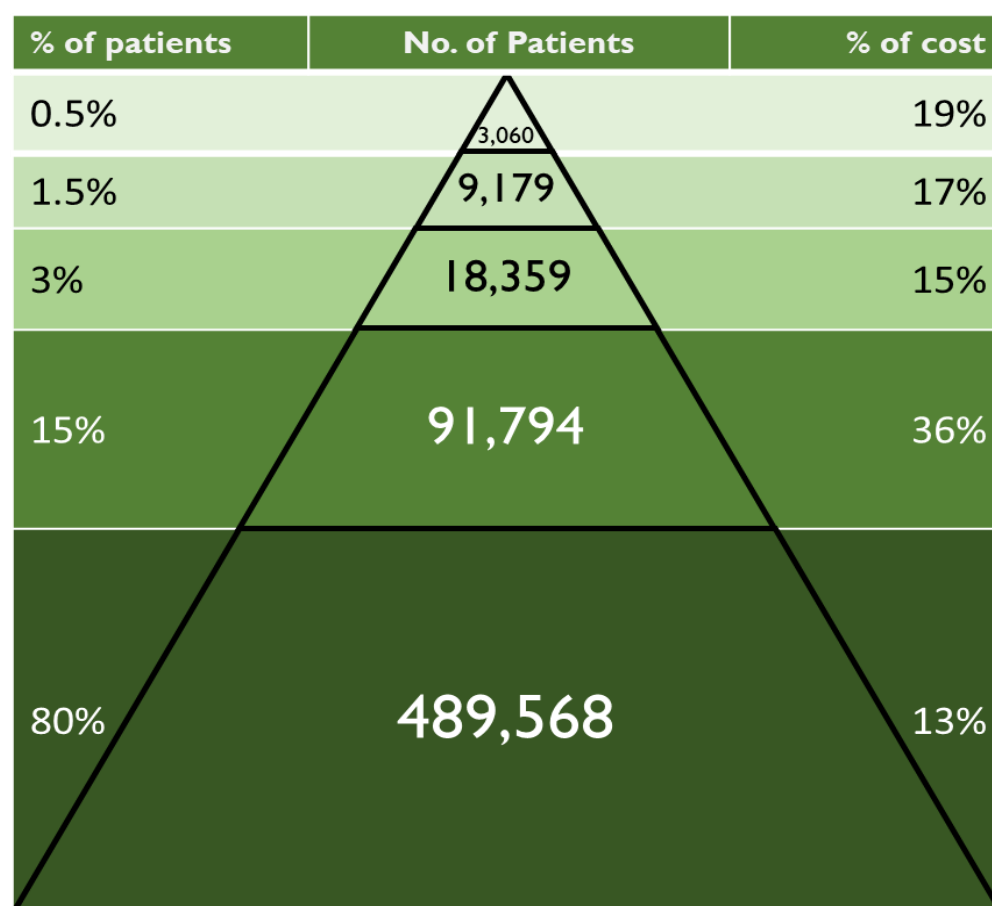
### 3.3. Stratifying the population by cost utilisation

It is well known that the costs incurred from consuming health care are not evenly distributed across the population; instead, the majority are concentrated by usage from a smaller proportion of people. The ACG System allows us to look at the specific figures for

Leicestershire County and ascertain the scale at which costs are concentrated within a small proportion of the local population.

Figure 5 shows how the cost of secondary care over a period of one year are concentrated in a relatively small population. Figure 5 illustrates that around 5% of the population of Leicestershire County (c. 30,500 people) accounts for around half (51%) of all secondary care costs over a year. Furthermore, almost a fifth (19%) of secondary care costs are concentrated in just 0.5% of the population of Leicestershire (c.3,000 people), whilst most of the population (80%) account for just 13% of costs.

**Figure 5: All secondary care costs over one year for people in Leicestershire County, 2018/19.**

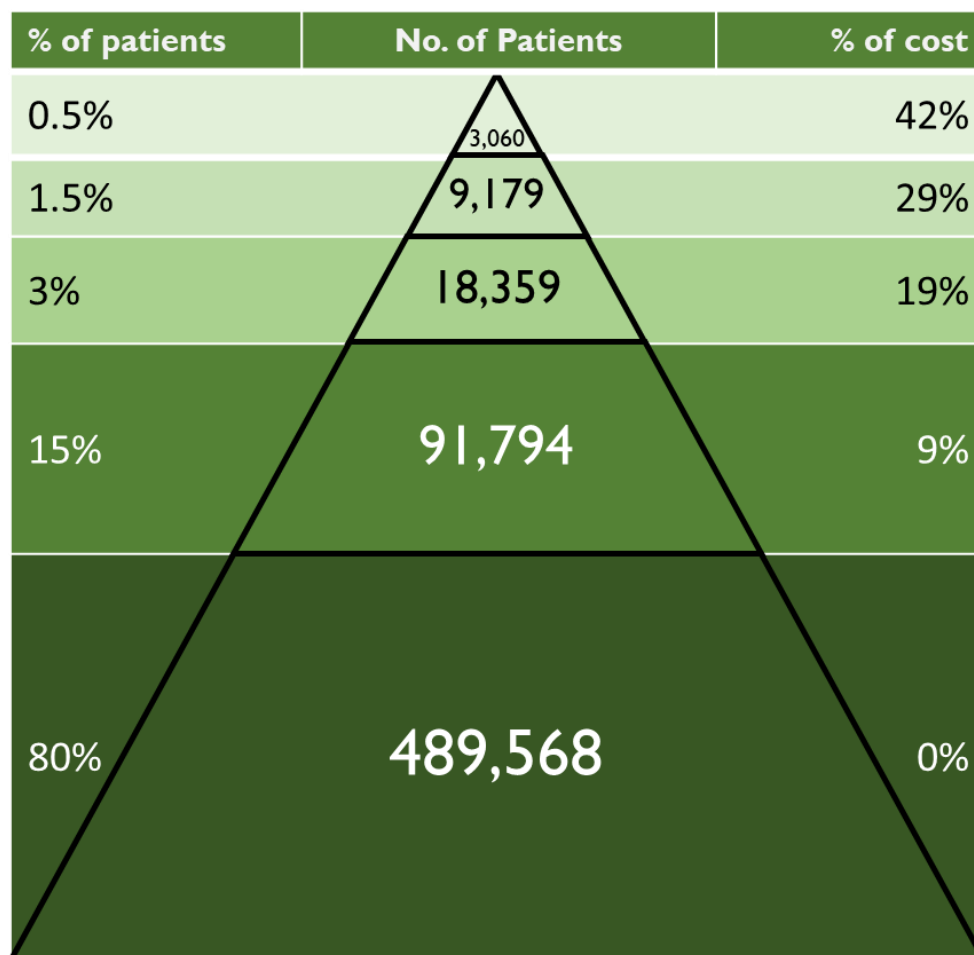


*Source: Adjusted Clinical Group (ACG) Risk Stratification Tool, 2019*

A similar, but even more pronounced pattern is evident for emergency admission costs (Figure 6), with around 0.5% of the population of Leicestershire (c.3,000 people) accounting for over two-fifths (c.42%) of all emergency admission costs in one year and 5% of the population accounting for over 91% of emergency admission costs. Most of the population

(80%) incur zero emergency admission costs.

**Figure 6: All emergency admission costs over one year for people in Leicestershire County, 2018/19.**



*Source: Adjusted Clinical Group (ACG) Risk Stratification Tool, 2019*

### 3.4. High risk groups are not homogenous

Using the Johns Hopkins Adjusted Clinical Groups (ACG) model, analysis was undertaken to ascertain the degree of overlap between three high risk groups that were identified as part of ACG analysis case examples:

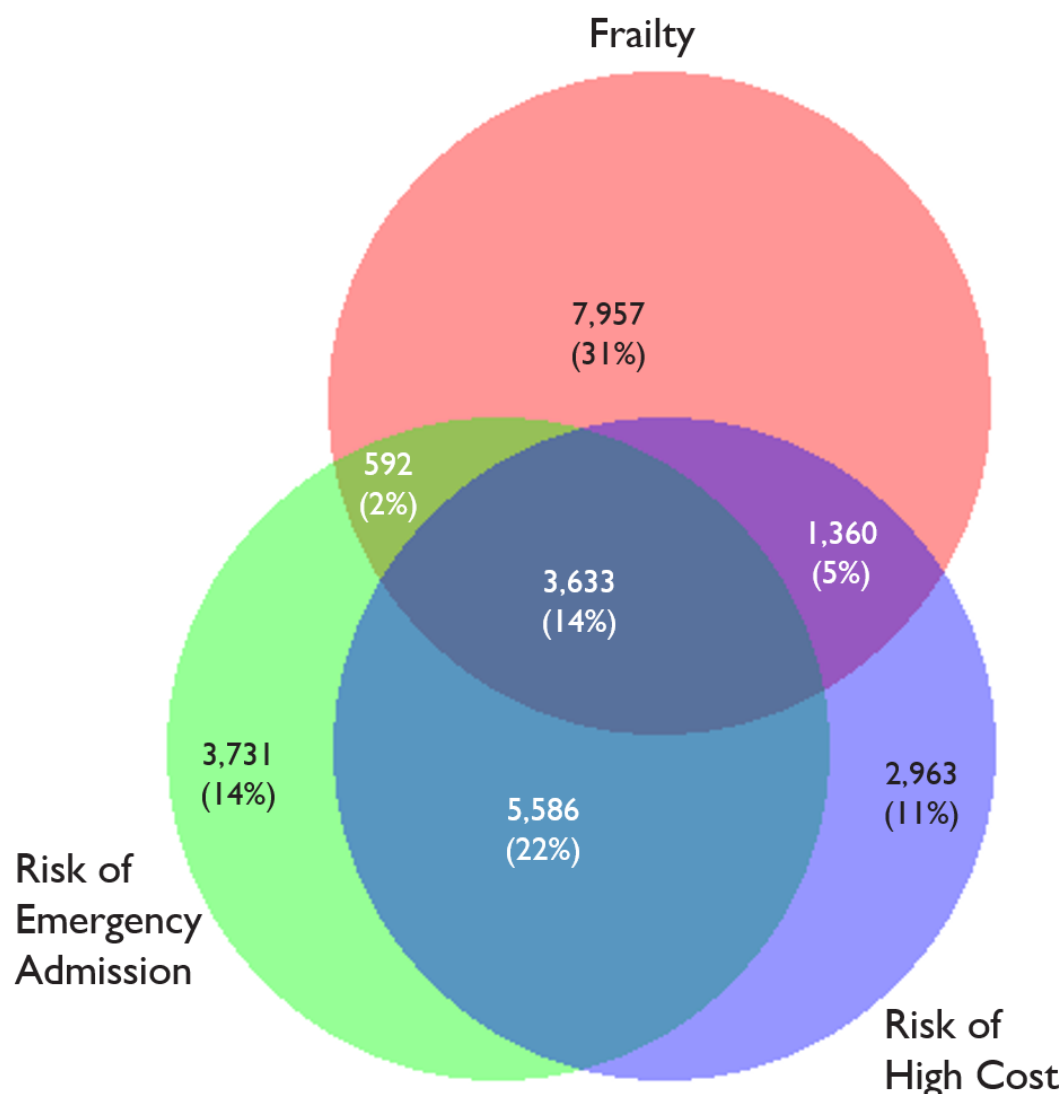
- people flagged for frailty;
- people at highest risk of emergency admission
- people at highest risk of high cost.

The groups were calculated by selecting all people within a CCG who were flagged for frailty in the ACG tool (13,452 people). Individuals were then ranked, separately, by their risk of emergency admission and, separately, by their risk of high cost. The top 13,452 people were

then selected from each list and the unique identification numbers for patients cross-checked to determine which individuals fell into each of the three high risk groups. The results are shown in the Venn Diagram in Figure 7 (below).

**Figure 7: Venn diagram<sup>†</sup> showing overlap of different high-risk groups in Leicestershire, 2018/19.**

[Segments of Venn Diagram are proportional to population.]



*Source: Adjusted Clinical Group (ACG) Risk Stratification Tool, 2019*

The Venn Diagram shows that there is overlap between different high-risk groups. Around 14 per cent of people in Leicestershire fall into all three of these high-risk categories: they are frail, at high risk of emergency admission and at high risk of high cost in the next 12 months. Although the Venn Diagram shows that there is overlap across these groups, the degree of

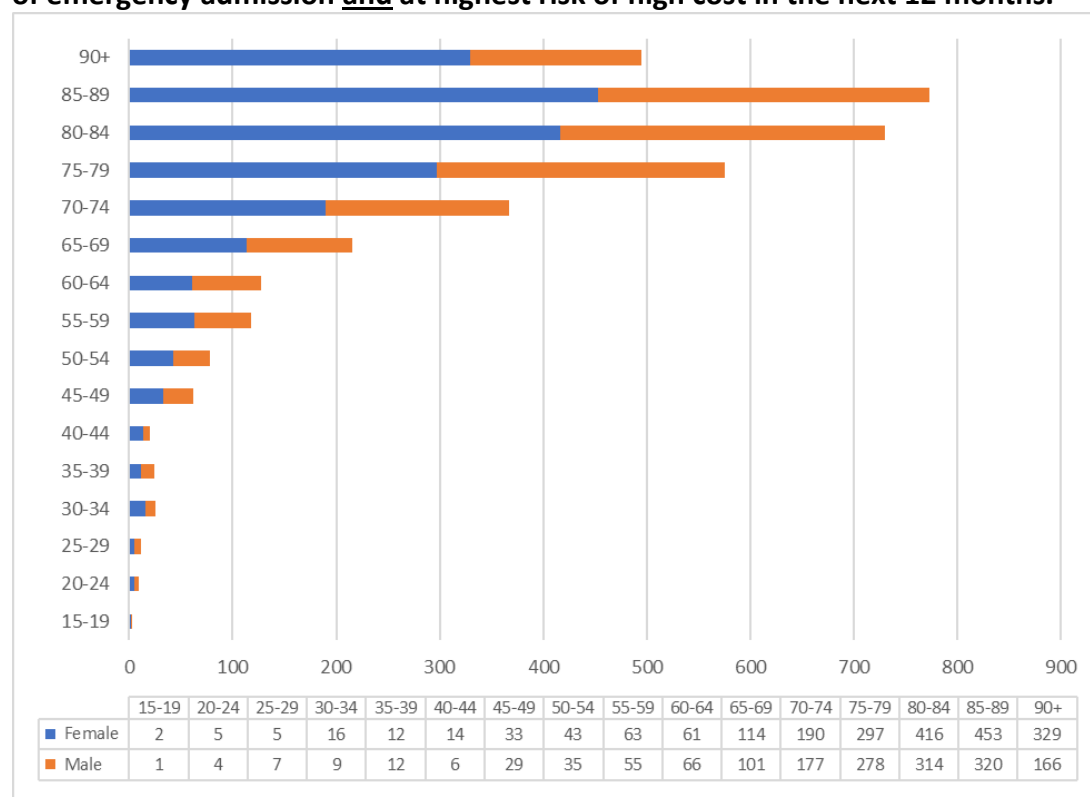
<sup>†</sup> Venn diagram created using BioVenn © 2007 - 2018 Tim Hulsen. <http://www.biovenn.nl>

overlap between these different cohorts or segments might not be as great as traditionally thought. For example, just under a third of people who are flagged as frail in the ACG System (31 per cent) are not amongst those most at risk of emergency admission or at greatest risk of high cost; 14 per cent of those at highest risk of emergency admission are not frail or at greatest risk of high cost. Further analysis could be undertaken to explore the interrelationship between these different groups and to identify cohorts for more targeted intervention.

The age and sex profile of people who fall into the central segment of the Venn Diagram (see

Figure 8 shows that those in all three groups of high risk are mainly older people, with just over a third (35 per cent) aged over 85 years. However, younger people are included too and around 478 people in Leicestershire (around one-in-eight of this group) are aged under 65 years.

**Figure 8: Age and sex profile of people in Leicestershire flagged for frailty and at highest risk of emergency admission and at highest risk of high cost in the next 12 months.**



Source: Adjusted Clinical Group (ACG) Risk Stratification Tool, 2019

Those in all three high risk groups are not evenly distributed across Leicestershire and are more concentrated in certain areas. The average number of this group in each GP practice in Leicestershire is around 52 people but this ranges from zero to 129 people in a practice.



Furthermore, the number in a practice is not merely a function of the overall number of patients registered with each practice as the rate per thousand population ranges from zero to 10.5 per thousand population. Of the 71 practices in Leicestershire whose data is included in the ACG risk stratification tool, around half of this cohort (49.4%) are registered with just 20 GP practices.

Almost all people in this group are multimorbid (99.9 per cent are – just 5 people only have 1 long term condition) and, on average, someone in this group has 10 long term conditions. Around one-in-ten in this group has 15 or more long term conditions (c. 400 people). There is also some commonality of long term conditions with over half of the group having hypertension (59 per cent), around a third with ischemic heart condition (32 per cent) and a third with low back pain. The group are also characterised by polypharmacy, with people taking an average of 15 distinct drug types and around 800 people in this group (c. a fifth) taking 20 or more distinct drug types.

### 3.5. Multimorbidity drives costs

Multimorbidity is known to be associated with a greater use of health services, including A&E attendances, outpatient attendances, hospital admissions and polypharmacy. Table 4 (below) highlights that increasing multimorbidity is associated with higher resource use and higher costs. This highlights the need to target prevention measures at those diagnosed with one or two LTCs as well as utilising universal prevention services for healthy individuals to slow down the relationship between number of LTCs, increasing ill health and costs.

**Table 4: – Health service use and cost stratified by the number of long term conditions for patients in Leicestershire, 2018/19**

			Average (mean)									
LTC Count	Number of patients	% of patients	Emergency admissions	Elective Admissions	A&E attendances	Outpatient attendances	Total APC cost	Emergency admission cost	Unique Prescription types	Risk of Emergency Admission	Risk of Persistent High Cost	
0	310,473	50.7%	0.0	0.0	0.2	0.4	£ 43	£ 25	1.0	6%	1%	
1	133,742	21.9%	0.1	0.1	0.3	1.0	£ 123	£ 50	2.3	12%	3%	
2	64,318	10.5%	0.1	0.2	0.3	1.6	£ 270	£ 91	3.9	17%	6%	
3	36,730	6.0%	0.1	0.3	0.4	2.3	£ 457	£ 145	5.4	22%	11%	
4	22,877	3.7%	0.2	0.4	0.4	2.9	£ 688	£ 242	6.8	27%	18%	
5	14,701	2.4%	0.3	0.6	0.5	3.5	£ 969	£ 388	8.2	33%	25%	
6	9,738	1.6%	0.3	0.7	0.6	4.1	£ 1,377	£ 575	9.4	39%	32%	
7	6,423	1.0%	0.5	0.8	0.7	4.7	£ 1,748	£ 862	10.4	45%	39%	
8+	12,958	2.1%	1.1	1.0	1.3	6.1	£ 3,610	£ 2,410	13.1	60%	55%	
Total	611,960	100%	0.1	0.1	0.3	1.2	£ 270	£ 129	2.7	13%	6%	

Source: Adjusted Clinical Group (ACG) Risk Stratification Tool, 2019

As expected, the data for Leicestershire County (Table 4) shows that people with multiple long-term conditions (LTCs) were more likely to experience higher hospital admission costs than those with only one condition. For example, the average total admitted patient cost (APC) was around £3,500 higher for patients with 8 or more LTCs than for patients with one condition alone. This pattern is evident across all resource use measures: the average number of A&E attendances, outpatient attendances and elective admissions all increase as the number of long term conditions a person has increases.

One of the most common consequences of being affected by multiple health conditions is being prescribed multiple medications for long periods of time, a phenomenon known as polypharmacy. While some polypharmacy can be appropriate, it can be harmful if poorly managed, especially among people living with frailty. As shown by the table, the count of unique prescription types increases considerably as the number of long term conditions a patient has increases. Those with 8 or more long term conditions have, on average, 13 unique prescription types.

The final two columns in Table 4 are risk scores calculated using the ACG System. The first of these risk columns is the 'risk of persistent high cost' and is calculated as the probability of a patient being in the top 20% of high cost patients in each of the next three six-month periods. The second risk column is the percentage likelihood of emergency admission in the next 12 months. Both ways of calculating future risk show that risk increases as the number of long term conditions increases. For those with 8 or more long term conditions the risk of emergency admission and the risk of persistent high costs in the next 12 months is 60% and 55% - i.e. more likely to happen than not. Even for those with 5 long term conditions the risk of emergency admission in the next 12 months is around 1-in-3 (33%) and the risk of high cost is 1-in-4 (25%).

Using the Johns Hopkins ACG model, it is possible to look at the relationship between age and multimorbidity in relation to cost. Using a data extract from November 2018 for all patients across Leicestershire & Rutland, the population was segmented according to age and multimorbidity. Five age bands and five bands for the number of chronic conditions were created as follows:

- |                     |                                   |
|---------------------|-----------------------------------|
| • A = 0-17 years    | • 0 = zero chronic conditions     |
| • B = 18 – 44 years | • 1 = 1 long term condition (LTC) |
| • C = 45 – 64 years | • 2 = 2 to 4 LTCs                 |
| • D = 65 – 79 years | • 5 = 5 to 7 LTCs                 |
| • E = 80+ years     | • 8 = 8 or more LTCs              |

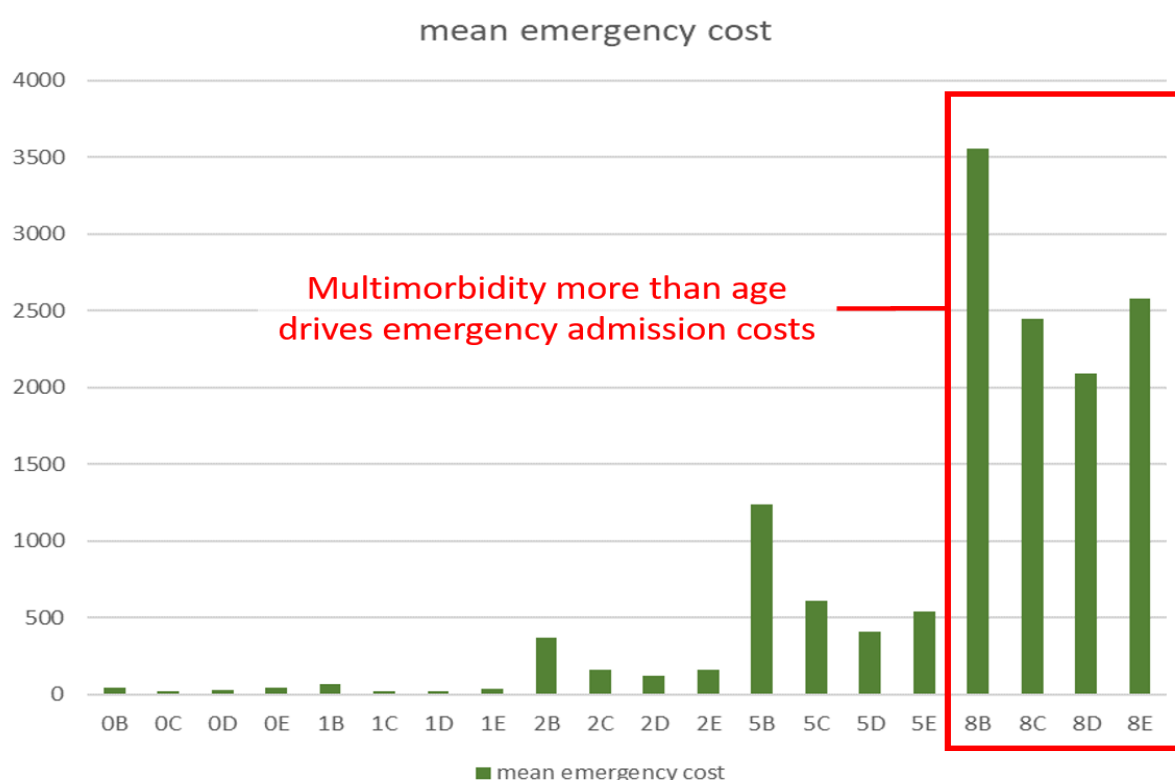
This process placed the whole population into one of 26 different segments according to their age and how many LTCs they had (e.g. B5 = people aged 18-44years with 5 to 7 long-term

conditions).

Figure 9 (below) shows the average emergency cost for the last 12 months for adults in Leicestershire for each of the segments described above (children were removed due to low numbers with multimorbidity). This shows that it is multimorbidity which drives cost, rather than ageing, which is consistent to the national literature.

The highest average costs, shown at the right-hand side of the chart, are all for the segments with people with 8 or more chronic conditions (8), not just the oldest segments (E). Furthermore, the highest segments within that group are not in the oldest age group, they are for people aged 18-44 years (8B). The same pattern is evident for people with between 5 and 7 LTCs, where the average emergency cost over a 12month period is much higher for those aged 18-44 years (5B) than for those aged 85 years and above (5E). This suggests a need to target/commission services for people aged 18-44 years with multimorbidity (5 or more LTCs).

**Figure 9: Mean emergency costs for Leicestershire population segmented by age band and number of long-term conditions (LTCs), 2018/19**



Source: Adjusted Clinical Group (ACG) Risk Stratification Tool, 2019

### 3.6. Long term conditions (LTCs) by age

The number of patients with counts of long term conditions (LTCs) by age is analysed for Leicestershire through Johns Hopkins ACG System. The data shows that, regardless of gender, as we age the prevalence of multimorbidity increases. As shown in Figure 10 (below) in Leicestershire, just under a quarter of people aged 85 years and above (23%) have 8 or more LTCs compared to 1 in 14 patients aged 65-84 years (7%). However, there are fewer people aged over 85 years than there are aged 65-74 years, so it is important that absolute numbers are considered alongside proportions (see Figure 11).

Although a lower proportion of people in the 65-84 years group (7%) have 8 or more LTCs, in absolute numbers this equates to 8,405 people compared to 3,747 people (aged 85 years +). When thinking about commissioning, planning and delivery services, it is important to consider where best to target intervention to both improve patient outcomes and prevent escalating health and care costs. Although, there may be higher costs associated with those aged over 85 years, with 8 or more long-term conditions, it may be that there is limited scope to improve their outcomes further or to reduce health and care costs for this cohort as they are already receiving all the health and care that is appropriate for their needs. However, it may be that, for example, people in a younger age band and/or with a smaller number of long term conditions, could be an area for intervention where it is possible to improve patient outcomes and reduce or prevent escalating health and care costs. This is particularly the case where we know there are potential pathways of comorbidity, such as diabetes and impaired kidney function, chronic kidney disease and renal failure, for example. Thus, risk stratification can be used to inform the service delivery and commissioning response for all the Leicestershire population not just the very old with high numbers of multiple LTCs.

**Figure 10: Long term condition count by age group (%) for patients in Leicestershire, 2018/19.**

Chronic conditions	Children (00-17)	Adults of working age (18-64)	older people (65-84)	very old (85+)	Total (%)
0	83	53	14	5	51
1	14	26	18	8	22
2	2	11	18	10	11
3	1	5	15	12	6
4	0	2	11	12	4
5	0	1	8	12	2
6	0	1	6	10	2
7	0	0	4	8	1
8+	0	0	7	23	2
Total (%)	100	100	100	100	100

Source: Adjusted Clinical Group (ACG) Risk Stratification Tool, 2019

**Figure 11: Long term condition count by age groups (numbers) for patients in Leicestershire, 2018/19**

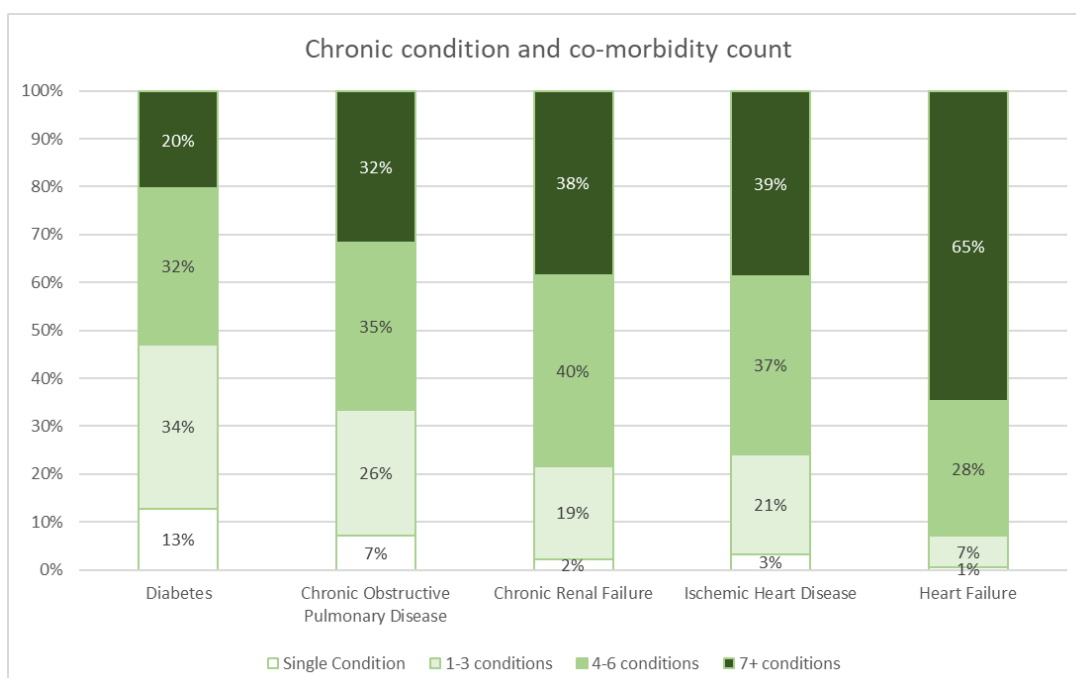
Chronic conditions	Children (00-17)	Adults of working age (18-64)	older people (65-84)	very old (85+)	Total
0	106,677	204,302	16,560	855	328,394
1	18,363	101,910	20,634	1,255	142,162
2	3,089	43,465	20,261	1,695	68,510
3	678	19,734	16,850	1,960	39,222
4	205	9,365	12,888	2,039	24,497
5	110	4,621	9,180	1,966	15,877
6	43	2,444	6,361	1,640	10,488
7	24	1,366	4,266	1,270	6,926
8+	31	1,803	8,405	3,747	13,986
Total	129,220	389,010	115,405	16,427	650,062

Source: Adjusted Clinical Group (ACG) Risk Stratification Tool, 2019

### 3.7. Multimorbidity is the norm

Figure 12 (below) underlines the normalisation of multimorbidity for people in Leicestershire. Figure 12 illustrates that almost all people with heart failure (99 per cent) have at least one other LTC and around two-thirds of people with heart failure (65 per cent) have at least 7 or more other LTCs (in addition to heart failure). A similar, though less pronounced, pattern is evident for other common LTCs. Even for diabetes, only 13 per cent of people with this have no other LTCs, with 83 per cent having at least 1 other LTC as well as diabetes. This demonstrates that multimorbidity is the norm for people with LTCs and it varies by condition type. It also highlights that only treating a single condition such as diabetes, is unlikely to have a huge impact for that individual if their other LTCs are not also treated and managed. Or, put simply, treat the person, not the condition.

**Figure 12: Multimorbidity by condition type for patients in Leicestershire, 2018/19**



Source: Adjusted Clinical Group (ACG) Risk Stratification Tool, 2019

### 3.8. Long term conditions:

To inform the development of an LLR business case for Long Term Conditions (LTCs) the Johns Hopkins ACG System was used to look at prevalence of the following LTCs:

- Cardiac arrhythmia
- Chronic Obstructive Pulmonary Disease (COPD)
- Persistent asthma
- Diabetes
- Chronic Heart Failure (CHF)
- Hypertension

As shown in Table 5, below, the most common of these six conditions is hypertension – which around 1-in-7 people in Leicestershire have (13.8%) and which is roughly the same as the prevalence rate for England. The next most prevalent of these six LTCs in Leicestershire is persistent asthma, which is roughly twice the prevalence for England. The prevalence of diabetes in Leicestershire is slightly lower than for England.

**Table 5: Prevalence by LTC type, Leicestershire population registered at GP practice.**

Long Term Condition (LTC)	Leicestershire		England
	number of people	percentage of population	Prevalence (QOF 2017/18)
Hypertension	85,429	13.8%	13.9%
Persistent Asthma	73,924	11.9%	5.9%
Diabetes	35,566	5.7%	6.8%
Cardiac arrhythmia	21,100	3.4%	-
Chronic Obstructive Pulmonary Disease	12,771	2.1%	1.9%
Chronic Heart Failure	6,764	1.1%	-

*Source: Leicestershire figures from ACG risk stratification tool, November 2018 data extract. Comparative figures for England (where available) from Quality and Outcomes Framework, Achievement, prevalence and exceptions data - 2017-18.<sup>21</sup>*

The prevalence of these six long term conditions is summarised at a locality level for Leicestershire in Table 6 (below), showing the absolute numbers and the proportions of the population with each of these six LTCs. This illustrates that there is variation in the prevalence of these six LTCs at a locality level. For example, in South Blaby and Lutterworth hub around 1-in-6 people have hypertension (16.6%), compared to 1-in-10 people in Harborough Hub (10.0%). Persistent asthma is also high in Blaby & Lutterworth Hub (14.0%), although slightly higher in North Charnwood (14.3%), and almost half as prevalent in Syston, Long Clawson and Melton Hub (7.5%).

**Table 6: Prevalence of six Long Term Conditions (LTCs) at locality level across Leicestershire (absolute numbers and percentages of population) as at November 2018.**

number of people with condition							
Area / locality	Total population	Cardiac arrhythmia	COPD	Persistent Asthma	Diabetes	CHF	Hyper-tension
South Blaby & Lutterworth Hub	47,129	1,810	1,132	6,610	2,541	520	7,832
Hinckley & Bosworth	106,094	3,651	2,258	14,625	6,493	1,493	16,920
North West Leicestershire	99,613	3,604	2,462	13,267	5,813	1,269	15,555
North Blaby Hub	47,840	1,462	836	5,803	2,681	451	7,375
South Charnwood	73,802	2,375	1,414	8,349	4,103	800	10,130
Oadby & Wigston Hub	49,567	1,777	1,040	4,328	3,268	538	5,890
North Charnwood	77,287	1,984	1,324	11,028	4,195	747	8,922
Syston, Long Clawson & Melton Hub	59,011	2,129	1,255	4,436	3,420	520	6,757
Harborough Hub	60,619	2,308	1,050	5,478	3,052	426	6,048
<b>Leicestershire</b>	<b>620,962</b>	<b>21,100</b>	<b>12,771</b>	<b>73,924</b>	<b>35,566</b>	<b>6,764</b>	<b>85,429</b>
percentage of population with condition							
Area / locality	Total population	Cardiac arrhythmia	COPD	Persistent Asthma	Diabetes	CHF	Hyper-tension
South Blaby & Lutterworth Hub	47,129	3.8%	2.4%	14.0%	5.4%	1.1%	16.6%
Hinckley & Bosworth	106,094	3.4%	2.1%	13.8%	6.1%	1.4%	15.9%
North West Leicestershire	99,613	3.6%	2.5%	13.3%	5.8%	1.3%	15.6%
North Blaby Hub	47,840	3.1%	1.7%	12.1%	5.6%	0.9%	15.4%
South Charnwood	73,802	3.2%	1.9%	11.3%	5.6%	1.1%	13.7%
Oadby & Wigston Hub	49,567	3.6%	2.1%	8.7%	6.6%	1.1%	11.9%
North Charnwood	77,287	2.6%	1.7%	14.3%	5.4%	1.0%	11.5%
Syston, Long Clawson & Melton Hub	59,011	3.6%	2.1%	7.5%	5.8%	0.9%	11.5%
Harborough Hub	60,619	3.8%	1.7%	9.0%	5.0%	0.7%	10.0%
<b>Leicestershire</b>	<b>620,962</b>	<b>3.4%</b>	<b>2.1%</b>	<b>11.9%</b>	<b>5.7%</b>	<b>1.1%</b>	<b>13.8%</b>

*Source: ACG Risk Stratification data extract, November 2018.*

Note: LTCs included here are derived from a combination of the patients' diagnosis code history and medication fills and are flagged in the ACG system with condition markers. The exception to this is cardiac arrhythmia which is flagged in ACG as one of the Expanded Diagnosis Cluster (EDC) codes. Cardiac arrhythmia includes atrial fibrillation and atrial flutter codes, plus other arrhythmic such as ventricular tachycardia and left bundle branch block.



As multimorbidity is associated with increased resource use and increased cost, it is useful to consider how these six LTCs combine with other LTCs in the Leicestershire population. The section that follows provides a summary of the prevalence of various long-term conditions for people with each of the six long term conditions described above. Alongside the prevalence an average cost has also been included. The cost figures are calculated on secondary services use only (previous 12 months) and excludes pharmacy costs. Thus, it does not reflect all health costs but is useful for comparative purposes.

Figure 13, below, shows the prevalence of various long-term conditions for people with cardiac arrhythmia. This shows that over half of all people with cardiac arrhythmia also have hypertension (56%) and just under a quarter have ischemic heart condition (23.6%). Although less prevalent there is a higher cost for people with cardiac arrhythmia and mental health conditions; depression, schizophrenia and bipolar disorder. There is a very high cost associated with people with cardiac arrhythmia and immunosuppression/transplant, but this is based on a very small number of people. As shown in the information which follows, high cost is associated for all people with immunosuppression/transplant, although the numbers are, relatively, very small.

**Figure 13: Multimorbidity: prevalence of other long term conditions for people with cardiac arrhythmia in Leicestershire, 2018/19.**

People with Cardiac Arrhythmia and...	n	%	Avg cost (12mths)
Hypertension	11,798	56.0%	£ 2,807
Ischemic Heart Condition	4,970	23.6%	£ 3,600
Chronic Renal Failure	4,491	21.3%	£ 3,307
Diabetes	4,353	20.7%	£ 3,099
Low back pain	3,170	15.0%	£ 2,758
Persistent asthma	2,957	14.0%	£ 2,569
COPD	2,190	10.4%	£ 3,703
Hypothyroidism	1,866	8.9%	£ 3,026
Osteoporosis	1,420	6.7%	£ 3,532
Depression	1,136	5.4%	£ 4,590
Age related macular degeneration	1,097	5.2%	£ 3,097
Glaucoma	991	4.7%	£ 2,871
Rheumatoid arthritis	576	2.7%	£ 3,909
Seizure Disorders	494	2.3%	£ 4,056
Parkinson's Disease	288	1.4%	£ 3,672
Schizophrenia	159	0.8%	£ 4,237
Bipolar disorder	117	0.6%	£ 3,592
Immunosuppression/transplant	58	0.3%	£ 11,111
all people with Cardiac Arrhythmia	7,006	-	£ 3,420

Source: Adjusted Clinical Group (ACG) Risk Stratification Tool, 2019

Figure 14, below, shows the prevalence of various long-term conditions for people with Chronic Obstructive Pulmonary Disease (COPD). Just under half of people with COPD also have hypertension and for those people, their average cost over 12 months was around 30% higher than for all people with COPD (£2,537 compared to £1,867). Around a third of people with COPD also have persistent asthma (35.4%), although the costs were not much higher than the average for this group. Around a fifth of people with COPD also have diabetes (19.7%) and the costs for this group were over a third higher than for all people with COPD (37% higher). Although smaller proportions of people, there were also high costs associated with people who have COPD and congestive heart failure (90% higher than average for all people with COPD) and those who have COPD and depression (79% higher).

**Figure 14: Multimorbidity: prevalence of other long-term conditions for people with Chronic Obstructive Pulmonary Disorder (COPD) in Leicestershire, 2018/19.**

People with Chronic Obstructive Pulmonary Disease (COPD) and...	n	%	Avg cost (12mths)
Hypertension	6,187	48.6%	£ 2,537
Persistent asthma	4,510	35.4%	£ 1,911
Diabetes	2,509	19.7%	£ 2,726
Ischemic Heart Condition	2,201	17.3%	£ 3,403
Low back pain	2,088	16.4%	£ 2,419
Chronic Renal Failure	1,999	15.7%	£ 3,229
Congestive Heart Failure	1,322	10.4%	£ 4,895
Hypothyroidism	1,050	8.2%	£ 2,562
Osteoporosis	1,042	8.2%	£ 3,110
Depression	984	7.7%	£ 4,301
Age related macular degeneration	595	4.7%	£ 2,628
Glaucoma	568	4.5%	£ 2,366
Rheumatoid arthritis	484	3.8%	£ 3,823
Seizure Disorders	285	2.2%	£ 3,740
Schizophrenia	159	1.2%	£ 3,199
Parkinson's Disease	126	1.0%	£ 3,880
Bipolar disorder	98	0.8%	£ 2,529
Immunosuppression/transplant	22	0.2%	£ 8,596
all people with Chronic Obstructive Pulmonary Disease (COPD)	12,737	-	£ 1,867

*Source: Adjusted Clinical Group (ACG) Risk Stratification Tool, 2019*

Figure 15, below, shows the prevalence of various long-term conditions for people with persistent asthma. This shows that persistent asthma is a much more prevalent LTC in Leicestershire and there is less commonality with other LTCs. The most common multimorbidity for people with persistent asthma is hypertension, with 16.2% of people –

around 1-in-6 – with persistent asthma also having hypertension. There is a higher cost (c. 87% higher) associated with people with both persistent asthma and hypertension. Although less prevalent – around 1,148 people – there is a much higher cost associated with people who have both persistent asthma and congestive heart failure – around 148% higher.

**Figure 15: Multimorbidity: prevalence of other long-term conditions for people with persistent asthma in Leicestershire, 2018/19**

People with persistent asthma and...	n	%	Avg cost (12mths)
Hypertension	12,127	16.2%	£ 1,501
Low back pain	5,433	7.3%	£ 1,392
Diabetes	5,158	6.9%	£ 1,571
Depression	4,597	6.2%	£ 1,651
Chronic Obstructive Pulmonary Disease	4,510	6.0%	£ 1,911
Hypothyroidism	3,143	4.2%	£ 1,282
Ischemic Heart Condition	2,662	3.6%	£ 2,623
Chronic Renal Failure	2,650	3.5%	£ 2,224
Osteoporosis	1,619	2.2%	£ 2,182
Seizure Disorders	1,333	1.8%	£ 1,632
Congestive Heart Failure	1,148	1.5%	£ 3,934
Rheumatoid arthritis	949	1.3%	£ 2,396
Glaucoma	916	1.2%	£ 1,500
Age related macular degeneration	720	1.0%	£ 2,080
Bipolar disorder	391	0.5%	£ 1,640
Schizophrenia	386	0.5%	£ 1,369
Parkinson's Disease	208	0.3%	£ 2,175
Immunosuppression/transplant	68	0.1%	£ 6,961
all people with persistent asthma	74,735		£ 595

Source: Adjusted Clinical Group (ACG) Risk Stratification Tool, 2019

Figure 16, below, shows the prevalence of various long term conditions for people with diabetes. This shows that over half of all people in Leicestershire with diabetes (55%) also have hypertension. The next most common LTC for people with diabetes is chronic renal failure, persistent asthma, ischemic heart condition and low back pain (between 12.2% and 16.1%). Although not as prevalent there is a relatively high cost associated with people with diabetes and congestive heart failure (around 112% higher cost), and those with diabetes and depression (c. 89% higher cost).

**Figure 16: Multimorbidity: prevalence of other long term conditions for people with diabetes in Leicestershire, 2018/19.**

People with diabetes and...	n	%	Avg cost (12mths)
Hypertension	19,621	55.0%	£ 1,611
Chronic Renal Failure	5,728	16.1%	£ 2,329
Persistent asthma	5,158	14.5%	£ 1,571
Ischemic Heart Condition	4,971	13.9%	£ 2,670
Low back pain	4,359	12.2%	£ 1,770
Hypothyroidism	2,974	8.3%	£ 1,662
Chronic Obstructive Pulmonary Disease	2,509	7.0%	£ 2,726
Congestive Heart Failure	2,254	6.3%	£ 4,191
Depression	1,886	5.3%	£ 3,075
Glaucoma	1,285	3.6%	£ 1,738
Age related macular degeneration	1,169	3.3%	£ 2,178
Osteoporosis	1,137	3.2%	£ 2,848
Rheumatoid arthritis	726	2.0%	£ 2,684
Seizure Disorders	648	1.8%	£ 2,616
Schizophrenia	382	1.1%	£ 1,790
Parkinson's Disease	279	0.8%	£ 2,598
Bipolar disorder	227	0.6%	£ 1,738
Immunosuppression/transplant	89	0.2%	£ 9,418
all people with diabetes	35,677	-	£ 1,188

Source: Adjusted Clinical Group (ACG) Risk Stratification Tool, 2019

Figure 17, below, shows the prevalence of various long-term conditions for people with Congestive Heart Failure (CHF). This shows that over two-thirds of people with CHF also have hypertension (69%). The next most prevalent LTC for people with CHF is ischemic heart condition (44%), followed by chronic renal failure and diabetes. Although less prevalent in number there is a higher cost associated with people who have CHF and depression – around 60% higher than the cost for all people with CHF.

**Figure 17: – Multimorbidity: prevalence of other long-term conditions for people with Congestive Heart Failure (CHF) in Leicestershire, 2018/19.**

People with Congestive Heart Failure and...	n	%	Avg cost (12mths)
Hypertension	4,837	69.0%	£ 3,993
Ischemic Heart Condition	3,082	44.0%	£ 4,095
Chronic Renal Failure	2,627	37.5%	£ 4,202
Diabetes	2,254	32.2%	£ 4,191
COPD	1,322	18.9%	£ 4,895
Low back pain	1,277	18.2%	£ 3,875
Persistent asthma	1,148	16.4%	£ 3,934
Hypothyroidism	857	12.2%	£ 4,333
Osteoporosis	692	9.9%	£ 4,586
Depression	533	7.6%	£ 6,346
Age related macular degeneration	490	7.0%	£ 3,859
Glaucoma	372	5.3%	£ 3,819
Rheumatoid arthritis	264	3.8%	£ 4,982
Seizure Disorders	179	2.6%	£ 5,094
Parkinson's Disease	133	1.9%	£ 4,857
Schizophrenia	87	1.2%	£ 5,181
Bipolar disorder	51	0.7%	£ 4,679
Immunosuppression/transplant	37	0.5%	£ 9,439
all people with Congestive Heart Failure	7,006	-	£ 3,420

Source: Adjusted Clinical Group (ACG) Risk Stratification Tool, 2019

Figure 18, below, shows the prevalence of various long-term conditions for people with Hypertension. This shows that there is a relatively high prevalence of hypertension amongst people in Leicestershire, compared to other long-term conditions. Just under a quarter of people with hypertension also have diabetes (22.5%) and there is a higher cost associated with people with both these conditions compared to the cost for all people with hypertension (around 29% higher). The next most prevalent LTC for people with hypertension is chronic renal failure, which are 1-in-6 people with hypertension have (16.1%), followed by ischemic heart condition, persistent asthma and low back pain (all around 13-14%). Although less prevalent there is higher costs associated with people who have hypertension and congestive heart failure (108% higher cost compared to all people with hypertension) and people who have hypertension and depression (88% higher cost).

**Figure 18: Multimorbidity: prevalence of other long-term conditions for people with hypertension in Leicestershire, 2018/19.**

People with Hypertension and...	n	%	Avg cost (12mths)
Diabetes	19,621	22.5%	£ 1,611
Chronic Renal Failure	14,021	16.1%	£ 2,024
Ischemic Heart Condition	12,164	13.9%	£ 2,503
Persistent asthma	12,127	13.9%	£ 1,501
Low back pain	11,623	13.3%	£ 1,742
Hypothyroidism	7,267	8.3%	£ 1,557
COPD	6,187	7.1%	£ 2,537
Congestive Heart Failure	4,837	5.5%	£ 3,993
Osteoporosis	4,519	5.2%	£ 2,200
Depression	4,140	4.7%	£ 3,076
Glaucoma	3,517	4.0%	£ 1,611
Age related macular degeneration	3,058	3.5%	£ 2,074
Rheumatoid arthritis	2,045	2.3%	£ 2,660
Seizure Disorders	1,557	1.8%	£ 2,612
Parkinson's Disease	715	0.8%	£ 2,587
Schizophrenia	571	0.7%	£ 2,130
Bipolar disorder	414	0.5%	£ 2,085
Immunosuppression/transplant	220	0.3%	£ 9,417
all people with Hypertension	87,240		£ 1,198

Source: Adjusted Clinical Group (ACG) Risk Stratification Tool, 2019

The examples above look at the six LTCs which are the focus of an LLR business plan and the prevalence of one other LTC from a list of 18 different LTCs. However, we know that multimorbidity is the norm and that increased multimorbidity corresponds to increased resource use and cost. However, even considering combinations of three LTCs, rather than two, is complex. In the summary tables included above there are 19 different LTCs in total. There are just under a thousand (969) possible combinations of 3 LTCs which can be drawn from a group of 19 LTCs. Thus, it is not practical to review analysis of a thousand different combinations, rather the approach needs to be targeted based on clinical knowledge of comorbidities and where the biggest impact can be achieved in terms of patient outcomes and reduced health and care cost. Reviewing the information provided here, higher costs are associated with depression and congestive heart failure and there is high prevalence of hypertension and other LTCs.

#### 4. How does this impact?

Between 2002 and 2004, the Kings Fund estimated that across England, there were 201 emergency department visits per 1,000 population and 735 outpatient appointments per

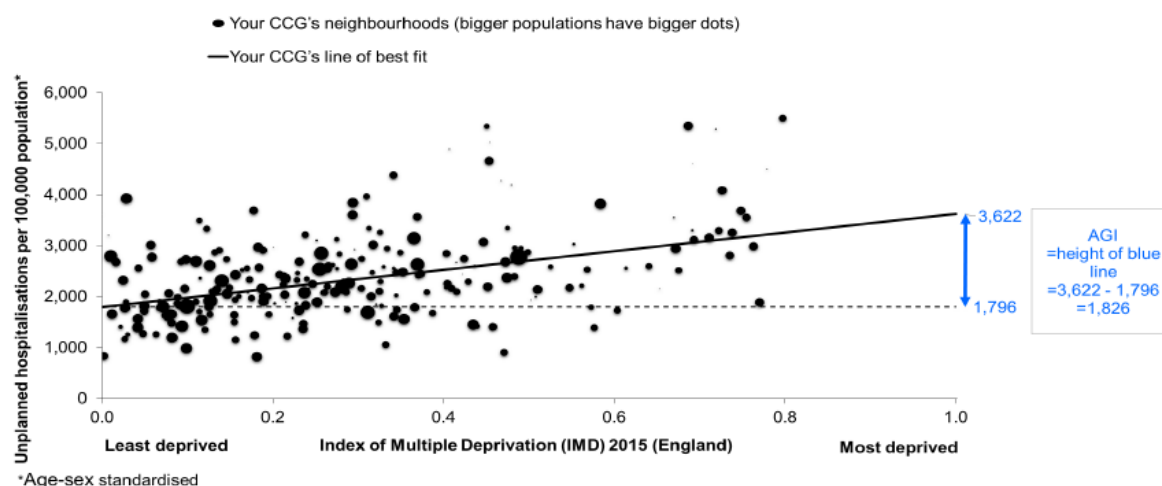
1,000 population. More recent data shows that in 2017-18 there were 23.8 million attendances in Accident and Emergency (A&E). This is an increase of 2 per cent compared with 2016-17 and 22 per cent since 2008-09.<sup>22</sup> However, these hospital visits are not spread evenly throughout the population. It was estimated that the highest relative risk (0.5% of the population) individuals were having 8.5 times more emergency department visits and 5.8 times more outpatient appointments than the population average.<sup>23</sup> In 2017-18, there were around twice as many A&E attendances (3.0 million attendances) for the 10 per cent of the population living in the most deprived areas compared with the least deprived 10 per cent (1.4 million attendances).

In 2015 there were over 250,000 Avoidable Emergency Admissions (AEAs) linked to living in with one study estimating that at least £12.5 billion a year is due to excess hospital and primary care costs because of the excess burden of illness in disadvantaged groups.<sup>24,25</sup> Additionally, the number of reattendances to A&E has also increased each year. In 2017-18 the reported number of reattendances was 1,796,526, an increase of 86 per cent from 2008-09 (964,453), which equates to 9% of the total A&E attendance.<sup>22</sup>

In December 2018, NHS England published new RightCare data packs for each CCG exploring health inequalities in avoidable unplanned hospital admissions and access to psychological therapies.<sup>26</sup> The packs present avoidable unplanned admissions by neighbourhood, health problem and certain demographics (age, gender and ethnicity).

Figure 19 below shows that NHS East Leicestershire and Rutland CCG has neighbourhoods across four quintiles of deprivation, albeit with the majority in the least deprived quintile. The line of best fit shows a correlation between increasing deprivation and increasing admissions for ACSCs. However, compared to similar 10 CCGs, NHS East Leicestershire and Rutland CCG has higher inequalities, in this indicator, than 8 of the similar 10. The top three priority wards were 1) South Wigston, 2) Wigston All Saints, and 3) Market Harborough-Welland. In all priority wards, the top five conditions for ACSCs in 2016/17 were 1) Pain in throat and chest, 2) Abdominal and pelvic pain, 3) Other disorders of urinary system, 4) Other chronic obstructive pulmonary disease and 5) Atrial fibrillation and flutter.<sup>27</sup>

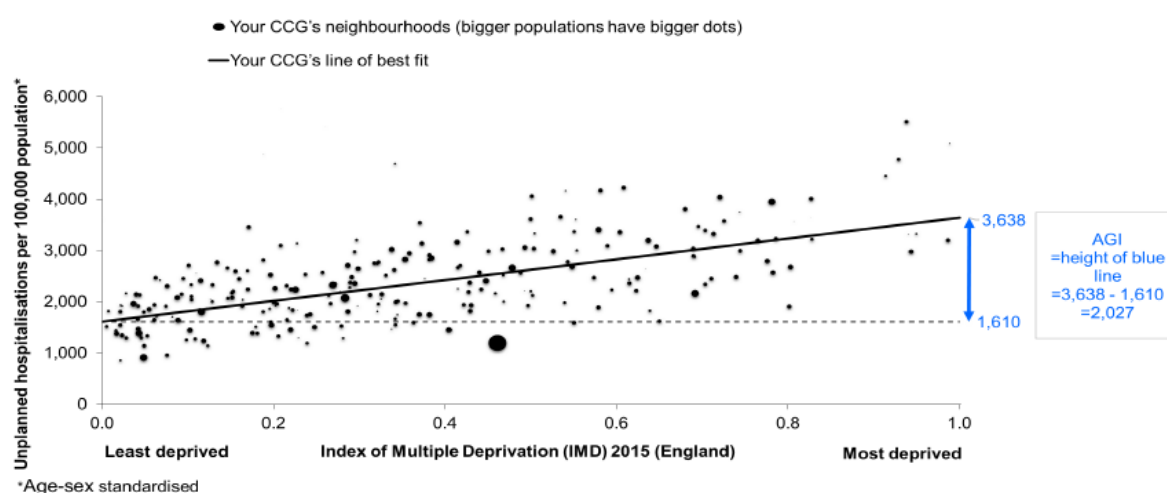
**Figure 19: Absolute Gradient of Inequality (AGI) for NHS East Leicestershire and Rutland CCG in 2016/17<sup>27</sup>**



Source: NHS England, NHS RightCare Data Packs, 2016/17

Figure 20 below shows that NHS West Leicestershire CCG has neighbourhoods across all quintiles of deprivation, albeit with the majority in the four least deprived quintiles. The line of best fit shows a correlation between increasing deprivation and increasing admissions for ACSCs and the number is higher than that of NHS East Leicestershire and Rutland CCG. However, compared to similar 10 CCGs, NHS West Leicestershire CCG has higher inequalities, in this indicator, than 7 of the similar 10. The top three priority wards were 1) Hinckley De Montfort, 2) Barwell, and 3) Hinckley Trinity. In all priority wards, the top five conditions for ACSCs in 2016/17 were 1) Pain in throat and chest, 2) Abdominal and pelvic pain, 3) Other disorders of urinary system, 4) Other chronic obstructive pulmonary disease and 5) Heart failure. Bar the 5<sup>th</sup>, these are the same for NHS East Leicestershire and Rutland CCG.<sup>28</sup>

**Figure 20: Absolute Gradient of Inequality (AGI) for NHS West Leicestershire CCG in 2016/17<sup>28</sup>**



Source: NHS England, NHS RightCare Data Packs, 2016/17



Evidence from the Health Foundation also suggested that emergency admissions in England have increased by 42% over the past 12 years, with one in three emergency admissions in 2015/16 being in patients with five or more health conditions, such as heart disease, stroke, type 2 diabetes, dehydration, hip fracture or dementia. This is up from one in ten in 2006/07. Hence it is estimated that 14% of emergency hospital admissions for ambulatory care conditions might be preventable in the community or through appropriate primary care or through a 'personalised care plan' providing an intense outreach and targeted interventions for these individuals might act to substantially reduce these numbers.<sup>9</sup>

The Kings Fund identifies three methods of predicting hospital admissions<sup>23</sup> :

- Threshold model- using a few variables such as being above 65 and having at least two hospitalisations to determine whether a person was at high risk of readmission
- Clinical knowledge – using clinicians to identify who they believe are at highest risk and
- Predictive risk models (PRMs)- using an algorithm to determine whether a patient is likely to return to hospital. Different predictive models will consider different factors and with different weightings.<sup>23</sup>

The Johns Hopkins ACG tool has been implemented as the predictive risk model tool across GP practices in Leicester City for several years and more recently in Leicestershire and Rutland (late 2018). The previous section shows the results of using the ACG tool across Leicestershire, however the following section reviews the evidence from a rapid literature review with regards to the impactability of using these tools and implementing a multimorbidity care coordination approach.

#### **4.1. Cost effectiveness of implementing a predictive risk model**

There are many costs associated with implementing a predictive model including developing the model, setting it up and obtaining the data, and implementing any interventions on the identified individuals. This is counterbalanced by the benefits associated with reduced hospital admissions both economic and health. A rapid literature review confirms that there are limited numbers of published reports that consider the cost analysis of implementing a predictive risk model across a health and care system.

The review by Oliver Baxter et al, 2015<sup>29</sup> mentions Nuffield Trust Virtual Ward programme which reported a decrease in cost per patient between six months pre and post intervention and a virtual ward programme in Croydon which reported £1 million savings in acute admission costs.<sup>29</sup> However both reports were critically assessed as low quality and therefore results should be considered carefully. Other interventions identified included a further

virtual ward intervention in Worcestershire, using predictive risk stratification at the general practice level to identify those who were at risk of potentially avoidable hospitalisations. This intervention contributed to a 10% reduction in emergency hospital admissions, representing a potential saving of £1.2 million.<sup>29</sup> Outside of the UK, a New Zealand study estimated potential savings of their predictive risk model at between \$396,000 and \$1.69 million.<sup>29</sup>

The rapid review mentions no risk models which were found to not be cost effective. However as many of these reviews are proprietary, it is highly likely models which are found to be economically unfeasible are dropped or the results are not published. This would lead to substantial reporting bias and may greatly affect the validity of the economic evaluations available. However overall the predictive risk models were shown to identify patients at risk of hospital admissions. The next section discusses who should be targeted for a multimorbidity/ integrated care coordination approach to ensure the greatest return on investment when using the risk stratification tools across LLR.

#### 4.2. Interventions to reduce hospital admissions

There are a range of interventions identified in the rapid evidence review as achieving reductions in hospital admissions and readmissions in patients with ACSC. Table 7 summarises the key interventions identified.<sup>§</sup>

**Table 7: Summary of interventions identified as reducing hospital admissions and readmissions in ACSC.** <sup>§ 15</sup>

Intervention	LTC where impact evidenced specifically	Comments
Body weight/ Physical activity	Hypertension  Falls	Specifically, physical activity, sodium and potassium intake and some evidence regarding alcohol consumption <sup>30</sup> Strength and balance activities <sup>31</sup> For additional detail see the Leicestershire obesity; physical activity, healthy weight and nutrition JSNA chapter available at <a href="http://www.lsr-online.org/uploads/obesity-physical-">http://www.lsr-online.org/uploads/obesity-physical-</a>

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<sup>§</sup> this was not a systematic review, so other interventions may be applicable.

Intervention	LTC where impact evidenced specifically	Comments
		<a href="#">activity-healthy-weight-and-nutrition.pdf</a>
Case management/ Care Coordination	Diabetes, Heart Failure <sup>15</sup> , Severe mental health with high hospital admissions <sup>32</sup>	Specifically, patients with diabetic ketoacidosis (DKA) and severe hypoglycaemia. <sup>33</sup> Limited evidence for asthma patients. <sup>15</sup>
Specialist clinics	Diabetes, Heart Failure <sup>15</sup>	
Medication reviews	Over 65years on antiplatelets, NSAIDs, diuretics and anticoagulants	6.5% of hospital admissions are for adverse effects of medicines this rises to 17% in the over 65 age group. Over 50% of errors were in 4 disease classes, antiplatelets, NSAIDs, diuretics and anticoagulants Conflicting evidence on effectiveness for older people especially with heart failure or asthma <sup>15</sup>
Education and self-management	Diabetes, COPD, asthma (adults only), heart failure (weaker) <sup>15</sup>	National Diabetes Prevention Programme
Telemedicine	Heart disease, diabetes, hypertension and the older people <sup>15</sup>	Based on the evidence reviewed, the most effective telecare interventions appear to be automated vital signs monitoring (for reducing health service use) and telephone follow up by nurses (for improving clinical indicators and reducing health service use). The cost-effectiveness of these interventions was less certain. <sup>15</sup>
Exercise and rehabilitation	COPD, coronary heart disease <sup>15</sup> , hypertension <sup>30</sup>	Pulmonary rehabilitation is a highly effective and safe intervention to reduce hospital admissions in patients who have recently suffered an exacerbation of COPD, exercise based cardiac rehabilitation for coronary heart disease is also effective <sup>15</sup> .

Intervention	LTC where impact evidenced specifically	Comments
Vaccine programmes	Influenza and pneumonia	Specifically, influenza and pneumonia vaccination in older people.
Oral health	CVD, diabetes, aspiration pneumonia	Chronic inflammation caused by a poor periodontal status is a risk factor for cardiovascular disease. Nutritional deficiencies, dehydration and urinary tract infections from poor oral health. Poor oral health can also worsen the confusion associated with dementia. Oral hygiene can reduce the incidence of aspiration pneumonia in frail older people. <sup>34,35</sup>

Other interventions identified as having a positive effect on reducing admissions include continuity of care with a GP, hospital at home, early senior review on A&E, MDT interventions, integration of primary and secondary care. Structured discharge planning and personalised care programmes have been found to reduce readmissions. Interventions found with little or no effect include pharmacist home based medication review, generic community-based case management, early discharge to hospital at home, nurse led interventions pre and post discharge for patients with COPD.<sup>15</sup>

## 5. Policy and Guidance

There are a range of local and national policies that support the work of multimorbidity and frailty. The section below outlines some of the key strategic priorities and clinical guidance for this area.

### 5.1. NICE Guidance

NICE (National Institute for Health and Care Excellence) has published several clinical guidelines, guidance and quality standard documents relating specifically to multimorbidity and frailty including;

#### 5.1.1. NG56 (2016) Multimorbidity: clinical assessment and management <sup>36</sup>

This guideline discusses ways to optimise care for adults with multimorbidity by reducing a

patient's treatment burden (via polypharmacy and multiple appointments) and unplanned care. The guidance promotes shared decision making based on what is important to the individual patient (including treatments, health priorities, lifestyle and goals) to improve quality of life.

NICE suggest that the people more likely to benefit from a tailored multimorbid approach are the individual that meet the following criteria (or it is specifically requested by the individual);

- **They find it difficult to manage their treatments or day-to-day activities**
- **They receive care and support from multiple services and need additional services**
- **They have both long-term physical and mental health conditions**
- **They have frailty or falls.** The guidance suggests assessing frailty in all multimorbid patients that are not acutely unwell. This may be completed in a primary, community or hospital setting informally using assessment of gait speed, self-report health status (how would you rate your health status on a scale from 0 to 10?', with scores of 6 or less indicating frailty), formal gait assessment (more than 5 seconds to walk 4 metres indicating frailty), or formal frailty questionnaires including PRISMA-7 (with scores of 3 and above indicating frailty).
- **They frequently seek unplanned or emergency care to hospital or care home**
- **They are prescribed multiple regular medicines.** NICE suggests using the multimorbidity care approach to those adults of any age who are prescribed 15 or more regular medicines, due to the higher risk of adverse events and drug interactions. It also suggests considering using this approach for patients with 10-14 regular medications and those prescribed fewer than 10 medications but are at particular risk of adverse reactions<sup>36</sup>.

These individuals may be identified through routine care or through proactively using a risk stratification to primary care records approach (as described above).

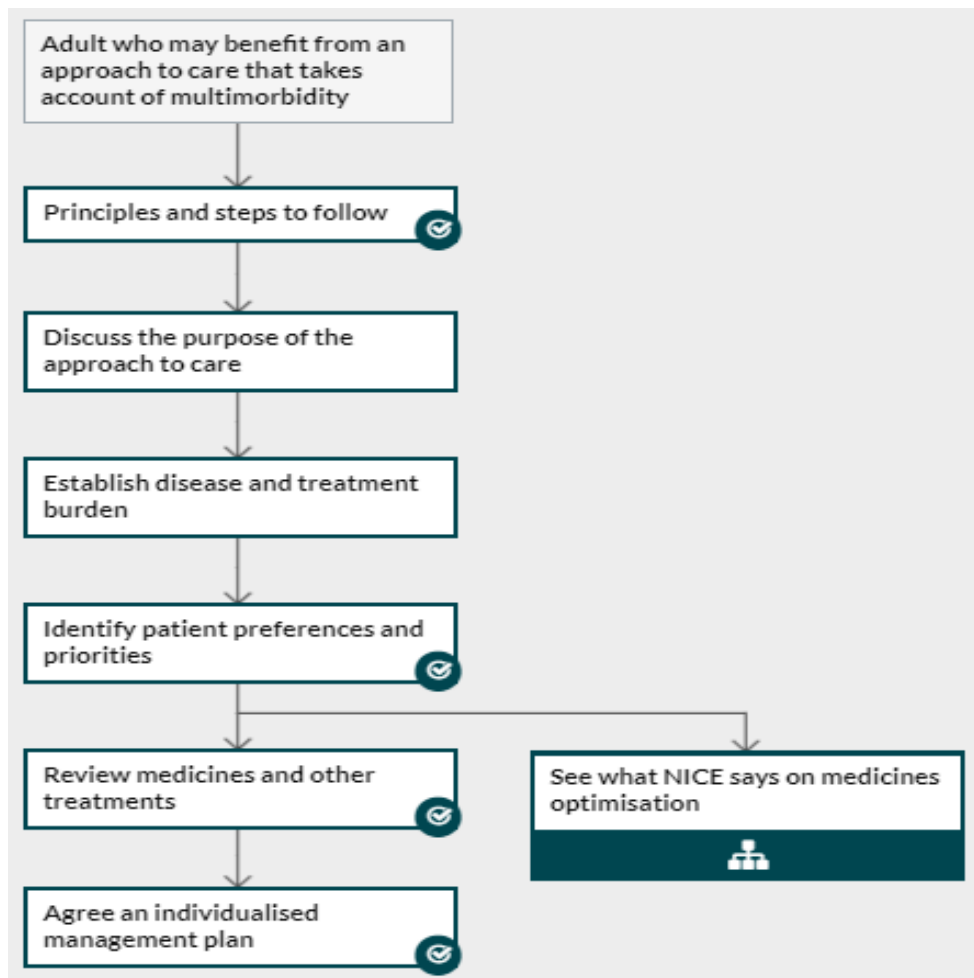
The guidance suggests that the multimorbidity care approach should focus on how the following factors can improve quality of life;

- how the person's health conditions and their treatments interact
- the person's individual needs, preferences for treatments, health priorities, lifestyle and goals
- the benefits and risks of following recommendations from guidance on single health conditions
- reducing treatment burden, adverse events, and unplanned care
- improving coordination of care across services.

The approach will consider the individuals disease burden and treatment/ medicines, goals values and priorities to develop an individualised management plan with the individual (see Figure 21). This will include future goals and plans, who is coordinating/ communicating the

care and agreed follow up depending on urgency.<sup>36</sup>

**Figure 21: Delivering an approach to care that takes account of multimorbidity (taken from [NICE 2017](#)<sup>36</sup>)**



### 5.1.2. QS153 (2017) Multimorbidity<sup>37</sup>

This NICE quality standard covers clinical assessment, prioritising and managing healthcare for multimorbidity. As discussed earlier, NICE define multimorbidity as adults aged 18 years and over with 2 or more long-term health conditions (multimorbidity). At least 1 of these conditions must be a physical health condition.<sup>37</sup> The standard discusses four priority areas for improvement to deliver high quality care. These include;

**Statement 1:** Adults with multimorbidity are identified by their GP practice.

**Statement 2:** Adults with an individualised management plan for multimorbidity are given opportunities to discuss their values, priorities and goals.

**Statement 3:** Adults with an individualised management plan for multimorbidity know who is responsible for coordinating their care.

**Statement 4:** Adults having a review of their medicines and other treatments for multimorbidity discuss whether any can be stopped or changed.<sup>37</sup>

The quality standards do not cover care for people who have multiple mental health problems and no physical health conditions because their care is largely delivered by psychiatric services.

## **5.2. National Strategies**

### **5.2.1. NHS Long Term Plan<sup>38</sup>**

The NHS Long Term Plan (LTP) was published in January 2019 and sets out how the NHS will be redesigned to ensure it is fit for the future. The vision for the NHS LTP is that ‘people get the right care at the right time in the optimal care setting’. There are seven chapters covering the new service model, action on prevention and health inequalities, care and quality outcomes, workforce, digitally enabled service and allocation of resource and next steps. The summary below details the key areas that are relevant to the multimorbidity and frailty workstreams across LLR.

One of the key developments in the new NHS service model is to boost ‘out-of-hospital’ care, and finally dissolve the historic divide between primary and community health services. This will ensure services are more joined up, proactive and differentiated to support individual needs. The new model will involve the development of a new urgent community response offer and recovery support from Primary Care Networks (PCNs). PCNs will be groups of local GP practices and community teams managing the needs of a 30-50k population. These will be supported by wider integrated neighbourhood teams that include social care, prevention and community staff. PCNs will have single network contracts and funds with new performance measures to treat at home (including enhanced health in care homes) and avoid acute admissions. There will be a greater rate of investment in GPs and community care than the overall NHS plan at ~ £4.5billion.

The LTP aims to provide people with support to get more control over their own health and more personalised care when they need it. This includes the roll out of social prescribing (non-clinical interventions) and personal care budgets, to provide greater links to patient and voluntary groups and concentrate on ‘what matters to someone’ rather than ‘what’s the matter with someone’. This will include further developing shared responsibility for health (i.e. expert patient groups, communities) in particular for long term conditions such as diabetes, asthma and respiratory conditions, and online therapies for common mental health problems. Specific aims have been set with regards to roll out of a NHS Comprehensive Model of Personalised Care across the country (reaching 2.5 million people by 2023/24 and then aiming to double that again within a decade) and social prescribing link workers (with over 1,000 to be in place across PCNs by the end of 2020/21 rising further by 2023/24, with the

aim that over 900,000 people are able to be referred to social prescribing schemes). This will increase the opportunity to embed a holistic, preventative approach into multimorbid care as discussed in section 5.1.

Local NHS organisations will increasingly focus on population health management and move to Integrated Care Systems (ICS) by April 2021. An ICS brings together local organisations to redesign care and improve population health, creating shared leadership and action. Locally this would be at a LLR level, whilst working with local authorities at the 'place' and localities at the 'neighbourhood' levels. They are a pragmatic and practical way of delivering the 'triple integration' of primary and specialist care, physical and mental health services, and health with social care.

It is likely that there will only be one CCG per ICS in the longer term and the system will move to a 'population health management' approach using risk stratification and predictive prevention (linked to new opportunities for tailored screening, case finding and early diagnosis) to better support people to stay healthy and avoid illness complications within the PCN footprints. This may include use of the Electronic Frailty Index to identify those at risk of falls. The Better Care Fund will also be reviewed in 2019 which will have implications for a range of services supporting multimorbid or frail individuals.

The NHS LTP plan also discussed the importance of prevention and reducing health inequalities, which are likely to have a greater impact on multimorbid and frail individuals that are more likely to be from deprived backgrounds. With regards to quality outcomes the following disease areas have been highlighted as priorities for better care; **cancer** (including increasing early diagnose from 50 to 75% of cases by 2028), **cardiovascular disease, stroke, diabetes, respiratory disease and adult mental health** services. This is due to the latest Global Burden of Disease study that shows that the top five causes of early death for the people of England are: heart disease and stroke, cancer, respiratory conditions, dementias, and self-harm and the slower improvement since 2010 in years-of-life-lost is 'predominantly in cardiovascular diseases and some cancers'.<sup>7</sup> This includes working with local authority partners on prevention and early detection, improving the effectiveness of the Health Checks, further expanding provision of structured education and digital self-management support tools for those with type 2 diabetes and glucose monitors, increasing access to pulmonary rehabilitation and education to respiratory patients and expansion of Improving Access to Psychological Therapies (IAPT) programme.



### 5.3. Local Strategies

#### 5.3.1. LLR Better Care Together <sup>39</sup>

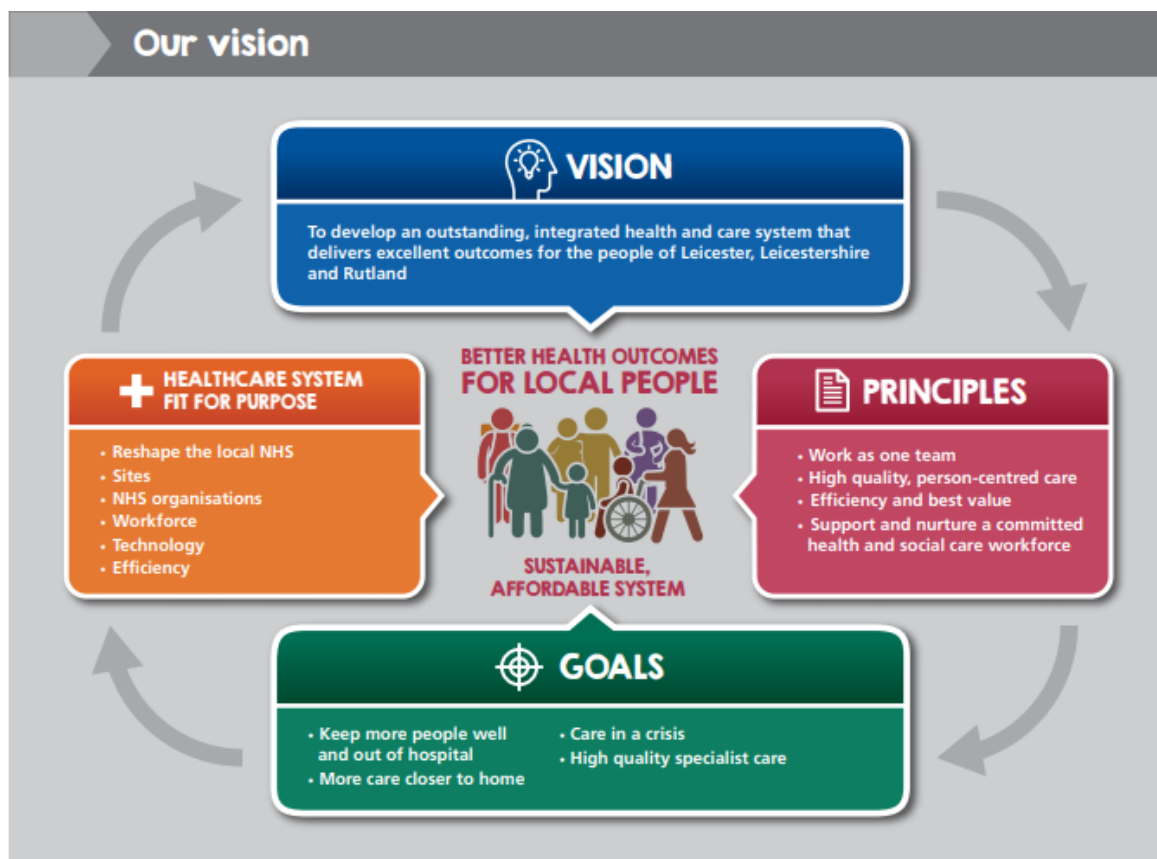
Across LLR, the local Sustainability and Transformation Partnership (STP) is known as Better Care Together (BCT). This is a partnership of three NHS trusts and three clinical commissioning groups in LLR, working alongside a range of other independent, voluntary and community sector providers and local councils, combine to look after a population of more than one million people. In November 2016, the BCT partnership published draft proposals for the development of local health and care services, including how it will work together on the “triple aims” of the NHS Five Year Plan.

The vision of the Leicester, Leicestershire and Rutland (LLR) Better Care Together (BCT) programme or local STP is, **‘To develop an outstanding, integrated health and care system that delivers excellent outcomes for the people of Leicester, Leicestershire and Rutland’**.

Figure 22 summarises the vision, principles and goals of the LLR BCT including aims to;

- Keep more people well and out of hospital
- Move care closer to home
- Provide care in a crisis
- Deliver high quality specialist care <sup>39</sup>

**Figure 22: LLR BCT Vision**

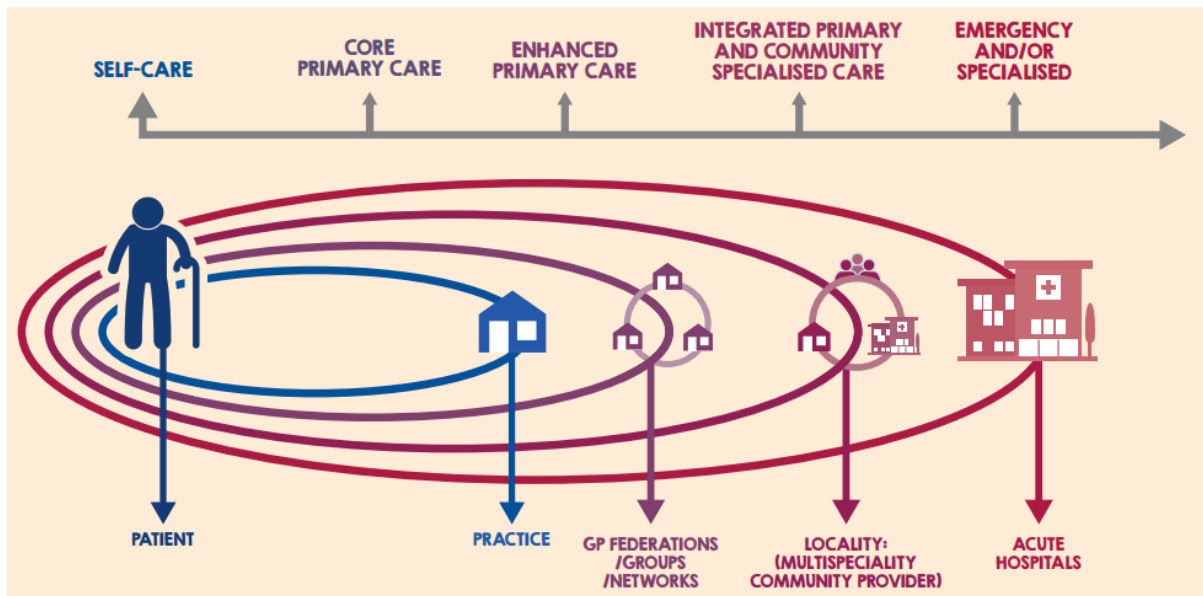


In August 2018 the BCT partnership published its Next Steps to Better Care in Leicester, Leicestershire and Rutland document which set out the progress made, future plans and the next steps in developing an effective integrated health system in LLR. With the publication of the NHS Long Term Plan in January 2019, the LLR BCT partnership is reviewing its plans to ensure they will be able to respond to the requirements of the Long Term Plan and we will publish a new five year plan in the Autumn of 2019.

In the meantime, the LLR Integrated Care System Operational Plan sets out an overview of what the system will deliver for its population with its share of NHS resources for 2019/20 and the progress the system expects to make over the year towards its long-term transformation objectives. It also sets out how the system intends to develop the Sustainability and Transformation Partnership into an Integrated Care System (ICS) across LLR.<sup>40</sup>

The operational plan also discussed the LLR evolving model of care that aims to create a more clinically effective and cost-efficient system (see Figure 23). The model is built around individuals, supporting them to be active and as independent as they can be and aims to treat people at or as close to home as clinically appropriate.

**Figure 23: LLR Operational Plan 2019/20 Model of Care**



The model will strengthen primary care through the development of (PCNs), with the GP surgery remaining the central pillar of local care. Recruitment to new roles within the PCNs, supported by integration of care for people with long-term and complex conditions through wider multi-disciplinary teams (including social and community care, prevention and voluntary sector) and practices working more closely together within PCNs, will increase the capacity available and reduce the number of emergency admissions. Population health management will be used to help us target care for those most likely to benefit. The model increases the support for self-care, allowing those with minor illnesses or long-term conditions to have the confidence to manage their own health or have their needs met in primary care by a pharmacist or a general practice.

The care model will deliver a shift in emphasis from reactive to proactive care where those with long term conditions will discuss their future needs with clinicians and contribute to the development of their integrated care plan. Where either a planned or unplanned hospital admission is necessary both the admission and the discharge will be co-ordinated to minimise the amount of time spent in hospital and to support individuals to stay at home for as long as possible.

### 5.3.2. Joint Carers Strategy 2018-2021<sup>41</sup>

Due to the complexity of care plans and support needed by many individuals with multimorbidity and frailty, carers are an important aspect of the wrap around care package for these individuals.

A carer is anyone who cares, unpaid, for a friend or family member who due to illness, disability, substance misuse or a mental health need cannot cope without their support. There

are many different types of carers, including:

- **Working carers** – A carer who juggles paid work with unpaid caring responsibilities.
- **Older carers** – An unpaid carer aged 60 or over.
- **Parent/family carers** – A person aged 18 or over who provides or intends to provide care for a disabled child for whom the person has parental responsibility.
- **Young carers** – A child or young person, aged 18 years or under, who provides regular and on-going care and emotional support to a family member who is physically or mentally ill, disabled or misuses substances.
- **Multiple carers/sandwich carers** – Those with caring responsibilities for different generations, such as children and parents.

The Joint Carers Strategy 2018-2021 sets out a shared vision and priorities for recognising, valuing and supporting carers by upper tier local authorities and the Clinical Commissioning Groups (CCGs) for LLR. Partner organisations that have been involved in the development of the strategy include Healthwatch (LLR), Alzheimer's Society, The Carers Centre, Voluntary Action South Leicestershire (VASL) Barnardo's and Age UK Leicestershire. The strategy is currently being finalised but emerging priorities that build on national direction include;

**Priority 1: Carers are identified early and recognised** – Building awareness of caring and its diversity

**Priority 2: Carers are valued and involved** – Caring today and in the future

**Priority 3: Carers are informed** – Carers receive easily accessible, appropriate information, advice and signposting

**Priority 4: Carer Friendly Communities**

**Priority 5: Carers have a life alongside caring** – Health, employment and financial wellbeing

**Priority 6: Carers and the impact of technology products and the living space**

**Priority 7: Carers can access the right support at the right time** – Services and Systems that work for carers

**Priority 8: Supporting young carers.**<sup>41</sup>

## 6. Current Services

### 6.1. NHS services

#### 6.1.1. Disease specific services are UHL

CCG's work in partnership with Local Authorities and Public health to scale up a proactive

approach to Health Promotion and primary, secondary and tertiary ill-health prevention. LTCs are managed as part of the standard care pathways across primary, secondary and tertiary care and specific disease and frailty pathways are developed across LLR.

## **6.2. Adult Social Care**

### **6.2.1. Fall Services**

With the elderly population increasing each year, there is a need to ensure that older people can access falls prevention and treatment following a fall as quickly as possible to reduce the risk of injurious falls and the need for a hospital admission. The LLR Falls Programme consists of 5 key interventions, which are designed to reduce falls related admissions:

- i. Therapy Triage – a significant proportion of referrals for consultant opinion are being seen and successfully treated by therapy interventions
- ii. Steady Steps – community-based exercise programme to improve balance, postural stability and independence
- iii. Care Homes – support and training for staff on falls prevention and how to manage falls effectively
- iv. Non-Blue Light Service Response – Leicestershire Fire and Rescue Service are starting a pilot to respond to non-injurious falls on behalf of EMAS. The pilot is based in Coalville and is due to commence in July 2019
- v. Falls Demonstrator: introducing technology which enables assessment, monitoring and screening of those at risk of Falls is due to commence in July 2019

### **6.2.2. Assistive Technology**

Assistive Technology in Leicestershire is currently predominantly based on lifeline alarm provision. There are approximately 6000 people who use a lifeline system provided by either the County Council or their District/Borough Council. The systems are analogue based with some potential for additional sensors to be added, such as falls detectors.

The County Council offer is part of reablement and consists of 3 elements:

- A short-term lifeline offer for hospital discharge, reablement and to prevent

carer breakdown for up to 6 weeks, this is a free service.

- A range of stand-alone equipment, including memo minders and pill dispensers, bed, chair, door and epilepsy sensors to alert someone within the property but without any wider connectivity.
- An activity monitoring service (Just Checking) which uses door and movement sensors to show an overview of daily activity, helping professionals make proportionate care decisions.

District and Borough Councils have a long-term lifeline offer which is chargeable and in some instances includes a responder service, providing reassurance with everyday events, advice and onward referrals to appropriate agencies. Some responder work includes remaining with a person who has fallen until the emergency services arrive.

A project is underway to select and test some of the new generation of assistive technology with the aim of modernising and improving the current AT offer. The pilot will focus on products that support people with dementia to continue living at home, aiming to launch in the Autumn.

### **6.3. Integrated Care Services**

#### **6.3.1. Integrated Locality Teams**

Across LLR three early implementer sites were set up to embed new ways of working across community, primary care, and social services, to test how an integrated approach to health and care supports complex case management through,

- Sub-locality MDT working;
- Care coordination;
- Risk stratification and intelligence from this to support proactive approach to complex care management;
- Promoting the local prevention offer;
- Developing new ways of working with Home First services;

In Leicestershire the early implementer site was developed in the Hinckley & Bosworth as a leadership team at the locality level, steering and planning interventions for the local population, and developing an operational integrated neighbourhood team working.

A first stage review of the early implementer sites was presented to the Integrated Communities Board in June 2019. The review identified that, in the first 9 weeks that the ILT had been operating (14 January to 15 March 2019), 26 people had been identified via the ACG Risk Stratification Tool and referred for a holistic assessment by the Care Coordinator. In addition, another 12 people were offered advice and guidance in their role as a carer. Whilst it is too early to evaluate the full impact of the ILT in Hinckley & Bosworth, emerging findings of the review include:

- New ways of integrated working are being developed at a neighbourhood level;
- A one-team ethos is a key enabler for stepping away from organisational boundaries and focussing on the needs of the local population;
- In the two areas where it existed, shared space (physical colocation) was highlighted as an enabler to better integrated working;
- MDT working leads to more targeted referrals to health or care prevention;
- Care coordinator/navigator is a vital role within MDT working, in particular support across a neighbourhood geography for early identification of patients and onward referral to MDTs, social prescribing and community assets;
- Developing trusted assessor roles for care coordination has proven effective in terms of increasing efficiency in processes;
- Primary care mental health workers/services form a key a part of an integrated team to support provision of mild-moderate mental health input to managing complex patient needs and provide holistic care.

Further opportunities were identified for ILTs in relation to improved care planning for End of Life patients, developing the technology and processes that supports integrated working at neighbourhood level and identifying resources to support the use of ACG Risk Stratification tool at a PCN level.

### **6.3.2. Home First**

The development of Leicestershire's Home First offer aims to provide an integrated health and social care service, giving a co-ordinated package of support, with reduced handoffs and a better patient experience. The service will be offered to adults when they have a change in need, requiring additional or new interventions that if not met will result in admission to hospital/care home or the person having to remain in hospital when they are medically fit for

discharge.

It will deliver integrated and co-ordinated interventions to meet the person's health and social care needs. This will utilise health and social care resources efficiently and effectively, reducing duplication, and allowing interventions and support to be provided by the most appropriate service.

The Council's HART (Homecare Assessment and Reablement Team) and CRS (Crisis Response Service) are integral to the development of the local Home First offer. HART currently provides a short-term assessment and reablement service to help individuals improve their independence following an admission to hospital. As part of Home First and the developing Target Operating Model, HART will also provide a reablement service for people living in the community – this service is currently provided by contracted Help to Live at Home (HTLAH) providers.

Central to the co-ordination of services is an integrated single referral point. This is currently being piloted within the Council's CRS service, supported by clinical staff from Leicester Partnership NHS Trust, to test out the service entry and exit pathways that are being designed. This is in preparation for the future model of adult community health services in LLR, to deliver care closer to home with better patient outcomes and to develop better integrated health and social care services.

#### **6.4. Social Prescribing Offer**

##### **6.4.1. First Contact Plus**

First Contact Plus provide the prevention front door for key preventative/ social prescribing services across Leicestershire. The service is provided by Leicestershire County Council Public Health Department and offers access to a range of low-level preventative services through a single point of contact. This is an online and telephone service ensuring that people can access information, advice and support across a range of issues. This includes a range of health and wellbeing topics including alcohol, drugs and mental health, and advice and support on topics that have the potential to impact on mental wellbeing, such as debt and welfare benefits, housing support, and families and relationships. The service provides early identification of needs and brief opportunistic interventions, support for self-help, or referral to a service provider. As well as providing advice pages, and signposting to useful resources, there is an option to self-refer for further telephone contact.



#### **6.4.2. Local Area Coordination**

This is a community-based intervention delivered in specific areas by Local Area Co-ordinators (LACs) and is delivered by Leicestershire County Council Public Health Department. LAC is focused on helping isolated, excluded and vulnerable people. LAC build the resources, networks and resilience of those who need help before they hit crisis, with the aim of diverting people from formal services and supporting people to have a good life as part of their community. In West Leicestershire CCG a LAC/ Care Coordinator hybrid role is being tested with the Hinckley and Bosworth integrated locality team early implementor site. Initial results are positive with 80% of the role utilising the traditional person centred LAC approach. The additional 20% of the role involved more clinical/ case management, MDT working and trusted assessor approaches.

#### **6.4.3. District councils, voluntary and community sector**

There are seven district councils across Leicestershire that provide a wide range of services to support their population. These will be specific to each district and may include debt, housing, employment advice, services to support loneliness, physical activity etc. Voluntary and community sectors will also support this offer in varying ways across the county. Services can be contacted directly, or First Contact Plus can provide a referral mechanism into these wider services.

### **7. Unmet needs/Gaps**

#### **7.1. Increasing secondary care and A&E admissions**

Evidence presented in this JSNA chapter has shown the significant increase in secondary care costs and A&E admissions over time. The Health Foundation confirmed that in 2015/16, one in three emergency admissions were in patients with five or more health conditions (such as heart disease, stroke, type 2 diabetes, dehydration, hip fracture or dementia). One sixth of hospital admissions and 14% of emergency hospital admissions are for potentially preventable ambulatory care conditions that would benefit from personalised care management in primary and community care.<sup>9,15</sup> The most common diagnoses include hypertension, diabetes, mental health due to tobacco harm, substance misuse, asthma, atrial fibrillation, circulatory disease, ischaemic heart disease (ISH) and depression. Chronic heart failure (CHF) also accounted for a disproportionate amount of cost at 10% when only attributable to 7% of cases.<sup>15</sup> There is also a clear link between deprivation and emergency admission usage, particularly related to alcohol related admissions and COPD.<sup>42</sup> This pattern

was also seen through the RightCare health inequalities packs which identified the increasing gradient of unplanned hospital admissions as deprivation increased. The packs also identified the top five conditions for ACSCs in Leicestershire priority wards in 2016/17 were 1) Pain in throat and chest, 2) Abdominal and pelvic pain, 3) Other disorders of urinary system, 4) Other chronic obstructive pulmonary disease and 5) Atrial fibrillation and flutter (ELRCCG) and Heart Failure (for West Leicestershire CCG).<sup>27,28</sup>

The prevalence of multimorbidity and frailty increases with age. NICE define multimorbidity as adults aged 18 years and over with two or more long-term health conditions (multimorbidity). At least one of these conditions must be a physical health condition.<sup>43</sup> By 2029 it is predicted that in Leicestershire there will be an additional 41,500 people in Leicestershire who are aged 65 years or older and, within that, an additional 8,300 that are aged 85 years or older. Current data for Leicestershire shows that 87% of those aged 85 years or older have more than one long-term condition (i.e. are multimorbid) and 23% of that age group have eight or more long term condition.\*\* If the same proportions are applied to those aged over 85 years in ten years' time there will be 22,660 people who are multimorbid and aged 85 years or above and (within that figure) 5,931 people who are aged 85 years and above with 8 or more long term conditions. This is equivalent to a 58% increase in those aged 85 years or above with multimorbidity.

In terms of frailty, different classification systems have been used which estimate the frailty prevalence to be ~15,000 patients across Leicestershire. It is also worth noting that frailty is not just seen in older age, with around 3,012 frail people in Leicestershire aged below 65 years, with 819 of those aged under 40 years. Agreeing a consistent approach to categorising frailty would support confirming these figures.

## **7.2. Multi-morbidity more than age is a key driver of cost, activity and future risk**

Both national and local evidence presented in this JSNA chapter suggest that multi-morbidity more than age is a key driver of cost, activity and future risk. For example, nationally the risk of an avoidable hospitalisation increases by a factor of 1.35 (95 % CI [1.34;1.35]) for each additional chronic condition, and 1.55 (95 % CI [1.55;1.56]) for each additional body system affected. The respiratory and circulatory systems have the most impact on the risk of ACSC,

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\*\* Please note, the data included in the ACG risk stratification tools used to analyse multimorbidity in Leicestershire excludes those patients who have opted out of having their data used in analysis and excludes those GP practices who have opted out of using the ACG tool. Thus, figures presented here are likely to be a slight underestimate of the true figures.

increasing the risk by 8.72 (95 % CI [8.58;8.86]) and 3.01 (95 % CI [2.95;3.06]), respectively.<sup>44</sup> Frailty is known to exacerbate pre-existing conditions and increase the likelihood of developing more comorbidities. However, ageing does not necessarily mean you become frail, although prevalence does increase with age. As will all LTCs including frailty, it can be improved or made worse depending how it is managed.

### **7.3. Proactive Personalised Care Plan Approach**

The Health Foundation and NG58 NICE guidance suggest that a 'personalised care plan' providing an intense outreach and targeted interventions for specific individuals may improve outcomes, patient satisfaction, care coordination and reduce treatment interactions, adverse events, unplanned care costs for specific groups of patients. NICE specifically recommend a tailored multimorbid approach to individuals that meet the following criteria (see section 5.1.1 for further detail);

- They find it difficult to manage their treatments or day-to-day activities
- They receive care and support from multiple services and need additional services
- They have both long-term physical and mental health conditions
- They have frailty or falls.
- They frequently seek unplanned or emergency care to hospital or care home
- They are prescribed multiple regular medicines.<sup>45</sup>

### **7.4. Risk Stratification across Leicestershire**

Predictive risk models or risk stratification are one method to help identify patients at risk of hospital admission and A&E attendance (including the multimorbid patients identified in the NICE guidance above.) Across LLR, the Johns Hopkins ACG risk stratification tool has been implemented across all GP practices. A rapid literature review confirms that there are limited numbers of high-quality published reports that consider the cost analysis or impactability of implementing a predictive risk model across a health and care system, although some findings look encouraging on the system costs saved by implementing the predictive, preventative approach. This therefore confirms the importance of combining clinical knowledge with the risk stratification results to identify patients that are likely to respond positively to a personalised care plan or care coordination approach. However overall the predictive risk models were shown to identify patients at risk of hospital admissions.

Analysing the Johns Hopkins ACG results across Leicestershire illustrates that around 5% of the population (c. 30,500 people) accounts for around half (51%) of all secondary care costs over a year. Furthermore, almost a fifth (19%) of secondary care costs are concentrated in just 0.5% of the population of Leicestershire (c.3,000 people), whilst the vast majority of the population (80%) account for just 13% of costs. A more pronounced pattern is evident for

emergency admission costs with around 0.5% of the population of Leicestershire (c.3,000 people) accounting for 42% of all emergency admission costs in one year and 5% of the population accounting for over 91% of emergency admission costs.

The most prevalent LTC across Leicestershire is hypertension – which around 1-in-7 people in Leicestershire have (13.8%) and which is similar to the prevalence rate for England. The next most prevalent of the six LTCs examined in Leicestershire is persistent asthma (11.9%), which is roughly twice the prevalence for England, followed by diabetes (5.7% lower than England average.) Variation was seen across the localities, hence PCNs will need to review needs locally.

When reviewing cross over between three high-risk categories: frail, at high risk of emergency admission and at high risk of high cost in the next 12 months, only 14% of people in Leicestershire fall into this group. 35% of which were over 85 years and 1 in 8 (478) were aged under 65 years old, with an uneven distribution across the County. Greater cross over was seen between risk of emergency admission and high cost, but 31% of frail patients do not sit in either. The distribution of the 14% is not evenly distributed across Leicestershire and are more concentrated in certain areas (i.e. 20 GP practices). Initial characteristics of the group suggest that 99.9% are multimorbid and on average have 10 LTCs, with 10% (c.400 patients) having 15 or more LTCs. There is also some commonality of LTC with over half of the group having hypertension (59%), and around a third with an ischemic heart condition and a third with low back pain. The group are also characterised by polypharmacy, with people taking on average 15 distinct drug types and ~20% (c.800) taking 20 or more. Polypharmacy is associated with increase in confusion, interactions and risk of falls or frailty, making this group a good candidate for care coordination.

As seen nationally, local evidence shows that the average number of A&E attendances, outpatient attendances and elective admissions all increase as the number of LTCs a person has increases. For those with 8 or more long term conditions the risk of emergency admission and the risk of persistent high costs in the next 12 months is 60% and 55% - i.e. more likely to happen than not. Even for those with 5 long term conditions the risk of emergency admission in the next 12 months is around 1-in-3 (33%) and the risk of high cost is 1-in-4 (25%).

In terms of cost, local results show the highest average costs, are all for the population segments with people with 8 or more chronic conditions, with the very highest costs for people aged 18-44 years (8B). The same pattern is evident for people with between 5 and 7 LTCs, where the average emergency cost over a 12month period is much higher for those aged 18-44 years (5B) than for those aged 85 years and above (5E). This suggests a need to

specifically target personalised care planning/ care coordination approaches to people aged 18-44 years with multimorbidity (c.7065 people).

### **7.5. Targeted Care Coordination Approach- LTC Clustering**

The rapid literature review suggests that generic care coordination is not seen as effective therefore must be targeted to have an impact in terms of clinical and cost effectiveness outcomes. The JSNA therefore reviewed patients with specific LTCs to see the clustering of LTC across the population to identify patients that could, potentially, be targeted for personalised care coordination approaches and could generate the greatest return on investment when using the risk stratification tools across LLR.

The JSNA chapter took an initial look at reviewing the combinations or clusters of LTCs across Leicestershire. Due to the complexity of the number of combinations the key six LTCs (COPD, Cardiac arrhythmia, persistent asthma, diabetes, hypertension, and congestive heart failure (CHF)) identified in the LLR business plans were compared to 18 other LTCs. The results identified that hypertension was the most prevalent second LTC for all six LTCs ranging from 69% in patients with CHF to 16.2% with persistent asthma. CHF was strongly associated with several LTCs including hypertension (69% of CHF patients), ischemic heart condition (44%), chronic renal failure (37.5%) and diabetes (32.2%). For patients with cardiac arrhythmias, diabetes, hypertension, key themes in the second LTC were ischaemic heart condition, chronic renal failure and diabetes, but not to the same proportions of patients as those with CHF. Persistent asthma was also prevalent as a second LTC in patients with COPD, diabetes and hypertension. Patients with primarily persistent asthma was the only LTC that did not appear to have a significant pattern in terms of predicting the second LTC.

The average cost of each patient with one of the specified 6 LTC's was calculated using secondary services use only (previous 12 months) and excludes pharmacy costs. Thus, it does not reflect all health costs but is useful for comparative purposes. When comparing each of the 6 specific LTC's the secondary LTC with the highest costs for all six LTCs were for people with immunosuppression/transplant (average cost ranging from £6961 to £11,111). This is almost double the average cost of a patient with any of the six LTCs plus any another secondary LTC. However, these are complex patients and the numbers are relatively small (maximum 220 identified for hypertension), therefore investigating if this cost could be reduced should be explored but may be clinically unsuitable.

Other areas of consistent high cost were with CHF and any other LTC. Patients with CHF plus another LTC were more likely to have an average 12month cost over £4,000 than any of the

other 5 LTCs examined. Other high cost LTCs that were linked to the six LTCs that were examined included depression (for COPD, cardiac arrhythmias, diabetes, hypertension, CHF) and schizophrenia or seizure disorders (for mainly cardiac arrhythmias and CHF). This demonstrates the importance of considering both the physical and mental health of the patient holistically to prevent additional LTC progression and for costs to the system. It also provides some direction in terms of patients that may be prioritised for care coordination in any population health management, risk stratification approach.

## **7.6. Possible Interventions**

The evidence has shown a range of preventative interventions can prevent or delay disease progression for specific conditions. These include physical activity/ weight management, case management/ care coordination, oral health, specialist clinics, medication reviews, education and self-management, telemedicine, specific disease exercise and rehabilitation and vaccination programmes (in particular influenza, pneumonia for ACSCs). However, this was a very rapid review and did not include with wider prevention evidence base, hence will not cover the full range of primary, secondary and tertiary prevention approaches that are seen to be effective. Therefore, this initial literature review should be triangulated with previous national and local work (specifically around preventing the LTCs prioritised above) to inform development of a population health management strategy and further risk stratification analysis. It must also be noted that there is a comprehensive prevention offer available across Leicestershire, using First Contract Plus as the prevention front door. Local initiatives such as MECC Plus training could be utilised across the system to ensure all staff are aware of the prevention services available and to know where to refer patients. There are also a wider range of services that also support self-care and management of LTCs including assistive technology. Considering how this will support those patients with comorbidities will need to be considered as part of the LLR Prevention board workstream.

Other interventions identified as having a positive effect on reducing admissions include continuity of care with a GP, hospital at home, early senior review on A&E, MDT interventions, integration of primary and secondary care. However, many of these are already being developed as part of the LLR BCT and NHS Long Term Plan intentions to develop an Integrated Care Systems (ICS) by April 2021. The LLR Operational Plan 2019/20 Model of Care, also aims to shift emphasis from reactive to proactive care for those with LTCs. This integrated model has many components ranging from developing primary care networks (PCNs), integrated locality/neighbourhood teams, social prescribing/ personalised care, home first/community services redesign to linking up secondary and emergency care services provided at UHL. Carers are also an integral part of this model; therefore, the Joint Carers Strategy 2018-2021

sets out a shared vision and priorities for recognising, valuing and supporting carers across LLR.

The JSNA chapter identifies that UHL provide a wide range of services for people with LTCs, however the pathways are currently separate apart from the frailty pathway, which may cause duplication and complexity for the patient. A key area that may require further review is therefore how the acute sector manages patients holistically with several comorbidities rather than individual disease pathways as aligned with the NG56 (2016) NICE guidance. This would also create further alignment with the developing LLR out of hospital health and care offer.

Overall the JSNA chapter has provided an overview of the current risk stratification work completed locally and cross referenced this with rapid literature reviews of national evidence. The chapter has limitations due to the rapid nature of these reviews, and the scope and limitations of the risk stratification and segmentation (including coding of the data). However, this JSNA aims to provide some direction to support and open conversations about developing systematic, targeted approaches to population health management and using the Johns Hopkins ACG Tool across Leicestershire and wider LLR. For example, there could be different cohorts targeted by risk stratification for separate sections of the system i.e. social prescribing may take a more preventative approach concentrating on patients with 2-3 LTCs in the younger age group (18-44yrs) vs care coordination which uses a more tailored case management approach for patients with high number of LTCs (5 and over in a wider age band). Further work is needed to explore these questions, and these are discussed in the recommendations below.

## **8. Recommendations**

Results from this JSNA chapter have been triangulated and discussed with partners to provide the following recommendations;

1. Develop a Leicestershire and wider LLR strategy for population health management, utilising risk stratification and care coordination approaches. This should consider;
  - a. What is the key driver for the strategy? For example, if targeting the greatest proportion of people with a LTC, priorities would include primary and secondary prevention for hypertension, ischaemic heart condition, chronic renal failure and diabetes. However, if average secondary care cost over a 12month period is the driver then specifically people aged 18-44years with multimorbidity (especially 5 and over LTCs), CHF, 14% of the population who

are frail, high cost and risk of A&E admission, followed by depression, schizophrenia and seizure disorders should be prioritised for care coordination and prevention interventions. Within this strategy the system should consider prioritising access to those who are most deprived due to the gradient in health needs, and increased service usage.

- b. Exploring whether further care coordination/ case management work could be completed with immunosuppression/transplant patients that have a LTC as these patients cost approximately double the cost of other LTC patients with two or more conditions.
  - c. The importance of combining clinical knowledge with the risk stratification results to identify patients that are likely to respond positively and actively to a personalised care plan or care coordination approach.
  - d. Developing regular data reporting approach for frailty and multimorbidity as part of the population health management approach. Ensure the system is trained and supported to utilise this data effectively to influence commissioning and care delivery at a place and neighbourhood (PCN) level.
- 2. Complete a further evidence review on the clustering of LTCs and define the key preventative interventions that should be prioritised across the system in line with the agreed priorities for risk stratification as part of the population health management approach. This may take a different approach depending on the number of LTCs the patient already has such as primary prevention for the wider population, secondary prevention for those with 2-3 LTCs or moderate frailty, and more tertiary prevention for those with 5+ LTCs.
  - 3. Triangulate the results from this JSNA with those from the Right Care national evidence. In particular the falls and fragility pathway and long-term conditions work.
  - 4. Complete further analysis exploring different cohorts of high risk patients to develop appropriate interventions at the system, place and neighbourhood level of population health management.
  - 5. PCNs to review LTC disease segmentation within their own practices to identify local priorities for commissioning and care coordination.
  - 6. Agree one, system-wide classification of frailty for LLR.



7. Work with academic partners to evaluate the impact of risk stratification and care coordination across LLR. This may be locally by reviewing the evaluation matrix and more formally through bidding for national funding and academic support.
8. Multimorbidity is now the norm, hence there is a need to ensure appropriate primary and secondary care services to address these needs holistically through implementation of the NICE guidance to ensure high quality care plans are completed at scale and accessible across organisations. UHL may therefore consider how it may treat multimorbid and frail patients more holistically in the longer term. Support medical education to consider a multimorbidity approach to workforce training.
9. Embed MECC Plus across the system to ensure all professionals are aware of the prevention services and referral pathways available across Leicestershire.
10. LLR prevention board to consider the implications for frail and multimorbid patients as part of the self-care management workstream including use of assistive technologies.

In order to respond to these recommendations, a partnership approach will be needed to develop and implement an action plan across the healthcare system.

## GLOSSARY OF TERMS

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ACG	Adjusted Clinical Groups
ACSCs	Ambulatory care-sensitive conditions
APC	Admitted patient cost
CCG	Clinical Commissioning Group
CHF	Chronic Heart Failure
eFI	Electronic frailty index
ELR CCG	East Leicestershire and Rutland Clinical Commissioning Group
HART	Homecare Assessment and Reablement Team
HTLAH	Help To Live At home
ILT/INT	Integrated Locality/Neighbourhood Team
JSNA	Joint Strategic Needs Assessment
KPI	Key Performance Indicator
LLR	Leicester, Leicestershire and Rutland
LTC	Long term condition
MDT	Multi-disciplinary Team
PCN	Primary Care Network
PHE	Public Health England
PHM	Population Health Management
LC CCG	Leicester City Clinical Commissioning Group
WL CCG	West Leicestershire Clinical Commissioning Group
COPD	Chronic Obstructive Pulmonary Disorder
CRF/CKD	Chronic Renal Failure / Chronic Kidney Disorder

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