



Frail Older People in Lewisham

*Local demography, health and social care use and
literature review*

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Index

Executive Summary.....	6
Background.....	8
1. Demographics and Trends in Lewisham.....	9
1.1 Population Profile.....	9
1.2 Mortality and Life Expectancy.....	12
1.3 Health.....	13
1.4 Healthcare Use.....	17
1.5 Social Care Use.....	24
1.6 Trends.....	26
2. Evidence Review.....	33
2.1 identifying Frail Older People.....	36
2.2 Risk Stratification.....	44
Who to Target.....	51
2.3 Approaches to Reduce Health and Social Care Use.....	53
Conclusions and Recommendations.....	61
Appendix.....	62
References.....	64

List of Tables and Figures

Figures

Figure 1 – Number of Lewisham Residents aged 65 and over by Five Year Age Band (2013)..	9
Figure 2 - Lewisham Residents Aged 65 Years and Over by Ethnicity, 2013	10
Figure 3 - Lewisham Residents Aged 16-64 Years by Ethnicity, 2013.....	10
Figure 4 - Attendances at University Hospital Lewisham by people aged 60+ with a diagnosis of fall by five year age band 2010-2013.	16
Figure 5 - Admission Rates Following A&E Attendance by Age, 2010-2013	17
Figure 6 – Number of People aged 65+ with five or more hospital admissions by age (2012-13)	19
Figure 7 - Sample of Lewisham GP-Registered Patients Showing Overlap of Those Receiving Adult Social Care and District Nurse Input.....	23
In 2011-12 almost 6400 individuals in Lewisham received at least one service from social care in Lewisham at some time during the year and just over 3500 of these service users were 65 years old or over. This equates to approximately 14% of all residents aged 65 years and over, though the proportion increases markedly with age; over 40% of residents aged 85 years and older receiving a social care service in 2011/12. (Figure 8)	24
Figure 9 – Proportion of Lewisham Residents Receiving at Least One Social Care Service for at Least Part of the Year 2011-2012 by Age	24
Figure 10 - Life Expectancy at Birth, Lewisham and England	26
Figure 11 - Life Expectancy at 65, Lewisham and England	26
Figure 12 - Projected number of Lewisham residents aged 60 and over 2001 – 2041	27
Figure 13 - Map of Lewisham Wards by Number of Residents Aged 65 and Over, 2011	28
Figure 14 - Map of Lewisham Wards by Projected Number of Residents aged 65 and over, 2041.....	29
Figure 15 – Projected Population Aged 65 and Over by Ethnicity, Lewisham 2028	30
Figure 16 - Projected Population Aged 65 and Over Numbers 2013-2028 by Ethnicity.....	30
Figure 17 - Actual and Projected Number of People with Long Term Conditions in England and Wales, 2000-2018.....	31
Figure 18 - Disability, Co-Morbidity and Frailty: Separate but associated concepts	33
Figure 19: Vulnerability of frail older people to a sudden change in health status after a minor illness.....	34
Figure 20 Waltham Forest Care Finding Service Outline	58
Figure 21 – Classification and Interventions using Combined Predictive Model	46
Figure 22 - Kaiser Pyramid of Risk of Future Healthcare Use.....	51
Figure 23 - Risk of Future Healthcare Use and Population Size	52

Tables

Table 1 - Number and Proportion of Residents Aged 65 and Over by Ward.....	11
Table 2 - Healthy and Disability Free Life Expectancy Aged 65, Lewisham (2001 Data)	12
Table 3 - Number and Prevalence of Long Term Conditions in Lewisham using QoF data 2011	14
Table 4 - Prevalence of Some Long Term Conditions by Age, England and Wales 2009 (Data from General Lifestyle Survey 2009).....	14
Table 5 - Proportion of People with Long Term conditions by Age, England 2009	15
Table 6 - Source of Referral for A&E Attendances by Age, 2010-2013.....	17
Table 7 – Number of A&E Attendances by Age (2010-2013).....	18
Table 8 - A&E Attendances as a proportion of population by age (2010-2013)	18
Table 9 - Number of People (aged 65+) with 5 or more Hospital Admissions in 2012-13 by Age	19
Table 10 - Primary Diagnosis Codes Used in at least 50 Emergency Admissions in 2012-2013 in those aged 65+	20
Table 11 - Number of Admissions for Lewisham Registered Patients by Age and Primary Diagnosis, 2012-12013	21
Table 12 - Number of People Receiving Continuing Care in Lewisham by age (2012-2013) .	22
Table 13 - Projected number and Percentage of 65+ and 85+ Population in Lewisham 2013-2038.....	27
Table 14 – Comparison of key features of eight screening tools for frail older people'.....	41

Executive Summary

In the UK people are living longer lives; the chance of surviving from birth to the age of 85 has more than doubled for men in the last three decades. This increased survival is resulting in a rise in the number of older people in the population. Over 85 year olds are currently the fastest growing demographic group in the UK. Health and social care use increase with age; eighty percent of people over 65 years old will need social care in the later years of their lives.

Amongst this growing population of older people are those that are more vulnerable; frail older people. This group are at greater risk of adverse outcomes, including disability, morbidity, mortality, hospitalisation and admission to care homes. Frailty also leads to loss of independence and impairs the quality of life and psychological well-being of older people.

Frail older people have been the subject of a number of national strategies and initiatives in the last few years, including, this year, the Department of Health's "Right Care, Right Place, Right Time". Locally, in Lewisham the Health and Wellbeing Board have identified two of their priorities as: Delaying/reducing the need for long term care and reducing the number of emergency admissions for people with long term conditions. And NHS Lewisham Clinical Commissioning Group has specifically identified frail older people as a priority.

This report aims to help inform those planning services for frail older people in Lewisham by:

- Providing up to date demographic information on older people in Lewisham and on their use of health and social care
- Reviewing evidence in how to
 - Identify frail older people (especially those who are not known to health and social care services)
 - Risk stratify frail older people in terms of their likelihood of unplanned or frequent hospital admissions and high level use of social care
 - Reduce healthcare use amongst the highest users of health and social care.

Demographics and Service Use

There are currently (in 2013) 26,800 Lewisham residents aged 65 and over. This population are more likely to die earlier and live in income deprivation than the England average. In Lewisham the older population is more ethnically diverse than in England, though less diverse than the younger population locally. More older people live in the south than north of Lewisham. Fourteen per cent of people of all ages in Lewisham have a disability or long term condition (LTC) that affects their day to day activities. The prevalence of long term conditions increases with age and increasing deprivation. In England almost half of women over 75 have at least one LTC.

In Lewisham admission and readmission rates for older people are higher than England. About a quarter of people aged 65-69 in Lewisham attended A&E at University Hospital Lewisham in the last three years, though almost 70% of those aged 90 and over did. Older people are more likely to be admitted to hospital when they attend A&E, last year almost 8000 people aged 65 and over in Lewisham had an unplanned admission to hospital. The most common primary diagnoses for admission amongst the over 65s are pneumonia, UTI and COPD. For the over 85s they are pneumonia, UTI and falls.

About 3500 residents aged 65 and over receive social care services, which represents approximately 14% of the (65+) population. About 200 people aged 65 and over are admitted to care homes each year.

Projections suggest that there will be an increase in the 65+ and 85+ populations of Lewisham of about 12% and 20% respectively between 2010 and 2022. So that by 2023 there will be almost 30,000 people aged 65 and over in Lewisham. The number of older people with multiple long term conditions and disabilities in England is expected to increase in the next ten years. The prevalence of obesity is increasing in older people by about 5% per year.

Frailty

There are a variety of definitions of frailty; a lack of resilience in the event of minor stressor events is a key element. Although many frail older people also have disabilities or co-morbidities up to a quarter may not have, making identification a challenge. In the UK between a quarter and half of those aged over 85 are thought to be frail.

Identification Tools

There are a variety of tools available to identify frail older people, from simple self-assessment screening questionnaires through to complex healthcare professional completed assessments. This report describes and compares some of these tools. Many of the tools described have been shown to identify those at increased risk of hospital admission or mortality.

Risk Stratification

Similarly there are many risk stratification tools, aiming to quantify an individual's risk of future health care. There are also tools aiming to identify risk of social care admission but these are not currently well enough developed to be useful. At present these tools are unable to identify the interventions that would be most effective for those frail older people at risk.

A key question in considering frail older people is which group to target for interventions, those with very high use of services (a small number) or those who are not currently using services but who are frail and hence also at risk of worse outcomes. It may be that the second group could benefit from simple, existing interventions but they do not receive them as they are not known to those who could recommend them. Deciding on a target group is vital in selecting a tool and influences the implementation structure and context. Assuming that frail older people not currently known to health and social care services are identified as a target for future intervention, the following are recommended as next steps:

- A more detailed review of implementation of frailty identification tools in practice, including their impact, feasibility and comparison to Lewisham of the context in which they implemented. (population factors and existing services including non-statutory).
- Mapping of existing services for older people in Lewisham, with a view to considering how these might be incorporated into an identification and referral process.
- Trial a simple identification tool in a small area to understand how large the population of unidentified frail older people is.
- On the basis of above consider piloting a programme of screening older people for frailty, providing those at risk with a more comprehensive assessment which acts to sign post individuals to existing preventative services.

Background

In the UK people are living longer lives; the chance of surviving from birth to the age of 85 has more than doubled for men in the last three decades¹. This increased survival is resulting in a rise in the number of older people in the population. Over 85 year olds are currently the fastest growing demographic group in the UK². Health and social care use increase with age; eighty percent of people over 65 years old will need social care in the later years of their lives³.

Amongst this growing population of older people are those that are more vulnerable; frail older people. This group are at greater risk of adverse outcomes, including disability, morbidity, mortality, hospitalisation and admission to care homes. Frailty also leads to loss of independence and impairs the quality of life and psychological well-being of older people⁴

Frail older people have been the subject of a number of national strategies and initiatives in the last few years, including, this year, the Department of Health's Right Care, Right Place, Right Time". It focuses on improving the out-of-hospital care for vulnerable older people, encouraging integrated working across primary care, urgent and emergency care and social services. The Department of Health has proposed a series of proposals, which will be tested and discussed this year, with recommendations expected in October. The proposals are:

- Staying healthy for longer (*focus on prevention and managing long term conditions*)
- Named clinician (*single named contact to co-ordinate an individual's care*)
- Improving access (*easier booking of appointments and access to advice*)
- Out of hours (*safe and consistent service*)
- Choice and control (*supporting patient choice*)
- Joining up services (*sharing of information and co-ordination of care*)

In Lewisham the Health and Wellbeing Board have identified two of their priorities as: Delaying/reducing the need for long term care and reducing the number of emergency admissions for people with long term conditions. And NHS Lewisham Clinical Commissioning Group has specifically identified frail older people as a priority.

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 - Reduce healthcare use amongst the highest users of health and social care

1. Demographics and Trends in Lewisham

Current demographic information and trends relating to older people in Lewisham and their current usage of health and social care in the borough.

As there are no direct data available on “frail older people” in Lewisham the information presented here relates to older Lewisham residents (mostly aged 65 years and older). In addition attributes or behaviours that may contribute to or indicate frailty are considered (such as long term conditions, A&E usage, hospital admissions and social care use). Some information such as loneliness and long term condition prevalence and trends amongst older people is provided at England-wide level, as it is not available at a lower level.

1.1. Population Profile

There are currently about 26,800 residents in Lewisham aged 65 years or over⁵, this represents 10.5% of the population of the borough. This is similar to the picture across London (11%), but lower than the UK as a whole where 16% of the population are aged 65 or over⁶. There are about 3600 Lewisham residents aged 85 years and over, which is about 1.3% of the population. As expected the number of residents per five-year age band over 65 declines with increasing age. (Figure 1)

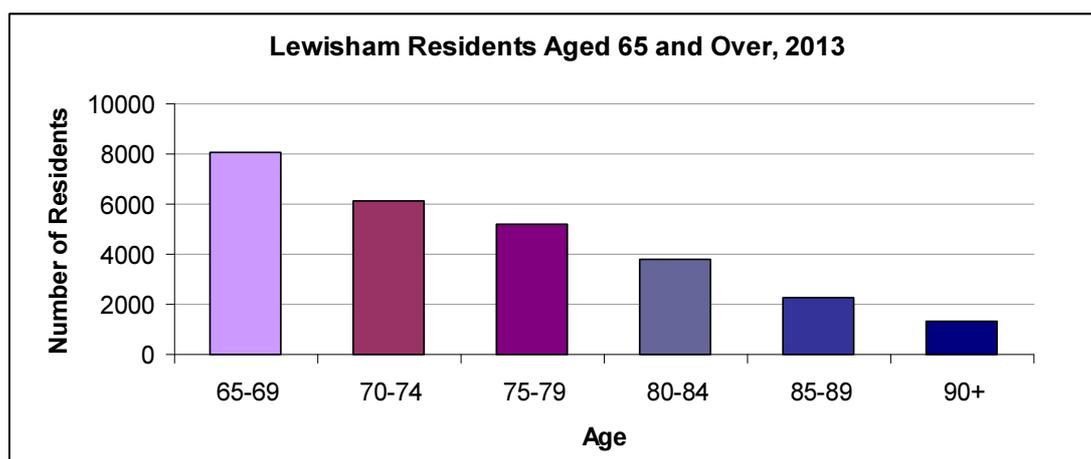


Figure 1 – Number of Lewisham Residents aged 65 and over by Five Year Age Band (2013)

The differences between the population of Lewisham and that of England as a whole (such as greater deprivation and greater ethnic diversity) are also reflected in the 65+ population. A greater proportion of 65+ Lewisham residents are from ethnic minorities than across England as a whole. And a greater proportion of residents aged 60 and over are in income deprivationⁱ than England as a whole.⁷

ⁱ Income Deprivation Affecting Older People Index (IDAOPi) is the proportion of adults aged 60 or over living in pension credit (guarantee) households as a percentage of all adults aged 60 or over.

Ethnicity

Lewisham has an ethnically diverse population, although this is less apparent in the over 65 age group at present. In 2013 73% of Lewisham residents aged 65 and over are white, compared to only 61% of those aged 16-64 years. (Figure 2 and Figure 3)

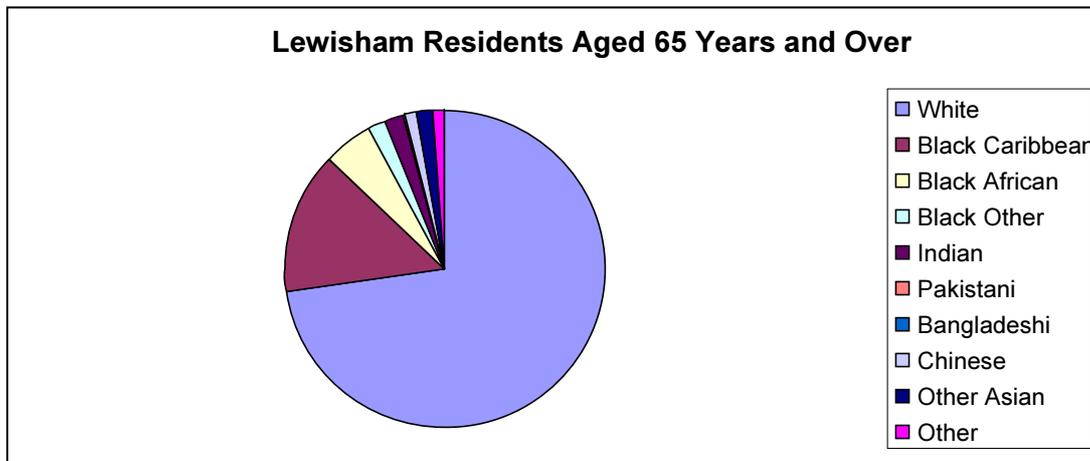


Figure 2 - Lewisham Residents Aged 65 Years and Over by Ethnicity, 2013
(Data from 2011 GLA Demographic Projections)

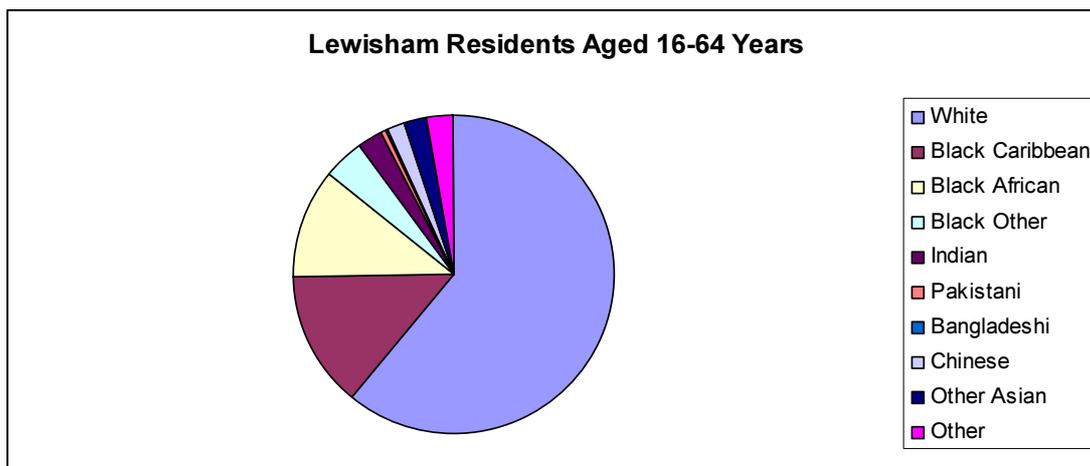


Figure 3 - Lewisham Residents Aged 16-64 Years by Ethnicity, 2013
(Data from 2011 GLA Demographic Projections)

Location

The size of the over 65 population varies across the borough; making up as little as 7% of residents the northern wards of the borough (Evelyn, New Cross and Brockley) and as much as 14% in the southern wards of Grove Park, Downham, Sydenham and Catford South.⁵

Ward	Number of Residents aged 65 and over (2013 GLA Projection)	Proportion of population aged 65 and over (%)
Bellingham	1870	12.5
Blackheath	1810	12.5
Brockley	1370	7.6
Catford South	2100	13.6
Crofton Park	1740	11.5
Downham	2160	14.6
Evelyn	1240	7.0
Forest Hill	1760	11.7
Grove Park	2220	14.9
Ladywell	1560	10.5
Lee Green	1990	13.4
Lewisham Central	1780	9.5
New Cross	1160	6.9
Perry Vale	1810	11.5
Rushey Green	1640	10.4
Sydenham	2180	13.7
Telegraph Hill	1450	8.6
Whitefoot	1900	13.0

Table 1 - Number and Proportion of Residents Aged 65 and Over by Ward

Key Messages

- *There are currently 26,800 Lewisham residents aged 65 and over.*
- *Compared to England a lower proportion of the population of Lewisham is aged 65 or over.*
- *Although the 65+ population of Lewisham is more ethnically diverse than England it is less diverse than the younger population in Lewisham.*
- *Lewisham has a greater proportion of residents aged 65 and over living in income deprivation than England as a whole.*
- *There are more older people living in the wards in the southern part of Lewisham than in the north.*

1.2. Mortality and Life Expectancy

Lewisham's directly standardised mortality rates for cancer, respiratory conditions, circulatory conditions, coronary heart disease and COPD in the over 65s are significantly worse than nationally.⁷ Only the over 65 mortality rate for stroke was not significantly different from the national average. Therefore Lewisham has a directly standardised all cause mortality rate for the over 65s that is significantly worse than the England average.⁷

In 2008-10 life expectancy at birth in the borough was 76.7 years for men and 81.3 years for women; this ranked Lewisham 341st and 319th respectively of the 404 local authorities nationally. The life expectancy at 65 was 16.6 years for men and 19.9 for women in the borough. Lewisham ranks lower nationally in life expectancy at age 65 than at birth; 381st for men and 323rd for women.

Simple life expectancy rates do not take into account the quality of life, both healthy life expectancy and disability free life expectancy attempt to address this. Both healthy and disability free life expectancy for men and women in Lewisham are significantly lower than the national figure. (Table 2)

	Disability Free Life Expectancy (Aged 65) (Years (95% CI)) (life free from longstanding limiting disability or illness)		Healthy Life Expectancy (Aged 65) (Years (95% CI)) (years living in good or reasonably good health)	
	Male	Female	Male	Female
Lewisham	7.5 (7.3 – 7.7)	8.6 (8.4 – 8.8)	11.2 (11.0 – 11.5)	13.5 (13.3 – 13.8)
London	8.3 (8.3 – 8.4)	9.3 (9.3 – 9.3)	12.5 (12.4 – 12.5)	14.6 (14.6 – 14.7)
England	8.1 (8.1 – 8.1)	9.1 (9.1 – 9.1)	12.5 (12.4-12.5)	14.5 (14.5 – 14.5)

Table 2 - Healthy and Disability Free Life Expectancy Aged 65, Lewisham (2001 Data)⁷

Key Messages

- Over 65 mortality rates are higher in Lewisham than England as a whole for all causes except stroke.
- Life expectancy at birth in Lewisham is currently about 77 for men and 81 for women, lower than the England figures.
- Life expectancy at 65 in Lewisham ranks 381st for men and 323rd for women, of a total of 404 local authorities.
- Healthy life expectancy at 65 is also lower in Lewisham than both London and England.

1.3. Health

1.3.1. Self Reported Health and Wellbeing

In 2011 83% of the population of Lewisham reported their health as being good or very good. But 14% of residents reported having a longstanding health condition or disability that limited their day to day activities. Half of those, 19,500 people, reported that it limited their activities “a lot”.⁸ Information is not available on the age of these individuals or the nature of the conditions that affect their health and limit their activities.

As part of the Measuring National Well-being Programme loneliness amongst people aged 52 years and older has been reported by age and by existence of a longstanding illness or disability. Loneliness increased with older age and with the existence of a long term condition. Overall 27% of those aged over 52 years were lonely sometimes or often compared to 46% of those aged 80 and over. And 45% of those aged over 52 with a longstanding condition or disability that limits them reported feeling lonely sometimes or often.⁹

1.3.2. Long Term Conditions

The prevalence of long term conditions increases with age, nationally those aged over 75 were three times more likely to report having a long term condition than those aged 16-44.¹⁰

At a local level QoFⁱⁱ provides us information on the number of people listed on registers for some of these common long term conditions (LTC)ⁱⁱⁱ. (Table 3)

ⁱⁱ Quality and Outcomes Framework for GPs

ⁱⁱⁱ A condition that can not be cured but can be controlled by medication or other treatment or therapies. (Department of Health)

Long Term Condition	Number of people on condition register	Prevalence (amongst all GP registrations, unless age specified)
Dementia	1014	0.3
Heart failure	1529	0.5
Epilepsy (>18yrs)	1362	0.6
Atrial fibrillation	2162	0.7
Stroke/TIA	3344	1.1
COPD	3497	1.1
Cancer	3639	1.2
Hypothyroidism	5537	1.8
Coronary heart disease	5561	1.8
Chronic kidney disease (>18yrs)	5101	2.1
Diabetes Mellitus (>17yrs)	13479	5.6
Asthma	17136	5.7
Obesity (>18yrs)	24351	9.9
Depression (>18yrs)	24802	10.4
Hypertension	33599	11

Table 3 - Number and Prevalence of Long Term Conditions in Lewisham using QoF data 2011

Again, this local information is not broken down by age group. However some of these conditions are likely to affect predominantly older individuals, such as dementia and others are more prevalent with increasing age. (Table 4)

Long Term Condition	Prevalence (Age Groups <50) (%)	Prevalence 60-69 (%)	Prevalence 70-79 (%)	Prevalence 80+ (%)
Stroke	<1	1	1	2
COPD	<1	2	2	2
Diabetes	<1-5	8	10	8
Cancer	<1	2	3	4
Musculoskeletal	1-11	22	30	37

Table 4 - Prevalence of Some Long Term Conditions by Age, England and Wales 2009 (Data from General Lifestyle Survey 2009)

Not only are older individuals more likely to have a long term condition (LTC) they are more likely to have multiple LTCs. In England almost half of woman aged 75 and over have more than one long term condition¹¹. (Table 5)

	16-24		25-34		35-44		45-54		55-64		65-74		75+	
	M	F	M	F	M	F	M	F	M	F	M	F	M	F
% with 1 LTC	14	19	17	16	26	24	26	26	31	30	37	25	35	26
% with 2 or more LTCs	4	6	4	6	10	11	18	16	23	25	32	38	43	49

Table 5 - Proportion of People with Long Term conditions by Age, England 2009

Lower income levels are associated with a higher prevalence of long term conditions. In England 25% of those in the lowest income tertile have at least two LTCs compared to only 13% of those in the highest income tertile.¹¹ This is relevant throughout Lewisham given the high levels of deprivation as well as in understanding health inequalities within the population. Smoking and obesity are more prevalent in individuals from more deprived areas¹², which contributes to this difference.

The challenge with this information on long term conditions is that it is hard to distinguish those with stable, well managed LTCs who are able to live independently and rarely need to seek healthcare and those whose conditions require frequent health and social care input. And although long term conditions are associated with frailty not everyone with a LTC is “frail”.

1.3.3. Dementia

Dementia is a condition that, in the vast majority of cases, affects older people and is associated with significant social care and healthcare costs. The Department of Health have produced a calculator to estimate the prevalence of dementia locally, both diagnosed and undiagnosed as well as predicting future trends. It estimates that in 2011/12 there were a total of 1926 people living with dementia in Lewisham, 1474 of those living in the community and a further 452 in residential and nursing care. The majority are female and about 40% of those living in the community are aged 85 and over. The prevalence of dementia increases markedly with age, at about 1% of 65 to 69 year olds and almost one in four people aged over 90. Almost two thirds care home residents in Lewisham aged 65 years and over have dementia. It is estimated that just under half of all people with dementia are undiagnosed in Lewisham. Although the diagnosis rate in Lewisham does not seem to vary significantly from the national average the CCG area ranks 45th -53rd of all CCGs in terms of the proportion of dementia cases diagnosis.

^{iv} Varies slightly dependent upon the prevalence figure used.

1.3.4. Falls

Falls are more common in older people; they can result in loss of confidence, continued fear of falling, activity restriction, reduced functional ability, loss of independence, social isolation and thus increased dependency on carers and services.¹³

The rate of emergency hospital admissions for accidental falls is significantly higher in Lewisham than the England average, at 3,367 per 100,000. (London as a whole, with a rate of 2,850 per 100,000 is also higher the England average).

At University Hospital Lewisham (UHL) A&E there were just under 700 attendances by people aged 65 and over with a diagnosis of fall in 2012/13. The numbers increased with increasing age^v. (Figure 4)

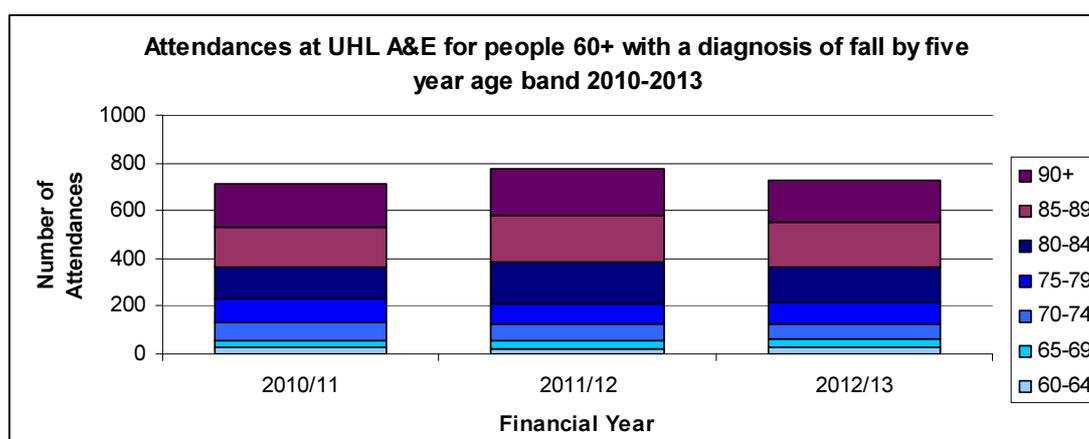


Figure 4 - Attendances at University Hospital Lewisham by people aged 60+ with a diagnosis of fall by five year age band 2010-2013.

Key Messages

- 14% of people of all ages in Lewisham have a disability or long term condition that affects their day to day activities.
- Loneliness increases with both age and the presence of a long term condition, in England and Wales almost half of people over 85 are sometimes or often lonely.
- The prevalence of long term conditions increases with age and increasing deprivation. In England almost half of women over 75 have at least one LTC.
- There are approximately 1900 people with dementia in Lewisham.
- Each year about 700 people aged 65 and over attend A&E at UHL with a fall, this is higher than the England average.

^v Note this only refers to attendances at UHL, and does not include Lewisham residents who attend A&E at King's College Hospital or Guy's and St Thomas' NHS Trust.

1.4. Healthcare use

Use of health services increases with increasing age; locally A&E attendance and inpatient admissions demonstrate this.

1.4.1. A&E Admissions^{vi}

With increasing age individuals are more likely to have an A&E attendance, to be brought to A&E by ambulance and to be admitted. Fifteen percent of all attendances at A&E at UHL are amongst people aged 65 and over. Almost 60% of individuals aged 65-69 attending A&E self-referred compared to less than a quarter of those aged 90+. (Table 6)

Source of Referral	Proportion of A&E Attendances					
	65-69	70-74	75-79	80-84	85-89	90+
<i>Emergency Services</i>	2.6%	3.3%	3.2%	4.3%	4.9%	5.2%
<i>General Medical Practitioner</i>	10.8%	12.1%	12.3%	11.9%	10.9%	9.5%
<i>Health Care Provider (Same or Other)</i>	3.7%	3.1%	3.4%	3.2%	3.1%	3.1%
<i>Other</i>	24.5%	29.3%	36.0%	43.2%	48.1%	58.0%
<i>Police</i>	0.6%	0.3%	0.3%	0.4%	0.4%	0.3%
<i>Self Referral</i>	57.7%	51.8%	44.7%	37.0%	32.8%	23.8%

Table 6 - Source of Referral for A&E Attendances by Age, 2010-2013

A greater proportion of older A&E attendees arrive by ambulance (88% of those aged 90+ compared to 40% of those aged 65-69). Once in A&E older people are more likely to be admitted to hospital. (Figure 5)

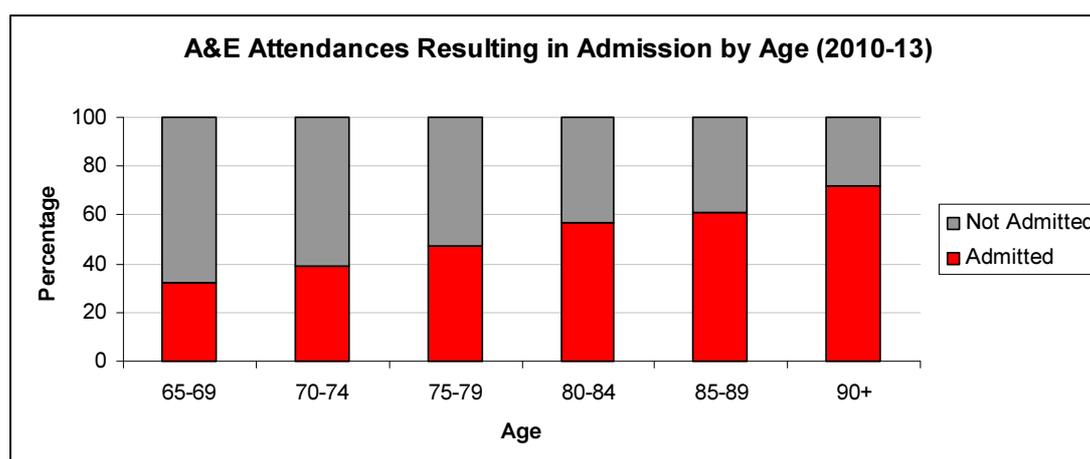


Figure 5 - Admission Rates Following A&E Attendance by Age, 2010-2013

^{vi} This data includes only admissions to University Hospital Lewisham (not King's College Hospital or Guy's and St Thomas' NHS Trust)

Although this data is useful in noting that if a 90 year old attends A&E he is more likely to be admitted to hospital than a 65 year old it does not tell us about the appropriateness of the admission (or the initial reason for the attendance). This would require an audit of A&E attendances/admissions.

A&E Admissions from Care Homes

Exploring a similar question an audit of admissions to A&E from care homes in Lewisham was carried out in November 2011. It aimed to explore the reasons behind admissions to A&E from care homes, as they had been identified as being relatively high. A Self Survey Audit which asked several questions including reasons for A&E attendance, existence of advanced care plans and GP involvement prior to A&E attendance. The audit found that residents referred to A&E seemed to have “serious medical conditions”, there was GP involvement with over 55% of residents prior to referral to A & E. Two-thirds of residents were not on the GP end of life register; however, 51% of residents had advanced care plans in place. It is not possible to know whether other primary care interventions would have been able to prevent these admissions, but this small audit of 53 admissions to A&E from care homes in Lewisham did not find significant evidence of these admissions being inappropriate¹⁴.

Multiple A&E Attendances

Over the last three years a number of individuals aged 65 and over have had multiple attendances at A&E. (Table 7)

Number of Attendances (over 3 years, 2010-2013)	Number of People (by age band)					
	65-69	70-74	75-79	80-84	85-89	90+
1	1409	1275	1220	1048	803	550
2 to 4	458	443	521	496	422	310
5+	54	66	61	77	56	45
Total	1921	1784	1802	1621	1281	905

Table 7 – Number of A&E Attendances by Age (2010-2013)

Although the number of people with multiple attendances is lower in the older age groups as a proportion of the general population of that age the number of multiple admissions in older age groups is greater.

Number of Admissions	% of Lewisham residents with UHL A&E attendance in the last 3 years (by age band)					
	65-69	70-74	75-79	80-84	85-89	90+
1	24.8	28.6	35.1	42.1	55.6	69.8
5+	0.7	1.1	1.2	2.0	2.4	3.5

Table 8 - A&E Attendances as a proportion of population by age (2010-2013)

1.4.2. Hospital Admissions^{vii}

Emergency hospital admission rates in people aged 65 and over are higher in Lewisham than England as a whole, at 29,161 per 100,000. Similarly, at 17% the emergency re-admission rates (within 28 days) for those aged 75 and over in Lewisham are higher than England (15%) but the same as London.

In 2012-13 in Lewisham almost 8000 people aged 65 and over were admitted to hospital. There were ten individuals who were admitted ten or more times and 187 people who were admitted five or more times in the year. The largest number of people with five or more admissions was in the 80-84 age-band. (Table 9 and Figure 6)

Age Band	Number of People with 5 or more Hospital Admissions in 2012-13
65-69	24
70-74	28
75-79	34
80-84	52
85-89	43
90-94	21
95+	7
<i>Total</i>	<i>187</i>

Table 9 - Number of People (aged 65+) with 5 or more Hospital Admissions in 2012-13 by Age

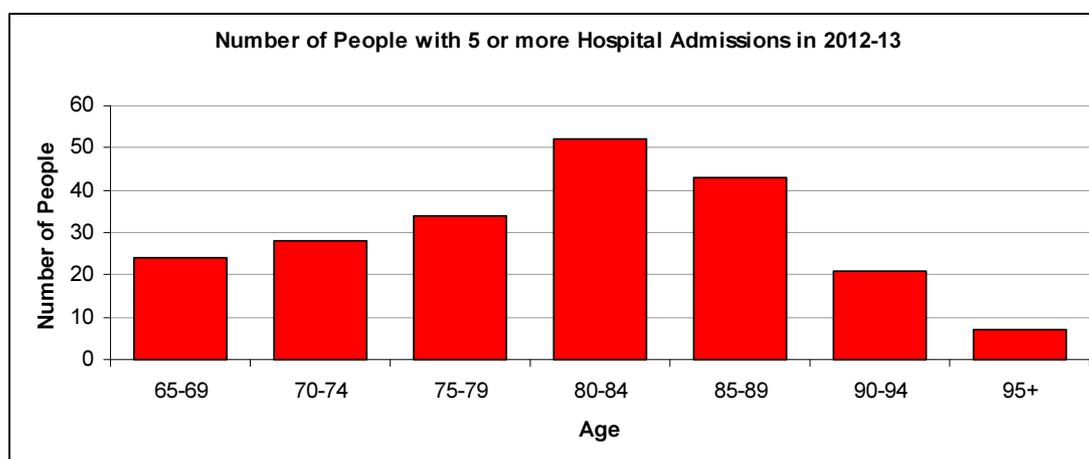


Figure 6 – Number of People aged 65+ with five or more hospital admissions by age (2012-13)

Although there are fewer admissions of people aged over 90, taking into account the numbers of residents of that age, their risk of admission is likely to be higher than younger individuals. However in terms of service planning it is useful to note that the 80-84 year age band has the largest number of people with multiple admissions.

^{vii} Hospital admissions for those registered with a Lewisham GP rather than Lewisham residents

The most frequent primary diagnoses for emergency admissions to hospital in Lewisham GP-registered patients in 2012-13 were UTI, pneumonia, falls, COPD and chest pain.

Primary Diagnosis	Number of Admissions (aged 65+, 2012-13)
Urinary tract infection, site not specified	557
Lobar pneumonia, unspecified	344
Repeated falls	258
Chronic obstruct pulmonary dis with acute lower resp infec	196
Chest pain, unspecified	183
Pneumonia, unspecified	178
Person with feared complaint in whom no diagnosis is made	177
Congestive heart failure	156
Acute renal failure, unspecified	119
Unspecified acute lower respiratory infection	118
Atrial fibrillation and flutter	106
Syncope and collapse	105
Fracture of neck of femur	102
Cerebral infarction, unspecified	96
Diarrhoea and gastroenteritis of presumed infectious origin unspec	95
Unstable angina	95
Cellulitis of other parts of limb	91
Constipation	90
COPD with acute exacerbation, unspec	87
Acute myocardial infarction, unspecified	82
Transient cerebral ischaemic attack, unspecified	70
Unspecified haematuria	64
Other chest pain	61
Retention of urine	59
Orthostatic hypotension	58
Mechanical complication of urinary (indwelling) catheter	57
Unspecified injury of head	54
Dyspnoea	50

Table 10 - Primary Diagnosis Codes Used in at least 50 Emergency Admissions in 2012-2013 in those aged 65+

Some of the primary diagnosis codes used are similar and contain the same underlying condition. Combining these highlights some differences in the most common primary diagnosis for admissions amongst 65-84 year old and those over 85. COPD and chest pain are more prominent in the younger population where as falls and no diagnosis made are more prominent in the older group. But overall pneumonia and UTI are the commonest diagnosis in both age groups.

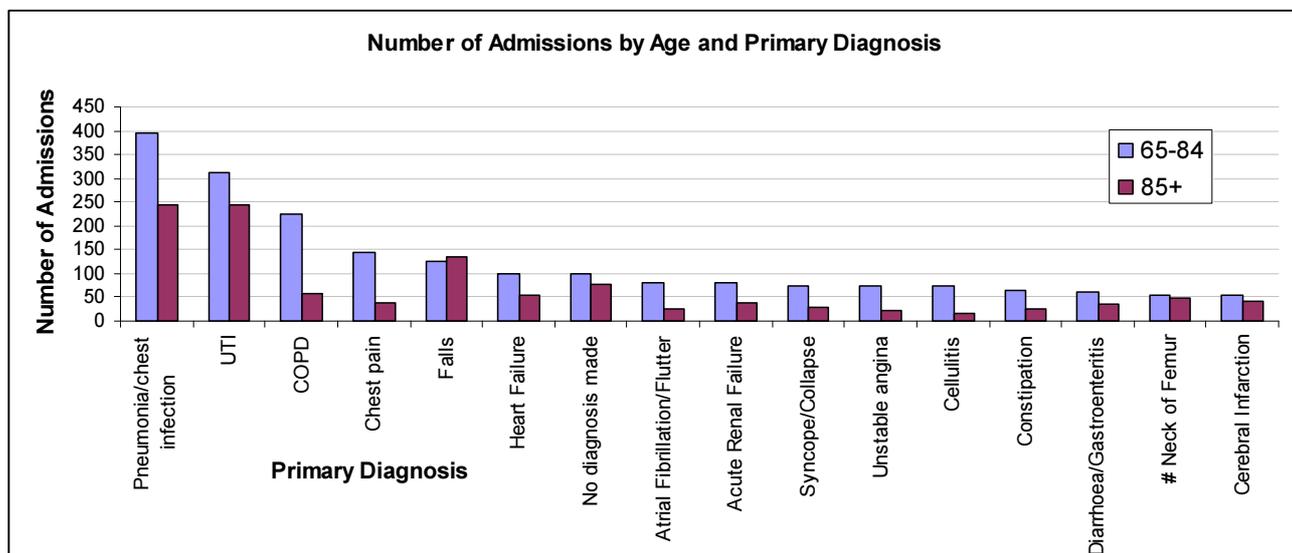


Table 11 - Number of Admissions for Lewisham Registered Patients by Age and Primary Diagnosis, 2012-2013

Key Messages

- *Lewisham's admission and re-admission rates for older people are higher than England.*
- *A&E attendances increase with age, older people are also more likely to arrive by ambulance and to be admitted to hospital.*
- *About a quarter of people aged 65-69 in Lewisham have attended A&E at least once in the last three years. Compared to almost 70% of those aged 90 and over.*
- *Last year almost 8000 people aged 65 and over in Lewisham had an unplanned admission to hospital.*
- *The most common primary diagnoses for admission amongst the over 65s are pneumonia, UTI and COPD. For the over 85s they are pneumonia, UTI and falls.*

1.4.3. NHS Continuing Healthcare

Individuals who are not in hospital but have ongoing, complex healthcare needs may be eligible for NHS Continuing Healthcare; a package of care that is arranged and funded solely by the NHS. Given the complexity of these patients' needs the number of people in receipt of this funding is a useful guide as to the number of people with complex healthcare needs locally. Last year just over 300 people started to receive continuing care funding, most of those (247) were over 65. The majority of people receiving continuing care are in a nursing home or receiving homecare.

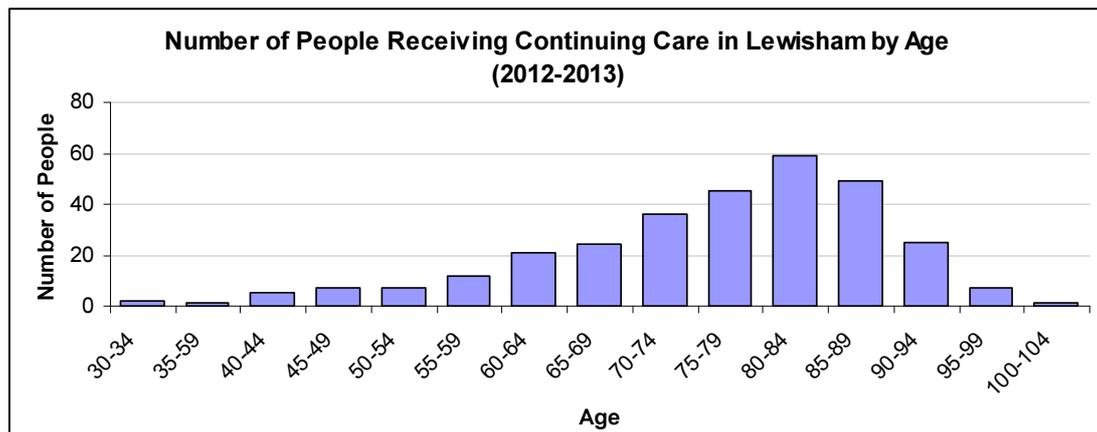


Table 12 - Number of People Receiving Continuing Care in Lewisham by age (2012-2013)

1.4.4. Substance Misuse and Alcohol Treatment Services

Approximately a quarter of adults who underwent treatment for alcohol dependency in Lewisham in 2012/13 were aged 50-64, this is similar to the England average. No-one aged 65 and over was received treatment for alcohol dependence during the year.

The number of older adults in treatment for substance misuse has increased over the last three years, to 176 in 2012/13. In 2012/13 the proportion of 50 to 64 year olds in the Lewisham treatment system was twice that of the England average.

1.4.5. Social Care and Healthcare Use

It is not possible to link social care and healthcare data on a large scale to understand how many people are in receipt of both. However as part of planning for integrated care in Lewisham the number of adults (of all ages) in receipt of both adult social care and district nurse support was estimated. (Figure 7) This found that about 20% of District Nurse cases were also in receipt of Adult Social Care (ASC) Services and that about 40% of ASC clients were also seeing District nurses.

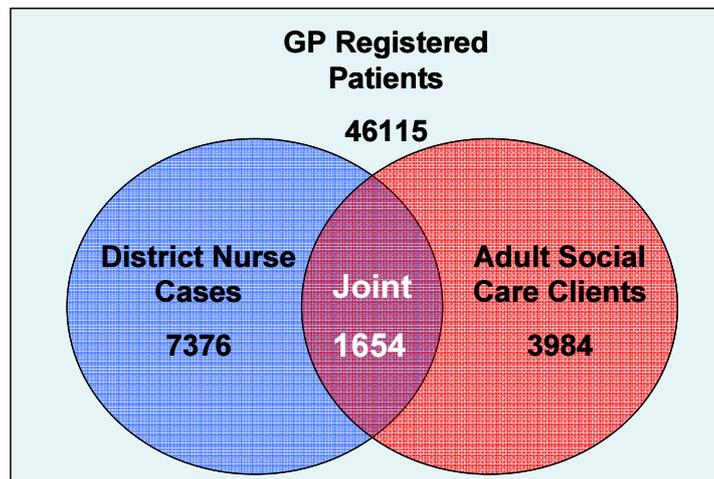


Figure 7 - Sample of Lewisham GP-Registered Patients Showing Overlap of Those Receiving Adult Social Care and District Nurse Input

1.5. Social care Use

In 2011-12 almost 6400 individuals in Lewisham received at least one service^{viii} from social care in Lewisham at some time during the year and just over 3500 of these service users were 65 years old or over. This equates to approximately 14% of all residents aged 65 years and over, though the proportion increases markedly with age; over 40% of residents aged 85 years and older receiving a social care service in 2011/12. (Figure 8)

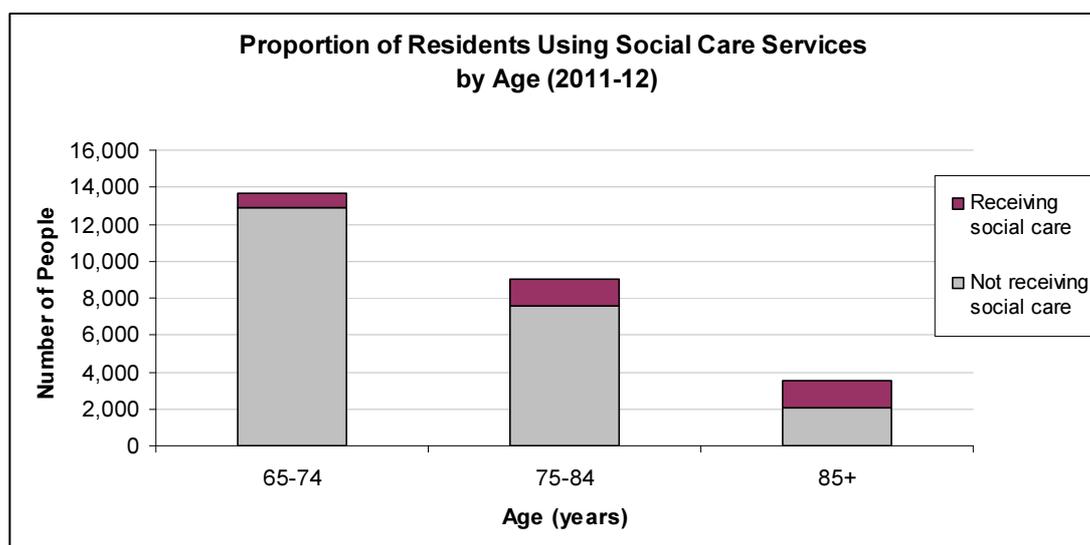


Figure 9 – Proportion of Lewisham Residents Receiving at Least One Social Care Service for at Least Part of the Year 2011-2012 by Age

Over half of service users aged 65 and over received more than one service (or the same service over more than one period of time) in 2011-12.

Number of Services/Episodes of a Service Used 2011-12	Number of Service Users
1	1489
2	742
3	505
4	327
5-9	473
10+	36

In 2011 almost half of service users (aged 65 and over) receiving 5 or more services (/service episodes) were aged 85 years and over. The majority were white (74%), Black Caribbeans were the next largest ethnic group, at 19%. Although the numbers are small, this is higher than the proportion of Black Caribbeans in the 65+ population (15% in 2011). The service use data from 2010-11 also suggest this, 21% of those aged 65 and over using 5 or more services were Black Caribbean.

^{viii} Meals, day care, direct payment, equipment, home care, permanent or short term residential or nursing placement or professional support.

The most frequently used service in 2011-12 was home care^{ix} which accounted for almost half of services provided. Permanent residential and nursing placements each accounted for 5% of services provided. (Though, it is possible that homecare could represent more than one episode in a year for an individual permanent care home placements can not.)

A survey, done as part of the Social Care Outcomes Framework (ASCOF) asked social care clients how satisfied they were with the way staff helped them. 65% of respondents in Lewisham were extremely or very satisfied compared (58% in inner London and 64% in England).¹⁵

1.5.1. Care Home Admissions

In Lewisham there are approximately 200 permanent admissions to care homes each year, giving a rate of approximately 80 per 10,000 residents aged 65 and over. Rates in Lambeth and Southwark are 72 and 78 per 10,000 respectively; however it is not possible to assess whether the differences between these rates are statistically significant.⁷

1.5.2. Rehabilitation Following Hospital Discharge

Eighty-seven per cent of older people (65+) discharged from hospital into their own home or a care home for rehabilitation were in their intended destination (ie home or extra care housing/placement) 91 days after discharge. In England this figure was 82% and 86% for London as a whole¹⁵.

Key Messages

- *About 3500 residents aged 65 and over receive social care services, which represents approximately 14% of the (65+) population.*
- *Half of clients receiving multiple services were aged 85 or over*
- *About 200 people aged 65 and over are admitted to care homes each year*

^{ix} Home care is care provided in an individual's home, normally of a personal nature such help with dressing, washing or toileting.

1.6. Trends

1.6.1. Population

People in the UK and in Lewisham are now living longer lives. In Lewisham life expectancy at birth in 2009-2011 was 77 and 82 years (male and female respectively) compared to 72 and 78 years in 1991-1993.¹⁶

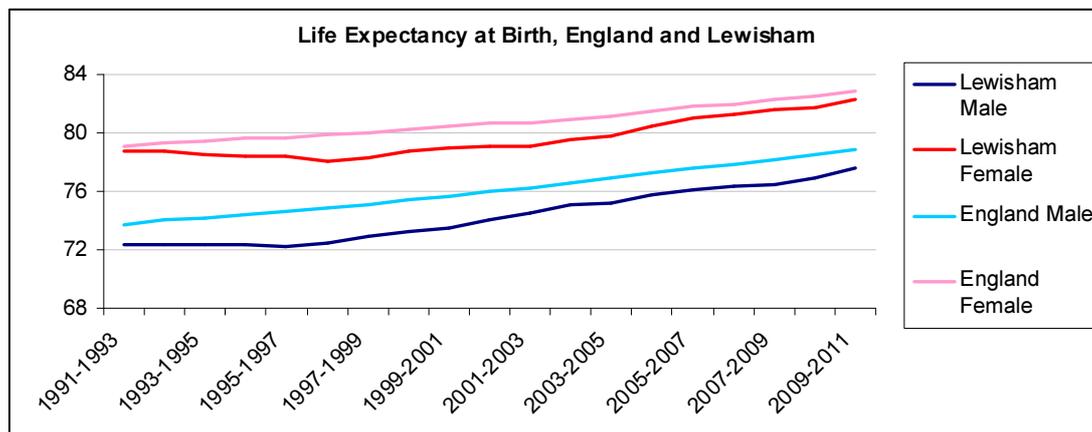


Figure 10 - Life Expectancy at Birth, Lewisham and England¹⁶

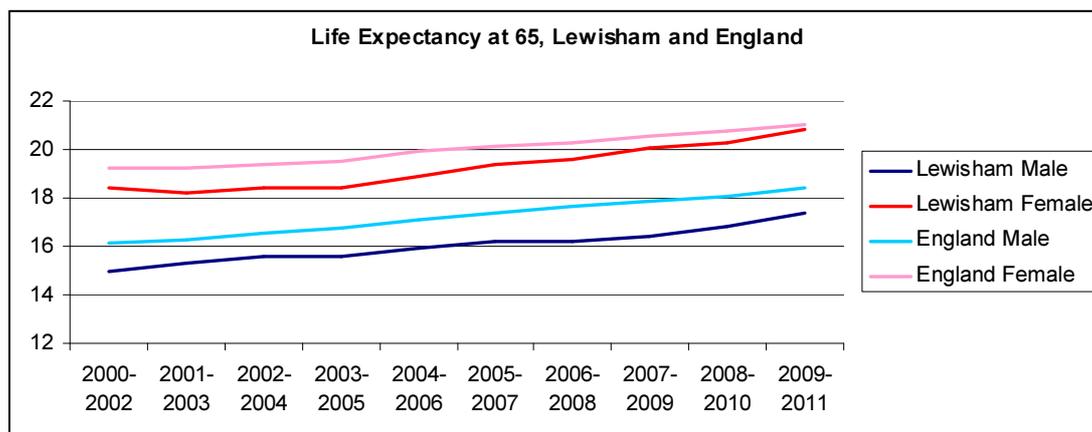


Figure 11 - Life Expectancy at 65, Lewisham and England

This increase in life expectancy is already in some areas and will in others, such as Lewisham lead to a rise in the number of older people in the population. In Lewisham the number of residents aged over 65 years has been stable or even falling slightly over the last decade⁵, despite an overall growth in the population between 2001 and 2011 of about 11%¹⁷.

However population projections suggest that from about 2015 the number of Lewisham residents over 65 years old will begin to rise. (Figure 12) The increase in the number of older people will be larger than in younger population groups, meaning that there will be an increase in the proportion of older people in the population; in 2011 11% of Lewisham residents were aged 65+, by 2041 this is predicted to be 15%.

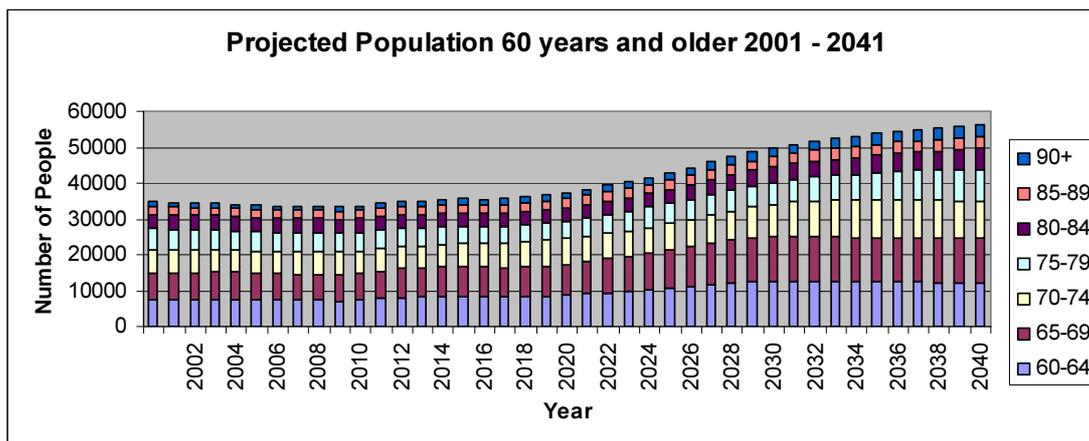


Figure 12 - Projected number of Lewisham residents aged 60 and over 2001 – 2041

The increase in the older population is predicted to be greater at older ages, ie those aged 85 and over. England wide figures suggest that the number of people aged 65 and over will increase by 27% by 2022 and the number of people aged 85 and over by 31%. The projected increases for Lewisham in the same time period are lower at 12% and 20% respectively¹⁸.

	2013	2018	2023	2028	2033	2038
Over 65s	26,808	27,482	29,878	34,288	39,104	42,667
% of 65+	9.5%	9.3%	9.8%	10.8%	11.9%	12.6%
Over 85s	3,604	3,870	4,323	4,791	5,634	6,293
% of 85+	1.27%	1.30%	1.41%	1.51%	1.71%	1.86%

Table 13 - Projected number and Percentage of 65+ and 85+ Population in Lewisham 2013-2038¹⁸

1.6.2. Location

At present there is a fairly clear pattern in the age of the population across the borough with larger numbers of people aged 65 and over living in the south of the borough. (Figure 13)



Figure 13 - Map of Lewisham Wards by Number of Residents Aged 65 and Over, 2011

However the 2041 projections suggest this is likely to become less clear, though still with fewer older people in the north of the borough. (Figure 14)



Figure 14 - Map of Lewisham Wards by Projected Number of Residents aged 65 and over, 2041

The number of older people is predicted to more than double in some wards, namely Evelyn and New Cross, by 2041. However in other wards, including Sydenham and Blackheath, the expected increase is 40% or less. These differences, as well as the predicted numbers of older people across the borough may be helpful in planning services for older people across the borough.

1.6.3. Ethnicity

As would be expected from the differences in the ethnic mix of the younger and older populations in the borough at present the projected increase in residents aged over 65 differs between ethnicities. The projected ethnic make up of the population aged 65 years and over in 2028 shows a reduction in the proportion of white residents and an increase across all other categories. (Figure 15)

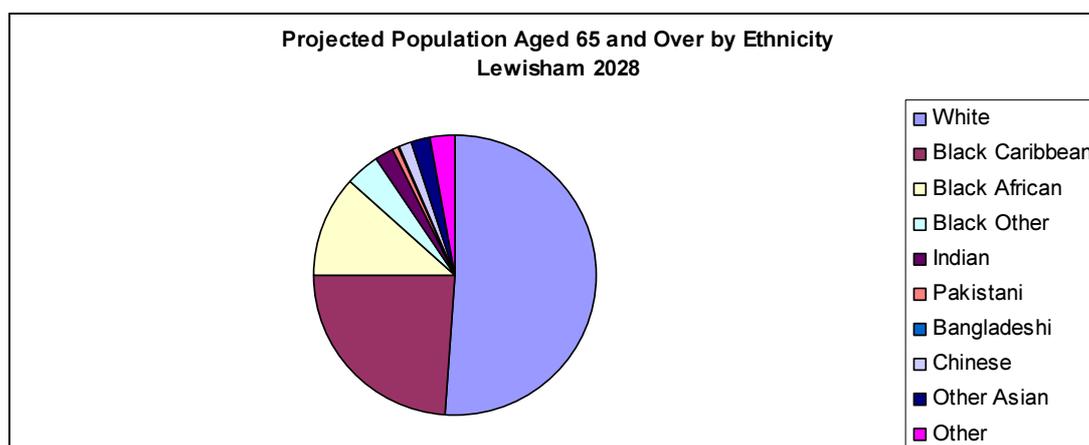


Figure 15 – Projected Population Aged 65 and Over by Ethnicity, Lewisham 2028
(Data from GLA 2011 Demographic Projections)

Ethnicity	2013	2018	Change from 2013	2023	Change from 2013	2028	Change from 2013
White	17,535	17,050	-3%	16,875	-4%	17,251	-2%
Black Caribbean	3,566	4,029	13%	4,889	37%	6,211	74%
Black African	1,207	1,581	31%	2,092	73%	2,762	129%
Black Other	371	453	22%	603	63%	836	125%
Indian	458	542	18%	632	38%	721	57%
Pakistani	76	83	10%	98	30%	112	47%
Bangladeshi	39	55	40%	65	66%	76	92%
Chinese	248	326	31%	402	62%	449	81%
Other Asian	379	481	27%	594	56%	704	85%
Other	285	394	38%	495	74%	623	118%
TOTAL	24,164	24,993	3%	26,746	11%	29,744	23%

Figure 16 - Projected Population Aged 65 and Over Numbers 2013-2028 by Ethnicity

The largest projected increases in older populations are in the Black Caribbean, Black African and Black other groups.

1.6.4. Health

There is much ongoing debate around the question of whether ill-health and disability, both key in predicting future health and social care use, will rise or fall in the face of falling mortality rates in older people. The number of older people with disabilities or LTCs requiring health and social care in the future depends on several factors:

- The prevalence of chronic conditions, which itself may be influenced by a variety of factors including preventative measures earlier in life.
- Treatment - is there optimal treatment available to reduce disability from a LTC or are treatments focused on reducing mortality from LTCs rather than the disabilities they cause?

On the one hand it is possible that the prevalence of disability will fall as mortality rates in old age fall but on the other prevalence could rise as individuals with disabilities survive into old age¹⁹. The trend for healthy life expectancy at 65 in England and Wales has increased approximately in line with the growth in overall life expectancy, suggesting that the prevalence of ill-health may remain fairly constant. However it is important to note that healthy life expectancy is worse in deprived populations, such as Lewisham²⁰.

A recent analysis of health in older people found that obesity prevalence is increasing in that population by about 5% per year¹⁹. Increasing obesity rates in turn will lead to an increase in the prevalence of associated conditions such as cardiovascular disease and stroke. The Nuffield Trust and London School of Economics have estimated that if rates of chronic disease continue to rise in line with recent trends, the number of older people with moderate or severe disabilities is projected to increase by 54% in England.¹⁹

The Department of Health projects that the number of people with one long term condition will be relatively stable over the next ten years. However, those with multiple LTCs is set to rise to 2.9 million in 2018 from 1.9 million in 2008.¹¹

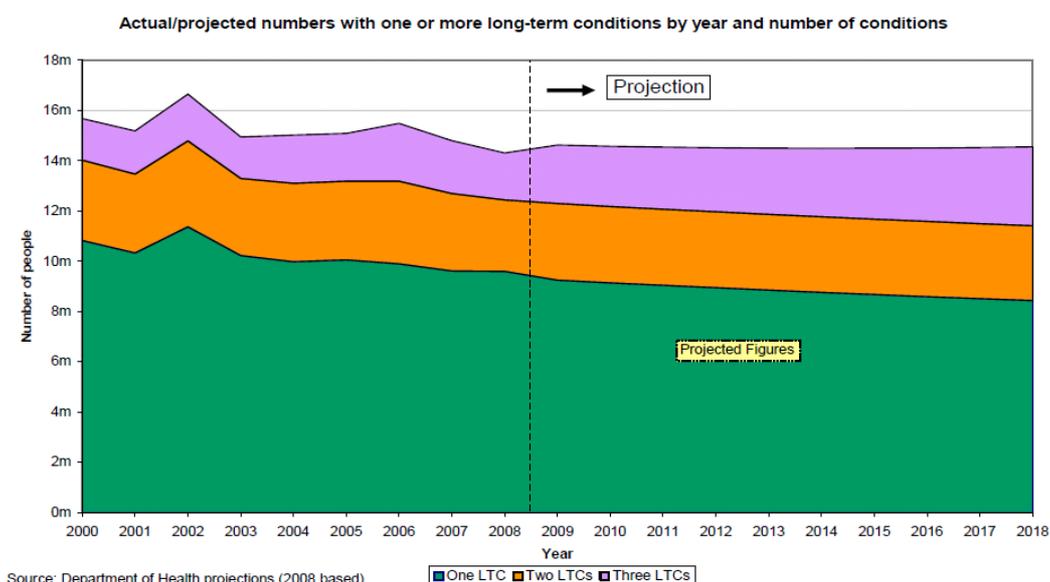


Figure 17 - Actual and Projected Number of People with Long Term Conditions in England and Wales, 2000-2018¹¹

Key Messages

- *Projections suggest that there will be an increase in the 65+ and 85+ populations of Lewisham of about 12% and 20% respectively between 2010 and 2022. So that by 2023 there will be almost 30,000 people aged 65 and over in Lewisham.*
- *Increased life expectancy is leading to this increase in the number of older people.*
- *The number of older people with multiple long term conditions and disabilities in England is expected to increase in the next ten years.*
- *The prevalence of obesity is increasing in older people by about 5% per year.*
- *There is ongoing debate about whether an increase or decrease in the prevalence of ill-health and disability is likely associated with the increase in life expectancy.*

2. Evidence Review

Overview of frailty (concept, prevalence and definitions), tools to identify frail older people and methods to reduce health and social care use in frail older people

Concept of Frailty

Frail older people are at high risk for developing adverse outcomes such as disability, morbidity, mortality, hospitalisation and admission to care homes. Frailty also leads to loss of independence and impairs the quality of life and psychological well-being of older people²¹. It also poses challenges to families and caregivers as well as health, social and other support services. The concept of frailty is therefore useful to help understand the heterogeneity and inequalities of health trajectories with aging and to offer practitioners useful tools for patient care.^{22,23}

Prevalence

Prevalence estimates of frailty differ, depending both on how it is defined and how it is measured. However it has been estimated that in Europe 17% of those aged 65 or older are frail⁴. And in the UK between a quarter and half of people over the age of 85 years are frail²⁴. A UK study of over 600 64-74 year olds, born in Hertfordshire and living in the community found a frailty prevalence of 8.5% for women and 4.1% for men.²⁵

Definitions

Frailty is a relatively new concept, prior to the 1990s it was often seen as another term for disability. Since then definitions of frailty no longer depend on the presence of a long term condition, dependency or need for health and social services^{4,26}. Frailty, disability, co-morbidity and aging are seen as separate but related concepts, one does not necessarily infer or result from the other in an individual. (Figure 18)

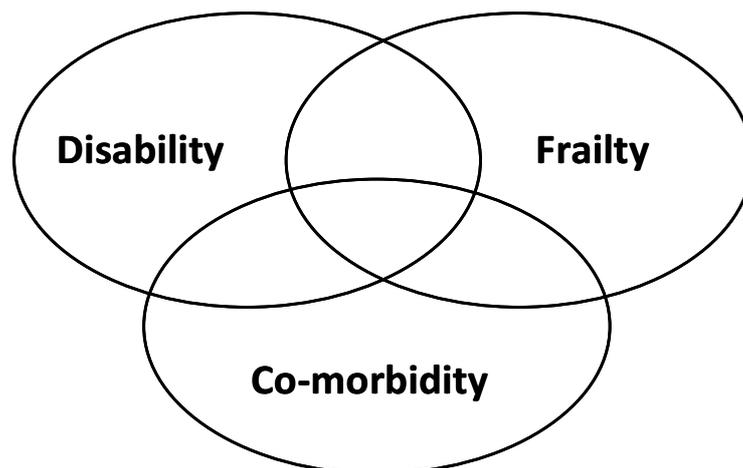


Figure 18 - Disability, Co-Morbidity and Frailty: Separate but associated concepts²⁶

A study in 2001 of over 5000 over 65 year olds explored the relationships between disability, frailty and co-morbidity. It found that less than half of those they defined as frail had at

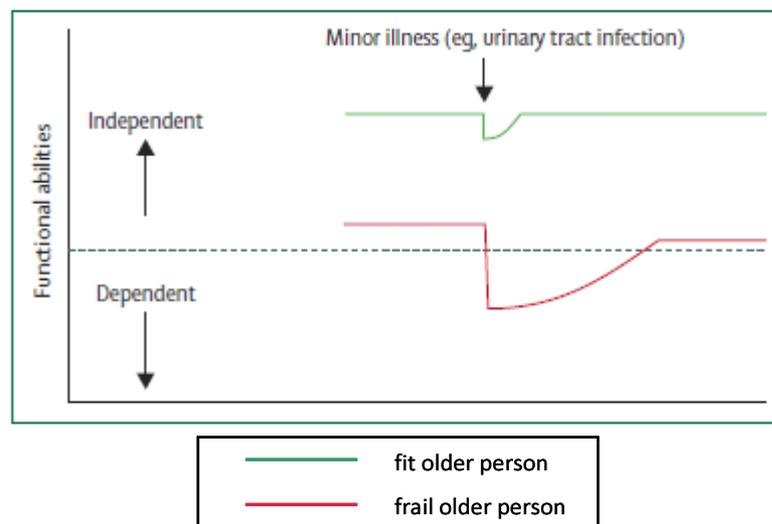
least two long-term conditions^x. Less than a third of the frail were disabled (defined as being unable to perform at least one activity of daily living independently). Over a quarter of the frail had neither a disability nor co-morbidity (at least two long term conditions)²⁶, which makes identifying those individuals challenging.

Frailty

Although the concept of frailty is widely recognised and felt to be useful amongst health and social care professionals there is not a universally agreed definition or criteria by which to judge someone frail. Frailty is not in itself a diagnosis but describes a state, which typically includes:

- an increased vulnerability to stressors due to impairments in multiple, inter-related systems that lead to decline in homeostatic reserve and resiliency;
- failure to integrate responses in the face of stress and
- poor resolution following a stressor event^{4,24,26,27}.

In practical terms this means a small insult can lead to a catastrophic loss of function; such as loss of independence, immobility and delirium.^{4,24}



The green line represents a fit older person who after a minor illness or stressor event such as a urinary tract infection has a small deterioration in function and then returns to previous level of function. The red line represents a frail older person who, after a similar minor illness undergoes a greater deterioration, which may manifest as functional dependency, slower recovery to a functional ability below their previous ability.

Figure 19: Vulnerability of frail older people to a sudden change in health status after a minor illness²⁴

The current debates surrounding the definition of frailty centre on whether it should include solely biomedical factors or also broader cognitive and psychosocial ones. Despite this a number of studies have shown an increase risk in adverse outcomes for the frail, using a variety of definitions and criteria.⁴ It is therefore useful to consider how to identify those who are frail and consider how to minimise the risk of these adverse outcomes. (see later)

^x Myocardial infarction, angina, congestive heart failure, claudication, arthritis, cancer, diabetes, hypertension and COPD.

Frailty and Aging

Aging brings a gradual decline in physiological reserve, through the accumulation of damage to organ systems throughout life; this often leads to functional decline. Age in itself is also a risk factor for many long term conditions which in themselves may reduce an individual's reserve and cause functional decline.²⁸ Aging in an individual is determined by a variety of underlying genetic and environmental factors²⁹. In frailty the decrease in physiological reserve is faster and homeostatic mechanisms start to fail.²⁴ Therefore older people are more at risk of frailty but frailty is not a natural consequence of aging.

Key Messages

- *There is considerable evidence that frailty is associated with adverse outcomes, including disability, morbidity, mortality, hospitalisation and admission to care homes.*
- *Although there are a variety of definitions of frailty, a lack of resilience in the event of minor stressor events is a key element.*
- *Although many frail older people also have disabilities or co- morbidities up to a quarter may not have.*

The following section focuses on three key questions:

- 1) How to identify frail older people (in particular those who are not currently known to health and social care services)
 - a. What tools are available?
 - b. How might those tools be implemented in reality?
- 2) How to identify those older people who are increased risk of hospital admission and high use of social care.
- 3) What can be done to reduce health and social care use amongst frail older people (with particular reference to those with high health and social care use; and those identified through question 2)

During this work it became clear that the identification of frail older people not known to services is a priority locally and hence this became the main focus of the next section.

2.1. Identifying Frail Older People

It is useful to understand how frailty may manifest itself in an individual to consider how best to identify frail older people. Many frail older people could be identified following a “stressor event” such as a fall or minor infection or illness, which, as outlined above, has a significant impact on an individual as a result of their frailty. For example they may suffer reduced mobility or falls, confusion and delirium or fluctuating disability, necessitating a health or social care intervention and often a hospital admission. However, there is an additional challenge for professionals; how to identify frail older people who are yet to experience a stressor event, in effect pre-screening for frailty amongst the general (older) population. Although the tool to identify both these groups as frail could well be the same, the implementation of the tool may need to be different. This section will focus on how to identify frail older people who are not currently well known to health and social care services.

Identification Tools

As with definitions of frailty there is a wealth of tools in the literature that aim to identify older people who are frail and at risk of adverse outcomes. A systematic review in 2011 identified twenty such tools³⁰.

These tools broadly fall into three categories:

- Those that are “rules-based”; defining frailty on the basis of the existence of a set number of criteria, such as the Fried classification;
- Those that are the sum of an individual’s impairments or deficits, such as the Frailty Index.
- And finally those which rely on clinical judgement in interpreting the results of history taking and clinical examination to ascribe and level of frailty to an individual, such as the Clinical Frailty Scale³¹.

Some focus primarily on frailty as a physical syndrome where as others have a broader scope and include social and psychological aspects. The systematic review identified eight key risk factors of the greatest importance to the concept of frailty; these include physical, psychological and social factors;

- Nutritional status
- Physical activity
- Mobility
- Strength
- Energy
- Cognition and mood
- Lack of social contacts
- Social support³⁰

Probably the earliest attempt at developing and validating a comprehensive tool to identify frail older people was in 2000. Fried and colleagues in the USA developed a “phenotype” of frailty and assessed its predictive validity (of an increased risk of falls, hospitalisations, disability and death)²⁶. They used data from the Cardiovascular Health Study of 5,000 people aged 65 and over. The criteria they used represent underlying regulatory systems whose function is impaired in frailty; namely weakness, slowness, reduced activity, low

energy and unintentional weight loss. They defined frailty as at least three of (as assessed by a healthcare professional):

- Unintentional weight loss (of more than 10pounds in the last year)
- Exhaustion (using CES-D depression score)
- Physical activity (based on Kcals of activity per week)
- Walk time (time taken to walk 15 feet (stratified by gender and height))
- Grip strength (stratified by BMI and gender)

Using these criteria frailty was independently predictive of adverse outcomes (falls, hospitalisation, disability and death) with an adjusted odds ratio^{xi} of between 1.3 and 2.24 over 3 years²⁶. This validation was done amongst older people living in the community rather than those living in care homes, which is useful when trying to identify frail older people who are not known to services. Similarly the measurements used are relatively simple and reproducible making it feasible to use in practice; although the self reported weight loss does risk recall bias.

An alternative approach was taken by Rockwood and colleagues (as part of the Canadian Study on Aging and Health) in developing their frailty index, adding an individual's health deficits across a variety of areas³¹. A total of 70 possible deficits are considered, and responses not limited to a binary answer, three or four different variables are offered for some factors. Amongst the 70 variables are; the presence or absence of current diseases, ability in activities of daily living and physical and neurological signs from physical examination. The responses to each of the variables are aggregated to provide a score for an individual. The outputs of this tool have a strong predictive value and the continuous nature of the output score enables monitoring of an individual's frailty over time unlike more rules-based approaches. Although this is the most comprehensive tool in terms of the breadth of factors considered it is time consuming to apply, and unlikely to be practical in day to day clinical practice.

Rockwood and colleagues then went on to consider using clinicians to categorise the frailty of an individual following history taking and examination. Clinicians selected from one of seven categories of frailty on the Clinical Frailty Scale:

1. Very Fit (*robust, active, energetic, well motivated and fit; these people commonly exercise regularly and are in the most fit group for their age*)
2. Well, without active disease (*but less fit than those in category 1*)
3. Well, with treated co-morbid disease (*disease symptoms are well controlled compared with those in category 4*)
4. Apparently vulnerable (*although not frankly dependent these people commonly complain of being "slowed up" or have disease symptoms*)
5. Mildly frail (*with limited dependence on other for instrumental activities of daily living*)
6. Moderately frail (*help is needed in both instrumental and non-instrumental activities of daily living*)
7. Severely frail (*completely dependent on others for the activities of daily living on terminally ill*)

^{xi} The odds ratio compares the likelihood of adverse outcomes in the frail and non-frail groups, an odds ratio of greater than one means that the likelihood of an adverse outcome was higher in the frail group.

Following a clinical interview and with access to information on the individual's diagnoses and previous assessments relating to falls, delirium and cognitive impairment, co-morbidities and function clinicians assigned one of the seven frailty categories above to each individual. The results of the Clinical Frailty Scale and the Frailty Index were strongly correlated and higher frailty scores were associated with a higher risk of death and entry into a care home. The Clinical Frailty Scale is one that would be easier to apply in clinical practice than the frailty index, although the population used in the validation had an over-representation of those with cognitive impairment and in care homes³¹. And it does require the input of an experienced healthcare professional which may limit its use outside healthcare settings.

Following these and other initial tools numerous others have been developed using broadly similar domains in the definition of frailty as outlined above. The mechanism of delivery of the tools varies from self-report questionnaires to healthcare professional scoring or performance tests. Self reported instruments have been developed both as a mechanism of identifying the frail older person independently but also as a pre-screening tool used as a prompt for performing a more comprehensive assessment such as a Comprehensive Geriatric Assessment (CGA). For example the Tilburg Frailty index is a self administered questionnaire which takes about 14mins to complete. It covers three domains: physical, psychological, and social, and asks 15 simple yes/no questions. It has been tested in community-based people aged over 70 and was found to have good predictive validity for disability, need for personal care, need for nursing and informal care and fair for hospitalisation and GP visits³². Where as the abbreviated Comprehensive Geriatric assessment (a-CGA) is based on a notes review and acts as a decision tool for applying the CGA.³²

Each of these tools has been tested in a different setting, with different outcome measures making selecting one tool for the identification of frail older people difficult. There have been a number of attempts in the last few years to provide an overview and analysis of the tools available.^{30,32,33} Perhaps unsurprisingly none have reached a conclusion as to which is the preferred tool; the Frailty Index is probably the most comprehensive measure and the Fried phenotype tool appears the most studied.

In 2008 the European, Canadian and American Geriatric Advisory Panel performed a literature review and suggested an ideal screening tool needed to include the following domains:

- Patient-reported fatigue
- Physical performance
- Walking speed
- Number of co-morbidities
- Nutritional state

Using this approach, SHARE-FI and TFI are most comprehensive tools. The SHARE Frailty Instrument is based on five items: physical exhaustion, loss of weight, strength of grip, walking speed and difficulties in activities of daily living and classifies patients into three (frail, pre-frail and not-frail) groups.

However, in addition to the comprehensiveness of the tool other factors are important including the sensitivity^{xii}, specificity^{xiii} and feasibility of use. The table below summarises and compares the key features of eight of the more comprehensive screening tools used to identify frail older people.

Examples of the questions included in two screening tools (the Tilburg Frailty Index and the Sherbrooke Postal Questionnaire) are included in the appendix).

^{xii} The percentage of people defined as frail by the test who are frail.

^{xiii} The percentage of people defined by the test as not being frail who are not frail.

Tool	DETAILS OF TOOL				GAP DOMAINS						DIAGNOSTIC INDICATORS				
	Format	Equipment ?	Self Report Possible?	Number of Items	Patient Reported	Fatigue	Physical Performance	Walking	Co morbidities	Nutritional State	Population	Outcome Measure	Sensitivity	Specificity	Other
SHARE-Frailty Instrument	Survey, physical test & Web-based calculator	Dynamometer	No	5	X	X	X		X	Primary Care	Mortality				Odds Ratio (2.1-6.9)
Tilburg Frailty Index	Survey	No	Yes	15	X	X	X		X	Primary Care	Mortality	67	61		
											Hospital Admissions (last 12 months)	53	65		
											Development of disabilities	62	71		
Groningen Frailty Indicator	Survey	No	Yes	15		X	X		X	Primary Care	Mortality	73	54		
											Hospital Admissions (last 12 months)	52	55		

											Development of disabilities	71	63
7-Item Rowland	Questionnaire	No	Yes	7	X	X				A&E	Mortality (120 days)	27	82
											Hospital Admission (last 120 days)	23	83
G-8	Questionnaire	(BMI)	Yes	7 + age					X	Cancer Patients	Impairment on CGA	51	97
Vulnerable Elders Survey-13	Self-administered	No	Yes	13	X	X				Cancer Patients	Impairment on CGA	87	62
ISAR (Identification of Seniors at Risk)	Questionnaire	No	Yes	6 + age	X					A&E	Mortality (120 days)	64	51
											Hospital Admission (last 120 days)	65	54
Abbreviated CGA	Screening for CGA	Yes	No	15	X						Impairment on CGA	51	97

Table 14 – Comparison of key features of eight screening tools for frail older people^{32,30}

In addition to these eight, a newer, two-stage, instrument has been developed in the Netherlands to identify frail older people as a target for integrated care. It involves a multistep process and includes the use of information already known to the GP as well as using their clinical experience. The first step of the Easycare-Two Step Older persons Screening (EASYCARE-TOS) involves the GP using the patient record to answer 14 questions about the functioning of the patient in somatic, psychological and social domains; the study found this took between 3 and 10 minutes. Based on the responses the patient is considered frail, not frail or unclear (i.e. there is insufficient information to decide). The second step is a structured assessment, in the model conducted by a primary care nurse, it explores each of the domains in more detail; this took 45-90 minutes on average. Finally a final decision on each patient is made by the nurse and GP which took 2 to 10 minutes; unlike many instruments the final decision of frailty is based on clinical judgement rather than a numerical cut off. The instrument was fairly well received by those involved in the study; six out of seven GP practices involved plan to implement it in their practices³⁴. As described there is a considerable time commitment to using this process, but using a two step approach, and thereby limiting the number of people requiring an in depth assessment, may reduce this. Using a tool as an initial screening for a further assessment means that a high sensitivity is important, but the specificity is less important as those who are not frail can be identified as such in the second step of screening and the screening process does not have side effects or complications.

In summary, there are a large number of tools available to identify frail older people, tested in a variety of settings. If such a tool was used in Lewisham it would most likely be used in primary care and community settings, therefore selecting a tool that has been validated in that population is preferable. There is little information available about the populations the tools were tested on to assess how similar these were to our population in terms of more detailed demographic variables, such as deprivation or ethnicity. It is likely that most of these tools would be appropriate to use in Lewisham to identify frail older people. However there would be an advantage in selecting one tool for use in the borough, to allow comparison and shared understanding between those using the tool locally; i.e. social care, GPs, secondary care, community and voluntary organisations.

Process and Setting for use of Identification Tools

In deciding which tool to use to identify frail older people locally it is important to consider how and in what setting it would be implemented. Using a two step process seems to be the most pragmatic solution; using an initial screening tool to identify those who require further assessment for frailty followed by a more comprehensive assessment. There are a number of options as to where the initial screening could take place:

- *Secondary care* – this is unlikely to identify those who are not well known to services and the use of a risk stratification tool for older people admitted to secondary care is more likely to be useful. (see below)
- *Primary Care* – given the high number of older people who see their GP annually using GP practices for initial screening is appropriate.
- *Community/Self Report* – this would help to reach those older people not known to services but there are some limitations of self-assessment instruments: they often have lower response rates from the most vulnerable (and hence possibly frail) groups; and the reliability of responses from frail older people, especially on cognitive questions, may be questionable³⁵.

Primary care is an obvious target for the delivery of a pre-screening frailty tool. Over 90% of over 75 year olds see their GP at least once a year. Under the initial General Medical Services Contract offering all patients over 75 an annual health check was a requirement. Since the change to the new contract in 2004 this has not been a requirement and there is not a Quality and Outcomes Framework measure that incorporates a similar (non-disease specific) check. However given the high prevalence of long term conditions in older people is likely to mean that many are seen regularly for disease-specific health checks.

There are at least two possible delivery methods for a primary care based screening tool for frailty:

- 1) Self Assessment –Using a tool that can be posted to relevant patients (i.e. those aged 65 or 70 and over) on a practice register. The responses could then be collated centrally and the more comprehensive assessment arranged for those needing it.
- 2) GP assessment – GPs or other practice staff could complete a tool using patient records, this may not be feasible for patients who visit the practice infrequently.

Once individuals are identified as potentially frail using a screening tool they would then need to undergo a comprehensive assessment, ideally by a multidisciplinary team. The contents and structure of this is not considered here, as there is ongoing work on Integrated Care and single point of assessment in the borough.

Key Messages

- *There are a variety of tools available to identify frail older people, from simple self-assessment screening questionnaires through to complex healthcare professional completed assessments.*
- *Many of the tools described have been shown to identify those at increased risk of hospital admission or mortality.*

Recommendations

- **Consider introduction of a simple self-completed (or completed from basic information held by GP practices) frailty screening tool to identify individuals not known to services.**
- **Selecting a particular tool should be determined by the overall strategy for this group of individuals.**

2.2. Risk Stratification

The section above focused on how to identify frail older people in the community who are not known to health and social care services. This section focuses on frail older people who are already users of services and how to quantify their risk of further health and social care use. Inevitably there is some overlap in the methods used, as any tool that identifies someone as frail, will also identify those at more risk of health and social care use.

Although the aim is to understand the risk of use of both health and social care, the majority of the tools developed focus solely in health care. However given that healthcare use is likely to be associated with a reduction in functional ability and hence increased need for social care these tools may identify those at risk of increased use of social as well as health care.

The starting point for the development of many of these tools was an aim to reduce emergency and avoidable hospital admissions. There is evidence that emergency admission rates in the UK are higher in; older people, areas of deprivation, areas with increased morbidity and chronic disease (on GP registers), urban areas and there is some evidence that admissions are higher in black and minority ethnic populations for some conditions such as asthma^{36, 37, 38}. It has been found that emergency admission rates are 60-90% higher in GP practices serving the most deprived populations compared to those serving the least deprived³⁹. Given that Lewisham has sizeable populations that fall into these higher risk categories it is not surprising that its emergency hospital admission rates are higher than the national average.

In principle, there are several ways to identify individuals who may be at high risk of future admission:

- **Clinical knowledge** – this is widely used in the NHS, but there is little evidence in the area. Although clinicians may be able to identify individuals who are currently high risk they may be less able to identify those who may be at risk in the future.⁴⁰
- **Threshold modelling** – this identifies individuals at high risk using a set of criteria, which may include repeated emergency admissions.
- **Predictive modelling** – this involved entering data into a statistical model which then calculates the risk of future admission for that individual.

There is reasonable agreement that in general predictive models provide the best available technique in identifying those at high risk of future admission.⁴⁰ A number of the most widely used and studied tools are described below.

Case finding Using Repeated Age and Repeat Emergency Admissions

It would seem reasonable to assume those that have had a high number of emergency admissions are at risk of repeat admissions and therefore it would be possible to identify those at risk simply using a number of emergency admissions as a threshold. However a pilot of a model that assumed those aged 65 and over with 2 or more emergency admissions to be at risk showed that this was not accurate in predicting their risk of admission within 12 months.⁴¹ This is because of the “regression to the mean” phenomenon for individuals’ risk of admission. A history of two or more emergency admissions in a year is a risk factor for future admission in elderly patients: in the first year after the index year such patients aged 65 still have admission rates that are 3.4 times higher than those in the general population of the same age. But these rates are still much lower than in the index year. In the year after two emergency admissions, the overall emergency admission rate was reduced by 75% in patients 65, without any intervention.⁴¹ A review of HES data has been suggested that about

a third of over 65 year olds with 2 or more emergency admissions in the last year will be admitted again in the next 12 months³⁶. As well as limiting the use of previous admissions as a predictor of future admissions the regression to mean phenomenon is important when evaluating any interventions aiming to reduce admission rates.

Emergency Admission Risk Likelihood Index (EARLI)

EARLI, typically administered by a GP practice, is a six-item questionnaire used to identify patients aged 75 and over who are at high risk of admission. The six questions included were:

- Do you have heart problems?
- Do you have leg ulcers?
- Can you leave your house without help?
- Do you have memory problems and get confused?
- Would you say the general state of your health is good?

Using the responses patients are categorised as low, moderate or high risk of emergency admission in the next 12 months. The tool correctly identified more than half of those at high or very high risk of admission and 79% of those who were not.⁴² One limitation is that this provides a snapshot view of an individuals risk and does not take into account changes in their health over time unless it is repeated.

Patients at Risk of Re-hospitalisation (PARR) and derivatives

This tool was developed between 2005 and 2007 by The King's Fund on behalf of the Department of Health. It systematically identifies patients (aged 65 and over), who have had an emergency admission and are at high risk of future emergency admissions; it uses Hospital Episodes (HES) data and other variables. The identification algorithms include:

- 1) A "trigger event", this is an emergency hospital admission with a reference diagnosis (ie those where the admission is less likely to be unavoidable and that gives a higher risk of re-admission). (Reference diagnoses make up a fifth to a quarter of all emergency medical admissions)
- 2) Patient variables, these include presence of chronic conditions and demographics.
- 3) Community variables, during development of the model it was noted that admission rates between GP practices varied significantly, up to twenty-fold across England. This, in part due to varying thresholds for admission, is therefore incorporated into the model.
- 4) Hospital variables, similarly there was variation in re-admission rates for reference conditions between hospitals and this is included in the model.

The PARR algorithm and software designed to run it was freely available for use to all PCTs in the UK. Unfortunately the Department of Health have not funded an update to this tool and software, which is now eight years old. A further limitation of PARR is that it requires someone to have had an emergency admission to trigger the tool.

Combined Predictive Model

In order to address the limitation of PARR that it can only be used once an individual has been admitted the Combined Model combined secondary care data with GP electronic records. In addition it aimed to improved the predictive accuracy for very high risk patients and allow all patients to be risk stratified. This risk stratification places all individuals into one of four categories and each category is associated with a staged intervention aim⁴³. (Figure 20)

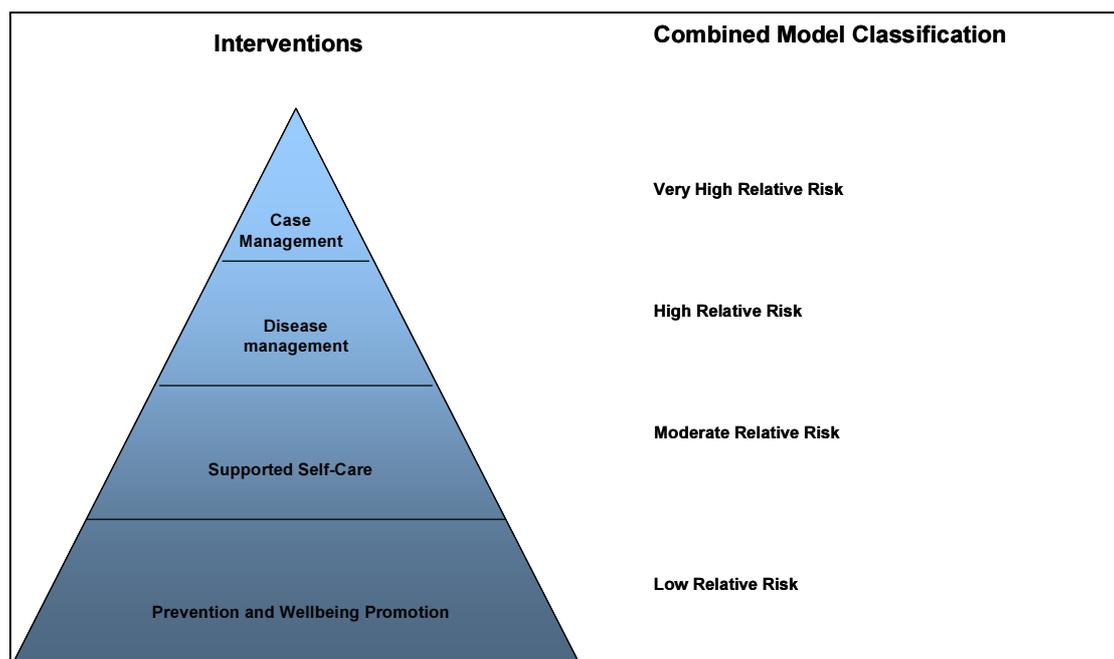


Figure 20 – Classification and Interventions using Combined Predictive Model⁴³

Unlike PARR the Combined Model was not available to download ready for use, as it was anticipated that it would be developed locally. Adding GP data to the tool enables it to be applied to a wider group of patients; however it also brings added complications as the data may not be readily available outside GP Practices and will be less standardised than HES data.

PARR-30

PARR-30 is a predictive model that aims to identify inpatients at risk of re-admission within 30 days of discharge. It is primarily aimed at acute hospital trusts and uses HES data to identify those at risk. The model had a low sensitivity, although this was better amongst some sub groups, it may be that with additional validation work the model will be improved⁴⁴. In England approximately 8% of individuals discharged from hospital are re-admitted within 30 days⁴⁵. Given the low sensitivity and that it aims to identify those at risk of re-admission only in the first 30 days this tool is useful only in a selected population.

Summary Predictor of Key Events (SPOKE)

SPOKe was developed by the Sussex Health Informatics Service; it works by analysing the healthcare history for each resident in Sussex. It is similar to the Combined Model but has been adapted to fit local data availability for Sussex, Kent and Essex. The accuracy of risk stratification is similar to the Combined Model. It has been used predominantly by Community Matrons to prioritise patients for case management and reduce/avoid admissions and historical as well as current scores are available.⁴⁶

United Health UK RISC

RISC was developed by United Health UK for the NHS. It uses information from a variety of sources, including primary and secondary care, to perform a risk assessment for the entire population. It provides both population-wide and individual patient information to facilitate caseload planning and individual case management. A number of PCTs used the tool as part of the Department of Health's Long Term Conditions QIPP (Quality Innovation Productivity and Prevention) Workstream⁴⁷.

Doctor Foster's High Impact User Manager (HUM)

The HUM system was developed in conjunction with Imperial College London and University College London and Dr Foster intelligence. It allows acute hospital trusts and GP practices to access up-to-date information via the web and conduct their own analysis to identify a list of patients who may be or become high-impact users of secondary care. In particular it aims to identify patients with conditions where hospitalisation is at least partially preventable.⁴⁸

Other Models

In addition to those listed there are a number of other models, often developed locally or for use in specific population groups; including:

- **PRISM** is a tool developed for use in Wales. It is applicable to all patients registered with a GP and predicts admission in the next 12 months.³⁶
- **SPARRA and PEONY** (Scottish Patients at Risk of Admission and Re-admission and Predicting Emergency Admissions over the Next Year). These are both Scottish models. SPARRA uses 3 years of linked hospital admission and demographic data and can be applied to individuals aged over 65 who have had an emergency admission in the past 3 years. PEONY can be applied to all patients registered with a GP practice aged over 40 and uses a variety of information included prescribed drugs, number and length of admissions and demographic data⁴⁹.

There are a few other models that were developed as part of a programme to reduce health and social care use amongst frail older people, these are included in the next section.

Models to Predict Social Care Use

Much of the drive to develop tools for risk stratification came from the QIPP agenda. There has been less of a drive to develop similar models to predict social care use. There were some tick-box prediction tools used at individual patient level but the Nuffield Trust model described below represented the first attempt to utilise population level data to identify those at risk of social care use. One of the challenges of using social care data at population level is that there are no ICD-10 equivalent categories and so it can be hard to standardise the data. This makes developing a tool that is accurate across different local areas challenging but should not affect the utility of a tool developed at a local authority/CCG level.

Nuffield Trust's Social Care risk model

In 2009, the Department of Health commissioned the Nuffield Trust to work with a group of Primary Care Trusts and Local Authorities to determine the feasibility of building predictive risk models for social care. Pseudo-anonymised data on a number of variables was used, from health and social care, including inpatient and outpatient episodes and A&E attendances. The tool aimed to predict, within the next twelve months, care home admissions, initiation of at least ten hours of homecare or an increase in social care expenditure of £10,000 a year (in addition three models were compared using £5000, £3000 and £1000 a year increase in spending). The sensitivity of the tool was low, though improved with a lower threshold for the increase in social care expenditure; at a threshold of £1000 the positive predictive value of the tool was 55%. The developers of the tool acknowledge the limitations but do note that those who were classified at high risk were 17 times more likely to have in an increase in social care in the following year.⁵⁰

At present the sensitivity of this tool is probably too low to make it useful in identifying patients. However further modifications and, for example the inclusion of primary care data may make it more accurate in the future.

Selecting and Implementing a Tool

Despite the significant number of tools available selecting the most appropriate to use locally is not easy. At present it is not clear whether it is preferable to procure or build a tool at local, regional or national level. Nationally the policy of the Department of Health, despite previously funding the development of two models, is to promote an open market for suppliers of risk tools. The Nuffield Trust has recently published guidance for commissioners in choosing a predictive model.⁵¹ Factors to consider in selecting a tool include:

1. The event it is aiming to predict

The event needs to be undesirable to the patient, significant (probably in financial terms) to health and/or social care, recorded in routine administrative data and preventable. Typically the events used are admissions (unplanned or speciality specific) or increase in social care use. However at a local level it is key that the event the tool predicts is one that fits with the local strategy. For example in Lewisham given the existence of an admission avoidance service and introduction of integrated care would a tool that focused on identifying those at risk of increased social care use be more appropriate?

2. The data required

The majority of the tools use Secondary uses Service (SUS) data from secondary care; in addition others use GP, social care or prescribing data. The tool selected needs to use data that is both available and acceptably accurate locally. The output of any tool is limited by the quality of the data entered. In particular ensuring that Read coding for conditions associated with preventable unplanned admissions is standard across GP practices.

3. *Information Governance and data linkage*

Models that link two sources of data (i.e. SUS and GP) are able to link data using pseudoanonymisation (based, for example, on the NHS number). However if, in addition, links to non-NHS data sources (i.e. social care) are required the linking becomes much more challenging. If the aim locally is to use a tool that combines data sources careful consideration needs to be given to both the data linkage challenges and the information governance implications. The National Information Governance Board for Health and Social Care, in June 2012, published guidelines on the implications of risk stratification activities for the NHS, social care and partner agencies.⁵²

4. *Technical*

The tools already in existence are available in a variety of forms, from algorithms that require local software development to those that are available to download and use without significant local development. There are clear advantages of choosing a tool that can be developed and tailored to the local health and social care economy; however this is likely to incur more costs to implement.

5. *Maintenance*

There are three considerations of maintaining and using a model:

- How often it should be run to generate a list of at risk patients
- How often it should be recalibrated, i.e. altering the weight of the variables within the algorithm to improve accuracy.
- How often/when it should be rebuilt, i.e. adding or removing variables from the algorithm.

The frequency with which each of these needs to be done will depend on the population and the tool, however ensuring that there is local expertise available to be able to perform these tasks is important.

6. *What next?*

The tool is only able to identify a list of people who may be at increased risk of a particular event, be that admission or an increase in their social care use. It is not able to determine which subgroup or individuals should be targeted or which intervention to use. Using the local strategy to determine which group to target should be done before a tool is selected; for example if a decision is made to target the very highest risk individuals with time consuming, costly interventions the tool used has to have a high specificity.

Impactability Models

Although these tools identify people who may be at high risk of unplanned admission/increasing social care use at present they are not able to determine which of those people may be amenable to preventative care. There have been some attempts to refine tools so as to be able to identify the subgroup of individuals who are at high risk and in whom preventative intervention is likely to be successful. Strategies include:

- Excluding those at very high risk (as admissions may be less likely to be preventable and the risk of death prior to intervention is higher).
- Focusing only on ambulatory care sensitive conditions
- Excluding individuals who have been non-compliant with preventative interventions in the past.
- Assessing patients "activation" or willingness to engage in preventative interventions.

- Include patients who have similar characteristics to populations in which preventative interventions have been successful.
- Exclude those who have characteristics that suggest they may be at risk of disengaging with preventative measures.⁵³

Although these tools are at a very early stage in development there are clearly significant potential problems with this approach, particularly in addressing health inequalities in a population.

Key Messages

- *There are a variety of tools available to risk stratify frail older people according to their risk of future hospital admission.*
- *Tools aiming to identify risk of social care admission are not currently well enough developed to be useful.*
- *At present these tools are unable to identify the interventions that would be most effective for those frail older people at risk.*
- *There is not strong evidence to recommend the use of one tool over another (without more detailed information on the intended target for identification and integration, for example targeting the very high risk with a complex intervention would require a highly specific tool , where as a less intense but wider reaching intervention would benefit from a tool with higher sensitivity).*

Recommendations

- **Selecting the most appropriate use for risk stratification locally requires careful consideration to be given to the context in which it will be used.**

Who to Target?

It is clear that there are many tools available to identify or risk stratify frail older people. However a key question remains as to who should be the target, both who should you aim to identify and in the case of risk stratification who should be the target of interventions.

Individuals' risk of future healthcare use varies; this has commonly been represented in the Kaiser pyramid. The pyramid shows that the very high risk group represent a very small proportion of the population but each account for a disproportionately large share of future healthcare use.

Risk segmentation

The Kaiser pyramid can be divided into four segments:

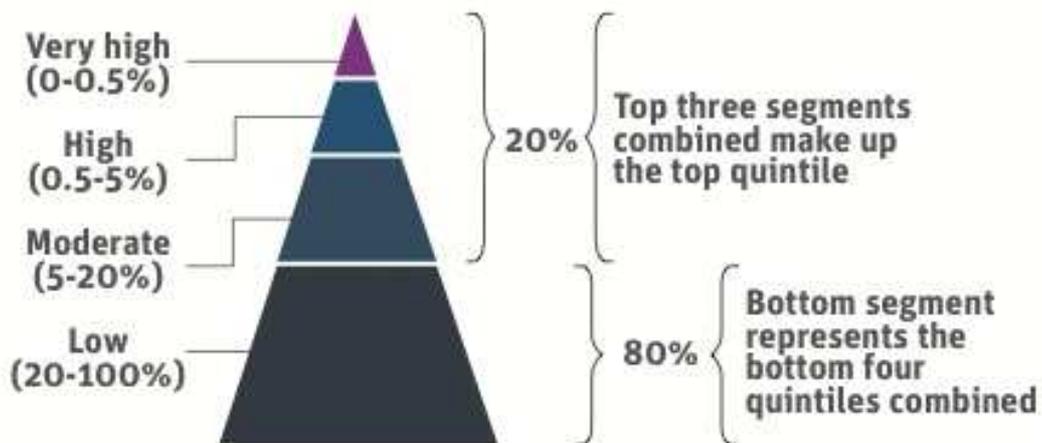


Figure 21 - Kaiser Pyramid of Risk of Future Healthcare Use⁵¹

Risk stratification tools aim to provide information on individual's within a particular population in each of these risk "segments". At strategic service planning level these tools can provide information on the number of these individuals. And for service delivery it can provide details of individuals at each risk level to be targeted with an appropriate intervention.

However in using these tools and in particular in planning interventions based on the outcomes it is important to consider where the greatest impact is on the health service locally; by taking into account both the size of the population and the level of use. Moving down the pyramid, the population size increases so although each individual accounts for a smaller proportion of future utilisation than those in the high-risk category, in aggregate these lower-risk populations will represent a greater proportion of future utilisation because there are far more such people. It is important, therefore, that any intervention be targeted carefully at the right population after having taken account of the expected impact, cost and local feasibility of the intervention. (Figure 22)

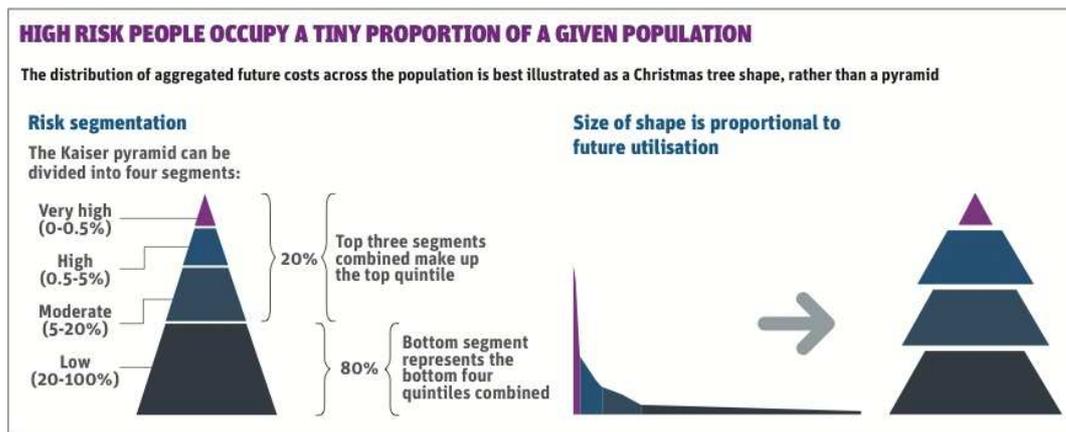


Figure 22 - Risk of Future Healthcare Use and Population Size⁵¹

Prior to starting to decide which tool or intervention to use it is vital to be clear about what it is you want to predict (i.e. early identification of frail older people at risk of falls, hospital admission and deteriorating health and wellbeing rather than predicting health and social care use in those who are already high users of those services). Similarly to maximise the gain in using an identification or risk stratification tool it needs to be embedded in a wider strategy for managing older people. For example in the case of Lewisham this would include:

- Integrated care,
- Long term condition management,
- Falls management,
- And others.

2.3. Approaches to reduce health and social care use

This section initially sought to consider which measures are effective in reducing health and social care use amongst “high-end service users”, i.e. those who are “high risk” using a risk stratification model. However as early identification of the frail elderly became more of a focus this section provides a brief overview of measures that have been found to be effective in reducing hospital admissions in that group and some practical examples of how a tool may be used and integrated at a local level.

2.3.1. Reducing Hospital Admissions

Reducing hospital admissions has been the focus of many interventions over the past few years, on both local and national levels. Understanding which interventions are most effective is challenging for a number of reasons:

- Admission rates are affected by many factors, therefore separating out any impact an intervention has had on admissions locally is difficult.
- Many interventions are complex and multi-faceted, meaning that if there is a reduction in admission rates it can be difficult to identify which element of the intervention was effective. Similarly it may be challenging to reproduce such a complex intervention in a different context.
- For some interventions there is conflicting evidence about its effectiveness. This may be as a result of interventions being subtly different between studies, differing populations with different admission behaviours or as a result in differences inherent in the study designs.

The King’s Fund in 2010 provided an overview of the research evidence on what works in reducing unplanned admissions³⁶. (Figure 23)

Evidence Generally of Little or No Effect	Further Evidence Needed	Evidence Generally of Positive Effect
<ul style="list-style-type: none"> •Pharmacists-based medication reviews •Intermediate care •Community – based case management •Early discharge to hospital at home •Nurse-led interventions pre and post-discharge for patients with COPD 	<ul style="list-style-type: none"> •Increasing GP practice size •Changing out-of-hours primary care arrangements •Telemedicine •Cost-effectiveness of GPs in A&E •Access to social care in A&E •Hospital-based case management •Rehabilitation programmes •Rapid response teams 	<ul style="list-style-type: none"> •Continuity of care with a GP •Hospital at home at as alternative to admission •Assertive case management in mental health •Self-management •Early senior review in A&E •Multidisciplinary interventions and telemonitoring in heart failure •Integration of primary and secondary care •Structured discharge planning •Personalised health care programmes

Figure 23 - Evidence for Interventions to Reduce Hospital Admissions or Re-admissions (adapted from King's Fund Report³⁶)

Self- Management

There is evidence from systemic reviews that self-management is effective in reducing unplanned admissions for long term conditions including asthma and COPD. One study in COPD patients found that providing self-management education to ten patients with (fairly severe) COPD for a year prevented one admission⁵⁴. Self management has also been shown to reduce symptoms and improve quality of life. There have also been some studies that did not find an improvement in admissions when providing a self-management intervention, but the weight of evidence is in favour.

However the extent to which this is applicable to frail older patients is questionable. For example given self management has not been shown to reduce unplanned admissions for every LTC what would the impact be on frail older people without a LTC. Similarly do frail older people with a LTC respond to self management education in the same way as the general population with LTCs?

Continuity of Care with a GP

High continuity of care is associated with lower hospital admissions. A study in Canada that looked specifically at people aged 67 and over found continuity of care with a family doctor reduced the odds of a hospital admission with an ambulatory care sensitive condition⁵⁵ (i.e. one in which a primary care intervention should be able to prevent the admission).

Out of Hours GP Services

A five-fold variation in out-of-hours admission rates has been found between GPs working in the same out-of-hours service with the same population. Follow up qualitative research with those GPs suggested this may be due to lack of confidence, feelings of isolation, aversion to risk and lack of awareness to alternatives to admission.^{56,57}. The factors are modifiable, particularly the lack of awareness of alternatives, though it does raise the question of how many of the alternatives are available out-of-hours.

Telemedicine

The majority of evidence for the use of telemedicine is in diabetes or heart failure, and predominantly from the USA, where it has been shown to reduce hospital admissions. In the UK there is less evidence but two reviews suggest that it may reduce hospital admissions. Automated vital signs monitoring and telephone follow up by nurses appear to be the most effective interventions.³⁹ Again, given the evidence base for the use of telemedicine is in people with particular LTCs it is hard to know if it would be effective in frail older people in general.

Case Management

The initial stage of case management involves the identification of at-risk individuals using a risk stratification model as outlined above. What then follows is variable, particularly when compared internationally; typically case management in the UK is less intensive than the USA; which may include health visitors to visit older people at home. Although there is evidence for case management in some conditions, most notable mental health it is not universal and the Evercare model in frail older people did not reduce hospital admissions (see below). There is some evidence for using patient advocacy case management in frail older people to reduce service use.³⁶

Hospital at Home

Hospital at Home, as an alternative to admission for the older people who are clinically stable, is less expensive and associated with greater levels of satisfaction. However it was also associated with slightly higher levels of subsequent admission.³⁶

Intermediate Care

There is conflicting evidence regarding the use of intermediate care. One review of evidence concluded that it did not reduce admissions.³⁶ However a slightly more recent review of nurse-led units used following discharge from an acute hospital found that it did reduce early re-admissions, but that it was more expensive than inpatient stays.⁵⁸

Integrated Care

There is evidence that integrating primary care and social care reduces admissions, in particular when used in high-risk older people⁵⁹. There is also evidence for the integration of primary and secondary care in reducing admissions. Particularly when used to provide disease management for patients with certain conditions. (Though isolated provision of hospital specialist clinics in primary care is not effective at reducing admissions)

Acute Assessment Units (AAUs)

Whilst there is some evidence that these reduce admissions the numbers of short admissions has been rising considerably, raising the question of whether there has been a reduction in the admission threshold associated with the 4 hour target in A&E and use of AAUs.³⁶

Senior Review in A&E

Availability of a senior doctor (experienced middle-grade/consultant) in A&E to review patients has been shown to reduce admissions.³⁶

Discharge interventions for Reducing Re-admissions

There is strong evidence that structured individualised discharge planning reduces readmission rates (by 15% in randomised controlled trials).⁶⁰ Discharge to hospital at home was associated with an increase in re-admission rates in older patients³⁶.

2.3.2. Examples of Implementation of Frail Older People Identification Tools

Evercare⁶¹

In April 2003 UnitedHealth Europe piloted the Evercare case management model for older people in the UK. Patients were selected on the basis of age (≥ 65) and a history of emergency admissions. Advanced practice nurses then agreed individualised care plans with the patient, the general practitioner, and other staff. And patients were subsequently monitored.

Quantitatively the intervention did not reduce hospital admissions, bed days or mortality in the GP practices in which it was implemented. However the authors note, from qualitative data, that access to case management added a frequency of contact, regular monitoring, psychosocial support, and a range of referral options that had not previously been provided to frail older people.

Waltham Forest Case Finding Service⁶²

Since 2002 Waltham Forest have had a frail older people case finding service. It was established to identify frail older people in the community who may be at risk of increasing dependency on services, to initiate a Single Assessment Process where appropriate and deliver co-ordinated services in the community. They adopted a generalised case finding approach:

- GPs identified all their patients aged 65 and over and made their information available to the programme.
- Frailty self assessment questionnaires were posted to the patients identified above, alongside a letter about the programme from the GP.
- Completed questionnaires are returned to Age UK Waltham Forest, where they are scored and those who identify as potentially frail/with unmet needs undergo a Single Assessment Process, those who do not receive health promotion information and signposting to community services.
- Following assessment in addition to referrals to statutory services people may also be referred to other services such as falls prevention, healthy living, handyperson and home security information.

One clear advantage of this generalised case finding approach is that it means wider aspects of frail older people's lives can be assessed and, if needed, addressed. Although these wider aspects are not purely health issues, they are ones that can have an impact on health and wellbeing. Examples of these wider aspects include: heating or housing repairs, isolation and lack of confidence in using community facilities and income maximisation.

Case Finding & Single Assessment Pathway

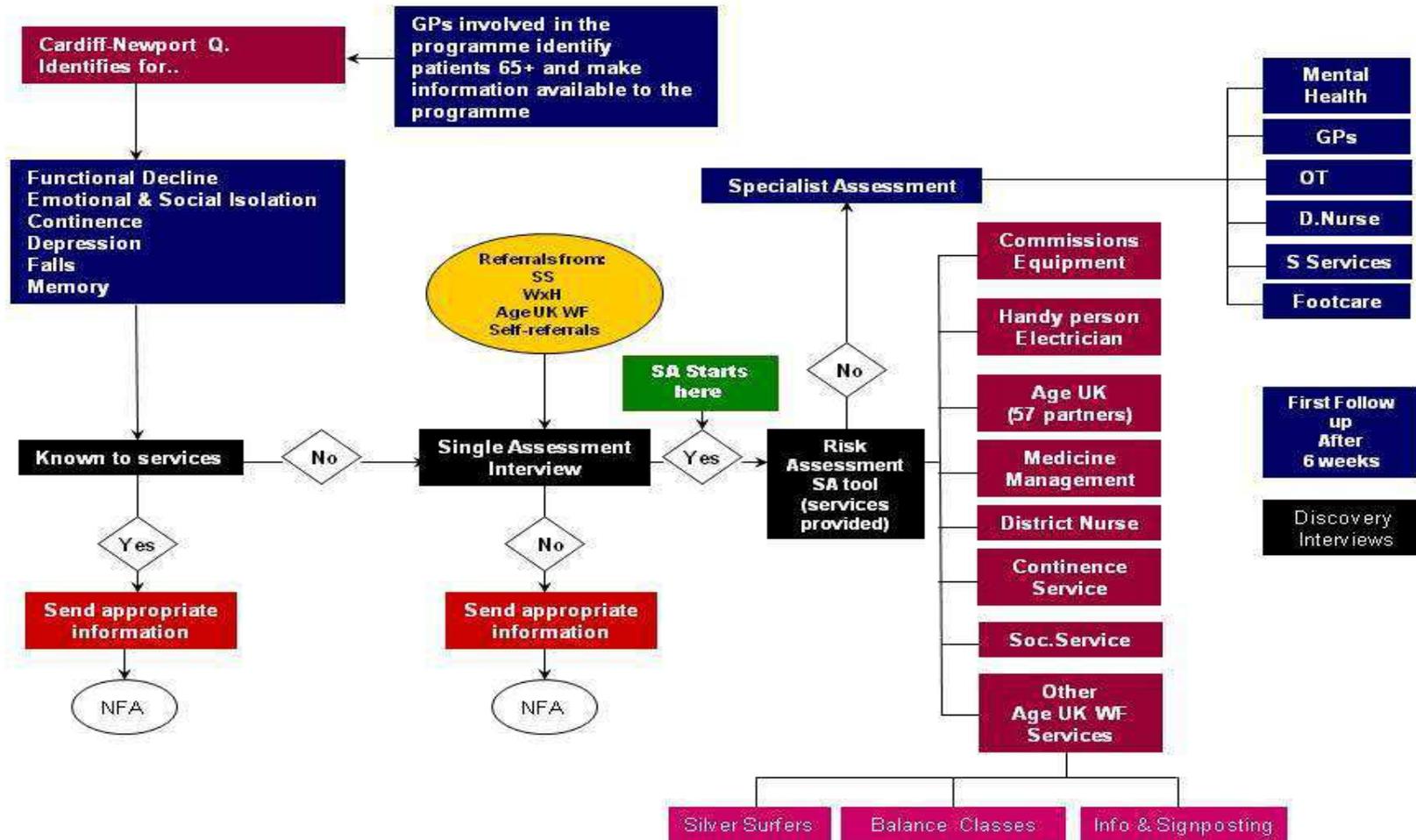


Figure 24 Waltham Forest Care Finding Service Outline

The questionnaire used by Waltham Forest is the Cardiff-Newport self-reporting questionnaire which includes 30 questions covering⁶³:

- Home circumstances and carers
- Recent health
- Present medication
- Physical handicap, mobility
- Fall and falls risk
- Shopping
- Social activities
- Activities of daily living (housework, personal care, dressing, bathing)
- Continence
- Eyesight and hearing
- Independence
- Memory, depression, anxiety
- Present use and perceived need for services
- Changes in past year and present concerns

The Cardiff-Newport questionnaire was originally developed and tested using a randomised trial of 359 GP patients aged 65 and over in Wales in the early 1990s. The questionnaire was validated using a geriatric health visitor as gold standard as a tool for identifying frail older people. It was found to have a sensitivity of 89% and specificity of 78%. Each person who completed the questionnaire was then seen by a nurse, follow up was for 3 years. The response rate was 88%, with younger and more active individuals being less likely to complete the questionnaire. Mortality in the intervention (i.e. questionnaire and nurse appointment) group was significantly lower than the control group. Hospital admissions and long-term residential care were not significantly different⁶⁴.

The Waltham Forest service has reached 45% of all residents over 65 in the borough in its first 11 years (from 2002 to 2011). It had a response rate of 47% to their postal questionnaires and about half of those returning questionnaires were referred for a Single Assessment. Over the first 11 years:

- 5772 questionnaires were completed
- 26% of older people were identified as taking 4 or more medications without them having been reviewed appropriately.
- 6200 risk factors, that were not previously known, were identified
- 300 people who had falls were found
- A further 1000 people at risk of falls were identified
- 1000 people were found to have memory problems
- 140 people were found to have depression
- 1800 people were found to be socially isolated
- 1700 people received services (this included a variety of services)

Of note if a similar service were to be considered in Lewisham, the Waltham Forest service found that the response rate to the questionnaire was lowest amongst BME communities. The service discovered this was because individuals in those communities were unable to read, write or speak English and responses from BME communities have improved since they employed an Asian-speaking Single Assessment Officer.

Waltham Forest is an ethnically-diverse London borough, with people from Pakistan making up the highest proportion of the BAME population, followed by Black Caribbean and black

African. It ranks 13th in the country in terms of Index of Multiple Deprivation. Hospital admissions and falls rates are above the England average for people aged 65 and over in Waltham Forest (comparisons between boroughs are not statistically valid)⁷⁶⁵. Therefore there are similarities between the populations of Lewisham and Waltham Forest, which is useful in considering utilising their case-finding model locally.

Camden: Integrating Care for People with Chronic and Complex Needs⁶⁶

Camden define frail older people, using the Edmonton frailty index (or similar), though it is not clear the mechanism of identification. Frail people with complex needs are placed on a “frailty register”, there are about 280 patients on the register. A weekly MDT between primary care, secondary care, mental health and social care discusses these patients. Prior to this MDT care 86% of days were spent at home by the cohort of patients, following the intervention 95% of days are spent at home.

Greenwich⁶⁷

Greenwich has recently undertaken a large review of individuals in receipt of homecare and found high levels of hospital admission and cardiovascular disease. They identified a need to optimise use of preventative measures for homecare clients and that a large number of new services had been introduced over the last five years. Hence there was a need to link these services and ensure client-facing groups are aware of and make use of these services. They have introduced a health assessment tool that is able to identify local services that the individual may benefit from. In addition a single referral process for these services is provided. Healthy ageing leads will support social care staff in performing these assessments and referrals.

As this service model was implemented in 2012 there is no evaluation data available. However if a similar model is to be considered in Lewisham understanding any challenges or modifications they experienced during implementation may be helpful.

Key Messages

- *There are a number of models available for how to use identification tools locally.*
- *In all cases the key is to ensure a system-wide approach and design that enables linkage with services that are already in place*

Recommendations

- **Once a clear target population is identified, for example frail older people not known to services a more detailed review of existing programmes, including evaluation and their working context would be valuable.**

Conclusions and Recommendations

The population is ageing as a result of increasing life expectancy, it is not clear whether current rates of ill health and disability will increase or decrease. But there will certainly be a significant increase in the number of older people requiring health and social care in the next ten to twenty years.

Defining frailty is difficult but a lack of resilience in the event of minor stressor events is a key element. A quarter to a half of over 85 year olds in England are frail. Although many frail older people also have disabilities or co- morbidities up to a quarter may not have, which can make identification a challenge. Though this is a challenge that needs to be undertaken given that frailty is clearly associated with poorer health outcomes including an increase in mortality.

There are plenty of tools available to identify frail older people, using a self-filled questionnaire or simple interviews and examinations. Similarly identifying older people at increased risk of hospital admissions is possible through the use of predictive modelling tools. Unlike the identification tools these require more complex data inputs and software to provide meaningful information.

A key question is considering frail older people is which group to target for interventions, those with very high use of services (a small number) or those who are not currently using services but who are frail and hence also at risk of worse outcomes. It may be that the second group could benefit from simple, existing interventions but they do not receive them as they are not known to those who could recommend them.

Recommendations:

(Assuming that frail older people not currently known to health and social care services are a priority as a target)

- *A more detailed review of implementation of frailty identification tools in practice, including their impact, feasibility and comparison to Lewisham of the context in which they implemented. (population factors and existing services including non-statutory)*
- *Mapping of existing services for older people in Lewisham, with a view to considering how these might be incorporated into an identification and referral process.*
- *Trial a simple identification tool in a small area to understand how large the population of unidentified frail older people is.*
- *On the basis of above consider piloting a programme of screening older people for frailty, providing those at risk with a more comprehensive assessment which acts to sign post individuals to existing preventative services.*

Appendix

Examples of the questions included in frailty screening tools:

The Tilburg Frailty Indicator (TFI)

Physical component

Do you feel healthy?

Have you lost a lot of weight recently without wishing to do so?

('A lot' is 6 kg or more during the last six months or 3 kg or more during the last month.)

Do you experience problems in your daily life due to:

Difficulty in walking?

Difficulty with maintaining your balance?

Poor hearing?

Poor vision?

Lack of strength in your hands?

Physical tiredness?

Psychological component

Do you have problems with your memory?

Have you felt down during the last month?

Have you felt nervous or anxious during the last month?

Are you able to cope with problems well?

Social component

Do you live alone?

Do you sometimes wish you had more people around you?

Do you receive enough support from other people?

Scoring:

Question 1: Yes = 0; No = 1

Questions 2-8: No = 0; Yes = 1

Question 9: No = 0; Sometimes = 0; Yes = 1

Questions 10-11: No = 0; Sometimes = 1; Yes = 1

Question 12: No = 1; Yes = 0

Question 13: No = 0; Yes = 1

Question 14: No = 0; Sometimes = 1; Yes = 1

Question 15: Yes = 0; No = 1

The Sherbrooke Postal Questionnaire (SPQ)

1. Do you live alone?
2. Do you take more than three different medications every day?
3. Do you regularly use a cane, a walker or a wheelchair to move about?
4. Do you see well?
5. Do you hear well?
6. Do you have problems with your memory?

Scoring:

Question 1: Yes = 0; No = 1

Questions 2-3: No = 0; Yes = 1

Questions 4-5: Yes = 0; No = 1

Question 6: No = 0; Yes = 1

References

- ¹ ONS 2013, Census 2011
- ² Age UK Improving Later life: Understanding the oldest old 2013 (Available at <http://www.ageuk.org.uk/Documents/EN-GB/For-professionals/Research/Improving%20Later%20Life%20%20WEB.pdf?dtrk=true> accessed 16th July 2013)
- ³ Department of Health 2012
- ⁴ Daniels R Frail Elderly: Identification and Disability Prevention in Primary Care. University of Maastricht, 2011. (Available at <http://arno.unimaas.nl/show.cgi?fid=22071>, accessed 24th April 2013)
- ⁵ Greater London Authority Population Projections 2012 Round, SHLAA
- ⁶ ONS, Census 2011
- ⁷ APHO Health and Wellbeing of Older People – check ref fully
- ⁸ ONS 2012, Census 2011
- ⁹ ONS 2013 Measuring National Well-being – Older people and loneliness, 2013
- ¹⁰ General Lifestyle Survey 2011, Office of National Statistics
- ¹¹ DH LTC document
- ¹² Lewisham JSNA, Tobacco and Healthy Weight
- ¹³ Lewisham Falls JSNA 2011
- ¹⁴ Care Homes Self Audit Survey of residents admitted to Accident and Emergency A&E) University Hospital Lewisham December 2011
- ¹⁵ Health and Social Care Information Centre Measures from the Adult Social Care Outcomes Framework (ASCOF), England 2012-13 provisional release
- ¹⁶ Interim Life Tables, ONS
- ¹⁷ Census 2001 and 2011, ONS
- ¹⁸ GLA 2012 Population Projections
- ¹⁹ Wittenbery R et al, Nuffield Trust 2012 Research Summary: Care For Older People: Projected Expenditure expenditure to 2022 on social care and continuing health care for England's older population
- ²⁰ King's Fund Life Expectancy (Available at <http://www.kingsfund.org.uk/time-to-think-differently/trends/demography/life-expectancy> Accessed 27th August 2013)
- ²¹ Daniels R Frail Elderly: Identification and Disability Prevention in Primary Care. University of Maastricht, 2011. (Available at <http://arno.unimaas.nl/show.cgi?fid=22071>, accessed 24th April 2013)
- ²² De Lepeleire J, Degryse J, Illiffe S, Mann E, Buntinx F. Family physicians need easy instruments for frailty. *Age Ageing*. 2008;37(4):484; author reply -5
- ²³ De Lepeleire J, Illiffe S, Mann E, Degryse JM. Frailty: an emerging concept for general practice. *Br J Gen Pract*. 2009;59(562):e177-82
- ²⁴ Clegg A et al Frailty in Elderly People *Lancet* 2013; 381: 752-62
- ²⁵ Syddall H et al Prevalence and correlates of frailty among community-dwelling older men and women: findings from the Hertfordshire Cohort Study *Age Ageing* 2010; 39(2):197-203
- ²⁶ Fried et al Frailty in Older Adults: Evidence for a Phenotype *Journal of Geratology* 2001; 56A(3): M146-M156
- ²⁷ Cornwell J, The King's Fund The Care of Frail Older People with Complex Needs: Time for a Revolution
- ²⁸ Sourdet et al Editorial: Frailty and Aging *The Journal of Nutrition, Health and Aging* 2012; 16(4): 283-4
- ²⁹ Kirkwood TB Understanding the Odd Science of Aging. *Cell* 2005; 120:437-447
- ³⁰ De Vries NM et al Outcome instruments to measure frailty: A systemic review *Ageing Research Reviews* 10(2011) 104-114
- ³¹ Rockwood et al A global clinical measure of fitness and frailty in elderly people *CMAJ* 2005 173(5): 489-495
- ³² Monitoring and Diagnosis in Oxford Horizon Scan Report 0026: Screening Instruments for Frailty in Primary Care November 2012 (Available at <http://madox.org/horizon-scanning-reports/20120026/screening-instruments-for-frailty-in-primary-care> Accessed 17th July 2013)
- ³³ Bouillon K et al Measures of frailty in population-based studies: an overview. *BMC Geriatr*. 2013 Jun 21;13:64. doi: 10.1186/1471-2318-13-64

-
- ³⁴ Van Kempen J et al Development of an Instrument for the Identification of Frail Older People as a Target Population for Integrated Care. *British Journal of General Practice* 2013 DOI: 10.3399/bjgp13x664289
- ³⁵ Daniels R et al The Predictive Validity of three Self-Report Screening Instruments for Identifying Frail Older People in the Community
- ³⁶ Purdy S, The King's Fund Avoiding Hospital Admissions: What does the Research Evidence Say? December 2010
- ³⁷ Majeed A, Bardsley M, Morgan D, O'Sullivan C, Bindman A (2000). 'Cross-sectional study of primary care groups in London: association of measures of socioeconomic and health status with hospital admission rates'. *British Medical Journal*, vol 321, no 7268, pp 1057–60
- ³⁸ Bottle A, Aylin P, Majeed A (2006). 'Identifying patients at high risk of emergency hospital admissions: a logistic regression analysis'. *Journal of the Royal Society of Medicine*, vol 99, no 8, pp 406–14
- ³⁹ Purdy, S, Griffin, T, Salisbury, C & Sharp, D 2011, 'Emergency admissions for chest pain and coronary heart disease. A cross-sectional study of general practice, population and hospital factors in England'. *Public Health*, vol 125., pp. 46 – 54
- ⁴⁰ King's Fund, NHS Modernisation Agency, New York University, Health Dialog (2005). Predictive Risk Project: Literature review [online].
- ⁴¹ Roland M, Dusheiko M, Gravelle H, et al. Follow up of people aged 65 and over with a history of emergency admissions: analysis of routine admission data *BMJ* 2005;330:289-292
- ⁴² Lyons D et al Predicting the likelihood of emergency admission to hospital of older people: development and validation of the Emergency Admission Risk Likelihood Index (EARLI) *Family Practice (2007) 24 (2): 158-167*.
- ⁴³ The King's Fund Combined Predictive Model: Final Report, December 2006
- ⁴⁴ Billings J et al Development of a predictive model to identify inpatients at risk of re-admission within 30 days of discharge (PARR-30) *BMJ Open* 2012; 00:e001667
- ⁴⁵ Nuffield Trust 2012 <http://www.nuffieldtrust.org.uk/our-work/projects/predicting-risk-hospital-readmission-parr-30> (accessed 13th August 2013)
- ⁴⁶ Sussex HIS <http://www.sussexhis.nhs.uk/our-services/sussexcpm/> (accessed 13th August 2013)
- ⁴⁷ United Healthcare <http://www.unitedhealthuk.co.uk/OurTechnology/HealthNumericsRISC.aspx> (accessed 13th August 2013)
- ⁴⁸ NHS Midlands and East Risk Stratification – A Key Driver of the Long Term Conditions delivery agenda July 212
- ⁴⁹ Donnan P et al Development and Validation of a Model for Predicting Emergency Admissions Over the Next Year (PEONY) *Archives of Internal Medicine*; 168(13) 1416-1422
- ⁵⁰ Bardsley M et al Predicting who will use intensive social care: case finding tools based on linked health and social care data. *Age and Ageing* 2011; 0: 1–5 doi: 10.1093/ageing/afq181
- ⁵¹ Lewis G et al Choosing a predictive risk model: A Guide for Commissioners in England (available at http://www.nuffieldtrust.org.uk/sites/files/nuffield/publication/choosing_predictive_risk_model_guide_for_commissioners_nov11.pdf)
- ⁵² National Information Governance June 2012 Board Advice on Risk Prediction and Stratification Activities <http://www.nigb.nhs.uk/pubs/guidance/riskpred.pdf>
- ⁵³ Lewis G "Impactability models": identifying the subgroup of high-risk patients most amenable to hospital-avoidance programs. *Millbank Quarterly* 2010 Jun;88(2):240-55. doi: 10.1111/j.1468-0009.2010.00597
- ⁵⁴ Effing T, Monninkhof EEM, van der Valk PP, Zielhuis GGA, Walters EH, van der Palen JJ, Zwerink M (2007). 'Self-management education for patients with chronic obstructive pulmonary disease (Cochrane Review)'. *Cochrane Database of Systematic Reviews*, issue 4, article CD002990
- ⁵⁵ Menec V, Sirski M, Attawar D, Katz A (2006). 'Does continuity of care with a family physician reduce hospitalizations among older adults?'. *Journal of Health Services Research & Policy*, vol 11, pp 196–201
- ⁵⁶ Calnan M, Payne S, Kemple T, Rosedale M, Ingram J (2007). 'A qualitative study exploring

variations in general practitioners' out-of-hours referrals to hospital'. *British Journal of General Practice*, vol 57, pp 706–13

⁵⁷ Rossdale M, Kemple T, Payne S, Calnan M, Greenwood R (2007). 'An observational study of variation in GPs' out-of-hours emergency referrals'. *British Journal of General Practice*, vol 57, pp 152–4

⁵⁸ Shepperd S, Doll H, Angus R, Clarke M, Iliffe S, Kalra L, Ricauda N, Tibaldi V, Wilson A (2009a). 'Avoiding hospital admission through provision of hospital care at home: a systematic review and meta-analysis of individual patient data'. *Canadian Medical Association Journal*, vol 180, no 2, pp 175–82

⁵⁹ Curry N, Ham C (2010). *Clinical and Service Integration. The route to improved integration*. London: The King's Fund. Available at: www.kingsfund.org.uk/publications/clinical_and_service.html

⁶⁰ Shepperd S, McClaran J, Phillips CO, Lannin NA, Clemson LM, McCluskey A, Cameron ID, Barras SL (2010). 'Discharge planning from hospital to home (Cochrane Review)'. *Cochrane Database of Systematic Reviews*, issue 1, article CD000313. DOI: 10.1002/14651858.CD000313.pub3

⁶¹ Gravelle H, Dusheiko M, Sheaff R, Sargent P, Boaden R, Pickard S, Parker S, Roland M (2006). 'Impact of case management (Evercare) on frail elderly patients: controlled before and after analysis of quantitative outcome data'. *British Medical Journal*, vol 334, no 7583, p31. DOI: 10.1136/bmj.39020.413310.55

⁶² Age UK Waltham Forest Case Finding Service – Service Model and Case Studies June 2011 (Available at http://www.ageuk.org.uk/brandpartnerglobal/walthamforestvpp/documents/age_uk_wf_case_finding_end.pdf (Accessed 8th July 2013))

⁶³ Dalby D et al Screening Seniors for Risk of Functional Decline: Results of a Survey in Family Practice *Canadian Journal of Public Health* 1998; 90(2): 133 - 137

⁶⁴ Pathy MS et al Randomised Trial of Case Finding and Surveillance of Elderly People at Home *Lancet* 1992; 340: 890 - 893

⁶⁵ Waltham Forest JSNA 2012-13

⁶⁶ <http://www.kingsfund.org.uk/sites/files/kf/caz-sayer-integrating-care-people-chronic-complex-needs-camden-kingsfund-may13.pdf> (accessed 13th August 2013)

⁶⁷ Greenwich Council and NHS Greenwich Healthy Ageing Workstream: Reducing Hospital and Care Home Admissions Amongst Home Care Recipients Specification and Business Case 2012