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# Frailty:

Ensuring the best outcomes for  
frail older people

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**POSITION STATEMENT**

# Contents

Acknowledgements	3
Working group	3
Foreword	4
How we can ensure the best outcome for frail older people	5
Introduction	5
Recognising frailty	6
The Comprehensive Geriatric Assessment	7
Summary of literature relating to mental health and frailty	8
Using frailty scales in relation to mental health	11
The collaborative role of older people’s mental health services (OPMH)	11
Areas for further research	16
Conclusion	16
Putting patients at the centre of all we do	17
Key recommendations	17
References	18
Appendix 1 – Service examples	22
Appendix 2 – Frailty scales	26
Appendix 3 – Literature methodology	37

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## Working group

### Co-Chairs

Kapila Sachdev  
Jonathan Richardson  
Amanda Thompsell

### Members

Conor Barton  
Scott Cherry  
Andrew Crombie  
Jayati Das-Munshi  
Karen Franks  
Elizabeth Lawn  
Nichola Hitchen  
Stella Maria-Paddick  
Vinay Sudhindra Rao  
Louise Tyms

## Foreword

“

Not all old people are frail and not all frail people are old. But frailty is often an issue amongst older people suffering with mental health problems.

This document takes a concerted look at this issue. It considers the prevalence of frailty and how it is measured. It provides a handy review of the literature and identifies gaps in our knowledge that further research might usefully fill.

Most importantly, we consider how this issue can best be addressed, with numerous examples of successful interventions and of service delivery which will be of interest to those working in integrated care systems, NHS England, primary care networks and clinical commissioning groups. (We have however decided not to address competencies and workforce issues as HEE and NHSE have already produced their Frailty Framework of Core Capabilities and are working on workforce requirements.)

In particular we celebrate and argue for the central and collaborative role that old age psychiatrists play in frailty, and we illustrate the difference that older people's mental health services can make. We start with an example of just such an intervention.

”

**Dr Amanda Thompsell**

Chair of the Faculty of Old Age Psychiatry

# How we can ensure the best outcome for frail older people

## Case example: Annie

'Annie', an 82-year-old female, presented to the frailty clinic having suffered numerous falls and multiple admissions to hospital; she was assessed by an occupational therapist and a social worker. After reviewing her at home the social worker felt concerned about her mood and her living conditions; there was evidence of self-neglect with out of date food and her older husband ( and main carer) had visual impairment, poor self care and was drinking alcohol excessively.

Annie was seen by the old age psychiatrist, who found that she had depression, with some evidence of mild cognitive impairment secondary to her depression. She was started on an antidepressant and referred to the local community choir. Her husband was referred to the sensory team and given support with reducing his alcohol intake. The occupational therapist assessed the home situation and put appliances in place to enable the couple to continue to function at home. Additionally, they were linked into the local befriending service. She did not attend hospital as frequently and a potential deterioration in her husband's health was avoided.

## Introduction

The example above outlines how members of the Faculty of Old Age Psychiatry at the Royal College of Psychiatrists, working collaboratively with others, have expertise in providing high quality care and treatment for frail older people.

Old age psychiatrists are trained to adopt a holistic approach, and practise within a biopsychosocial model (RCPsych, 2016); we focus on not only 'what is the matter' but more importantly 'what matters', to the people and families we serve, which is an approach advocated by patients and carer groups (Dementia Carer Voices, 2019). Within older adults mental health services we already have standards for patient and carer/family engagement and involvement (RCPsych, 2016). Whilst it is mainly older people that are frail, there are younger people with serious mental illness who are at risk of becoming frail and it is important that their needs are met in the same holistic way.

Psychiatrists can help to deliver services to meet the needs of frail older people. The RCPsych [Position Statement on the provision of liaison psychiatry services across the lifespan](#) stresses that within the service requirements for managing patients of all ages there is specific expertise required for assessing and managing older adults which includes competencies in working with older patients who have complex and interacting mental and physical comorbidities as well as frailty" these competencies are something which old age psychiatrists can offer (RCPsych, 2019). They include the ability to comprehensively assess and document patient's potential for self-harm or harm to others (RCPsych, 2017).

To assess fully and manage effectively a person's needs, teams must be multidisciplinary and the examples within the paper demonstrate how mental health services working in conjunction with those specialising in physical health and social care can achieve this.

Improving mental health is embedded within the NHS Long Term Plan (NHSE, 2019a). However mental health could be at risk of becoming 'everyone's problem but no one's responsibility' if we do not implement and expand older adults' community teams for older persons with severe mental health illnesses (NHSE, 2019b). The Faculty supports the expansion of core community teams ensuring specialised assessment and treatment of mental health illness — which we feel is a key component of a multidisciplinary approach to treating an older person with frailty.

Professor Alistair Burns, The National Clinical Director for Dementia and Older People's Mental Health, has highlighted ways in which old age psychiatrists, working in collaboration with other professionals, can intervene early and adopt an integrated approach to ensure people get the right outcomes. It is also essential that information is accessible to all members of the multidisciplinary team and the Mental Health Global Digital Exemplars are jointly leading work to enable the best use of informatics, such as within the Great North Care Record (GNCR, 2019).

Over the last few years there has been an increasing focus on frailty within physical health services. Available evidence suggests fragmented, reactive and poorly coordinated care for frailty results in poor functional outcomes, creating dependency and further escalating demand and costs (MacAdam, 2015); however there is a dearth of literature on frailty and mental health services for older people.

The aim of this Position Statement on frailty is to effectively articulate the value of old age psychiatry's expertise in looking after frail older people, and to showcase best practice.

Within the paper we want to explore the ways that old age psychiatrists and mental health practitioners are working to help older people with frailty and mental health problems, addressing both their mental health problems and their frailty. We want to explore the enablers and challenges of working in this area and articulate what success looks like in managing frail older people with mental health problems.

## Recognising frailty

Frailty has grown in global importance as there is a need to better understand better the health trajectory of older people in an ageing population. Whilst frailty is a common condition leading to death, it is not an inevitable consequence of ageing. It is however more prevalent in older people, with around 10 per cent of people aged over 65 currently living with frailty, rising to between a quarter and a half of those aged over 85 (NHS RightCare, 2016). The prevalence of frailty in clinical settings reaches 60% for older people attending acute wards. Frailty however is a distinct condition independent from ageing.

Frailty has been defined in many different ways. Xue described frailty as being a “clinically recognizable state of increased vulnerability resulting from ageing-associated decline in reserve and function across multiple physiological systems such that the ability to cope with every day or acute stressors is compromised” (Xue, 2011). In the absence of a gold standard, frailty has been operationally defined by Fried (Fried and Walston, 1998) as meeting three out of five phenotypic criteria indicating compromised energetics: low grip strength, low energy, slowed walking speed, low physical activity, and/or unintentional weight loss.

Alternatively, Xue goes on to state that “frailty has been operationalised as a risk index by counting the number of deficits accumulated over time (termed ‘frailty index (FI)’) including disability, diseases, physical and cognitive impairments, psychosocial risk factors, and geriatric syndromes (e.g. falls, delirium, and urinary incontinence)” (Xue, 2011).

Frailty has also been described as a “state of vulnerability to poor resolution of homeostasis after a stressor event and is a consequence of cumulative decline in many physiological systems during a lifetime. This cumulative decline depletes homeostatic reserves until minor stressor events trigger disproportionate changes in health status” (Clegg et al., 2013).

Most of the definitions of frailty consider the physical health aspect of it rather than considering frailty as a combination of both physical and mental health vulnerabilities. One helpful definition that combines both aspects states that “Frailty is a distinctive state of health related to the ageing process, usually characterised by a complex mix of physical, mental health and social care needs. It is a condition where the body’s in-built reserves are eroded, meaning people are vulnerable to sudden changes in their health triggered by seemingly small events, such as a minor infection or a change in medication” (NHS Right care 2016). Another succinct definition which NHSE guidance refers to, is the following: “Frailty is a distinctive health state related to the ageing process in which multiple body systems gradually lose their in-built reserves” (BGS, 2014).

The recently published ‘NHS RightCare Frailty Toolkit’ “supports systems to understand the priorities in frailty identification and care, and key actions to take. It provides opportunity to assess and benchmark current systems to find opportunities for improvement ... There is a strong focus on early screening and diagnosis for early prevention. Frailty however also needs to be adequately assessed and managed as increasing numbers of people are at risk of developing frailty and people living with frailty are experiencing unwarranted variation in their care” (NHS RightCare, 2019).

## The Comprehensive Geriatric Assessment

The British Geriatrics Society (BGS) Fit for Frailty publication recommends the comprehensive geriatric assessment (CGA) as the gold standard for assessment of those diagnosed with frailty, and for planning their ongoing management (BGS, 2014). The CGA is an interdisciplinary process focused on assessment of the older person’s medical, physical, psychological, mental, nutritional, cognitive, social, economic, and environmental status. There is strong evidence which shows that use of the CGA improves outcomes in older people and that when it is used following an emergency admission

to hospital, the patient's likelihood of being able to live in their own home six months later increases by 25% (Ellis et al., 2011).

Whilst the Faculty agrees on its usefulness, the CGA does have limitations in relation to detecting mental health issues. In particular, whilst there is a brief assessment for cognitive issues and depression, anxiety can be overlooked and there is no focus on substance misuse, which is becoming an increasing problem (RCPsych, 2018).

NHS England has worked with North Central London Sustainability and Transformation Partnership (NCL STP) to collate evidence on a number of teams. NHSE felt that evidence collated for these teams shows *fantastic examples of the community-based, integrated and holistic approaches we are looking to promote through the implementation of the Long Term Plan, including via the roll out of the Enhanced Health in Care Homes model and the expansion of community-based crisis care for older people* (Burns & Piper, 2019). The Faculties represented in this paper support a comprehensive mental health assessment, and the presence of senior mental health expertise, in a multi-disciplinary process to assess frailty.

## Summary of literature relating to mental health and frailty

Psychiatric illnesses are common among older adults and are associated with increased mortality and physical co-morbidities. It has been suggested that patients with frailty have a higher prevalence of depressive symptoms (Lakey et al., 2012). Frailty has also been proposed as a risk factor for cognitive decline, mild cognitive impairment (MCI) and dementia (Avila-Funes et al., 2012).

The relationship between frailty and psychiatric syndromes is a rapidly expanding area of scientific research. The majority of relevant published articles include observational studies and reviews in community settings; to our knowledge there are no published interventional studies in this area to date. A summary of current literature is provided below. (Appendix 3 explains the approach taken in compiling this).

### Dementia

Review articles have been published examining the relationship between frailty and dementia (Lim et al., 2018; Payne & Morley, 2018; Panza et al., 2019). Two systematic reviews, including one meta-analysis, have examined the relationship between frailty and dementia. Findings included a pooled prevalence of frailty of 32% in mild to moderate Alzheimer's disease (AD) and that frailty is a significant predictor of all dementias (Kojima et al., 2016; Kojima et al., 2017).

Frail persons were almost 8 times more likely to have cognitive impairment (OR 7.8, 95% CI 4.0-15.0), 8 times more likely to have some kind of dementia (OR 8.0, 95% CI 4.0-15.9), almost 6 times more likely to have vascular dementia (OR 5.6, 95% CI 1.2-25.8) and over 4 times more likely to have Alzheimer's disease (OR 4.5, 95% CI 2.1-9.6)



than persons who were robust (Kulmala et al., 2014). Frailty has been identified as an independent risk factor for vascular dementia (VaD), independent of all conventional dementia and cardiovascular risk factors (Avila-Funes et al., 2012). Baseline frailty can increase the risk of all dementia, especially VaD (Solfrizzi et al., 2013).

Wallace and colleagues (2018) found that frailty is associated with increased likelihood of developing Alzheimer's disease, independent of AD neuropathology burden. A neuroimaging study has shown increasing frailty is associated with increasing cortical atrophy, especially severe global and fronto-temporal lobar atrophy (Gallucci et al., 2018).

Frailty is an independent predictor of incident dementia (Lin et al., 2018). Higher baseline levels of frailty, as well as more rapid increases in frailty, have also been associated with an increased risk of incident AD (Buchman et al., 2007), dementia and death, increasing as frailty deficits accumulate (Wang et al., 2017). Data from the English Longitudinal Study of Ageing has identified that pre-frailty and frailty are associated with a higher risk of developing dementia, suggesting that where risk factors for dementia are being considered, a frailty assessment should be included (Rogers et al., 2017).

High levels of carer burden have been found in situations where frailty and dementia co-exist, with a similar set of needs present for patients with frailty and dementia (Abreu et al., 2019, 2020). Frailty and pre-frailty have also been found to be independently associated with challenging behaviour and carer burden in dementia (Sugimoto et al., 2018). An increasing need for including measured frailty in dementia research has also been highlighted (Searle & Rockwood, 2015).

## **Cognitive impairment/mild cognitive impairment (MCI)**

The combined prevalence of frailty and MCI was described to be 2.7% among community-dwelling elderly populations (Shimada et al., 2013). Frailty is a distinct entity measurable in AD and MCI correlating with age and increasing comorbid illness (Ni Mhaolain et al., 2011). Physical frailty has also been associated with a greater risk of developing MCI (Boyle et al., 2010).

Increasing frailty has been associated with cognitive impairment; with slow gait speed being particularly significant (Fougere et al., 2017). In two separate studies, the syndrome of frailty plus cognitive impairment ('cognitive frailty', see below) has been associated with increased mortality (Hao et al., 2018; Lee et al., 2018).

There is increasing research interest in the concept of 'cognitive frailty' i.e. the co-existence of measured frailty and cognitive impairment. Cognitive frailty has been suggested as a significant risk factor for dementia (Shimada et al., 2018) and been associated with an increased risk of dementia and mortality (Solfrizzi et al., 2017). Frailty and cognitive impairment have also been found to significantly influence cost/resource utilisation by patients (Butler et al., 2016). A recent review article has emphasised the importance of assessing frailty and cognitive impairment together (O'Hanlon & Rechner, 2018).

## Delirium

Frailty has been shown to be an independent predictor of residual delirium at 1 year following discharge from a specialist delirium unit (Chew et al., 2017). A unit increase in a Frailty Index score has been significantly associated with delirium (Hubbard et al., 2017) and frailty has been strongly related to delirium (Verloo et al., 2016). These findings are supported by a recent meta-analysis showing a significant association between frailty and delirium (Persico et al., 2018).

Delirium and frailty are associated with increased mortality (Dani et al., 2018; Eeles et al., 2012). It has also been suggested that delirium and frailty may share pathophysiological pathways, a topic which merits further investigation (Bellelli et al., 2017).

## Depression

A recent meta-analysis found an overall prevalence of depression of 39% in frailty with a reciprocal relationship apparent between the two syndromes (Soysal et al., 2017). Correlation between frailty and depression in late life has been noted as substantial, and not fully explained by symptom overlap (Lohman et al., 2016). A rapid increase in frailty and depressive symptoms can confer higher risk of nursing home admission and falls (Lohman et al., 2017).

Data from the English Longitudinal Study of Ageing suggests that, although gait speed is significantly associated with depression, pre-frailty/frailty does not predict the onset of depression (Veronese et al., 2017). However, the prevalence of frailty has been found to be significantly higher among depressed vs. non-depressed persons and additional frailty components can worsen outcomes in depression (Collard et al., 2015, 2017). It has also been suggested that depression scores can reduce if frailty improves (De Rui et al., 2017).

## The overlap between severe mental illness, substance misuse and frailty

People with severe mental illness are at a greater risk of poor physical health and experience elevated premature mortality compared with the general population, mostly through preventable physical causes (Das-Munshi et al., 2017; Saha et al., 2007). Compared to the general population, people aged under 75 in contact with mental health services in England have death rates that are 5 times higher for liver disease, 4.7 times higher for respiratory disease, 3.3 times higher for cardiovascular disease, 2 times higher for cancer (HMG 2018). Subsequently people with severe mental illness may be more likely to become frail at a younger age, although research in this area is currently scarce.

Substance misuse/ harmful use of alcohol/ dependence is highly prevalent in the hospital population and is increasingly being recognised in older adults. Substance misuse interacts with frailty (falls, fractures, liver disease, cognitive impairment, depression and anxiety etc.) and remains an under-recognised area in which specific expertise has an important role to play. NICE guidelines list excessive alcohol use, dementia and mood disorders as risk factors for frailty (NICE, 2019).

## Loneliness and social isolation

High levels of loneliness were associated with an increased risk of becoming physically frail or pre-frail 4 years later (Gale et al., 2018).

## Using frailty scales in relation to mental health

In clinical practice there are several ways to identify people who are frail. These may include an assessment of gait speed, self-ratings of health and/or structured questionnaires (BGS, 2014). Instruments/ tools which have been used to assess for the presence and severity of frailty have an important role to play in identifying populations at high risk (see Appendix). Some of the tools – for example electronic frailty indices – may also have a role identifying clinically frail populations and rating the degree of severity of frailty. In turn such tools could inform identification and management of patients with frailty (BMA, 2018).

The majority of the tools to identify frailty focus on physical function (BGS, 2014; BMA, 2018), however a subset of tools utilise multidimensional approaches across domains, which may include an assessment of cognition, dementia, depression and/ or other mental disorders. The tools vary in their approaches (see Appendix) highlighting the complex inter-relationship of these conditions with frailty (Soysal et al., 2017).

A recent systematic review found that none of the available frailty assessment tools has been validated in older adults with psychiatric disorder. It noted that significant construct overlap exists, potentially confounding frailty assessment results, also that a reliable/ valid tool is needed to assess frailty in this population (Sutton et al., 2019). Only one published study is currently available examining a psychiatric inpatient population; this found that frailty index scores, multimorbidity, and gait speeds were associated with adverse discharge destination, but not with improvement in psychiatric symptoms as assessed using Clinical Global Impression Scores (Benraad et al., 2020). Similarly, only one published study of frailty in patients with schizophrenia spectrum disorders exists in the currently available literature (Tsai et al., 2018).

Most of the definitions of frailty consider the physical health aspect of it rather than considering frailty as a combination of both physical and mental health vulnerabilities. A detailed review of the scales can be found in Appendix 2.

## The collaborative role of older people's mental health services (OPMH)

People are living longer; the number of older people aged 85 and over in the UK has increased by over a third in the last decade and is predicted to more than double in the next 23 years to over 3.4 million (ONS, 2015). At the same time, the prevalence of multi-morbidity is estimated to increase by 17% by 2035, and two thirds of people with four or more diseases will have mental ill-health (Kingston et al., 2018). These demographic

changes are already putting a strain on existing health, mental health and care services that have not been designed to manage people with conditions that combine physical health, mental health and care needs, and further growth in the number of older people will increase demand on these services.

To assess and manage frailty requires an interdisciplinary approach that encompasses functional, psychological and medical input and includes long-term planning within our complex and changing healthcare systems. Patients with frailty can be expected to be involved with multiple specialties and will require flexibility and pragmatism in management.

#### Case example: 'Bettie'

'Bettie', a 90-year-old widowed woman was admitted to the general hospital following a fall and long-lie on the floor. She was agitated and aggressive on the ward and had refused treatment. Her son who visited her was argumentative with the staff and had asked to take her home although she was still unwell. She was referred to the old age psychiatrist for a review with regards to management of her behaviour on the ward and for the concerns with regards to her son's behaviour on the ward.

The old age psychiatrist gave advice about ways of managing her on the ward after reviewing her with her son. Her son had intellectual disability and on gathering collateral information from the neighbours there had been significant concerns with regards to her memory for at least a year, and she had been found wandering. She had refused carers in the past. The old age psychiatrist was able to convene a best interest meeting and she older adults mental health team was arranged in the community and she stayed at home along with her son with the package of care.

The old age psychiatrist and the multidisciplinary team can play a valuable role in identifying frail persons as part of their everyday clinical work, and bring additional skills resources to a frailty service. The old age psychiatrist brings a wealth of specialist knowledge of mental health problems and the interaction between mental and physical health problems in older people including delirium, dementia, depression, psychosis, anxiety, and substance misuse disorders, all of which have a role in frailty in older adults.

They also bring expertise in complex capacity, legal and risk assessments in patients in the community to help the frail older person and the team in their decision making. The old age psychiatry team will gather comprehensive information – assisting medical, nursing and social care staff from other specialities – so that the right decisions can be made, including what level of support and where people can be best supported to address their needs.

The old age psychiatrist can provide a resource for other staff to clarify mental health concerns, e.g. memory problems; grief reactions; unrecognised depression or substance misuse; and management of behavioural and psychological symptoms of dementia.

Old age psychiatrists have an established tradition of working with care teams in care homes where most people live with frailty. Old age psychiatrists had long embraced a model of outreach based around clinics, community mental health teams and home visits, and we can enrich care planning decisions in work with the medical teams to give choices in care planning that may not have been considered otherwise. As yet there

is not a robust evidence basis to state the most effective service models but many old age psychiatrists have already been exploring how they can improve the care of older people with frailty under their care. The good practice examples in the table below (with further details in Appendix) demonstrate how old age psychiatry can play its part in the care of older people with frailty.

**Table 1: Good practice examples**

Setting	Service example	What value does older adult mental health service involvement bring?
<p><b>Acute general hospital</b></p>	<p><b>1 – Doncaster old age psychiatry liaison service based in Frailty wards:</b> This model dedicated old age psychiatry staff to be based on frailty wards, within the general acute hospital.</p>	<p>In the first year external evaluation, found that 83% staff participating reported improved care of people on [their] ward.</p> <p>Improved formulation of mental health diagnosis, management of care, discharge plans and reduction in falls (<math>p &lt; 0.05</math>) experienced by patients with dementia, depression or delirium while in hospital.</p> <p>Cost savings as a result of appropriate discharge destination and reduction in re-admission rates in the range of £1.07–£1.40 million a year. For details see Appendix 1.</p>
<p><b>Out-patient in acute general hospital</b></p>	<p><b>2 – SLaM and King’s Liaison outpatient clinic model to support those with frailty needing further assessment:</b> Since 2016 a pilot outpatient mental health liaison clinic has operated, embedded within the outpatient geriatric medicine service. The service is offered as a joint venture between South London &amp; Maudsley NHS Foundation Trust (SLaM) and King’s College Hospital. Referral criteria are needs-based and do not operate with age cut-offs, however, preliminary data indicate that the patients comprise mainly older adults (mean age 78 years (SD: 9.3)). The clinics are currently operated by a consultant old age psychiatrist who attends the multi-disciplinary team (MDT) meetings in the geriatric medicine service. The clinics operate as a one-off assessment and treatment service, with all patients referred on to other services as appropriate or discharged back to the referrer.</p>	<p>External evaluation in process but the clinic has helped to identify ‘hidden co-morbidities’ contributing to falls, deteriorating physical health and cognition including alcohol misuse and dependence.</p> <p>Expertise in complex capacity assessments, identification of carer strain. For further details please see Appendix 1.</p>
<p><b>Care home</b></p>	<p><b>3 – Gateshead frailty work in care homes:</b> As part of the enhanced healthcare in care homes vanguard, Gateshead have been having weekly care home MDT/ Virtual Ward, plus associated clinical input/ visits outside of the meeting in place focusing on frail older people. The attendees at the meeting are the consultant old age psychiatrist, GPs, consultant geriatrician and band 7 older people’s specialist nurses. This service covers 70% of care home residents in Gateshead (total = 1360); Weekly MDT caseload = approx. 30.</p>	<p>The results have demonstrated reduced bed days and emergency admissions and significant economic value to the health and social care system with a calculated cost saving of £3.3 million across the Newcastle Gateshead Clinical Commissioning Group for the duration of the Care Homes Vanguard. For further details please see Appendix 1.</p>

**Table 1, continued: Good practice examples**

Setting	Service example	What value does older adult mental health service involvement bring?
Community	<p><b>4a – Camden Frailty MDT meetings:</b></p> <p>The Camden Frailty Hub is a collaborative partnership, coordinated through Camden CCG, with involvement of mental health, the local authority, two local acute Trusts, and Age UK, and other third sector partners. The hub runs weekly frailty MDT meetings in four local ‘Neighbourhood’ groups of 5-8 GP surgeries as well as fortnightly Frailty Hub meetings operating on a Borough-wide basis.</p>	<p>A study of the impact of the model has shown an increase of 7% in the number of days moderate and severely frail patients are able to spend at home in the six months after receiving support. In this population group there has been a 51.8% reduction in emergency bed days and a 47.7% reduction in accident and emergency department attendances. Additionally, there has been a 32.2% reduction in first and follow-up outpatients’ appointments required in this group. For further details, please see Appendix 1.</p>
Community	<p><b>4b – Delivering a service to older people with frailty as part of an integrated hub; North West Surrey Locality Hubs service:</b></p> <p>The North West Surrey Locality Hubs service is a community-based integrated physical health, mental health and care service for older people living with frailty, providing both proactive and reactive care. It aims to identify people with frailty at an early stage in order to identify their needs and provide advice and treatment and put support in place before people go into crisis.</p>	<p>There have been better outcomes since the hub has been in place, demonstrated by reduction in non-elective admissions.</p> <p>There has also been a reduction in referrals to outpatient clinics in psychiatry as old age psychiatrists are part of the core team. For further details, please see Appendix 1.</p>
In-patient	<p><b>5 – King’s Frailty Pathway and Frailty Unit:</b></p> <p>King’s College Hospital, London has established an inpatient Frailty Pathway to allow older patients identified in the emergency department as frail to be transferred directly to an eight-bedded short-stay Frailty Unit for further assessment.</p>	<p>Old age liaison psychiatry has become an integrated part of the Frailty Unit, with proactive identification of patients requiring liaison psychiatry input, information sharing about patients already known to mental health services, and attendance at team handover meetings.</p> <p>This has facilitated early discharge from the Frailty Unit within 24 hours.</p> <p>For further details, please see Appendix 1.</p>
Mental health in-patient	<p><b>6 – North West Boroughs NHS trust older adult psychiatric inpatient ward with focus on frailty:</b></p> <p>Parsonage Unit is a specialist mixed-sex functional frailty inpatient unit in North West Boroughs NHS trust and the patients are from this trust wide (including Wigan, Warrington, Hulton, St Helens and Knowsley). Patients over the age of 75 who suffer from non-organic mental illness are automatically accepted for admission to Parsonage Unit as per current criteria for admission. Patients between the ages of 60 and 75 are screened for admission; this screening is based on the physical frailty needs of the patient.</p>	<p>A full MDT discussion takes place for complex cases and plans are formulated at this ward regarding both physical and mental health treatment. These discussions involve the consultant psychiatrist, OT, physiotherapist, pharmacy and the ward doctors. These MDT discussions have helped reduce accident and emergency transfers and the number of falls sustained on the unit.</p> <p>For further details, please see Appendix 1.</p>

## Areas for further research

A considerable body of literature exists to support a bidirectional association between measured frailty and patients diagnosed with dementia/cognitive impairment, delirium and depression. This area of research is growing rapidly. However, evidence is lacking in patients diagnosed with major psychiatric illnesses including schizophrenia, bipolar affective disorder and anxiety disorders. A majority of existing studies have involved community based samples and with limited research examining psychiatric illness and frailty in psychiatric inpatient, clinic or nursing home settings. Studies have often excluded people who are unwell due to mental illness and who have severe frailty, so may have underestimated the associations between these constructs in broader patient population settings.

Existing literature suggests considerable diagnostic overlap between the concepts of frailty, cognitive impairment and depression. Frail persons can be misclassified as suffering from a depressive disorder during a period of (physiological) low mood. Aetiological overlap in this area has also been postulated and further biomarker research is required to optimise future treatment interventions (Collard et al., 2015). Suggested future study areas include the interaction between frailty and psychotropic medications which may worsen frailty outcomes (Lakey et al., 2012).

To our knowledge there is an absence of literature regarding combined interventions for frailty and psychiatric illness. Solutions might include integrated care between old age medicine and old age psychiatry to improve outcomes in both domains (Andrew & Rockwood, 2007; Collard et al., 2015). In somatic conditions it has already been shown that the optimal treatment needs to be different for frail and for non-frail persons (Ferrucci et al., 2003).

This literature review and paper highlights a pressing need for further research in diagnosed psychiatric populations to inform future interventional studies in frailty medicine and better evidence on which models work best.

## Conclusion

Old age psychiatrists and their multi-disciplinary teams play a valuable role in identifying frail people as part of their everyday clinical work, and bring additional skills and resources to a frailty service; old age psychiatrists also have a role in population health – linking with colleagues across health, social care and the voluntary sector – and in early identification of frailty. When considering frailty it is essential to see it as a combination of both physical and mental health vulnerabilities. The examples of services and the case examples show how care for frail older people involves blending a chronic care approach with a rehabilitation approach to optimise function. The interventions should however be prioritised to avoid the risks of over treatment and adverse side effects.



## Putting patients at the centre of all we do

We end this report with another care case example of the positive impact of integrated working.

### Case example: 'Charlie'

Case example: 'Charlie' is an 85-year-old man who was admitted to hospital following a chest infection. The hospital asked for a review from the mental health liaison team as he had been recorded as a frequent attender of the hospital. The older people's mental health liaison team referred him to the locality hub team for a post-delirium review and assessment of his needs in the community. The hub coordinator and hub matron identified a need for an assessment of his memory and his mental health.

An old age psychiatrist was brought in. He ascertained the background. Charlie's wife had died about two years ago after he had been caring for her for about four years. The psychiatrist found evidence of anxiety disorder along with mild cognitive impairment.

The psychiatrist requested review by the occupational therapist and attendance at the local day centre. Charlie was referred to the local IAPT service to help with ways of managing anxiety and psychoeducation to help develop strategies to manage the mild cognitive impairment.

When Charlie was reviewed a year later, there was no evidence of progression of his cognitive impairment and he was doing well in managing his anxiety

## Key recommendations

- 1 We recommend that commissioners in primary care networks or an integrated care system ensure that the mental health needs of individuals who are frail are specifically addressed by their service provision. We strongly recommend that senior mental health input is built into the specifications of the frailty services both in the community and in A&E, which would help to take a proactive approach to frailty rather than a reactive approach.
- 2 We recommend that commissioners ensure that senior mental health input is an essential part of services that are delivering enhanced care in care homes as this is a setting where a significant number of individuals with frailty live, and there is significant psychiatric morbidity.
- 3 We recommend that commissioners and service providers ensure that any commissioned frailty services take adequate consideration of the impact that alcohol, substance misuse and anxiety have on the presentation – including the potential for self-harm or harm to others – and the needs that the person with frailty presents with.
- 4 We also recommend research bodies at a national level ensure that there is adequate research into the impact of mental health issues on frailty as well as the correlation between serious mental illness and the risk of developing frailty, so that we can ensure we give the best evidence-based care and support to people. This should include positive and negative identifiable frailty outcomes.

## References

- Abreu W, Tolson D., Jackson G A and Costa N. (2020). A cross-sectional study of family caregiver burden and psychological distress linked to frailty and functional dependency of a relative with advanced dementia. *Dementia (London)*, 19(2), 301-318. doi:10.1177/1471301218773842
- Abreu W, Tolson D, Jackson GA, Staines H. and Costa N (2019). The relationship between frailty, functional dependence, and healthcare needs among community-dwelling people with moderate to severe dementia. *Health Soc Care Community*, 27(3), 642-653. doi:10.1111/hsc.12678
- Andrew, M K and Rockwood, K. (2007). Psychiatric illness in relation to frailty in community-dwelling elderly people without dementia: a report from the Canadian Study of Health and Aging. *Can J Aging*, 26(1), 33-38. doi:10.3138/8774-758w-702q-2531
- Avila-Funes JA, Carcaillon L, Helmer, C, Carriere I, Ritchie K, Rouaud O et al. (2012). Is frailty a prodromal stage of vascular dementia? Results from the Three-City Study. *J Am Geriatr Soc*, 60(9), 1708-1712. doi:10.1111/j.1532-5415.2012.04142.x
- Bellelli G, Moresco R, Panina-Bordignon P, Arosio B, Gelfi C, Morandi A and Cesari M. (2017). Is Delirium the Cognitive Harbinger of Frailty in Older Adults? A Review about the Existing Evidence. *Front Med (Lausanne)*, 4, 188. doi:10.3389/fmed.2017.00188
- Benraad, C E M, Disselhorst L, Laurensen, N C W, Hilderink, P H., Melis R J F, Spijker J and Olde Rikkert, M G M (2020). Frailty, multimorbidity and functional status as predictors for health outcomes of acute psychiatric hospitalisation in older adults. *Aging Ment Health*, 24(1), 119-128. doi:10.1080/13607863.2018.1515888
- Boyle P A, Buchman A S, Wilson R S, Leurgans S E and Bennett D A (2010). Physical frailty is associated with incident mild cognitive impairment in community-based older persons. *J Am Geriatr Soc*, 58(2), 248-255. doi:10.1111/j.1532-5415.2009.02671.x
- British Geriatrics Society (BGS). (2014). Fit for Frailty Part 1. Retrieved from [https://www.bgs.org.uk/sites/default/files/content/resources/files/2018-05-23/fff\\_full.pdf](https://www.bgs.org.uk/sites/default/files/content/resources/files/2018-05-23/fff_full.pdf)
- British Medical Association (BMA). (2018). Focus on identification and management of patients with frailty. Retrieved from <https://www.bma.org.uk/advice/employment/contracts/general-practice-funding/focus-on-identification-and-management-of-patients-with-frailty>
- Buchman, A. S., Boyle, P. A., Wilson, R. S., Tang, Y., & Bennett, D. A. (2007). Frailty is associated with incident Alzheimer's disease and cognitive decline in the elderly. *Psychosom Med*, 69(5), 483-489. doi:10.1097/psy.0b013e318068de1d
- Buigues, C., Padilla-Sanchez, C., Garrido, J. F., Navarro-Martinez, R., Ruiz-Ros, V., & Cauli, O. (2015). The relationship between depression and frailty syndrome: a systematic review. *Aging Ment Health*, 19(9), 762-772. doi:10.1080/13607863.2014.967174
- Burns, A., & Piper, C. (2019). Showcasing achievements for the care of older people. Retrieved from <https://www.england.nhs.uk/blog/showcasing-achievements-for-the-care-of-older-people/>
- Butler, A., Gallagher, D., Gillespie, P., Crosby, L., Ryan, D., Lacey, L., et al. (2016). Frailty: a costly phenomenon in caring for elders with cognitive impairment. *Int J Geriatr Psychiatry*, 31(2), 161-168. doi:10.1002/gps.4306
- Chew J, Lim, W S, Chong M S, Ding Y Y and Tay L (2017) Impact of frailty and residual subsyndromal delirium on 1-year functional recovery: A prospective cohort study. *Geriatr Gerontol Int*, 17(12), 2472-2478. doi:10.1111/ggi.13108
- Clegg A, Young J, Iliffe S, Rikkert M O and Rockwood K (2013) Frailty in elderly people. *Lancet*, 381(9868), 752-762. doi:10.1016/S0140-6736(12)62167-9
- Collard, R. M., Arts, M. H. L., Schene, A. H., Naarding, P., Oude Voshaar, R. C., & Comijs, H. C. (2017). The impact of frailty on depressive disorder in later life: Findings from the Netherlands Study of depression in older persons. *Eur Psychiatry*, 43, 66-72. doi:10.1016/j.eurpsy.2017.01.003
- Collard R M, Comijs H C, Naarding P, Penninx, B W, Milaneschi Y, Ferrucci L and Oude Voshaar R C (2015) Frailty as a predictor of the incidence and course of depressed mood. *J Am Med Dir Assoc*, 16(6), 509-514. doi:10.1016/j.jamda.2015.01.088

- Dani, M., Owen, L. H., Jackson, T. A., Rockwood, K., Sampson, E. L., & Davis, D. (2018). Delirium, Frailty, and Mortality: Interactions in a Prospective Study of Hospitalized Older People. *J Gerontol A Biol Sci Med Sci*, 73(3), 415-418. doi:10.1093/gerona/glx214
- Das-Munshi, J., Chang, C. K., Dutta, R., Morgan, C., Nazroo, J., Stewart, R., & Prince, M. J. (2017). Ethnicity and excess mortality in severe mental illness: a cohort study. *Lancet Psychiatry*, 4(5), 389-399. doi:10.1016/S2215-0366(17)30097-4
- De Rui, M., Veronese, N., Trevisan, C., Carraro, S., Berton, L., Maggi, S., et al. (2017). Changes in Frailty Status and Risk of Depression: Results From the Progetto Veneto Anziani Longitudinal Study. *Am J Geriatr Psychiatry*, 25(2), 190-197. doi:10.1016/j.jagp.2016.11.003
- Dementia carer voices. (2019). What matters to you - case studies and podcasts. Retrieved from <https://dementiacarervoices.wordpress.com/what-matters-to-you-case-studies-and-podcasts/>
- Eeles, E. M., White, S. V., O'Mahony, S. M., Bayer, A. J., & Hubbard, R. E. (2012). The impact of frailty and delirium on mortality in older inpatients. *Age Ageing*, 41(3), 412-416. doi:10.1093/ageing/afs021
- Ellis, G., Whitehead, M. A., Robinson, D., O'Neill, D., & Langhorne, P. (2011). Comprehensive geriatric assessment for older adults admitted to hospital: meta-analysis of randomised controlled trials. *BMJ*, 343, d6553. doi:10.1136/bmj.d6553
- Ferrucci, L., Guralnik, J. M., Cavazzini, C., Bandinelli, S., Lauretani, F., Bartali, B., et al. (2003). The frailty syndrome: a critical issue in geriatric oncology. *Crit Rev Oncol Hematol*, 46(2), 127-137. doi:10.1016/s1040-8428(02)00177-4
- Fougere, B., Dumas, M., Lilamand, M., Sourdet, S., Delrieu, J., Vellas, B., & Abellan van Kan, G. (2017). Association Between Frailty and Cognitive Impairment: Cross-Sectional Data From Toulouse Frailty Day Hospital. *J Am Med Dir Assoc*, 18(11), 990 e991-990 e995. doi:10.1016/j.jamda.2017.06.024
- Fried, L. P., & Walston, J. (1998). Frailty and failure to thrive. In W. R. Hazzard, J. P. Blass, W. H. J. Ettinger, J. B. Halter, & J. Ouslander (Eds.), *Principles of Geriatric Medicine and Gerontology*, 4th Edition (pp. 1387-1402). New York: McGraw Hill.
- Gale C, Westbury L, Cooper C, The English Longitudinal Study of Ageing, Age and Ageing, Volume 47, Issue 3, 1 May 2018, Pages 392–397, <https://doi.org/10.1093/ageing/afx188>
- Gallucci, M., Piovesan, C., & Di Battista, M. E. (2018). Associations between the Frailty Index and Brain Atrophy: The Treviso Dementia (TREDDEM) Registry. *J Alzheimers Dis*, 62(4), 1623-1634. doi:10.3233/JAD-170938
- Great North Care Record (GNCR). (2019). Retrieved from <https://www.greatnorthcarerecord.org.uk>
- Hao, Q., Dong, B., Yang, M., Dong, B., & Wei, Y. (2018). Frailty and Cognitive Impairment in Predicting Mortality Among Oldest-Old People. *Front Aging Neurosci*, 10, 295. doi:10.3389/fnagi.2018.00295
- Hendry, A., Carriazo, A. M., Vanhecke, E., Rodriguez-Laso, A., & Package, A. J. W. (2018). Integrated Care: A Collaborative ADVANTAGE for Frailty. *Int J Integr Care*, 18(2), 1. doi:10.5334/ijic.4156
- Hubbard, R. E., Peel, N. M., Samanta, M., Gray, L. C., Mitnitski, A., & Rockwood, K. (2017). Frailty status at admission to hospital predicts multiple adverse outcomes. *Age Ageing*, 46(5), 801-806. doi:10.1093/ageing/afx081
- Kingston, A., Robinson, L., Booth, H., Knapp, M., Jagger, C., & project, M. (2018). Projections of multi-morbidity in the older population in England to 2035: estimates from the Population Ageing and Care Simulation (PACSim) model. *Age Ageing*, 47(3), 374-380. doi:10.1093/ageing/afx201
- Kojima, G., Liljas, A., Iliffe, S., & Walters, K. (2017). Prevalence of Frailty in Mild to Moderate Alzheimer's Disease: A Systematic Review and Meta-analysis. *Curr Alzheimer Res*, 14(12), 1256-1263. doi:10.2174/1567205014666170417104236
- Kojima, G., Taniguchi, Y., Iliffe, S., & Walters, K. (2016). Frailty as a Predictor of Alzheimer Disease, Vascular Dementia, and All Dementia Among Community-Dwelling Older People: A Systematic Review and Meta-Analysis. *J Am Med Dir Assoc*, 17(10), 881-888. doi:10.1016/j.jamda.2016.05.013
- Kulmala, J., Nykanen, I., Manty, M., & Hartikainen, S. (2014). Association between frailty and dementia: a population-based study. *Gerontology*, 60(1), 16-21. doi:10.1159/000353859

- Lahey, S. L., LaCroix, A. Z., Gray, S. L., Borson, S., Williams, C. D., Calhoun, D., et al. (2012). Antidepressant use, depressive symptoms, and incident frailty in women aged 65 and older from the Women's Health Initiative Observational Study. *J Am Geriatr Soc*, 60(5), 854-861. doi:10.1111/j.1532-5415.2012.03940.x
- Lee, Y., Kim, J., Chon, D., Lee, K. E., Kim, J. H., Myeong, S., & Kim, S. (2018). The effects of frailty and cognitive impairment on 3-year mortality in older adults. *Maturitas*, 107, 50-55. doi:10.1016/j.maturitas.2017.10.006
- Lim, W. S., Canevelli, M., & Cesari, M. (2018). Editorial: Dementia, Frailty and Aging. *Front Med (Lausanne)*, 5, 168. doi:10.3389/fmed.2018.00168
- Lin, H. R., Tsuji, T., Kondo, K., & Imanaka, Y. (2018). Development of a risk score for the prediction of incident dementia in older adults using a frailty index and health checkup data: The JAGES longitudinal study. *Prev Med*, 112, 88-96. doi:10.1016/j.ypmed.2018.04.004
- Lohman, M., Dumenci, L., & Mezuk, B. (2016). Depression and Frailty in Late Life: Evidence for a Common Vulnerability. *J Gerontol B Psychol Sci Soc Sci*, 71(4), 630-640. doi:10.1093/geronb/gbu180
- Lohman, M. C., Mezuk, B., & Dumenci, L. (2017). Depression and frailty: concurrent risks for adverse health outcomes. *Aging Ment Health*, 21(4), 399-408. doi:10.1080/13607863.2015.1102199
- MacAdam, M. (2015). PRISMA: Program of Research to Integrate the Services for the Maintenance of Autonomy. A system-level integration model in Quebec. *Int J Integr Care*, 15, e018. doi:10.5334/ijic.2246
- Mezuk, B., Edwards, L., Lohman, M., Choi, M., & Lapane, K. (2012). Depression and frailty in later life: a synthetic review. *Int J Geriatr Psychiatry*, 27(9), 879-892. doi:10.1002/gps.2807
- National Institute for Health and Care Excellence (NICE). (2017). Improving care and support for people with frailty. Retrieved from <https://stpsupport.nice.org.uk/frailty/index.html>
- NHS England. (2019a). The NHS Long Term Plan. Retrieved from <https://www.longtermplan.nhs.uk/publication/nhs-long-term-plan/>
- NHS England. (2019b). Long Term Plan Implementation Framework. Retrieved from <https://www.longtermplan.nhs.uk/publication/implementation-framework-support-offer/>
- NHS RightCare. (2016). RightCare Scenario: The variation between standard and optimal pathways. Retrieved from <https://www.england.nhs.uk/rightcare/wp-content/uploads/sites/40/2019/07/janets-story-frailty-full-narrative.pdf>
- NHS RightCare. (2019). Frailty Toolkit, Optimising a frailty system. Retrieved from <https://www.england.nhs.uk/rightcare/wp-content/uploads/sites/40/2019/07/frailty-toolkit-june-2019-v1.pdf>
- Ni Mhaolain A M, Gallagher, D., Crosby, L., Ryan, D., Lacey, L., Coen, R., et al. (2011). Correlates of frailty in Alzheimer's disease and mild cognitive impairment. *Age Ageing*, 40(5), 630-633. doi:10.1093/ageing/afr066
- O'Hanlon S and Rechner, J. (2018). Optimising pre-operative assessment for older people. *Anaesthesia*, 73(11), 1317-1320. doi:10.1111/anae.14356
- Office for National Statistics (ONS). (2015). National population projections: 2014-based projections. Retrieved from <https://www.gov.uk/government/statistics/national-population-projections-2014-based-projections>
- Panza F, Lozupone M, & Logroscino, G. (2019). Understanding frailty to predict and prevent dementia. *Lancet Neurol*, 18(2), 133-134. doi:10.1016/S1474-4422(18)30446-0
- Payne, M., & Morley, J. E. (2018). Editorial: Dysphagia, Dementia and Frailty. *J Nutr Health Aging*, 22(5), 562-565. doi:10.1007/s12603-018-1033-5
- Persico I, Cesari M, Morandi, A., Haas, J., Mazzola, P., Zambon, A., et al. (2018). Frailty and Delirium in Older Adults: A Systematic Review and Meta-Analysis of the Literature. *J Am Geriatr Soc*, 66(10), 2022-2030. doi:10.1111/jgs.15503
- Public Health England (PHE). (2018). Severe mental illness (SMI) and physical health inequalities: briefing. Retrieved from <https://www.gov.uk/government/publications/severe-mental-illness-smi-physical-health-inequalities/severe-mental-illness-and-physical-health-inequalities-briefing>
- Rogers, N. T., Steptoe, A., & Cadar, D. (2017). Frailty is an independent predictor of incident dementia: Evidence from the English Longitudinal Study of Ageing. *Sci Rep*, 7(1), 15746. doi:10.1038/s41598-017-16104-y

- Royal College of Psychiatrists (RCPsych). (2016). Quality Network for Older Adults Mental Health Services. Retrieved from [https://www.rcpsych.ac.uk/docs/default-source/improving-care/ccqi/quality-networks/older-adult-wards-qn/older-adults-qnoamhs-anual-report-2016.pdf?sfvrsn=b922eb09\\_2](https://www.rcpsych.ac.uk/docs/default-source/improving-care/ccqi/quality-networks/older-adult-wards-qn/older-adults-qnoamhs-anual-report-2016.pdf?sfvrsn=b922eb09_2)
- Royal College of Psychiatrists (RCPsych). (2017). A Competency Based Curriculum for Specialist Training in Psychiatry: Specialists in Old Age Psychiatry. Retrieved from [https://www.gmc-uk.org/-/media/documents/old-age-psychiatry-curriculum-march-2019\\_pdf-77959017.pdf](https://www.gmc-uk.org/-/media/documents/old-age-psychiatry-curriculum-march-2019_pdf-77959017.pdf)
- Royal College of Psychiatrists (RCPsych). (2018). Our Invisible Addicts (2nd edition, CR211). Retrieved from <https://www.rcpsych.ac.uk/improving-care/campaigning-for-better-mental-health-policy/college-reports/2018-college-reports/our-invisible-addicts-2nd-edition-cr211-mar-2018>
- Royal College of Psychiatrists (RCPsych). (2019). Position statement on the provision of liaison psychiatry services across the lifespan (PS02/19). Retrieved from [https://www.rcpsych.ac.uk/docs/default-source/improving-care/better-mh-policy/position-statements/ps02\\_19.pdf?sfvrsn=87ec0e23\\_4](https://www.rcpsych.ac.uk/docs/default-source/improving-care/better-mh-policy/position-statements/ps02_19.pdf?sfvrsn=87ec0e23_4)
- Saha, S., Chant, D., & McGrath, J. (2007). A systematic review of mortality in schizophrenia: is the differential mortality gap worsening over time? *Arch Gen Psychiatry*, 64(10), 1123-1131. doi:10.1001/archpsyc.64.10.1123
- Searle, S. D., & Rockwood, K. (2015). Frailty and the risk of cognitive impairment. *Alzheimers Res Ther*, 7(1), 54. doi:10.1186/s13195-015-0140-3
- Shimada, H., Makizako, H., Doi, T., Yoshida, D., Tsutsumimoto, K., Anan, Y., et al. (2013). Combined prevalence of frailty and mild cognitive impairment in a population of elderly Japanese people. *J Am Med Dir Assoc*, 14(7), 518-524. doi:10.1016/j.jamda.2013.03.010
- Shimada, H., Makizako, H., Tsutsumimoto, K., Doi, T., Lee, S., & Suzuki, T. (2018). Cognitive Frailty and Incidence of Dementia in Older Persons. *J Prev Alzheimers Dis*, 5(1), 42-48. doi:10.14283/jpad.2017.29
- Solfrizzi, V., Scafato, E., Seripa, D., Lozupone, M., Imbimbo, B. P., D'Amato, A., et al. (2017). Reversible Cognitive Frailty, Dementia, and All-Cause Mortality. The Italian Longitudinal Study on Aging. *J Am Med Dir Assoc*, 18(1), 89 e81-89 e88. doi:10.1016/j.jamda.2016.10.012
- Soysal, P., Veronese, N., Thompson, T., Kahl, K. G., Fernandes, B. S., Prina, A. M., et al. (2017). Relationship between depression and frailty in older adults: A systematic review and meta-analysis. *Ageing Res Rev*, 36, 78-87. doi:10.1016/j.arr.2017.03.005
- Sugimoto, T., Ono, R., Kimura, A., Saji, N., Niida, S., Toba, K., & Sakurai, T. (2018). Physical Frailty Correlates With Behavioral and Psychological Symptoms of Dementia and Caregiver Burden in Alzheimer's Disease. *J Clin Psychiatry*, 79(6). doi:10.4088/JCP.17m11991
- Sutton, J. L., Gould, R. L., Coulson, M. C., Ward, E. V., Butler, A. M., Smith, M., et al. (2019). Multi-component Frailty Assessment Tools for Older People with Psychiatric Disorders: A Systematic Review. *J Am Geriatr Soc*, 67(5), 1085-1095. doi:10.1111/jgs.15710
- Tsai, M. T., Lee, S. M., Chen, H. K., & Wu, B. J. (2018). Association between frailty and its individual components with the risk of falls in patients with schizophrenia spectrum disorders. *Schizophr Res*, 197, 138-143. doi:10.1016/j.schres.2018.01.023
- Verloo, H., Goulet, C., Morin, D., & von Gunten, A. (2016). Association between frailty and delirium in older adult patients discharged from hospital. *Clin Interv Aging*, 11, 55-63. doi:10.2147/CIA.S100576
- Veronese, N., Solmi, M., Maggi, S., Noale, M., Sergi, G., Manzato, E., et al. (2017). Frailty and incident depression in community-dwelling older people: results from the ELSA study. *Int J Geriatr Psychiatry*, 32(12), e141-e149. doi:10.1002/gps.4673
- Wallace, L., Theou, O., Rockwood, K., & Andrew, M. K. (2018). Relationship between frailty and Alzheimer's disease biomarkers: A scoping review. *Alzheimers Dement (Amst)*, 10, 394-401. doi:10.1016/j.dadm.2018.05.002
- Wang, C., Ji, X., Wu, X., Tang, Z., Zhang, X., Guan, S., et al. (2017). Frailty in Relation to the Risk of Alzheimer's Disease, Dementia, and Death in Older Chinese Adults: A Seven-Year Prospective Study. *J Nutr Health Aging*, 21(6), 648-654. doi:10.1007/s12603-016-0798-7
- Xue, Q. L. (2011). The frailty syndrome: definition and natural history. *Clin Geriatr Med*, 27(1), 1-15. doi:10.1016/j.cger.2010.08.009

# Appendix 1 – Service examples

## 1: Doncaster old age psychiatry liaison service based in frailty wards

**Contact:** 01302 798467

This model dedicated old age psychiatry staff to be based on frailty wards within the general hospital. Individual new referrals of frail older people seen by the service amounted to 1207 in 2017. Total volume of clinical activity was however appreciably higher, since each referral may necessitate several clinical encounters (with the patient, family and ward staff) in assessment, diagnosis, treatment and discharge planning. External evaluation in the first year of its operation found that the service had increased competencies of the ward staff in managing patients with mental health problems. 83% of staff participating reported ‘direct, personal experience of the way the older people’s mental health liaison team improve the care of people on [their] ward’. They concluded that the service improved formulation of mental health diagnosis, management of care, discharge plans, and medication. The service appears to have contributed to a reduction in rate of falls ( $p < 0.05$ ) experienced by patients with dementia, depression or delirium while in hospital. No such reduction was experienced by other people aged 65+. The analysis of cost savings focused on the ability of the service to promote timely discharge from hospital to an appropriate discharge destination while avoiding an upsurge in re-admissions within 30 days. The estimated cost savings for older people with dementia, delirium and depression are in the range of £1.07 to £1.40 million a year.

## 2: SLaM and King’s liaison outpatient clinic model to support those with frailty needing further assessment

**Contact:** [jayati.das-munshi@kcl.ac.uk](mailto:jayati.das-munshi@kcl.ac.uk)

Since 2016 a pilot outpatient mental health liaison clinic has operated, embedded within the outpatient geriatric medicine service. The service is offered as a joint venture between South London & Maudsley NHS Foundation Trust (SLaM) and King’s College Hospital.

Referral criteria are needs-based and do not operate with age cut-offs, however preliminary data indicate that the patients comprise mainly older adults (mean age 78 years (SD: 9.3)) with 69% meeting criteria for mild to moderate/severe frailty. Although referral guidelines stipulate patients with a primary memory complaint should be referred to memory services, a significant proportion of referrals to the clinic have dementia (25%) of which a third were previously unknown, highlighting the challenges of detection and diagnosis of dementia with the standard screening tools usually used within general hospital settings.

The clinics are currently operated by a consultant old age psychiatrist who also attends the MDT meetings in the geriatric medicine service.

The clinics operate as a one-off assessment and treatment service, with all patients referred on to other services as appropriate or discharged back to the referrer.

Aside from advising on psychiatric treatments (prescribing and psychological treatments), interventions from the clinic have also included identifying ‘hidden morbidities’ contributing to falls, deteriorating physical health and cognition (such as alcohol misuse/dependence), assessments of cognition with onward referral to neuropsychology for complex presentations, assessments of capacity including advice on driving and safety, identifying vulnerable older adults and informing assessments of safeguarding, as well as supporting patients through psychosocial difficulties impacting on their mental state – such as carer strain, family conflicts, domestic violence and bereavement, through onward referral to appropriate agencies. The clinics also have an educational function, with the regular presence of nursing students, medical students and other members of staff. Currently the plan is to evaluate further the impact which the service has on potentially reducing referrals to community mental health teams and improving outcomes such as hospital admissions.

### 3: Gateshead frailty work in care homes

**Contact:** [karen.franks@nhs.net](mailto:karen.franks@nhs.net)

As part of the enhanced healthcare in care homes vanguard Gateshead have been having weekly care home MDT/Virtual Ward, plus associated clinical input/visits outside of the meeting in place focusing on frail older people. The attendees at the meeting are the consultant old age psychiatrist, GPs, consultant geriatrician and band 7 older people’s specialist nurses. Currently this service covers 70% of care home residents in Gateshead (total = 1360). Weekly MDT caseload = approx. 30. The results have demonstrated reduced bed days and emergency admissions and significant economic value to the health and social care system, with a calculated cost saving of £3.3 million across NGCCG for the duration of the Care Homes Vanguard.

		Vanguard	Care home	Non-NCM
Change on baseline period	Emergency admissions	-3.2%	-1.4%	6.7%
	Bed days	-15.2%	-4.5%	1.4%

Data relates to care home residents

(Vanguard = NGCCG EHCH Vanguard, Care Home = other 5 EHCH vanguards in England, Non-NCM = non New Care Models)

## 4a: Camden frailty MDT meetings

**Contact:** [mdt.admin@nhs.net](mailto:mdt.admin@nhs.net)

The Camden Frailty Hub is a collaborative partnership, coordinated through Camden CCG, with involvement of mental health, the local authority, two local acute Trusts, and Age UK, and other third sector partners.

The hub runs weekly frailty MDT meetings in four local 'Neighbourhood' groups of 5-8 GP surgeries as well as fortnightly 'Frailty Hub' meetings operating on a borough-wide basis. These meetings are attended by senior representatives from teams including a senior social worker, consultant geriatrician, nurses from memory clinics, palliative care and complex care, representatives from Age UK and Camden Carers as well as a consultant old age psychiatrist. Patients with moderate frailty are managed at the weekly meetings whereas the fortnightly meetings focus on managing patients considered to have severe frailty and/or significant complexity and who cannot be managed at a locality level.

Patients may be referred to these meetings from a variety of sources but generally from health or social care sources. GPs remain the primary case identifiers however a significant proportion of patients considered in the borough Frailty Hub are identified by local acute trusts, reflecting the high rates of frequent admission in this patient group.

A study of the impact of the model has shown an increase of 7% in the number of days moderate and severely frail patients were able to spend at home in the six months after receiving support. In this population group there has been a 51.8% reduction in emergency bed days and a 47.7% reduction in accident and emergency department attendances. Additionally, there has been a 32.2% reduction in first and follow-up outpatients' appointments required in this group.

## 4b: Delivering a service to older people with frailty as part of an integrated hub: North West Surrey Locality Hubs service

**Contact:** [liz.lawn@nhs.net](mailto:liz.lawn@nhs.net)

The North West Surrey Locality Hubs service is a community-based integrated physical health, mental health and care service for older people living with frailty, providing both proactive and reactive care. It aims to identify people with frailty at an early stage in order to identify their needs and provide advice and treatment and put support in place before people go into crisis. Any physical health professional, mental health professional, adult social care professional and borough council member of staff can refer but the majority of referrals come from GPs and hospital geriatricians.

The Locality Hubs provide both physical and mental health care. Each hub team includes a full-time senior mental health practitioner working as a member of the team who provides mental health input for the people on the hub caseload, and these mental health practitioners have weekly clinical supervision with a consultant old age psychiatrist. The hubs are based in community hospitals and are a physical space where people can come to see team members and access services.



This model has had significant benefits both to individuals and the community. This is borne out in patient feedback: *I was referred to Bedser Hub by my GP and it's the biggest favour she could have done for me. I was treated with so much respect and more important than anything the staff listened to me. At no time did I feel that I needed to leave because the staff had more important things to do; I was the important person before them. I would recommend the hub to everybody who needs medical care.*

We can also see better outcomes where the hub is in place. There has been a reduction in growth in non-elective admissions activity for people over 75 and a reduction in referrals to care of older people outpatient clinics and cardiology outpatients for people over 75 in the Woking locality. In addition, where the hub is available there has been a significant increase in uptake of IAPT services. Overall, there has been improved coordination and joint planning between services for more complex patients which helps to reduce anxiety and conflict for staff and has improved care for patients and support for carers.

Mental and physical health problems can be addressed in one service and staff feel supported by other team members with different knowledge and skill sets as well as benefiting from shared learning. Frailty assessments including presence of the older adult mental health services has helped to deliver better outcomes for the patients seen in the hub.

## 5: King's frailty pathway and frailty unit

**Contact:** [ruth.cairns@slam.nhs.uk](mailto:ruth.cairns@slam.nhs.uk)

King's College Hospital, London has established an inpatient frailty pathway to allow older patients identified in the emergency department as frail to be transferred directly to an eight-bedded short-stay frailty unit for further assessment. The new frailty ward has been set up for the assessment and management of frail older adults and operates outpatient services which include those for frail older people living in the community.

Patients are referred to the in-patient liaison psychiatry team by a range of teams across the hospital; the main referrers in 2017 were general medicine (43% of all referrals), geriatric medicine (27%) and surgery (18%). Referral rates continue to increase on an annual basis, with a total of 665 patients referred in 2017, 590 of whom were seen, compared with 315 seen in 2010. Old age liaison is becoming an integrated part of the frailty unit, with proactive identification of patients requiring liaison psychiatry input, information sharing about patients already known to mental health services, and attendance at team handover meetings.

The frailty unit is open from Sunday evening to Friday evening. Assertive attempts are made to facilitate early discharge from the frailty unit within 24 hours, unless acute hospital admission is needed.

## 6: North West Boroughs NHS Trust older adult psychiatric inpatient ward with focus on frailty

**Contact: 01925 664000 – ask for Parsonage unit**

Parsonage Unit is a specialist mixed-sex functional frailty inpatient unit in North West Boroughs NHS Trust and the patients are from trust-wide (including Wigan, Warrington, Hulton, St Helens and Knowsley), for patients over the age of 75 who suffer from non-organic mental illness are automatically accepted for admission to Parsonage Unit as per current criteria for admission. Patients between the ages of 60 and 75 are screened for admission; this screening is based on the physical frailty needs of the patient. The majority of patients admitted to Parsonage Unit would be described as moderately frail on the Rockwood Clinical Frailty Scale, with some flexibility to either side. Each patient on Parsonage Unit is reviewed by the Consultant Old Age Psychiatrist regularly, and the strong multi-disciplinary ethos forms these reviews. The unit actively involves community mental health teams and social work colleagues in the planning of care and treatment. Every patient is discussed within the multi-disciplinary team on a daily basis as part of the unit's morning meeting.

The physical health nurse lead reviews and assesses each patient on admission and then throughout their admission journey. A full MDT discussion takes place for complex cases and plans are formulated in the ward regarding both physical and mental health treatment. These discussions involve the consultant old age psychiatrist, OT, physio-therapist, pharmacy, ward doctors and the physical health nurse, which has helped to reduce accident and emergency transfers and the number of falls sustained on the unit. Over a two year period there were 119 admissions with an average length of stay of 75.4 days. The readmission rate was 3.4%.

## Appendix 2 – Frailty scales

In clinical practice there are several ways to identify people who are frail. These may include an assessment of gait speed, self-ratings of health and/or structured questionnaires. Instruments/ tools which have been used to assess for the presence of frailty and severity of frailty in populations have an important role to play in identifying populations at high risk. Some of the tools – for example electronic frailty indices – may also have a role to play at the level of identifying clinically frail populations and rating the degree of severity of frailty, and in turn such tools could inform service provision and commissioning as well as annual check ups such as medication reviews. The majority of the tools to identify frailty focus on physical function, however a subset of tools utilise multidimensional approaches across domains, which may include an assessment of cognition, dementia, depression and/or other mental disorders. The tools vary in their approaches, highlighting the complex inter-relationship of these conditions with frailty.

Tool	Clinician-/self-rated	Domains assessed	Where tool was developed	Validation studies	Cognition	Social	Psychiatric
<b>Section 1 Frailty Scales based on self-report and/or clinical exam</b>							
CGA-frailty index  Mobile Geriatric Assessment Team (MGAT) study	Clinician-rated; Based on CGA:  Mild  Moderate  Severe frailty	Comprehensive 10-item:  Bowels, bladder, mobility, balance, cognition IADLs, nutrition, social resources, communication, mood and motivation	Canada – rural Nova Scotia	Rural, community	Cognitive impairment, dementia, delirium	Social resources	Mood and motivation
Clinical Global Impression of Change in Physical Frailty (CGIC-PF)	Clinician's judgement  13 items	6 intrinsic items:  Mobility, balance, strength, endurance, nutrition, and neuromotor performance  7 consequence items:  Medical complexity, healthcare utilisation, appearance, self-perceived health, ADLs, emotional and social status	USA	Six expert panel members, 46 clinicians, 24 patients, and 12 caregivers  Pilot n=10 mild frailty	No	'Social status'  (Roles, interaction with others, living situation)	'Emotional status', depression or anxiety (clinician judgement), -self-perceived health, -self-reported energy or fatigue

Tool	Clinician-/self-rated	Domains assessed	Where tool was developed	Validation studies	Cognition	Social	Psychiatric
Easycare Two-step Older persons Screening (TOS)	Two stage GP (family practitioner) or nurse rating No, mild, moderate, severe If rated 'frail' Second stage interview process	Multimorbidity, polypharmacy, cognitive, hearing and vision, ADLs, mobility, falls, informal care, loneliness, social network, depression, anxiety, somatoform, 'other psychiatric'	Netherlands	N=141 from 7 GP practices	Cognitive impairment or dementia	Loneliness, social network, Informal care	Depression, anxiety, somatoform, other psychiatric
Edmonton Frail Scale	Administered by clinician; Examination (clock draw and timed up-3m walk) plus questionnaire Scored from 17	Cognition (clock draw), depression, function (ADLS), nutrition, continence, medication (polypharmacy), general health (number of hospital admissions 1 year), function (performance) timed up and go			Yes Assessed by clinician on clock draw		Yes
EPIDOS study of hip fracture (Carrieres' model, 2005)	Developed as self-rated questionnaire	Mobility, balance, nutrition, muscle strength, physical inactivity, perceived health, educational level, age, time since baseline evaluation	France	545 'high-functioning women' aged $\geq 75$ 7 year cohort study	No	No	'Perceived health' (bad or very bad), fear of falling

Tool	Clinician-/self-rated	Domains assessed	Where tool was developed	Validation studies	Cognition	Social	Psychiatric
FRAIL scale	5-item self-report scale: Fatigue, resistance, ambulation, illnesses, loss of weight		USA	998 African Americans aged 45-69 Cross-sectional	No	No	No
FFI (Fried Frailty Index)	5 items 'phenotype' Self-report and examination findings >3/5 =frailty 1-2/5 prefrailty	Weakness, fatigue, weight loss, low calorie, walking speed	USA	Cardiovascular Health Study: 5,317 65 years and older (4,735 from 1989-90 582 African American 1992-93).	No	No	No
Gealey instrument	10-item Clinician-rated	10 items Based on IADLS Eating, bathing, toileting, dressing, transfers, walking, ability to use telephone, shopping, food preparation, housekeeping, laundry, transportation, medication management	USA Gerontological care providers		No	No	No
Geriatric Functional Evaluation (GFE)	7-domain questionnaire 15-20 minutes	Physical condition, mental health, functional status, community support, housing, social relationships, financial situation	Italy	3060 Community-dwelling aged >65	'Disorientation', reasoning ability, memory loss	Relationships, community support	Hallucinations, 'delirious psychosis', energy and motivation

Tool	Clinician/ self-rated	Domains assessed	Where tool was developed	Validation studies	Cognition	Social	Psychiatric
Groningen Frailty Indicator	15 item self-assessment (limitations) >4/15 indicates frailty	Self-reported fitness, vision, hearing, functional ability, polypharmacy, weight loss, memory impairment, loneliness, low mood and/or emptiness, anxiety	Netherlands Primary care	Community sample	Self-reported memory impairment	Self-reported loneliness/isolation	Self-reported anxiety, self-reported low mood/'emptiness'
Guilley instrument SWILSO-O (Swiss Interdisciplinary Longitudinal Study on the Oldest Old)	Self-rated 5 domains	5 domains: Sensory capacities, mobility capacities, physical pains, memory problems, energy	Switzerland	Octogenarians community-dwelling	'frequent problems with memory'	No	Frequent loss of energy, frequent loss of appetite (taken from depression questionnaire), self-perceived pain severity
Identification of Seniors at Risk (ISAR) screening tool	6-item self administered	Premorbid functional impairment, acute functional decline, hospitalisation in previous six months, visual impairment, memory impairment, concurrent use of >3 medications	Four university-affiliated hospitals in Montreal.	1122 + 520 (2 studies) 65 and over, attending emergency department	Memory impairment	No	No
Modified Functional Independence Measure (FIM)	Developed for TBI rehabilitation Observation, telephone interview or case conference	12 items: Bowel/bladder control, transfers, locomotion, communication, social cognition, feeding, grooming, bathing, dressing (upper/lower body), toileting	USA	N=122 acute care geriatric inpatient unit Prospective cohort study	Social cognition, memory	'Social cognition'	No

Tool	Clinician-/self-rated	Domains assessed	Where tool was developed	Validation studies	Cognition	Social	Psychiatric
PUTS Longitudinal Aging Study Amsterdam	>3 from 9 factors = frail	Body weight, peak expiratory flow, cognition, vision, hearing problems, incontinence, sense of mastery, depressive symptoms, physical activity	Netherlands	N=2,257 Community-dwelling Mn age 72.5	MMSE <24	No	'Sense of mastery' Pearlin and Schooler Mastery scale SF 'depression' CES-D self-rated
Ravaglia Instrument	9 prognostic indicators (clinician-rated)	Age ≥ 80 gender (male), physical inactivity, polypharmacy (≥3 drugs), calf circumference, IADLs disability, gait and balance, sensory deficits, pessimism about health	Italy, Conselice, Study of Brain Ageing (CSBA)	1007 community-dwelling aged ≥65  Prospective population study	No (but IADLs disability)	No	'Health pessimism'
Rockwood	Single 1–9 phenotype scale – clinician rated	Global 'phenotypes'	USA		No (but mentions need for help with IADLs in scoring guidance)	No	No

Tool	Clinician-/self-rated	Domains assessed	Where tool was developed	Validation studies	Cognition	Social	Psychiatric
Rothman Instrument (modification of Fried scale)	4-item scale 2/4 = frail	Mobility (Gait speed of >10 s to walk back and forth over a 10 foot course)  Physical Activity Score ( <64 for men, <52 for women on the physical activity scale for the elderly EURO-D)  Nutrition (>10lbs weight loss in past year (intentional or unintentional)  Cognitive Impairment (<24/30 MMSE)			Yes (MMSE <24/30)	No	No
SOF (study of osteoporotic fractures)	3 items 2/3 = frailty	(1) Weight loss (irrespective of intent to lose weight) of 5% or more  (2) the subject's inability to rise from a chair 5 times without using her arms; and  (3) reduced energy level					No  NB: used and answer of 'no' to "Do you feel full of energy?" on the Geriatric Depression Scale as definition of low energy
Self-Reported Health (Brody)	13-item self-reported questionnaire	Age, health conditions interfere with daily activities, needing/ receiving assistance for bathing and/or taking medications.	USA	5821 community dwelling age ≥65 enrolled with Kaiser Permanente	No	No	No



Tool	Clinician-/self-rated	Domains assessed	Where tool was developed	Validation studies	Cognition	Social	Psychiatric
Sherbrooke Postal Questionnaire	Self-report (postal) 21 item		Sherbrooke (Quebec, Canada) community	N=842 aged 75+	Yes 'problems with memory'	Yes Death/bereavement in last year 'count on someone' lonely	Yes 'Sad or depressed'
Strawbridge	16 self-reported questions in four domains functioning: physical, cognitive, sensory, and nutritive.	Nutrition (weight loss and appetite) Subjective memory/concentration problems Physical (balance/weakness/dizziness) Sensory (sight and hearing – with focus on function)	USA	Convenience sample in primary care n=48	Yes	No	No
Tilburg Frailty Indicator	15 item self-report scale >/5/15 indicates frailty	Physical: unexplained weight loss, physical health, difficulty in walking, balance, vision problems, hearing problems, strength in hands, physical tiredness  Psychological: depressive symptoms, anxiety, coping  Social: living alone, social relations, social support	Netherlands	Reference values from general health survey 47,768 >65 (58.5% response rate)	Cognition	Living alone, social relations, social support	Depressive symptoms, anxiety, coping

Tool	Clinician/ self-rated	Domains assessed	Where tool was developed	Validation studies	Cognition	Social	Psychiatric
Three Cities Study (Avila-Funes)	5 items 3/5 = frailty (1-2 prefrail)	Weight loss, weakness, exhaustion, slowness, and low physical activity	France	6030 community dwelling individuals aged 65-95 followed up in a 4 year longitudinal study. 7% were frail.	MMSE and Isaacs Set Test	No	No
Vulnerable Elders Survey (VES)	Self-report 13-item questionnaire	Physical function and IADLS Expanded version includes diagnoses	USA	6205 community-dwelling Medicare recipients aged ≥65  Prospective cohort	Expanded version 'dementia diagnosis'  Includes IADLS	No	Self-reported health  Expanded version 'psychiatric history'
Zutphen Elderly Study	Presence/absence two factors	Inactivity AND 1 of: weight loss/low energy intake/low BMI	Netherlands	N=450 69-89  Community sample	No	No	No
<b>Frailty Indices</b>							
Accumulation of deficits  Frailty Index  Canadian Study of Health and Ageing	92-item frailty index		Canada	Community sample mean age 82  Longitudinal study  N=2914	Clouding of consciousness, 'difficulty with memory', apraxia, agnosia, aphasia, impaired judgement, impaired abstract thinking	No	'Difficulty with mood', feeling sad, blue or depressed

Tool	Clinician-/self-rated	Domains assessed	Where tool was developed	Validation studies	Cognition	Social	Psychiatric
Frailty Index Canadian Study of Health and Ageing	20-item frailty index		Canada	Community sample mean age 82 n=2914 Longitudinal study	'Memory impairment'	No	No
Rockwood Accumulation of deficits	40-item self-reported (Canada) 51-item diagnosed conditions (Sweden)	Comprehensive list	Canada and Sweden	962 male 1178 female CSHA and gothenburg 70+	No	Gothenburg +70 Difficult socialising Difficulty with retirement Living alone	CHSA – 'self-perceived health' Gothenburg +70 Feels health not good
Rockwood	70-item frailty index	Comprehensive list from Canadian study of Health and Ageing	Canada	Canadian study of Health and Ageing	Clouding of consciousness, memory impairment, cognitive impairment, long/short term memory impairment, changes in mental functioning		Feeling sad, blue or depressed, 'depression' clinician rated, tired all the time, restlessness, sleep changes, paranoia, problem with mood

Tool	Clinician-/self-rated	Domains assessed	Where tool was developed	Validation studies	Cognition	Social	Psychiatric
<b>Section 2 – Frailty Scales based on electronic health records</b>							
FI 1.	Electronic patient records	Comprehensive	Netherlands		Yes	Yes	Yes Depression 'Functional disability – psychiatric'
Hospital Frailty Risk Score	Based on ICD-10 codes	Core frailty codes: Mobility, dependence, senility, dementia, somnolence and stupor, amnesia and disorders of cognition and awareness, incontinence	UK 2013–tt14 and 2014–15 Hospital Episode Statistics (HES) inpatient database	22039 development cohort aged ≥75 1,013590 validation cohort	Cognitive impairment R41 F00 – F05.9	No	Anxiety and Depression
Electronic frailty index (eFI)	Based on electronic primary care records	36 deficits (containing 1,574 corresponding Read 2 codes)	UK primary care	N= 931,541 age 65-95 Registered with ResearchOne or THIN practice	Memory and cognitive problems	Social Vulnerability	No

## Appendix 3 – Literature methodology

This document supplements and includes data from Dr Scott Cherry's original (unpublished) systematic review including searches to February 2016 (already submitted to RCPsych Frailty Working Group).

### Methodology

Narrative Literature review 6-8 March 2019:

**Search terms:** As for my systematic review 2016

**Documents:** In English language, abstract available, publication date 2016-present

**Libraries:** University of Leicester and Northamptonshire Healthcare NHS Foundation Trust Libraries

**Databases searched:** PubMed, Cochrane, Embase, Psycinfo, Prospero, Google Scholar

**Referencing software:** EndNote

### Review of 45 articles found

By study design:

**Observational studies:** 31

**Review Articles:** 9

**Systematic Reviews:** 5 (including 4 x meta-analysis)

**Interventional studies:** Nil