

Frailty

**Wirral Intelligence
Service**

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Executive Summary

- Frailty puts older adults at increased risk of falls, institutionalisation, hospitalisation, declining mobility and death
- Despite widespread perceptions that frailty is an inevitable part of ageing, frailty is not a foregone conclusion and is in fact, potentially reversible
- There are significant inequalities in the prevalence of frailty, with certain groups more at risk
- UK studies have found the Electronic Frailty Index (eFI) to be an excellent predictor of hospitalisation, mortality and admission to a nursing home
- At clinical assessment, the test recommended by both the BGS and NICE is the Formal Gait Speed test (>5s to walk 4m)
- CGA is evidenced to reduce nursing-home admissions, risk of hospital admissions and falls. In terms of Numbers Needed to Treat, CGA is estimated to avoid one long-term care placement for every 20 people with a CGA
- NHS England recommends all patients have an enriched Summary Care Record
- Although all Wirral patients have a Summary Care Record, a sizeable proportion have withdrawn their consent for it to be used, meaning they will be excluded from the Wirral Care Record and could lose out on timely and informed care
- People taking ten or more medicines are 300% more likely to be admitted to hospital than those taking one or two medications
- Pharmacy-led medicine review appears to reduce the odds of medicine related unplanned admissions in older people, but may not significantly reduce unplanned admissions in general
- Older people aged 60+ spend 80% of their waking life sitting down, yet it is well evidenced that insufficient physical activity (along with obesity and diabetes), are strong predictors of frailty in older age
- Evidence suggests the optimal type of physical activity to reduce and prevent frailty should be multi-component; be performed three times per week; last for 30–45 minutes per session and last more than 5 months
- Supplementation of vitamin D (all doses, all forms) has also been found to have positive effects on muscle strength and physical frailty in adults over 65 years old
- Loneliness and isolation are important determinants of frailty and decline. A GP-led intervention in Somerset shows that when isolated people with health problems are supported by community groups and volunteers, the number of emergency admissions to hospital can fall dramatically
- The misconceptions that functional decline is a natural part of ageing may inhibit professionals from more effectively rehabilitating older people, training on frailty could help overcome this
- Older people may not recognise themselves as frail, so using language that resonates with older people's desire to maintain or return to a level of independent living and being clear that identifying the problem is the best way to get solutions in place to help older people achieve their goals, is crucial
- Vaccine preventable illnesses such as, shingles, pneumococcal disease and influenza and their sequelae, often result reduced activity and function, which may push people over a threshold from living independently into permanent disability. Vaccination should be optimised for all patients, but particularly those who are aged 65+ or classified as frail

Introduction

There is a lack of consensus on a definition for frailty. One useful description from the literature is that it is, 'a distinctive health state related to the ageing process in which multiple body systems gradually lose their in-built reserves' [1,5]. Another widely accepted definition is that proposed by Fried et al, which is based on the co-occurrence of at least 3 of the following five features [4,5]:

1. Unintentional weight loss
2. Self-reported exhaustion
3. Weakness (low grip strength)
4. Slow walking speed
5. Low physical activity

Although frailty is associated with ageing, it is important to note that not all older people are frail, and not all people living with frailty are old [15]. Frailty can exist independently of long term conditions and disability and it is important to recognise this in order to manage it effectively [6].

Older people living with frailty are at risk of dramatic decline in their physical and mental wellbeing after an apparently minor health event, such as an infection or new medication [1]. Research shows that frailty puts older adults at increased risk of falls, institutionalisation, hospitalisation, declining mobility and death [4].

High-quality care delivery for frail older persons, many of whom have multiple complex needs, is a huge challenge however [10]. According to NHS England, frailty, typically goes largely unnoticed until a crisis happens which necessitates urgent intervention. Even then, the response tends to focus on the shorter-term issue in a reactive way, without addressing the underlying problems [24]. NHS England also suggests that many adverse outcomes could be avoided through proactive case finding, timely comprehensive assessment, care planning and targeted, proactive use of services outside of hospital [28].

Despite widespread perceptions that frailty is an inevitable part of ageing [8], frailty is not a foregone conclusion and is in fact, potentially reversible [4]. Interestingly, there is evidence to suggest that the term 'frailty' does not resonate with older people, nor is it something that they identify with, even when they meet definitions of frailty as understood by healthcare professionals [26]. This has led to concerns that as a result, fewer older people access the health and social care that they need to reduce frailty and remain independent for longer [26].

Prevalence of frailty

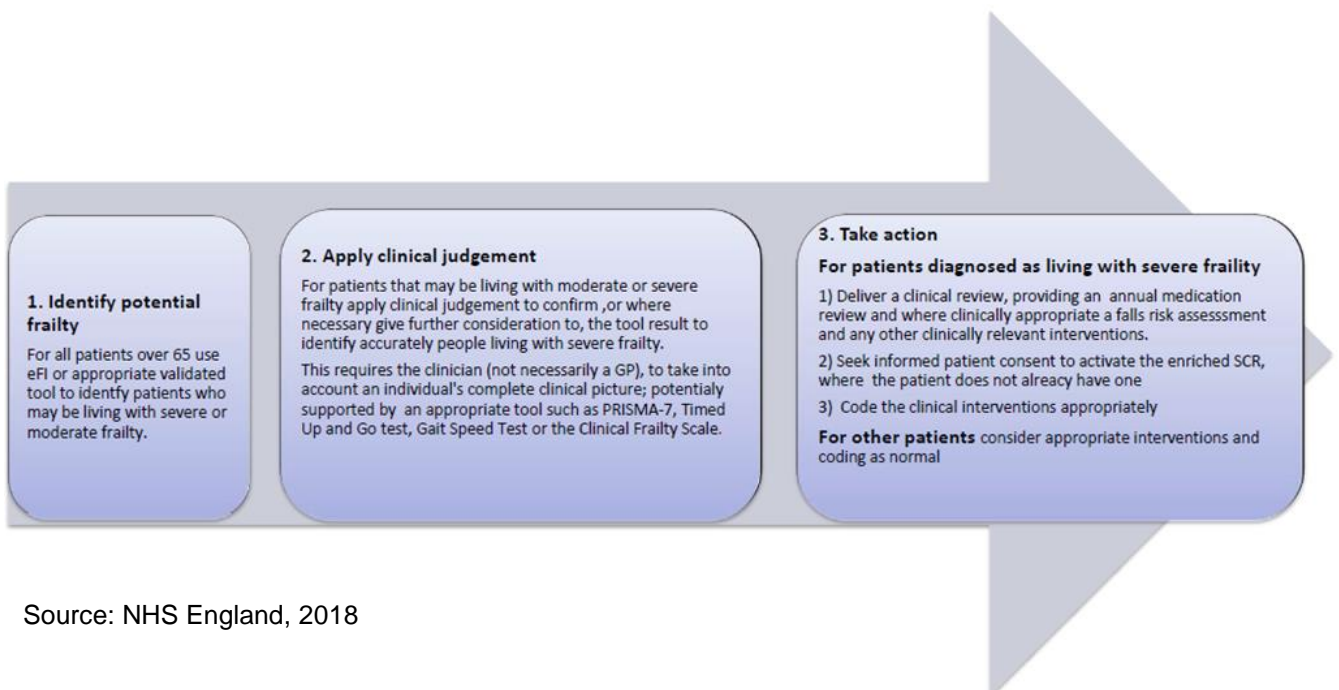
People living with severe frailty comprise around 3% of the population aged 65 and older in England. For moderate frailty it is 12% of those aged 65 and older and 35% for mild frailty [28]. There are significant inequalities in the prevalence of frailty, with certain groups more at risk [1], namely:

- Women
- BAME groups
- Those with a long term condition, particular those with multiple long term conditions [5]
- Those with an unhealthy lifestyle risk factor at age 50 (smoking, physical inactivity, obesity)
- Low socioeconomic status (e.g. those with a history of having worked in lower skilled jobs) [5,12]

Although frailty is different to multi-morbidity, there is considerable overlap, between the two, with data from the UK Biobank finding that people with four or more long term conditions were 27 times more likely to be frail than those with no long term conditions [5]. NHS England make the point that frailty doesn't appear suddenly, but is a progressive condition that develops over five to ten years, which suggests that more could be done before a health crisis occurs [24]. Older people living with frailty can be identified sooner and are usually known to local health and care professionals. As with any other long-term condition, when older people living with frailty are supported to live well independently and to manage their long-term condition(s), they are less likely to reach a crisis, require urgent care or experience poor outcomes [24].

Managing frailty

NHS England recommends the following three step pathway for managing frailty [28].



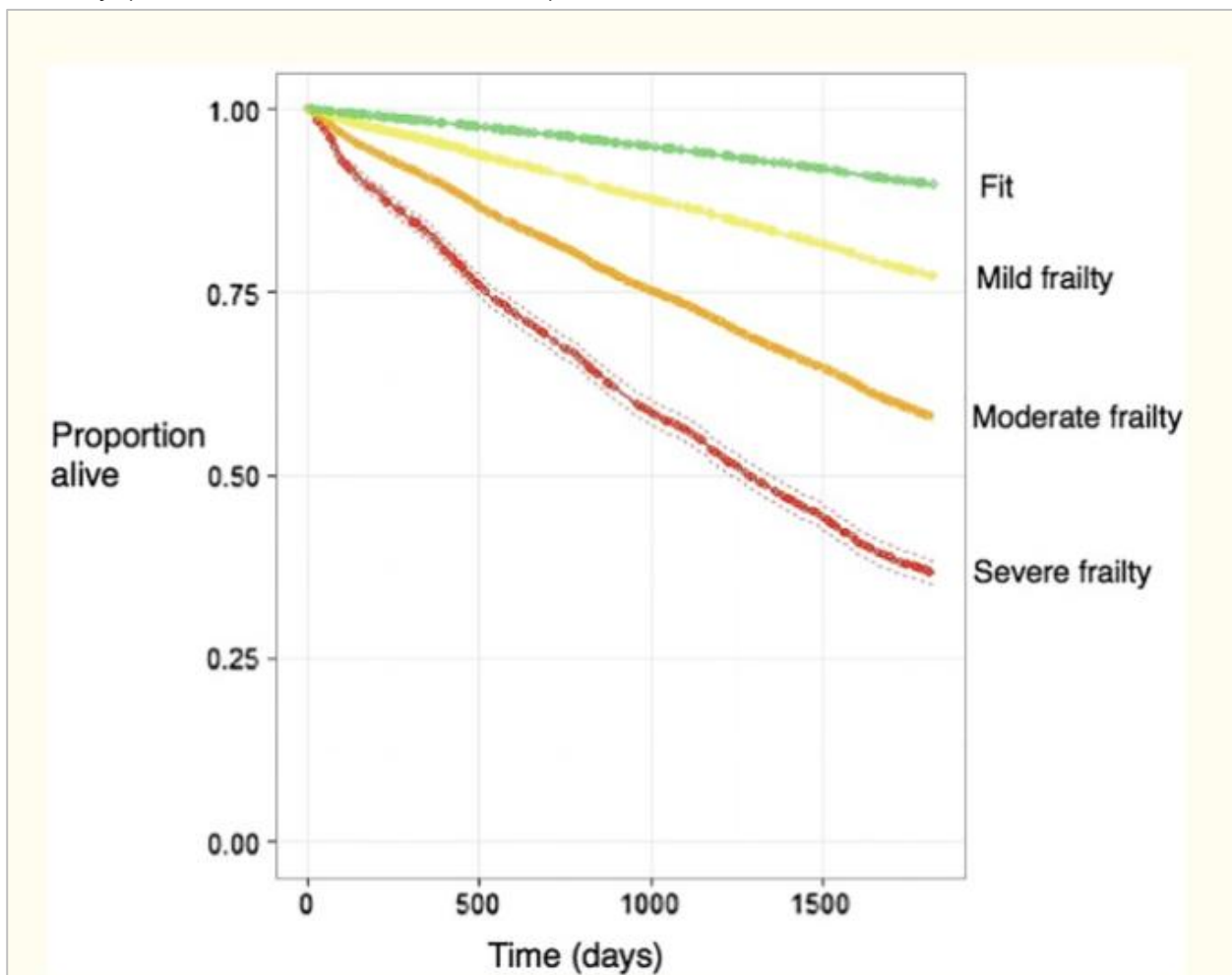
Source: NHS England, 2018

Step 1: Identify potential frailty

The Electronic-Frailty Index (eFI) uses the presence of 36 deficits including factors such as weight loss, mobility, psychological factors, social factors and poly-pharmacy (see Appendices for full list) to estimate the likelihood of an individual being frail.

The eFI therefore takes a broader approach to estimating the likelihood frailty than using one assessment such as gait speed for example [1]. UK studies have found the eFI to be an excellent predictor of hospitalisation, mortality and admission to a nursing home at 1,3 and 5 years in a study involving almost a million older UK patients in the UK [6,9]. Hazard ratios (HRs) were produced for risk of hospitalisation (1.93 (95% CI 1.86-2.01) for mild frailty, 3.04 (95% CI 2.90-3.19) for moderate frailty and 4.73 (95% CI 4.43-5.06) for severe frailty). For nursing home admission the HRs were 1.89 (95% CI 1.63-2.15) for mild frailty, 3.19 (95% CI 2.73-3.73) for moderate frailty and 4.76 (95% CI 3.92-5.77) for severe frailty [9]. In other words, patients classified as severely frail were 5 times more likely to be hospitalised or admitted to a nursing home than patients not classified as severely frail, hence the recommendation by NHS England for GPs to use the tool to identify potential frailty. See Appendices for list of deficits captured by the eFI [15]. The figure below is from the same study of almost a million UK people aged over 65 and shows the progression of mortality by frailty classification over time (to 5 years).

Figure 1: Five year Kaplan-Meier survival curve for the outcome of mortality by categories of frailty (fit, mild, moderate and severe)

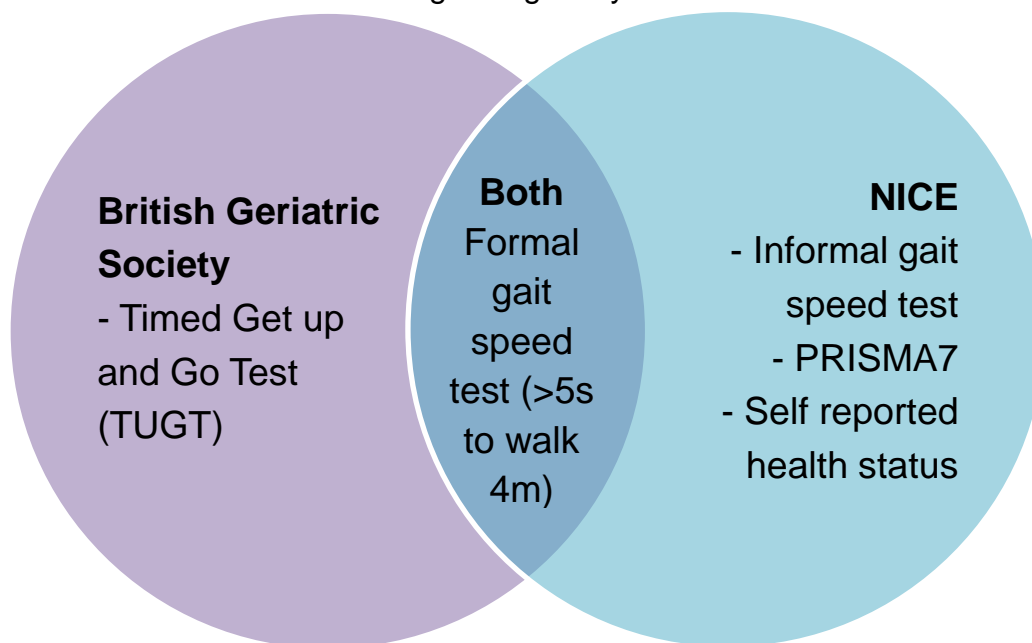


As the chart shows, at five year follow up, almost 2 in 3 patients classed as severely frail have died. The eFI is available to Wirral GPs, but not all practices currently make use of the tool.

Step 2: Applying clinical judgement

There are a large number of tests for the diagnosis of frailty in primary care or community settings; the BGS recommends two tests, NICE recommend four tests; they both recommend the Formal Gait Speed test (>5s to walk 4m) (see Figure 1).

Figure 1: Recommended tests for diagnosing frailty



Notes: See Appendices for fuller explanation/definition of these tests

Another frailty scale is the Rockwood Clinical Frailty Scale (CFS) which is designed to be used to measure severity of frailty only *after* a comprehensive geriatric assessment [1]. The BGS note that its use is inappropriate without a formal clinical assessment. The BGS also notes that any one of the following syndromes or symptoms should raise suspicion that the individual has frailty [1]:

- Falls (e.g. collapse, legs gave way, 'found lying on floor').
- Immobility (e.g. sudden change in mobility, 'gone off legs' 'stuck in toilet').
- Delirium (e.g. acute confusion, 'muddledness', sudden worsening of confusion in someone with previous dementia or known memory loss).
- Incontinence (e.g. change in continence – new onset or worsening of urine or faecal incontinence).
- Susceptibility to side effects of medication (e.g. confusion with codeine, hypotension with antidepressants).

3. Take Action/Interventions

Numbers of older people are projected to increase - in 15 years, there will be 1.2 million more people aged 85 and over in England - an increase of nearly 80% between 2018 and 2033 (ONS projections, 2017). More action is needed to support both those currently in mid-life to stay healthier for longer, to stop or slow the decline in older people and for those

who have already experienced decline, supporting and enabling them to maintain their functional ability so they can continue to participate in society and do the things they value [18]. The results from systematic reviews into the prevention of frailty indicate that treating frailty in older adults *is* a realistic therapeutic goal [22], but it is still difficult to determine how effective different types of interventions are and how efficiency is influenced by other factors (e.g. severity of clinical condition) and which types of interventions are more likely to be effective.

Comprehensive Geriatric Assessment

Referred to as the 'gold standard' for the care of people with moderate to severe frailty, this is a detailed, holistic process for determining a person's health, social and environmental needs [1]. A review of community based interventions which included CGA showed a reduction in nursing home and hospital admission rates in older people with frailty [6]. Specifically, the interventions (detailed in a meta-analysis involving just under 100,000 patients, mean age of 65, for which relative risks [RRs] were calculated) reduced nursing-home admissions (RR of 0.87, 0.83–0.90), risk of hospital admissions (RR of 0.94, 0.91–0.97) and falls (RR of 0.90, 0.86–0.95). Physical function (standardised mean difference –0.08, –0.11 to –0.06) was better in the intervention groups than in other groups [43]. Geriatrician led CGA conducted in hospital settings found significant improvements in the odds of patients being alive and in their own home 1 year later, compared to patients receiving usual care on general medical wards [6,11]. Patients receiving CGA were also less likely to die or experience deterioration and were more likely to experience improved cognition compared to patients receiving usual care [11]. In terms of Numbers Needed to Treat (NNT), CGA is estimated to avoid one long-term care placement for every 20 people with a CGA [37].

In Wirral, CGA is mainly carried out in secondary care by Geriatricians, so until the Wirral Care Record links this information to primary care (or practices correctly code that a CGA has taken place), this information will not be available to improve patient care.

A study looking at the PoC (Prevention of Care) approach (similar to CGA), which was primary care led and consisted of a multidimensional assessment with interdisciplinary care based on a tailor made treatment plan and regular evaluation and follow-up, among frail older people, found no evidence of effectiveness [14], which may have been because the intervention protocol was not implemented as planned [14]. Frailty can be effectively managed within primary care however, it takes five to ten years to develop and there is often a trajectory of slow functional deterioration which suggests that more could be done before a health crisis occurs [24]. NHS England recommend that where a patient does not already have an enriched Summary Care Record (SCR) the practice will promote this, seeking informed patient consent to activate the enriched SCR [28]. Locally, although there is a SCR for all patients in primary care, patient consent has been withdrawn in a sizeable proportion of patients. This means that those patients will be excluded from the Wirral Care Record and could lose out on timely and informative care.

Medication review

Polypharmacy (being prescribed multiple medicines) is associated with various adverse outcomes for older people, including unplanned hospitalisation [33]. A person taking ten or more medicines is 300% more likely to be admitted to hospital than those taking one or two medications [33,41]. Adverse reactions to medicines are implicated in 5-17% of hospital admissions and there is a clear and steady increase in the number of patients admitted to hospital with drug side effects [16]. Patients who have been admitted with drug side effects are subsequently more than twice as likely to be admitted again for the same reason. This could potentially leading to a situation where people may be suffering side effects (and hospital admissions) from drugs that they derive little or no benefit from, or where the harm of the drug outweighs any possible benefit [16]. Given that most older people aged over 75 (four out of five) take a prescription medicine, 36% are taking four or more [16] and evidence suggests that up to 50% of drugs are not taken as prescribed [31], it is clear polypharmacy is a huge issue, particularly for older people.

A recent systematic review looking at interventions by community pharmacists targeted at people aged 65+ found they resulted in reductions in drug-related problems and increased adherence [32]. Interventions varied in comprehensiveness from prescription and clinical medication reviews, to sending dispensing histories to other healthcare providers, accessing medical histories, interviewing patients and consulting on or case-conferencing findings with the GP, discussing findings with patients and following up implementation of medication changes [32]. An RCT on the impact of a medication review with follow-up service provided in community pharmacy to older polypharmacy patients found the number of *medication-related* hospitalisations was significantly lower in patients receiving medication review and follow up. The probability of being hospitalized was 3.7 times higher in the control group (odds ratio 3.7, 95% CI 1.2, 11.3, P=0.021) [44]. Other systematic reviews from the UK have found no effect for pharmacist-led interventions to reduce unplanned admissions for older people [45]. Included studies varied considerably however, and crucially some examined effects on *all* unplanned admissions (not just those which were medication related) and this may account for lack of effect. Medication review is also of course, part of the Comprehensive Geriatric Assessment.

Physical activity

Older people aged 60+ spend 80% of their waking life sitting down [19], yet it is well evidenced that insufficient physical activity (along with obesity and diabetes), are strong independent predictors of loss of functional capacity in older age, resulting in around 5-7 years of lost functioning [11]. Thus one of the most studied interventions is physical activity, particularly resistance exercise, which is beneficial both in terms of preventing and treating the physical performance component of frailty. Physical activity interventions were found to be safe, feasible, and reduced the level of frailty in older people living at home in some studies [4], but only when done in groups [22]. Evidence suggests the optimal type of physical activity to reduce and prevent frailty should be multi-component; be performed three times per week; last for 30–45 minutes per session and last more than 5 months [23]. There was a lack of evidence for physical exercise performed individually or delivered

one-to-one [22]. Other studies have suggested also that exercise *alone*, may be insufficient to improve functioning [7] and that older people themselves prefer interventions which tackle a range of factors, including social and psychological factors alongside their activity levels [7,8]. The findings of a recent systematic review of 12 frailty interventions support this preference for broader interventions [17]. In the review, interventions which had multiple components including exercise, tended to be more effective than single-domain interventions on frailty status/ score, muscle mass and strength, and physical functioning [17]. Of course, multi component interventions may cost more than single interventions and require greater co-ordination.

Nutrition and weight status

It was also noted in the systematic review mentioned above [17], that additional components (e.g. nutritional intervention) could lead to further improvements, as long as the intervention maintained a physical activity element [17]. Supplementation of vitamin D (all doses, all forms) has also been found to have positive effects on muscle strength and physical frailty in adults over 65 years old and vitamin D deficient individuals [23, 42]. It appears to be particularly beneficial on muscle strength in the lower limbs, which explains the significant effect of vitamin D on falls (observed in several other meta-analyses) as quadricep strength is recognised to be a significant predictor of falls [42]. Interventions with multiple components appear most effective and this makes sense, as frailty results from reaching a threshold of decline in different physiological systems, approaches to address frailty should similarly act on multiple domains [17]. There is also emerging evidence that frailty increases in the presence of obesity particularly if accompanied by other unhealthy behaviours such as inactivity, a poor diet and smoking [1] and that interventions aimed at reducing obesity in midlife could reduce frailty in later life [5].

Social isolation

Many studies suggest that loneliness and isolation are important determinants of frailty and decline and interventions which take a combined approach have shown positive and additive effects [7,34]. Consultation with older people and professionals in the field suggest that broader approaches are more acceptable and seen as more relevant, especially initiatives which emphasise social and psychological elements [7,8]. In addition, the BGS recommend that all initiatives are evaluated for their impact on quality of life, loneliness, pain, function and harms (e.g falls, adverse medication events) [2]. Qualitative analysis of how frail older people see frailty determined that if we want frailty to be approached as a reversible and preventable condition, the needs of frail older people and their carers should be listened to [8] and the message that it is preventable and reversible needs to be better communicated. Provisional data from a GP-led approach in Frome, Somerset, called the Compassionate Community Programme [34,35,36] appears to show that when isolated people who have health problems are supported by community groups and volunteers, the number of emergency admissions to hospital can fall dramatically. While across the whole of Somerset, emergency hospital admissions rose by 21% during the three years of the study, in Frome they *fell* by 21% [35]. Along with partners, the local GP practice employed Health Connectors to help people plan their care, and most interestingly

trained voluntary “community connectors” to help their patients find support. Often this meant handling debt or housing problems, sometimes joining choirs, lunch clubs, exercise groups or writing or mending workshops to combat social isolation. The point was to break a familiar cycle of misery: illness reduces people’s ability to socialise, which leads in turn to isolation and loneliness, which then exacerbates illness. Wirral currently has a Community Connectors initiative (one practice has its own Connector), currently managed by Public Health, which works slightly differently to the Frome project, but aims to result in positive effects for participants (an evaluation will be carried out by Liverpool John Moores University which will be complete in February 2019). NHS England have acknowledged that the long-term sustainability for the NHS can only be achieved with a much greater focus on the wider social determinants of health [18].

Training for professionals

Training for all health and social care staff on recognising frailty has been recommended by the BGS [1]. To deliver quality management of a frail individual, clinicians should understand the concept of frailty, be aware of its epidemiology, be able to screen for frailty (and assess it when it is present) and finally, to recommend successful interventions [23]. In addition, just like the general population, many health professionals have misconceptions which can lead to the belief that functional decline is a natural part of ageing [18]. These misconceptions may inhibit many from more effectively rehabilitating older people, enabling them to make an optimal recovery and in many cases continue to live autonomously and contribute to society [18]. Training could help overcome this.

“No, I’m definitely not frail. Frail means you’re dodderly and shaky. You can’t do anything at all.”
Female, 71, South, Living with frailty

Re-framing of frailty

Using language that resonates with older people’s desire to maintain or return to a level of independent living and being clear that that identifying the problem is the best way to get solutions in place to help older people achieve their goals is crucial [26]. Focus groups carried out with older people found strong negative associations meant that the word ‘frailty’ was understood to mean an irreversible state that some older people enter into in the very final stages of their lives. It was assumed that frailty means an almost total loss of independence, and there was no sense that frailty exists on a spectrum or continuum and is a state that people can move in and out of [26].

The language and management of frailty can act as a barrier to engaging with older people who may not perceive themselves, or wish to be defined, by a term that is associated with increased vulnerability and dependency [1]. Older people may not recognise themselves as frail; one Age UK research study for example, showed that in a series of filmed case studies of ‘frailty’, none of the participants classified themselves as “frail” [1]. Some of them mentioned finite periods where they “had been frail”, but they did not see it as defining

them [1]. This makes inviting people onto programmes and initiatives designed to prevent or reduce frailty potentially difficult. Avoiding using the term ‘frail’ (or other all-encompassing terms), but instead using specific examples of living with frailty in order to drive self-identification is highlighted as strategy more likely to reap results [26].

The biggest priority for the older people studied was maintaining their independence and they tended to articulate their wellbeing in terms of their ability to independently carry out everyday tasks [26]. It may therefore make sense to re-frame frailty as a continuum, highlighting independence as the goal (and not use the word frailty!) when dealing with older people.

Frailty is not something you can prevent. You cannot do anything, it just happens” (non-frail respondent, aged 61) [8]

Beliefs and knowledge about prevention

People’s knowledge about how they themselves can prevent frailty is poor. For example, only 41% of people aged over 70 were aware that doing strength and balance exercises or activities two or more times a week greatly reduce people’s chances of suffering a fall [20]. A study which gathered the views of people aged 50+ for the Department for Health in 2017 [21], found that biggest issue for older people was actually loneliness (which links to evidence already outlined above that isolation and loneliness are important determinants of decline), but also that those living in the most deprived groups were:

- More likely to rate their health as bad or very bad;
- More likely to say they do nothing to maintain their physical health;
- More likely to think that living a healthy lifestyle makes no difference to developing dementia;
- Less likely to have prepared financially for future care and support needs; and
- More likely to say they are not confident that they would know where to find information about care and support services.

If people believe that nothing that they themselves do will improve their future ability to maintain their independence, they are unlikely to consider changing their behaviour.

Maximising uptake of vaccine preventable conditions in older people

Preventable illnesses such as, shingles, pneumococcal disease and influenza and their sequelae, can result in death or reduced activity and function, which may push people over a threshold from living independently into permanent disability [39].

Shingles (herpes zoster) is a painful condition which is particularly debilitating in older people. Incidence increases with age [29] and older people are also more likely to develop complications of shingles. Analysis of the first 3 years of the vaccination programme (3-36 million person-years of data from 2013-16) showed that incidence of herpes zoster fell by 35% and post-herpetic neuralgia fell by 50% [29]. These reductions are consistent with a vaccine effectiveness of about 62% against herpes zoster and 70–88% against post-

herpetic neuralgia. The study showed that the ‘real world’ impact of the herpes zoster vaccination programme is higher than was estimated in clinical studies before the programme was implemented and is consistent with the vaccine resulting in fewer patients with severe forms of disease presenting to health-care services [29]. The results also suggest the initial cost-effectiveness of the UK programme may have been underestimated and that improvements in the current poor rates of shingles vaccination both locally and nationally would be beneficial. Current rates of vaccination in Wirral are 44.8% compared to the England uptake rate of 48.3% [30]. Coverage has fallen significantly since the introduction of the programme.

Influenza and pneumococcal pneumonia vaccination are recommended by NHS England as effective strategies to promote healthy active ageing and support Independence [37]. There is good evidence that flu and pneumococcal vaccination in older people reduces the number of hospitalisations and deaths due to respiratory disease during flu season and that immunisation reduces the incidence of bronchopneumonia, hospital admissions, and overall mortality [38, 39].

Hospital admissions

Much has already been written on the evidence for reducing hospital admissions; they are an important target for the health services, so that evidence will not be replicated here. What is important to note however, is that reducing them in older people is key to tackling frailty because hospital admissions are not only a consequence of frailty, they can be a cause of it. For example, it is well evidenced that hospital admission itself in a previously independent older person, is a risk factor for increasing dependency in all four activities of daily living (bathing, dressing, walking, and transferring) and other adverse outcomes [13]. It has been estimated that 10 days of being in a hospital bed for healthy older people can equate to 10 years of muscle ageing with attendant loss of function [40]. Preventing an ‘index’ admission in previously healthy older people is therefore extremely desirable.

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Appendices

Tests for frailty

BGS recommended tests:

1. Formal gait speed; taking more than 5 seconds to walk 4 m using usual walking aids if appropriate)

2. TUGT (timed get up and go test) with a cut off score of 10 seconds to get up from a chair, walk 3m, turn round and sit down, as the most suitable tests for identifying frailty in in primary care (and community settings) [1]

NICE recommended tests:

1. Informal assessment of gait speed (take taken to walk from waiting room)
2. Formal assessment of gait speed (more than 5 seconds to walk 4 meters, the BGS also recommend this test)
3. PRISMA 7 tool (score of 3+ indicates frailty – see Appendices for questions), although the BGS only recommend this test if an older person is ill and there is reason to believe that their illness will affect their gait speed or ability to get up from a chair (PRISMA can be self-completed, including as a postal questionnaire) [1].
4. Self-reported health status (on a scale of 0-10, those scoring 6 or less indicates frailty)

PRISMA 7 Questions

1. Are you more than 85 years?
2. Are you male?
3. In general, do you have any health problems that require you to limit your activities?
4. Do you need someone to help you on a regular basis?
5. In general, do you have any health problems that require you to stay at home?
6. In case of need, can you count on someone close to you?
7. Do you regularly use a stick, walker or wheelchair to get about?

Figure 1: List of 36 deficits in the Electronic Frailty Index (eFI): graphic and table

• Memory and cognitive problems	• Heart failure	• Dyspnoea
• CVD	• Peripheral vascular disease	• Anaemic/haematinic deficiency
• Dizziness	• Respiratory disease	• Skin ulcer
• Parkinsonism and tremor	• Peptic ulcer	• Thyroid Disease
• Sleep disturbance	• Weight loss and anorexia	• Foot problems
• Visual impairment	• Urinary incontinence	• Housebound
• Hearing impairment	• Urinary system disease	• Falls
• Hypertension	• Chronic kidney disease	• Mobility and transfer problem
• Ischaemic Heart Disease	• Osteoporosis	• Activity limitation
• Atrial Fibrillation	• Fragility fracture	• Social vulnerability
• Heart Valve Disease	• Arthritis	• Requirement for care
• Hypotension/syncope	• Diabetes	• Polypharmacy