OPAL (Older Patient Assessment and Liaison) was established in 2014 at Wythenshawe Hospital. Since then, it has seen significant improvements in hospital admission and discharge rates, as well as an improvement in person-centred care for frail older people.

Let’s get physical
Jess Kuehne, Senior Engagement Manager for the Centre for Ageing Better, highlights the importance of physical activity, in particular muscle strengthening and balance activities, as one of the best ways to prevent loss of muscle mass as we age.
Welcome to issue 22 of Innov-age, focusing on the topic of frailty.

It is well known that as we age, we become more frail and it becomes harder to ‘bounce back’ from health events. Even minor illness or accidents can increase the risk of hospital admission and further health problems. Frailty is extremely common in older people, particularly in women, and has long been thought of as an unavoidable consequence of ageing. However, current research is recognising more and more the importance of frailty as a standalone condition, and how it can be prevented and treated.

In this issue, leading researches and experts in the field of elderly frailty will discuss the identification and outcomes of frailty, as well as what can be done to prevent it from occurring.

Leading this issue, Dr Lauren Wentworth, Rebecca Cruise, Geraldine Donnelly, VeeHan Lim and Katherine Horgan from Wythenshawe Hospital discuss OPAL (Older Patient Assessment and Liaison), an initiative that has led to significant reductions in hospitalisation and improved discharge rates from hospital, and has provided a safe alternative to acute settings for frail older patients.

Jess Kuehne from the Centre for Ageing Better discusses the often-ignored importance of maintaining physical activity in old age, and how this can help to prevent frailty and loss of muscle mass.

Dr Amit Arora discusses deconditioning syndrome and the effects of this condition, particularly on the already frail, as well as what can be done to prevent and combat this in the elderly.

Professor Simon Conroy sheds light on the importance of frailty and the effects of this condition on the outcomes of older people, particularly those in hospital, as well as how to diagnose the condition in acute settings, the importance of Comprehensive Geriatric Assessment for higher-risk individuals, and how frail older people already in hospital can be helped.

Professor James Nazroo from the University of Manchester discusses the fRail project, and how socioeconomic inequalities, including social, economic and health factors, impact on the process of conditions such as frailty, using interdisciplinary approaches in the context of an ageing population.

Dr Moe Thaw Oo presents a review of the process of frailty in old age, discussing the various stages of frailty and the predictors of frailty, which must be recognised in order to effectively care for frail older people and to prevent further deterioration.

This issue of Innov-age sheds light on one of the most prevalent and often ignored health issues affecting the health and quality of life in the elderly, and provides insight into how current research and treatment is helping to improve outcomes for frail older people, as well as highlighting services available that can help to reduce the impact of frailty on older people.

Jackie Oldham
Honorary Director, Edward Centre for Healthcare Management Research
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OPAL (Older Patient Assessment and Liaison) – An Innovation for Ageing by Wythenshawe Hospital

Drs Cruise, Donnelly, Lim and Horgan are North West Geriatric training doctors working alongside Dr Wentworth and her multi-disciplinary team at Wythenshawe Hospital, Manchester Foundation Trust in the Complex Care department.

OPAL Emergency Department and Acute Medical Unit developments
As the ageing population in the United Kingdom is continuing to grow, so has the pressure placed on emergency departments (ED) nationwide. ED performance, which is measured by the 4-hour waiting time, has been the worst since records began (Quality Watch, 2018). As the trend continues, the effects are being felt in particular by the frail, elderly population.

With that in mind, the Older Patient Assessment and Liaison (OPAL) Team was established in May 2014 at Wythenshawe Hospital. The team comprises a consultant geriatrician, a specialist registrar, a physiotherapist/occupational therapist and a care coordinator. It currently operates a 5-day service from 8am-6pm. Referrals can be made by the ED Team, General Practitioners or Nursing Home Service to the designated geriatrician, who will then assess the patient alongside other team members. The aim is to provide Comprehensive Geriatric Assessment (CGA) at the front door to initiate appropriate investigations, prevent admissions, facilitate early discharge and improve outcomes in older adults.

There is strong evidence that older adults that received CGA compared to routine medical care are more likely to be living at home and less likely to be living in a nursing home up to a year following admission (Ellis et al., 2016).

Issues such as falls, delirium, social set up and medication reviews are better dealt with by OPAL, who provide a specialist skill set. The service has been audited and it showed a reduction in the proportion of elderly patients admitted into hospital, 39.2% when seen by OPAL vs 65.6% when seen by ED (Keelan et al., 2016). The 4-hour ED target has also shown an improvement. As the service continues to evolve, the objective is to provide Comprehensive Geriatric Assessment (CGA) at the front door to initiate appropriate investigations, prevent admissions, facilitate early discharge and improve outcomes in older adults.

In addition to the ED, the OPAL team also work seven days of the week on the Acute Medical Unit (AMU). There are fourteen beds on the AMU managed by the OPAL team for frail elderly patients with complex needs. There is a daily consultant ward round as well as physiotherapy, occupational therapy, pharmacy and specialist frailty nurse input in order to undertake a CGA to improve outcomes in these patients, as well as maximising their chances of returning home. Discharge facilitators, social workers and other Allied Healthcare Professionals are easily accessible. The frailty nurses in particular play a key role in liaising between the other members of the multidisciplinary team, and provide a vital means of communication with both patients and their families, in addition to a wealth of clinical experience. Furthermore, the fact that the team and frailty nurses are embedded within the existing AMU leads to education of other members of the medical, nursing and allied health professional team in the management of this complex, frail elderly cohort.

Results from OPAL in the AMU have also been encouraging, particularly with regard to weekend discharges, with a 55% increase of discharges in these patients on Saturdays, and 95% on Sundays (Figure 1). Morning discharges have also doubled and a 60% increase in the use of a discharge lounge. Encouragingly, in addition to these improvements, there has been a 22% increase in discharges from AMU in patients over the age of 90 (p< 0.005), with a reduction in 30-day readmission rates of 7.5%. This shows that CGA in this complex group of patients is effective and beneficial, not only to patients, but also to the Trust as a whole in avoiding unnecessary delays in transfer of care.

Figure 1: Percentage of patients staying on the Acute Medical Unit (AMU) discharged from the ward for months of each year Sept-July for 2014-15 and 2015-2016.
As well as increasing discharges, there is a culture of ensuring that those frail, elderly patients requiring a more long-term admission to hospital are transferred to complex care wards, where they will be looked after by geriatricians as well as nurses and allied health professionals with the necessary expertise to deal with their complex health and social needs (Figure 2). This ensures ongoing CGA in addition to providing continuity of care.

**OPAL House**

Part of the success of OPAL has been its ability to critically analyse the current services and create positive change. OPAL house is an example of this, representing the creation of a patient orientated service for patients with cognitive impairment, lack of motivation on assessment or marked frailty. The lack of a suitable alternative to the acute setting for this group creates prolonged stays and resultant patient flow issues.

In 2017, a 41-bed unit adjacent to the acute hospital site was developed, made to create a suitable environment for these patients to enable rehabilitation. The unit was designed with input from specialists in dementia care to ensure it would meet patients’ specific needs and enable them to achieve their optimum potential. Specific colour schemes were utilised to help orientation as well as support patients with visual impairment. Soft lighting reduces agitation, and furnishings are comfortable and easily accessible for those with mobility issues. A reminiscence lounge with objects from the 40s and 50s supports engagement with patients on a one-to-one basis, building relationships and trust and calming those becoming agitated through distraction techniques and by stimulating long term memories. The calming, supportive environment enhances recovery from acute illness through supporting recuperation and orientation and avoiding subsequent episodes of delirium.

OPAL House has a complete multi-disciplinary team who follow an interdisciplinary method of working, all adopting nursing shift patterns with regular senior geriatrician input and an onsite doctor 9:00-17:00 Monday to Friday. There is an emphasis on socialising, with five communal areas and regular activities such as painting, card making, gardening, music sessions and film nights. Nutrition is a key focus with an onsite chef, specially designed menus and eating areas. Meals are served at times to suit each patient’s needs. Recently analysed data demonstrated that weight increased in 67% of patients during their stay.

NICE guidance (2015) refers to the importance of not forcing people to make decisions about long term care whilst they are in crisis. OPAL house provides a homely environment, where patients can be safely assessed and better-informed decisions around discharge destinations can be made. Recent analysis of data demonstrated that 38% of patients had an improvement in Barthel (functional) score from admission to discharge, demonstrating functional improvement in those thought not to have rehabilitation potential. Opal House has contributed to the avoidance of unnecessary premature 24-hour care admissions, with recent data showing that 74% of patients are discharged to their own home. Furthermore, the percentage of new 24-hour care admissions in those over 80 years old was reduced from 2.3% to 1.9% over a comparative 9-month period.

**OPAL and Nursing Home Services**

The Wythenshawe Nursing Home Service was conceived fourteen years ago in recognition that hospital is not the panacea for all medical problems, and often acute illnesses are better managed in the home environment.

The service has evolved and grown and is now commissioned to look after eight large nursing homes, servicing over 330 people in the South Manchester area. The multi-disciplinary team consists of four advanced nurse practitioners, three consultant geriatricians, two registrars, and clinical fellows who specialise in the care of older people. There are two main streams to the service, reactive and proactive. In the reactive stream, people are reviewed who are acutely unwell who would have traditionally presented to GPs or Accident and Emergency. In the proactive stream consultations anticipate and detect medical problems before they become an issue. Clients are known on an individual level, and on admission to the nursing home each person has an initial clinical review where an individualised medical plan will be designed to help them age well and live well for as long as possible.

*continued on next page*
Deconditioning Syndrome – a new syndrome or a forgotten entity?

Dr Amit Arora is a Consultant Geriatrician and Lead of Older People’s Services at University Hospital of North Midlands, Stoke on Trent. He is also the Clinical Lead for NIHR CRN: Ageing (West Midlands). Amit has served as Chairman of the England Council of the British Geriatrics Society. He has a keen interest in national policy for the ageing population and is a member of many national advisory committees and working groups of NHS England and Department of Health. He has developed the National Deconditioning Awareness and Prevention Campaign ‘Sit-up, Get-Dressed, Keep-Moving’ and actively supports the EndPJparalysis campaign.

Deconditioning syndrome is the process of physical, psychological and functional decline as a result of extended periods of inactivity. Deconditioning can affect anyone irrespective of age, though in older people its effects can be more severe, more prolonged and can sometimes be irreversible. This could therefore adversely affect outcomes for frail older people. It can happen in any setting but hospitalised patients, those in care homes and those living alone with carer support may be more prone to becoming deconditioned. Indeed there is increasing evidence that older people in hospitals can stay in bed for 20 hours, in chairs for 3 hours and only one hour standing or walking (Brown et al., 2009).

Dictionary definitions describe deconditioning as: Cause to lose fitness or muscle tone, especially through lack of exercise; sedentary lifestyles that decondition bodies; a loss of physical fitness due to failure to maintain an optimal level of physical activity or training. Inactivity for any reason may lead to deconditioning.

Is deconditioning a new concept?

In the 17th century Hippocrates proposed that “in every movement of the body, whenever one begins to endure pain,
it will be relieved by rest.” However, shortly after suggesting rest as a medical therapy, he noticed that prolonged inactivity led to a significant decline in both strength and exercise performance (Chadwick and Mann, 1950). Thus, even as early as Hippocrates, the potential detrimental effects of bed-rest were partially understood.

More recently, in 1947, the BMJ published a paper by Richard Asher on this topic who wrote: “Teach us to live that we may dread; Unnecessary time in bed. Get people up and we may save; our patients from an early grave” (Asher, 1947).

Since then more robust scientific evidence has emerged supporting the fact that the process of deconditioning can start within the first 24 hours of inactivity as shown in Table 1 & 2.

Since 2016, deconditioning has become topical and recognised following the launch of the ‘National Deconditioning Prevention and Awareness campaign - Sit Up Get Dressed Keep Moving’ (BGS, 2016) and #EndPJParalysis, aiming at getting patients mobilised and dressed in their own clothes. The campaigns have developed many useful resources such as patient leaflets, banners, posters, screensavers, care bundles etc. which are publicly available and are free for patient benefit (UHN M 2018).

What can be done about deconditioning?
Targeted measures that have proven beneficial in mitigating functional decline during hospitalisation include Comprehensive Geriatric Assessment (CGA) to identify patients at risk, structured, supported and resourced geriatric care models, dedicated hospital units (Frailty Units) and use of specific inter-disciplinary resources to enhance care for the hospitalised older people. A wider rethink about how to develop ‘Elder Friendly Hospitals’ is urgently required. Prevention of deconditioning is one of the many actions that will be required. It is hoped that the awareness and education that has been generated recently about deconditioning will prove to be of significant help.

Where next:
With a rapidly shifting population, ‘the demographic escalator’ deconditioning syndrome must be addressed. The effects of deconditioning can be debilitating on a patient’s quality of life, dignity and independence. It inhibits ‘Active Ageing’ in the older population. As stated by the first President of the British Geriatrics Society, Lord Amulree, there is greater value in “adding life to years not years to life.” (Denham, 2006).

The benefits and efficacy of activity, walking and regular exercises in frail older people are well established. However, the current challenge remains in implementing and developing new and effective strategies to prevent deconditioning in hospitals and care homes.

Various approaches have been suggested. Generating education and awareness is certainly one of the main ones. Some others that have been suggested include developing appropriate deconditioning reporting and root cause analysis coupled with deconditioning care bundles and prescribing/encouraging activities of daily living as a norm in hospital inpatients.

All of this will require a strong collaborative effort from politicians, managers and clinicians as well as patients, families, well-wishers and the public. The starting point will be improving education and awareness amongst these stakeholders. The good news is that this societal movement has already started.

Some facts about deconditioning in frail older people:

Hospital admission in past 12 months is the single most predictive risk of functional decline.

Older people admitted to hospital spend a significant amount of time not being physically active (83-95%).

Inactivity is associated with a functional decline (10-65% people) in activities of daily living upon discharge from hospital.

Functional decline has been seen as early as the second day of hospital admission.

Impact of bed-rest in older people:

In first 24 hours:
  • Reduced muscle power 2-5%
  • Reduced circulatory volume by up to 5%

In first 7 days:
  • Reduced circulatory volume by up to 25%
  • Reduced VO2 max (maximal oxygen consumption) by up to 8-15%
  • Reduced muscle strength by up to 5-10%
  • Reduced FRC (Functional Residual Capacity) by up to 15-30%
  • Reduced skin integrity
  • Reduced dignity, quality, confidence, independence, choice

(Courtesy Acute Frailty Network)

References:
Following a Mediterranean diet can reduce the risk of frailty

A recent study found that following a Mediterranean diet can provide protection against frailty in older people

A study led by UCL (University College London) has found that following a Mediterranean diet rich in fruit, vegetables, nuts and whole grains can help to keep people healthy, independent and protected from frailty as they age.

People who followed this diet the most were found to be less than half as likely to become frail compared to people who followed the diet the least over a nearly 4-year period. This is in addition to the other known health benefits of this diet, which include lower incidence of cardiovascular disease, diabetes and some cancers.

It is thought that this diet can help to promote healthy ageing through the maintenance of muscle strength, activity, weight and energy levels.

To find out more, please visit...
http://www.ucl.ac.uk/news/news-articles/0118/040118_diet_med_frailty

Research helps frail elderly in hospitals

Led by researchers at the University of Leicester, a ‘risk score’ for frailty has been devised to better support older people in hospital, and to identify those who are most vulnerable.

This will allow the identification of those individuals who may need additional and more holistic care to improve their outcomes.

The ‘Hospital Frailty Risk Score’ can be used to identify older people at significant risk of harm, longer hospital stays and higher likelihood of readmission, and to therefore adjust the care that is provided to them to reduce the risk of this harm occurring.

To find out more, please visit...

Frailty scores are associated with future mortality and cardiovascular risk

A recent study examined the association between 35 frailty scores with cardiovascular disease, cancer and mortality using data from the English Longitudinal Study of Ageing.

The study found that although no frailty scores were associated with cancer, there were some that were associated with cardiovascular disease, and all were found to be associated with future all-cause mortality.

Certain frailty scores were found to perform better than others; the findings of this study will help clinicians to be able to choose the most appropriate frailty score tool for their purpose, to assess frailty and potential future health outcomes in patients.

To find out more, please visit...
Improving heart health could prevent frailty in old age

Elderly people with low risk of cardiovascular disease have been shown to also have little frailty

Researchers from the University of Exeter have found that reducing risk factors for cardiovascular disease, even by a small amount, can help to reduce the risk of frailty, among other illnesses including dementia and chronic pain.

These risk factors included: uncontrolled high blood pressure, high cholesterol and blood sugar levels, being overweight, being a smoker and doing little physical activity.

Keeping these risk factors to near ideal levels in people aged 60-69 resulted in an 85% reduction in the likelihood of severe frailty developing in those individuals, as well as reducing the likelihood of other conditions common in old age, such as dementia, incontinence, falls and fractures.

To find out more, please visit... https://www.nursingtimes.net/news/research-and-innovation/improving-cardiovascular-health-could-prevent-frailty-in-old-age/7024593.article

Upcoming Events...

Age UK For Later Life Conference
5th September 2018
The conference is a key date for people interested in ageing policy and who are passionate about delivering quality services for older people. The theme for the 2018 conference is 'A Later Life Worth Living'. Age UK's vision is a world where everyone can love later life, both current and future generations. There are huge differences among our older population, with some luckier and more resilient than others. Life can often be restricted and miserable for those at the less favoured end of the spectrum and they are the older people we should worry about the most.

https://www.ageuk.org.uk/our-impact/conferences/for-later-life/

Health and Care Innovation Expo 2018
5th – 6th September 2018
Health and Care Innovation Expo is a highly significant annual event in the health and care calendar. Its aim is to make the case for change, renewal and improvement in the NHS and social care, and to activate people to do something new and different when they return to their organisations or communities. The ultimate goal is to improve health and care delivery.

https://www.england.nhs.uk/expo/

British Geriatrics Society 19th International Conference on Falls and Postural Stability
14th September 2018
This annual event is widely recognised as the leading meeting in the UK for clinicians working in the field of falls and mobility medicine. The day provides a forum for scientific discussion and clinical updates and enables a multidisciplinary audience of over 200 professionals to share their experiences of best clinical practice.


Managing older people in emergency settings
30th September 2018
Older people with frailty are a growing proportion of attendees to an urgent care setting, but managing such patients well and efficiently is not widely taught. The challenges and solutions for clinicians dealing with older people in emergency settings will be explored in a course designed to fill gaps in knowledge and understanding. The course is designed for all clinicians involved in the care of older people with frailty and urgent care needs. It covers a range of geriatric syndromes and the approach to older people with frailty, adapted to the emergency or acute context.

https://www2.le.ac.uk/news/blog/2018-archive/june/managing-older-people-in-emergency-settings
Identifying and managing frailty in the elderly

Professor Simon Conroy is a Geriatrician and Honorary Professor at the University Hospitals of Leicester, and the Clinical Lead for the Acute Frailty Network. Simon’s ambition is to improve outcomes for frail older people by embedding evidence based medicine into clinical practice (‘campus to clinic’ translational research). His research addresses different models of care for frail older people, assessing feasibility as well as clinical and cost-effectiveness. His educational activities take an interdisciplinary perspective on developing and teaching knowledge locally (frailty services), nationally (BGS) and internationally (EUGMS & EAMA). Implementation of research findings into clinical practice is key, and best exemplified by work on the Silver Book and the Acute Frailty Network.

Amy Elliott is currently a final year medical student, about to start work as a Foundation Year 1 doctor in Leicester. As part of her degree, she completed a BSc doing research into the feasibility of identifying frailty in older people in the emergency department.

Molly Jameson is a 4th year medical student at the University of Leicester. She has a keen interest in geriatrics and, geriatric-related research.

Introduction

What is frailty?
Over the years, care of older people has moved away from determining people’s health by their chronological age and started to use the concept of ‘frailty’ instead. Frailty is a state of health where a person has a number of different issues that, when added together, reduce a person’s overall capability and wellbeing. It is mostly associated with older age although it may also be associated with severe disease such as cancer (British Geriatrics Society, 2018). Determining health by someone’s level of frailty is more appropriate than determining it by age as no two people age in the same way. For example many 80 or even 90 year olds are very healthy, active and able whereas some 60 year olds may not be able at all, due to their health. Frailty can be measured in a variety of different ways, most of these methods considering a person’s health issues, alongside what they are able to do in their day to day life (Dent et al., 2016).

Importance of frailty

Effect on outcomes
Frailty matters because it is associated with numerous costs, both to the patient, their quality of life, and to the NHS. When ‘costs’ to the patient are talked about, this means things such as: increased disability (Clegg et al., 2013); having to take lots of unplanned medications and therefore an increased chance of experiencing side effects; reduced day-to-day independence; and increased rates of complications from chronic disease, of which one patient may have many (Buckinx et al., 2015). All of these may lead to a reduced quality of life for the older person, meaning they are less able to live the life they would like to live and keep doing the things they enjoy.

People with frailty are more likely to be admitted to hospital, they are less likely to go back to their own home after their time in hospital and they are also less likely to survive their stay in hospital (University of Southampton, 2018). Once in hospital, a person with frailty is likely to have a much longer stay than someone without frailty (Rose et al., 2014), which will then affect their ability to manage independently at home. As well as having negative impacts for older people, frailty requires a lot of NHS time and money to manage and keep patients well. Often, frail people who live at home require carers to help them in their home and many frail people live in care or nursing homes, both of these being very expensive for the patient and the NHS. Many frail people take lots of medications for different reasons which can also be expensive for the NHS (Rockwood and Hubbard, 2018).

What are the goals of identifying frailty?
The vast number of older people living with frailty is not a problem that will go away by ignoring it. The task of designing healthcare systems to best serve this population is a large one and can feel intimidating and overwhelming, but there are things that can be done to help. Firstly, knowing the exact scale of the issue by identifying those people living with frailty. In the acute care setting, this can be done using quick and simple
identification scales, such as the Rockwood Clinical Fraility Scale (Rockwood et al., 2005). Alternatively, institutions with good integrated healthcare IT systems and frailty risk indices have been validated in this setting (Hubbard et al., 2015).

Identifying a person as frail is then not designed to help make decisions about whether a specific treatment plan is appropriate for that patient. Rather, it is a method of risk stratification, with the ‘higher risk’ patients with frailty being referred on through the appropriate frailty pathway, or on to a setting where a Comprehensive Geriatric Assessment (CGA) can be carried out. The aim of identifying frailty and the ensuing CGA process is to identify any previously undiagnosed conditions (British Geriatrics Society, 2014), especially syndromes which are very common in frailty, such as incontinence, cognitive impairment, and falls.

How to help

Comprehensive Geriatric Assessment is ‘the gold standard’ for managing an older person with frailty, and looks at seven domains of a person’s life: physical and medical; psychological and memory; functional ability in daily life; social support; environment at home; participation in daily life; and resilience (British Geriatrics Society, 2014). The assessment should ideally involve people from a wide range of disciplines. On the face of it, this process does not appear feasible for a busy Emergency Department but identifying somebody as frail should trigger some form of CGA pathway, which may look different in each healthcare setting.

Studies have also been done to evaluate carrying out CGA in an acute care setting and it is not only possible but can be beneficial (Conroy et al., 2014).

Hospital admissions are not always avoidable and sometimes, older people have to stay in hospital for quite a long time. Hospital stays can have a huge effect on an older person in terms of their physical and cognitive function with loss of muscle mass and loss of ability to carry out their normal activities of day-to-day life (Kortebein et al., 2008). One campaign that has aimed to put an end to this is the End PJ Paralysis campaign, which encourages patients to get dressed into their own clothes, and out of pyjamas (Oliver. 2017). Getting people up and dressed can help people maintain their function and ability to carry out normal day-to-day activities at home.

There are many ways to help frail older people during their hospital stay, or to help keep them out of hospital. There is no ‘one size fits all’ solution however, as every setting serves a slightly different population, and will have different needs and populations. The Acute Frailty Network has been set up to help different health services collaborate and offer support to services trying to implement new frailty-friendly strategies (Acute Frailty Network, 2018).

Conclusion

The growing number of older people with frailty is a public healthcare priority. It’s important to identify those people with frailty, preferably using a validated screening tool or identification index. Once someone has been identified as frail, this should trigger a CGA process, with an aim to identify any underlying conditions, and take a holistic approach to the patient and their problems. Once in hospital, deconditioning and muscle loss is a huge problem, so keeping patients active and engaged as much as possible is key.

For support with implementing frailty-friendly pathways and services in a healthcare environment organisations such as the Acute Frailty Network may be able to help.

Learning points

• Frailty is associated with a number of costs, both to the patient and the NHS. These costs include a reduced quality of life, higher risk of hospitalisation and reduced likelihood of recovery.
• Identifying patients with frailty through methods such as the Rockwood Clinical Frailty Scale means that a Comprehensive Geriatric Assessment can be carried out for higher-risk patients, thus allowing underlying conditions to be identified and for patients to be better supported and managed.
• For frail older patients in hospital, keeping active is essential to prevent deterioration.

References:

An ageing population

Back in 1999, the Commission on Global Aging stated that nothing ‘is more likely to shape economic, social, and political developments in the early 21st century than the simultaneous aging of Japan, Europe, and the United States… The human life cycle is undergoing unprecedented change. To preserve economic security, we must adapt the social institutions built around it to these new realities’. Indeed, the ageing of the baby-boomer cohort (born between 1946 and 1964), alongside increasing life expectancy, means that like other countries the UK faces a rapidly growing population of older people. The latest Office of National Statistics estimates suggest that the size of the UK population aged 65 and over has risen by 21% over the last ten years to 11.6 million people, while the population aged 85 or over has risen by 30% to 1.4 million people, and aged 90 and over by 34% to more than half a million.

A key question in this context is how increases in life expectancy relate to health in later life. It is possible, for instance, that the number of years spent in poor health decreases as life expectancy increases, because of general improvements in health. Or it could be the case that the number of years spent in poor health stays the same, or even increases proportionally, alongside an increase in life expectancy. This has substantial implications both for the levels of health and social care needed to support older people, and the wellbeing of older people.

The fRaill study

Against this backdrop, the fRaill (Frailty, Resilience and Inequality in later life) programme of research has been specifically concerned with providing an integrated understanding of the processes that lead to both positive and negative outcomes in later life. This five-year project has taken a holistic, interdisciplinary approach to examining the causal processes relating to frailty and wellbeing at older ages. The core of this is pictorially illustrated in Figure 1, which shows the fRaill approach to studying biological pathways leading to individual outcomes. These processes are then framed by a consideration of how they are shaped by economic, psychological and social factors operating at various points of the life-course, including in later life; so how they are shaped by socioeconomic inequalities.

What is frailty and why study it?

The word frailty brings to mind terms such as delicate, fragile, weak, infirm and even feeble. Echoing this, in both clinical practice and
research, frailty is a concept that is used to identify those who are vulnerable in later life and to identify factors that might lead to that vulnerability. It is a non-specific state that reflects the impact of age-related declines in multiple biological systems on impairments in physical, cognitive and psychological function. As such, it provides a holistic assessment of an individual rather than the identification of a particular illness. Importantly, frailty, as a state of increased vulnerability, is related to the future risk of a range of adverse outcomes, such as falls, fractures, hospitalisation, institutionalisation, and mortality (Clegg et al., 2013).

This means that frailty is a useful way of considering the health challenges of a growing population of older people. It can provide an indication of an individual’s capacity for independent living and the risk of experiencing an adverse event that might precipitate a need for greater levels of care in the future. At a population level, levels of frailty are a useful indicator of need, how this varies across segments of the population, and across different regions in a country.

In this context, a key aspect of the fRaill research on population ageing and inequality has been on predicting and understanding risk of frailty, and how this varies across segments of the population, including across different generations of older people.

How do we identify frailty?

Because frailty is a syndrome, rather than a specific illness or disease, there is no discrete cluster of symptoms, or biological changes, that define it. In research settings two broad approaches have been taken to measure it. The first assesses key components that are theoretically relevant to frailty in order to produce a measure that clearly distinguishes between those who are frail and those who are not. The classic example of this approach was developed by Fried et al. (2001) and involves the assessment of muscle loss, weakness, reduced physical performance and tiredness (all reflecting biological processes related to sarcopenia). The second approach simply counts up the number of things wrong with the person (the number of ‘deficits’ they have), covering items such as mobility, activities of daily living, sensory impairments, illnesses/diseases and symptoms. This approach has been developed by Rockwood et al. (2005), who argue that the actual deficits counted do not matter, rather what is important is to count a reasonably large number (thirty or more) so that people can be placed reliably on a continuum of frailty. The merits of these two broad approaches can be (and are) hotly debated, but in research terms the choice really depends on the nature of the research question.

What are the levels of frailty in the population?

The method used to assess frailty influences the estimate of the proportion of the population who could be considered frail. Taking the more diagnostic approach used by Fried and colleagues, somewhere between 7 and 10 percent of those aged 60 or older are estimated to be frail (excluding those in residential care, for whom rates will be considerably higher). A further two-fifths of this age group are estimated to be pre-frail, that is have some, but not all, of the characteristics of frailty.

Frailty is, of course, related to both age and gender. Women on average have a higher risk of frailty – among those aged 60 or more about 30 per cent higher. And levels of frailty increase dramatically with age. For example, those aged 70 to 79 have almost twice the risk of those aged 60 to 69, and those aged 80 or older have more than eight times the risk of those aged 60 to 69. There are also marked differences in risk of frailty by socioeconomic position, something that is consistent with wider evidence on socioeconomic inequalities in health and life expectancy. For example, the average level of frailty for 70 year olds in the poorest third of the population is equivalent to the average level of frailty for 80 year olds in the richest third of the population, a ten-year difference (Marshall et al., 2015).
Are levels of frailty decreasing with new generations of older people?

As described above, one important question is whether we are seeing improvements in levels of frailty alongside the well-documented improvements in life expectancy – so-called compression of morbidity. Evidence from the fRail study presents a pessimistic conclusion. At best, at a given age in later life, more recent cohorts of older people have the same levels of frailty as previous cohorts, with the suggestion that we are seeing some increases in levels of frailty (Marshall et al., 2015).

Even more negatively, evidence indicates that for poorer segments of the population, levels of frailty are increasing. That is, they are higher at a given age for more recent cohorts than for previous cohorts, suggesting they are experiencing an expansion, rather than compression, of morbidity, alongside no change for those who are more affluent (Marshall et al., 2015). This is illustrated in Figure 2.

The implications of these findings for population ageing are worrying – the rising number of older people appears to be combined with a rising proportion of vulnerable older people as a result of declines in health in more recent cohorts of poorer people. These findings emphasise the need to address inequalities in later life.

What is driving these inequalities and how might we respond?

As well as studying the genetic and biological processes related to frailty, illustrated in Figure 1, the fRail research has demonstrated the mechanisms through which inequalities operate – namely economic circumstances, quality of work and processes of retirement, engagement in other productive (civic) activities in later life, and social and cultural engagement. All of these have
biological, physiological and psychological consequences.

Given the central importance of inequalities to later life experiences and to the consequences of population ageing, effective policy responses to the challenges of population ageing should not be seen in isolation from the need to address social, economic and health inequalities in later life. Indeed, addressing later life inequalities will take us some considerable way to responding to the challenges of, and maximising the potential of, population ageing.

However, to do this, it is important to consider how risks and advantages accumulate across the life course. What the fRail research has also shown is the strong influence that all of childhood, social mobility after childhood, and wealth accumulation across the life course, have on health in later life. But the research has also emphasised the importance of events and circumstances in later life, which should be a priority for policy work.

Learning points

- There are two main approaches that are used to measure frailty (assessment of biologic processes related to loss of muscle and number of functional ‘deficits’). The method used depends on the research question being posed.
- While life expectancy is increasing, levels of frailty, particularly in poorer segments of the population, appears to be increasing. Furthermore, risk and levels of frailty are affected by both age and gender.
- The processes relating to frailty are affected by socioeconomic inequalities in later life, which must be addressed to deal with the challenges of population ageing.

Further Reading


References:

Review on the process of frailty in old age

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Introduction
Frailty can be defined as “a state of high vulnerability for adverse health outcomes, including disability, dependency, falls, need for long-term care and mortality” (Fried et al., 2001). It is neither a disability nor a co-morbidity; nor does it represent the reflection of chronological ageing (Lang et al., 2009). There are, however, inter-relations between frailty, disability, illnesses and advanced age. Illnesses can contribute as a triggering factor for frailty and a frail condition is aggravated by underlying disability and advanced age (Lang et al., 2009). Advanced ageing could also cause impaired homeostasis of the body, which induces frailty (Lang et al., 2009) (Figure 1).

Frailty Stages
Scientifically, the frailty process can be described as three main states: pre-frail state, frailty state and frailty complications (Lang et al., 2009; Ahmed et al., 2007). The pre-frail state does not normally present any clinical features (Lang et al., 2009). In this state, normal physiology of the human body can respond well to any external attack, such as infections and a complete recovery would generally be expected (Lang et al., 2009). In the frailty state, the natural physiology and immune systems of the body cannot fight well against any threat and this may result in an incomplete recovery and a negative outcome (Lang et al., 2009). This unfavourable condition could damage the normal capabilities of the body and subsequently affect the daily activities of frail, elderly people and lead to a state of disability and handicap (Lang et al., 2009).

An elderly patient for example, who, after a major stroke, loses their ability to be independently mobile; this dramatic change means that they are at greater risk of falls, injuries, infections and depression. All these stressors make the body’s physiological reserves weaker and weak body systems cannot respond well to these stressors (Fried et al., 2004). All of these negative impacts lead to the emergence of frailty complications in older people. Complications of frailty are closely related to physiological vulnerability and instability, resulting from irreversible damage or deficit in the body due to serious stressors (Cohen, 2000). These complications include frequent falls, hospitalisation, infections, progressive memory deficits, permanent institutionalisation and death (Cohen, 2000; Wells et al., 2003).

Predictors of frailty
As a clinical syndrome with a biological basis, frailty could overlap with states of disability and co-morbidity (Fried et al., 2001; Woodford, 2010). Many predictors are involved in the process of this complex clinical syndrome. These predictors include generalised weakness, poor balance, weight loss, cognitive impairment, vulnerability to infections...
and social isolation (Walston et al., 2006). All these parameters are co-related and influence the process of frailty in complex ways. It is therefore difficult to measure or identify a single specific factor for causing frailty in the elderly (Walston et al., 2006). However, lack of or reduced mobility and cognitive impairment have been identified as key predictors of frailty (Walston et al., 2006; Chin et al., 2003). Unexplained weight loss is also a triggering factor for frailty (Walston et al., 2006; Chin et al., 2003). A study jointly conducted by Italian and American researchers proposed that diagnosing physical frailty should be based on the following criteria or predictors: mobility, balance, muscle strength, motor processing, cognition, nutrition, endurance and physical activity (Chin et al., 2003).

There is a strong relationship between cognitive deficit and a decline in physical activity. This relationship should not be excluded when the syndrome of frailty is defined. The Nun Study investigating the relationship between cognitive impairment and independence through activities of daily living (ADL) clearly proved that loss of independence with ADL is directly proportionate to the severity of the cognitive deficit (B ind er et al., 1999). The Hispanic Established Population Epidemiological Study of the Elderly also concluded that cognitive impairment should be considered as an important predictor in the diagnosis of frailty (Ottenbacher et al., 2005; Abellan van Kan et al., 2008). Mobility and cognitive impairment are also highlighted as essential criteria for assessing frailty in the Canadian Study of Health and Ageing Clinical Frailty Scale ( Rockwood et al., 2005).

In addition to the above physical and cognitive parameters, some other factors that could exacerbate the severity of frailty should be recognised, such as underlying cardiovascular diseases and hypertension (Klein et al., 2006). Moreover, psychological distress, like depression, can also be associated with the increased risk of frailty (Lenze et al., 2005). Involvement of biochemical parameters should be considered as the key influencing factors over frailty.

The Cardiovascular Health Study found that inflammatory markers such as CRP were higher in frail older people than in non-frail older people (Cohen et al., 2003). The occurrence of insulin resistance and the associated altered lipid metabolic pathways and vascular endothelial functions in the body of the elderly person has been related to frailty due to the risk of skeletal muscle weakness, lower limb mobility impairment, cognitive deficit and body composition changes (Abbatecola and Paolisso, 2008). Insulin resistance might alter overall protein metabolism, resulting in reduced absorption of essential amino acids for protein synthesis in the body, and all these processes lead to the occurrence of the above unfavourable outcomes (Abbatecola and Paolisso, 2008; Marcel, 2003).

Conclusion
A number of facts about frailty can be highlighted as follows:
• Many key factors: physiological changes of ageing, environmental factors, infections, chronic illnesses, lifestyle, nutrition and psychological distress (Morley et al., 2006) are involved in the complex process of frailty.
• Frailty triggers recurrent hospital admissions, prolonged inpatient stay, institutionalisation and high mortality in the elderly (Morley et al., 2006).
• Frailty should be assessed appropriately and adequate action plans such as a Comprehensive Geriatric Assessment should be provided to frail older people.

Learning points
• Frailty is a dynamic, complex geriatric syndrome, which lies between the physiological changes of ageing and pathological challenges.
• Many pathophysiologcal changes happen in the process of frailty. Awareness of these changes should be made and more importantly, frailty should be identified among older people.
• A crisis intervention such as a rapid Comprehensive Geriatric Assessment must be provided to the frail, older people in order to slow down the progress of frailty towards disability and other untoward consequences.

References:
Let’s get physical: Why we need more focus on muscle strengthening and balance in later life

Jess Kuehne works as Senior Engagement Manager for the Centre for Ageing Better and leads on their Physical Activity programme. The Centre for Ageing Better is an independent charitable foundation whose vision is a society where everyone enjoys a good later life. Jess has a Masters in Public Health from the London School of Hygiene and Tropical Medicine and 10 years’ experience advocating for policy and legislative change on a variety of health issues, including tobacco control, tuberculosis and diabetes.

There is a prevailing misconception that growing old and experiencing decline go hand in hand. Many fear becoming frail and ending up in a care home. It’s easy to understand why – portrayals of ageing in media, film and advertising often show older people becoming dependent on others and unable to do the things they used to enjoy.

It is true that from the age of 40, adults lose 8% of their muscle mass per decade. Once over the age of 70, this increases to 15% per decade (Grímby and Saltin, 1983). At age 65, 16% of people report having difficulty with at least one activity of daily living, such as eating, bathing or going to the toilet independently. By age 85, about half of people report difficulty with at least one of these activities (Marmot et al., 2016).

However, despite popular belief, losing functional abilities is not a natural part of ageing. There are many things that can be done to stay independent and keep doing the things valued most, long into later life. It will come as no surprise that keeping physically active is one of the best ways to make sure one can still move around when we get older.

When most people think of ‘physical activity’, they often think of aerobic exercises, like running or cycling. However, muscle strengthening and balance activities are equally important. Evidence shows that low muscle strength is closely linked with a decline in ability to carry out activities of daily living (Rantanen et al., 2002). There is also extensive research which shows that low muscle strength and poor balance are two of the most common preventable risk factors for having a fall (NICE, 2015) – which in turn is a significant cause of injury and emergency-related hospital admission among people in later life.

Despite their importance, many people aren’t aware of the difference activities to improve strength and balance can make to their later lives. It’s not just the public – healthcare professionals often overlook the current guidelines on recommended levels of physical activity and what they should advise people to do to remain healthy and active (Chatterjee et al., 2017).

The current Chief Medical Officers’ guidelines for physical activity recommend at least two sessions of muscle strengthening and balance activity per week (Department of Health, Physical Activity, Health Improvement and Protection, 2011). Playing ball games and racquet sports are some of the most effective activities for both building muscle strength and improving balance (Public Health England, 2013). Similarly, resistance training (working against some type of force that “resists” your movement, like lifting weights or doing ab crunches) or circuit training (a combination of exercises that are repeated in sequence with only short rest periods) are also very effective.

Still, it’s important to note that just because these are some of the most effective types of activity, they may not necessarily be right for everyone. For example, people with osteoporosis should not try these types of activities if they are inexperienced, and may want instead to try an activity like Tai Chi, which can also be effective and a safer option. Similarly, frailer older adults should work with a physiotherapist or exercise instructor to adapt and tailor exercises based on their own ability.

Learning points

• Losing your functional abilities is not a natural part of ageing. Many people aren’t aware of the differences between activities to improve muscle strength and balance and can make too many assumptions about their impact.

• Muscle strengthening and balance activities deserve more attention for a good later life. They will keep people fit and healthy, enabling them to maintain mobility and – crucially – will help individuals keep independence.

• Healthcare professionals should make sure they are familiar with and using the most up-to-date guidelines. They should advise people to do the right physical activities for their individual abilities, whether resistance training, Tai Chi or bespoke exercise programmes.

References:


Spotlight on...

Dr Amit Arora

Consultant Physician and Geriatrician, University Hospital of North Midlands
Honorary Clinical Lecturer, Keele University

What is your current position and what was your career path that took you there?
I have been a consultant geriatrician at the University Hospital of North Midlands in Stoke on Trent since 2004. My interest in health care policy and improvement led me to become Chairman of England Council of the British Geriatrics Society. My interest in research led me to work as the NIHR CRN Ageing Research lead for the West Midlands. My interest in quality and efficiency led me to work with the Emergency Care Improvement Program of NHS Improvement where I am advising various health economies across England.

What challenges do you face in your current position and which has been the greatest one?
Nationally, one of the major challenges faced by the NHS is the ‘demographic escalator’ of our ageing population (older age is actually a cause for celebration) and we have a lot to do to ensure that the whole health and social care system is geared to deliver high quality and timely treatment, care and support for our older people.

Recruitment to the carer, nursing and medical workforces limit care of older people across the board. It is a national issue at present but hopefully it will get better.

In your opinion, what are the top three issues affecting the care of older people?
How a country looks after its older people is a measure of its societal barometer. More investment is required in health and social care needs of older people and this includes investment in training a skilled workforce with ‘geriatrician skills’, as well as also addressing dignity, age discrimination and many other related issues.

A real integration of care between primary care, secondary care, social care, housing etc. will make the NHS more efficient by addressing systemic delays, reducing readmissions and will improve quality of life for many older people.

Older patients becoming ‘deconditioned’ due to lack of activity when they are in hospitals, care homes and living alone - it can affect over a million people at any given time. Addressing this early on can prevent many people going into care homes prematurely and also make hospitals more efficient by reducing length of stay for older people.

What changes in elderly care do you anticipate in the next few years?
I hope to see: Better advance care planning- it should become the norm for older people. Better care at the end of life for those approaching the last few years of life. More workforce recruitment as geriatrics is very rewarding and satisfying.

If you hadn’t become a Physician what might you have done?
I have thought about this a few times and every time I (thankfully) end up becoming a geriatrician – that was my destiny.

What experience has influenced your career the most?
My early days as a junior doctor taught me to do well clinically which I carry on as a consultant. Other roles gave me the opportunity to learn from so many other leaders in the field of healthcare. The start was perhaps representing the hospital Trust for a West Midlands region-wide quality projects presentation where I had submitted some improvement schemes. Becoming the Chair for the England Council of the British Geriatrics Society and working with a few Presidents of the society influenced me a lot.

Where do you go for advice and information?
I have developed a small network of senior colleagues who I can seek advice from. I trained as a registrar with Professor Peter Crome (past President of the BGS and Chair, National Dementia Strategy) and he has thankfully been a great source of advice and inspiration. My wife Mona (a local GP) has been an excellent source of considered advice and is usually right.

What would you most like to work with?
I have recently been working closely with many patient groups and charities and realising the untapped insight they hold and I am fascinated how much they do.

What do you enjoy doing when you are not working?
I enjoy cooking and visiting historical places.

What do you do in a typical working day?
Each day, every hour is different. It is about striking a balance between clinical, managerial, leadership, meetings, committees, lecturing, teaching, research roles that I am involved in locally, nationally and internationally. Often, I will go to work and then will travel returning late and answering emails in between. Once I missed my train whilst standing on the platform and answering an email! I do enjoy that busy environment at present though. The working day ends at past midnight most days.

If you were stranded on a desert island what would be your one luxury?
That’s got to be a collection of classical music.
In our next quarterly issue of Innov-age we will be looking at Digital Health.

Digital Health is one of the fastest growing areas of healthcare, with the global digital health market expected to grow to £43bn by 2018. Digital Health technology can provide the potential for faster, safer and more efficient diagnosis and treatment of a huge variety of health conditions. For older people in particular, who may face a range of problems from travelling to appointments, to remembering to take medication on time, the use of digital health technologies such as apps can make a huge difference to the care they receive and their overall quality of life.