Access all ages

Assessing the impact of age on access to surgical treatment


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The Dunhill Medical Trust

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1 Forewords

Professor Norman Williams
President of The Royal College of Surgeons of England

The Office for National Statistics estimates that the number of people in Britain over the age of 65 will increase by 65% over the next 25 years.[1] This significant shift in demographics will change our perceptions and expectations of older people, and healthcare services will need to respond.

In this context, it is particularly alarming to read the growing number of studies that indicate that the healthcare a patient receives may be influenced by his or her age alone, rather than clinical factors. As surgeons, it is our duty to do the best for our patients, improving their health while protecting them from avoidable or unnecessary harm. Achieving this is a balancing act. Life expectancy in the UK has been steadily increasing and older people's fitness is improving but as people get older, they are more likely to experience comorbidities. These comorbidities and other clinical issues of the individual patient should be objectively assessed and mitigated where possible. In clinical terms, it is a person's biological rather than chronological age that matters.

Instinctively, most surgeons would support this approach. Yet delivering it can be challenging. There are multiple factors that affect treatment decisions and there may be good reasons why some older people opt out of surgery or are recommended non-surgical treatment alternatives. The key is that chronological age should not be used as a proxy for clinical factors.

With the ban on age discrimination now in effect in the NHS, there is a legal as well as a moral and professional imperative to ensure that older patients receive the most appropriate treatment for their individual needs. As a first step to supporting surgeons in delivering this, the College is delighted to be partnering with Age UK and MHP Health Mandate to publish this report, which explores trends in major surgical procedures, proposes potential causes of these trends and makes recommendations about how the NHS can ensure that all patients are offered the best possible surgical treatment, irrespective of their age.

Michelle Mitchell
Charity Director-General, Age UK

Life expectancy when the NHS was established was 66 for men and 70 for women. Today it is 78 and 82 respectively. At 65 years, men will live an average of 18 more years; women 21.

These figures are a testament to the achievements of the NHS. People live longer and they also live more healthily. Conditions that caused people to die at younger ages in the past are now treatable or manageable. This can mean that some older people could be referred for surgery with more complex needs and comorbidities. Equally, more and more older people will be referred with few or no additional needs or potential complications. Put simply, the use of chronological age in decision-making is out of date.

Unfortunately, the way in which the NHS approaches the care of older people is not keeping pace with these changes. By the time older people are considered for surgery, neither they or the surgeon can be assured that the referral was timely, that the decision about whether to treat will be taken purely on clinical grounds, or that post-operative care will be tailored to their needs. This needs to change. Now is the time for the NHS to recalibrate how it approaches the treatment and care of people in later life.

Change can be difficult to deliver, as the factors leading to suboptimal care for older people are complex. This report is an important step towards understanding the variations in surgical care that exist according to age, as well as the explanations for them.

We hope that this report will help inform some of the debates around how we care for older people. Fundamentally, we need to ensure that all people have the right to high-quality care and the chance of the best possible quality of life regardless of their age.

2 Executive summary

Our patient population today is older and fitter for longer than ever before. The number of people aged 65 and over is expected to rise by 65% (to almost 16.4 million) over the next 25 years.[1] Although our ageing population is often portrayed as a burden, it is in fact something to be celebrated: we lead healthier lifestyles and enjoy effective healthcare. The surgical profession should be proud of the role it has played in achieving this.

However, NHS services have not always kept pace with these changes, and recently the quality of care for older patients has faced intense scrutiny. A new legal framework to outlaw age discrimination in the NHS cements our moral duty of care to older patients and sends a clear signal to the NHS to deliver the best care and support to every patient in line with his or her needs.

In response to these issues, the Royal College of Surgeons, Age UK and MHP Health Mandate have undertaken a study to:

- assess how treatment rates for common surgical interventions vary according to age;
- explore potential reasons for this variation; and
- make recommendations about how the profession and other stakeholders can best respond.

This report summarises the findings of this process.

As people grow older, they are more likely to be diagnosed with common conditions such as cancer, heart disease and arthritis. A patient's relative need for a range of health interventions, including surgical treatment, therefore increases with age. However, our report shows that across a range of common conditions, elective surgical treatment rates decline steadily for the over-65s. This creates a stark contrast – of increasing health need on the one hand and a decline in potentially life-enhancing treatment on the other. For example:

- Incidence of breast cancer peaks in the 85+ age group, while the surgery rate peaks for patients in their mid-60s and then declines sharply from approximately the age of 70.[2]
- The rate of elective knee replacement and hip replacement surgery for patients aged in their late 70s and over has dropped consistently over the three years examined.

There are a number of possible explanations for these trends. Some are specific to the condition and these are explored in more detail within the report, but a number are of wider significance. They can be broadly summarised in three ways:

The number of people aged 65 and over is expected to rise by 65% (to almost 16.4 million) over the next 25 years.

Clinical factors. For example the impact of existing conditions or health needs, which could mean that the risks of treatment outweigh the benefits.

Clinical approaches. The way in which individual clinicians approach the treatment of older people based on their own experience, attitudes and evidence:

- A patient's chronological age and his or her biological age may be conflated – this means that decisions may not always be made on the basis of a comprehensive and objective assessment but on a series of assumptions about fitness in older age.
- The clinical benefit of providing treatment may be questioned when relative life expectancy is shorter.
- Communication with patients to discuss risks and benefits, and to inform and to reflect on issues and anxieties, may be limited or ineffective.
- There may be a shortage of evidence, tools, strategies and specialist clinical input to support surgical treatment in older age.

Patient awareness and preference. Patients may lack the information they need to make an informed decision about whether surgery is right for them. Even with the right information

and support, patients may opt out of treatment for a range of personal reasons, which are noted elsewhere in the report.

It is also clear that actions and behaviours across other parts of the pathway, such as within primary care or within the wider commissioning process, may affect both the rate of referral and the fitness of older patients for surgical treatment (for example if diseases were identified at an earlier stage or if comorbidities were managed better in a community setting pre and post-operatively). Similarly, at a system level, it will be important to ensure that the framework for quality improvement in the post-reform NHS effectively measures and provides incentives for high-quality outcomes for people of all ages.

We do not know what the relative importance of the different factors may be and decision-making will vary in each individual case. While there may be legitimate clinical reasons why an older person may not benefit from surgery, it remains the case that some patients may be missing out, given the important quality-of-life gains that surgical intervention can bring. It is the task of the NHS, professional bodies, individual clinicians, the third sector and the government to work together to ensure that every person can benefit from the right intervention, regardless of age.

Our 25 recommendations focus on 6 key areas:

1. Informing and communicating with patients to encourage them to seek help and take part in decisions about their treatment and care.
2. Improving the evidence base to further our understanding of the impact of age on surgical decision-making.
3. Developing guidance to promote age equality in surgical care.
4. Delivering the most appropriate care by improving models of working and developing guidance for clinicians.
5. Measuring progress and tackling underperformance.
6. Delivering high-quality commissioning for older people.

We hope this report establishes the starting point for this urgent discussion.

3 Methodology

The report examines eight different surgical procedures:

- **Breast excision:** surgery to remove a cancerous lump or a more extensive area of breast tissue, depending on the extent to which the cancer has spread.
- **Coronary artery bypass graft:** surgery performed to treat cases of severe coronary heart disease and improve vital blood flow to the heart by grafting a healthy blood vessel to the blocked coronary artery or arteries.
- **Hip replacement:** replacement surgery performed following the progressive worsening of severe arthritis in the hip joint or following a fracture.
- **Knee replacement:** replacement surgery performed following the progressive worsening of severe arthritis in the knee joint or following a severe fracture.
- **Colorectal excision:** a procedure used to remove a section of the bowel in order to treat cancer or other bowel diseases such as diverticular disease and Crohn's disease.
- **Radical prostatectomy:** the removal of the entire prostate and seminal vesicles, undertaken for some men with prostate cancer in order to remove the cancerous tumour and surrounding tissue.
- **Inguinal hernia repair:** groin hernias (inguinal hernias) are the most common form of hernia. Repair procedures fix the weakness in the abdominal muscle wall through which the hernia protrudes and prevent the hernia becoming strangulated and infected.
- **Cholecystectomy:** gall bladder removal (cholecystectomy) is indicated for patients with symptomatic gall stones, which develop when the flow of bile through the gall bladder slows. Gall stones are painful and can cause inflation and infection in the gall bladder or pancreas.

These procedures were chosen because:

- each has been proven effective among older patients, typically addressing health issues that are common in later life;
- most, if not all, procedures represent the most common treatment for the conditions in question; and
- the combination of procedures allows a range of surgical specialities to be considered.

Data on treatment numbers were elicited through parliamentary questions, which provided comprehensive Hospital Episode Statistics data, broken down by age, for each procedure that took place in the NHS in England. These data were analysed in detail to identify patterns in the provision of surgery by age.

To inform this analysis, an assessment was made of the mainstream clinical and professional guidance for practitioners in England of each of these procedures. This assessment sought to identify:

- any specific references to age and the decision to treat;
- any measures or statements that are likely to exclude patients on the basis of their chronological age (these could be implicit); and
- any guidance that supports clinicians in managing issues associated with older age that would enable a patient to undergo surgical treatment safely.

The data and evidence review were shared with clinical experts to gain a surgical opinion on the treatment rates presented, the extent to which age may be a factor in decisions to offer surgical treatment to patients and the extent to which this is clinically justifiable. It should be noted that the contributions of the clinical experts are based on their own practice and their individual views are not representative of the practice or views of the surgical profession as a whole.

While there are a number of points in the care pathway where access to treatment may be impeded (for example, within primary care or through the commissioning process), this report focuses on the point at which a patient is already referred to a secondary care specialist (consultant surgeon) and the process that happens at this stage to determine whether surgery is an option.

The report's findings and recommendations are grounded in a detailed analysis of the political, legal, economic and social context in which everyday NHS decision-making takes place.

4 Background

There is a broad political and clinical consensus that making decisions about access to healthcare on the basis of age alone is inappropriate. Doing so runs counter to the founding principle of the NHS that care should be available on the basis of clinical need.

Age can be assessed in two different ways:

» chronological age, which is the length of time a person has been alive; and
» biological age, which assesses the physiological fitness and function of a person.

Biological age is a valid way of assessing suitability for treatment; chronological age is not. The two are not the same and chronological age should therefore not be used as a proxy for biological age. Indeed, the NHS Constitution states:

'*The NHS provides a comprehensive service, available to all irrespective of gender, race, disability, age, sexual orientation, religion or belief. It has a duty to each and every individual that it serves and must respect their human rights. At the same time, it has a wider social duty to promote equality through the services it provides and to pay particular attention to groups or sections of society where improvements in health and life expectancy are not keeping pace with the rest of the population.*'[3]

However, there is evidence that older people are less likely to gain access to some treatments than other age groups, even though their relative need is higher. For example, older patients:

» wait longer in accident and emergency departments;
» are less likely to be referred to intensive care;
» have less access to palliative care; and
» are treated less for a number of conditions including cancer, heart disease and stroke.[4]

There is also evidence that outcomes for older people are poorer. For example, older people with cancer, stroke or heart disease have poorer outcomes than their counterparts in other countries.[5] Improvements in cancer mortality have also been much slower. Since 1971, mortality has dropped by 40% in people between 50–59 and only 9% in people 70–79.[6] This is despite two-thirds of cancers being diagnosed in people over 65.[6]

There is now a consensus that the NHS is too often failing to meet the needs of older people.[7–12] For example, a recent study by The King's Fund found that:

'*It is painfully clear that the health and social care system is failing older people with complex needs* [...] *the great urgency is to turn the guidance and rhetoric of personalised care into a reality of everyday care and practice*'.[11]

Box 1 Older people's health in 2012

'*Comorbidities or patient choice alone do not explain why older people receive less intensive treatment. It is likely that there are a range of contributory factors, including clinical attitudes, a misunderstanding of the toxicities and side effects of modern cancer treatments and problems in providing appropriate community support for older cancer patients*'.[13]
Department of Health, 2010

People are living and staying healthy for longer than ever before. The continuing achievements of the NHS and public health improvements mean that at 65, average life expectancy is a further 18 years for men and 21 years for women.[14] At 75, these figures are 11 and 13 years respectively. This means that a woman who lives to 75 can reasonably expect to live until she is 88. Some will live much longer (there are around 12,000 centenarians alive today in the UK).

The surgeons interviewed for this report described significant changes in the health and wellbeing of the older patients in their care. More older people are referred to them than at the start of their careers and many people traditionally thought of as in the higher end of later life (75+) are presenting with a health state previously expected in younger age groups.

This reflects improvements in disability-free life expectancy – the age to which people can expect to live without a disability. At 65, men and women both have a disability-free life expectancy of 10 years. We also know that this is modifiable throughout the life-course. Office of National Statistics (ONS) figures show that this figure varies hugely depending on levels of social deprivation, standing at 7 years for men in the poorest areas and 12 years in the wealthiest.[15]

Older people's health can be very good into later life and, where it is not, both early and late interventions can mitigate risk. This applies just as much to frail older people living with multiple comorbidities. Comprehensive assessment, by a geriatrician, for example, can have a significant impact on outcomes, particularly in the case of surgery. The National Confidential Enquiry into Patient Outcomes and Death report *An Age Old Problem*[16] highlighted the benefit of input from Medicine for the Care of Older People clinicians in reducing mortality in the first 30 days after surgery. With the right support, older people who may once have responded poorly to surgical procedures can now expect much better outcomes.

Tackling age inequality – learning from the cancer experience

Box 2

The National Cancer Equality Initiative was set up to develop research proposals on cancer inequalities, test interventions and advise on the development of policy. Meanwhile the work of the National Cancer Intelligence Network has proved crucial in bringing together different sources of information and publishing data that provide greater insight into cancer inequalities.

At a clinical level, the recent report *The impact of patient age on clinical decision-making in oncology* explored the extent to which age is a factor in treatment decisions for a range of cancers, as well as the extent to which clinical attitudes vary across different cancer types and in different countries. In the study, clinicians were presented with a number of patient vignettes with alternating variables and were asked to make treatment decisions for each. Analysis of the findings shows the significant impact of chronological age on decision-making. For example, patients in their 70s with good social support and no comorbidities were more likely to be given more intense cancer treatment than patients in their 80s with the same characteristics.[19]

The findings of the study have been used to inform the ongoing work of Macmillan Cancer Support, Age UK and the Department of Health to deliver the Improving Cancer Treatment, Assessment and Support for Older People Project. Five pilot sites are testing interventions aimed at reducing under-treatment.

These initiatives have proved crucial in identifying specific challenges and will inform the development of practical tools and guidance that allow clinicians to provide the best possible cancer treatment regardless of a person's age.

Initiatives to improve services for older people

The Equality Act 2010 requires NHS bodies (including commissioners and providers) to promote age equality and, since October 2012, to eliminate age discrimination in the provision of services. In preparation for the ban on age discrimination, a range of initiatives have been undertaken to help the NHS prepare:

- A review by Sir Ian Carruthers into age equality in health and social care, which set out the steps required to translate legal requirements into practical change.[17]
- The National institute for Health and Clinical Excellence (NICE) has begun to include active treatment rates for older people as a marker of high-quality care within quality standards.[18]
- The Department of Health, the National Cancer Action Team and Macmillan Cancer Support are working together to test new approaches to clinical assessment for older patients.
- The increasing use of 'equity audits' enabling multidisciplinary teams (MDTs) to consider the demographic characteristics of their patients and reflect on their care and treatment.

The challenge is that the reasons why older people often receive different treatment are complex and in some cases may be justified on the grounds of clinical judgement or patient preference. For example, the risks associated with surgery (both in terms of survival and impact on quality of life) may be greater for any person with comorbidities and older people

are more likely to live with one or more long term conditions. Equally, the benefit may be smaller – the clinician, patient or both may decide that the benefits do not justify the risks

Assessing the suitability of a patient of any age for treatment often requires finely balanced clinical judgements. The challenge is to ensure that such decisions are made on the basis of objective analysis.

Box 3

The Equality Delivery System: supporting access to surgery for older people?

The Equality Delivery System (EDS) helps the NHS to deliver on the NHS Outcomes Framework (see Box 4), the NHS Constitution for patients and staff and the Care Quality Commission (CQC) essential standards. It sets out four nationally agreed objectives for NHS commissioners and providers. These are:

1. Better health outcomes for all
2. Improved patient access and experience
3. Empowered, engaged and well-supported staff
4. Inclusive leadership at all levels

There are 18 outcomes across the 4 goals. There are three outcomes that directly support access to surgery on the basis of clinical need, regardless of age:

Objective 1: Better health outcomes for all

» Individual patients' health needs are assessed and resulting services provided, in appropriate and effective ways.

Objective 2: Improved patient access and experience

» Patients, carers and communities can readily access services and should not be denied access on unreasonable grounds.
» Patients are informed and supported to be as involved as they wish to be in their diagnoses and decisions about their care, and to exercise choice about treatments and places of treatment.

Performance will be analysed and graded against the goals and outcomes and reported to the local HealthWatch and HealthWatch England. HealthWatch England will advise the CQC of concerns so that these can be taken into account in the quality risk profiles for each organisation (a tool used to monitor compliance with the essential standards of quality and safety). The ultimate sanction for continued poor performance could be loss of registration. In addition, the agreed equality objectives for commissioners will be reported to the NHS Commissioning Board and performance managed.

The legal framework

The Equality Act 2010 provides the legal framework that outlaws unfair treatment and helps promote equality between individuals in the workplace and in wider society. The public sector equality duty (PSED) (section 149 of the Equality Act 2010) came into force in 2011. It requires public bodies to consider all individuals in the development of policy, the design and delivery of services, and in relation to their own employees. It stipulates that public bodies must have due regard for the need to eliminate discrimination against a number of protected characteristics, including age, to advance equality of opportunity and to foster good relations between employees.

NHS bodies, including commissioners and trusts, were exempt from the ban on age discrimination until October 2012. It is now illegal for people working within the NHS to:

- make assumptions about whether older patients should be referred for treatment based solely on their age, rather than on the individual need and fitness level; or
- choose not to refer certain age groups (such as those not of working age) for a particular treatment or intervention that is considered mainly for working-age adults.

The Equality Act 2010 does not prevent age being used as a criterion for service provision to a population when there is strong clinical evidence justifying it. This often applies to public health interventions such as screening and vaccination programmes, where evidence shows little or no benefit for particular age groups, old or young.

The challenge, however, is to translate theoretical legal protection into practical and meaningful action. At an organisational level the NHS Equality Delivery System was launched in July 2011, aiming to help the NHS meet its equality duties and embed equality within mainstream NHS business. NHS bodies are also required to publish information to demonstrate compliance with the PSED. Information must be published at least annually and equality objectives set at least every four years.

It is less clear how the new duty should be made meaningful at an individual clinical level, although the data that should be published as a result of the Equality Delivery System should help inform clinical practice.

The impact of current trends in the NHS

Financial challenges

The NHS has entered a period of spending restraint and the NHS Chief Executive has set out a challenge to deliver £20 billion of efficiency savings. Given this environment, there is a danger that interventions for different groups in society, such as older people, could be disproportionately restricted. One reason that restrictions may be imposed is the perceived reduction in the cost effectiveness of interventions for patients with a shorter relative life expectancy.

The NHS Operating Framework for 2012/2013 has made clear that equality duties – including those relating to age – should not be undermined as a result of the financial challenge facing the NHS:

'*We need to protect and promote quality while releasing savings everywhere. In doing so we will continue to ensure that NHS values are at the heart of what we do and we remain committed to tackling inequalities and promoting equality.*'[20]

Despite this, there is evidence that restrictions are being applied to certain procedures in order to secure cost savings. The type of procedure and the criteria used to determine access to individual procedures may negatively affect older patients as the perceived clinical benefit may be less significant.

One example is in the development of guidance such as the 'Croydon list' and the subsequent Audit Commission report, *Reducing expenditure on low value clinical treatments*, which are designed to help commissioners deliver cash-releasing savings.[21] Knee joint and primary hip replacement surgery, which is predominantly performed on patients over the age of 65, has been found to be '*highly cost effective*'[22] even for patients who have mild or moderate knee arthritis. Despite this, they are procedures that have been categorised as '*effective interventions with a close benefit or risk balance in mild cases*' where eligibility is likely to be narrower than in the past.[23] As a result, a number of primary care trusts have revised their policies on hip and knee replacement to reflect a low-priority procedure classification.[24] This will disproportionately affect older people.

Similarly '*work related issues*' have been explicitly listed as a factor that influences eligibility for hernia surgery[23] – this may disadvantage older men of non-working age, who may have comparable symptoms and who may gain quality-of-life benefits from the procedure.

> *The NHS is about fairness for everyone in our society*
>
> Department of Health, Equity and Excellence, November 2011

There is an escalating backlash against suspected rationing by NHS trusts, most recently in relation to restrictions in access to cataract surgery.[24] Cataracts affect a third of people over 65 and can easily be treated by surgery, which involves replacing the damaged lens with an artificial implant.[24] More than half of the NHS trusts in England have imposed additional criteria for cataract surgery that are tougher than national guidelines, according to research by the Royal National Institute of Blind People.

The Secretary of State for Health has argued that blanket bans on procedures are unacceptable,[25] but it appears that commissioners are nonetheless instituting policies that may restrict interventions disproportionately for older people.

Health service reforms

The financial challenge facing the NHS could make it more difficult to ensure that older people are given the most appropriate treatment. However, a number of the quality measures introduced as a result of the reforms to health and social care present opportunities to increase the accountability of commissioners and providers of treatment for older people, ensuring that the NHS can fulfil its twin commitment to promote equality and secure continuous improvement in the quality of services.

These commitments include:

- the focus on delivering identified outcomes, which can be disaggregated by age group;
- the development of quality standards by NICE, some of which make clear that intervention rates for older people should be monitored;[18]
- the introduction of incentive payments for improving quality, which could be focused on addressing unmet need among older people; and
- the increased use of clinical audit, which should enable clinicians, commissioners and patients to assess variations in the quality of care according to age group.

Box 4 The NHS Outcomes Framework 2012–2013

The NHS Outcomes Framework sets out the high-level areas for improvement against which the NHS will be held to account. NHS organisations are expected to use the NHS Outcomes Framework indicators, disaggregated by equality group wherever possible, as evidence of their performance.

'Active consideration has been given to how the indicators can be analysed by equalities and inequalities dimensions to support NHS action on reducing health inequalities.'[26]
Department of Health 2010

A number of measures are included that are of direct relevance to the quality of surgical treatment, such as patient-reported outcome measures (PROMS) for hip and knee replacements and other elective procedures. Disaggregation of these data by age will help identify the quality of outcomes for older patients. Even so, further work is needed to calculate the proportion of older patients who are put forward for medical interventions in line with their clinical needs.

While the majority of the indicators in the latest iteration of the framework (2012/2013) that are relevant to surgery capture outcomes for patients of all ages, four key indicators within Domain 1 specifically exclude patients on the basis of age. These are shared with the Public Health Outcomes Framework (2012):

Reducing premature mortality from the major causes of death:

1.1	Under-75 mortality rate from cardiovascular disease
2.2	Under-75 mortality rate from respiratory disease
3.3	Under-75 mortality rate from liver disease
4.1.vii	Under-75 mortality rate from cancer

The framework states that work is ongoing to *'Isolat[e] [...] the specific NHS contribution to outcomes for the over-75s'*[27] in order to inform future indicators encompassing this age group.

Nevertheless, there may be less incentive to improve access to interventions for over-75s where performance will be subject to less scrutiny, even though the benefits in quality of life and longevity may be significant. Given the proportion of older people in the NHS case load, more work is needed to define and measure good outcomes for older people and to identify whether older people have an appropriate level of access to care.

The impact of age on access to surgery, by procedure

5

Using routine NHS data collection, it is possible to investigate variations in access to different surgical interventions according to age. This section examines the patterns of surgical treatment in relation to age across eight procedures. Relevant clinical and professional guidance is analysed to determine the extent to which guidance supports decision-making in relation to older patients. The section includes insights from surgeons to interpret the trends identified and outlines possible factors that may influence the observed trends in treatment rates. These factors are discussed in more detail in the *Conclusions and recommendations* chapter.

6 Breast surgery

Indication

Most breast surgery is carried out in order to treat breast cancer. It is by far the most common cancer among women in the UK, accounting for 31% of all new cases of cancer in females.[18] The type of surgery is dependent on the size and location of the tumour. If left untreated, the prognosis can be life threatening.

The incidence of breast cancer increases with age, with 81% of all diagnoses occurring in people over 50. Older patients are also more likely to present with symptomatic, advanced cancer.[18] Incidence rates rise steeply from around age 35–39, level off for women in their 50s, rise further at age 65–69, drop slightly for women aged 70–74, then increase steadily to reach an overall peak in the 85+ age group.[18]

The NHS Breast Screening Programme has national coverage and currently targets women aged 50–70; although women over the age of 70 are not sent routine invitations, they are encouraged to request mammograms at their local unit every three years.[28]

Screening has led to earlier detection of breast cancer and an increase in breast conservation surgery, with local excision of the tumour now performed more frequently than mastectomy. The screening programme is now gradually being extended to women aged 47–49, as well as to those aged 71–73. The 'age extension' phase of the programme is expected to be complete by 2016.

Another indication leading to excision of breast tissue is the presence of benign breast lesions, although these will account for only around 10% of procedures captured within our data.

Treatment

Surgery is the mainstay of therapy for breast cancer, often in combination with an additional therapy. Patients may be given hormonal therapy or chemotherapy to shrink the cancer before they have surgery.

Breast-conserving surgery (lumpectomy) is the removal of the tumour and a small area of surrounding tissue. This is commonly used in combination with radiotherapy when cancer is limited to a small, defined area. Sentinel lymph node biopsy surgery may be performed to limit the spread of cancer within the body. Removal of all breast tissue (mastectomy) may be necessary in instances of later-stage disease.

The ASA Physical Status Classification System

Box 5

The American Society of Anesthesiologists (ASA) Physical Status Classification System is used to categorise a patient's physical state in advance of surgery, to inform the selection of the appropriate anaesthetic. The physical status classification system categorises by increasing severity as follows:

- **ASA PS 1** A normal healthy patient
- **ASA PS 2** A patient with mild systemic disease
- **ASA PS 3** A patient with severe systemic disease
- **ASA PS 4** A patient with severe systemic disease that is a constant threat to life
- **ASA PS 5** A moribund patient who is not expected to survive without the operation
- **ASA PS 6** A declared brain-dead patient whose organs are being removed for donor purposes

Descriptions of patients' pre-operative physical status are used for record keeping, communicating between colleagues and to create a uniform system for statistical analysis. The grading system is not intended for use as a measure to predict operative risk, but clinical anecdote suggests that physical status is factored in when deciding candidacy for surgery, as a predictor of the risk of adverse surgical outcomes. Patients receiving scores of 1 and 2 are broadly considered eligible for elective surgery and there is no specific mention of patients' age.

While this system is commonly used by clinicians, there are concerns over how suitable it is for older patients as it does not take into account nuances in comorbidities and resilience to anaesthesia. Further work is required in this area.

Guidance

Existing clinical guidance is positive with respect to provision of surgery in older age. The NICE clinical guidance for early and locally advanced breast cancer (February 2009) recommends that clinicians 'treat patients with early invasive breast cancer, irrespective of age, with surgery and appropriate systemic therapy, rather than endocrine therapy alone, unless significant comorbidity precludes surgery'.[29]

Likewise, the recently published NICE quality standard on breast cancer (September 2011) includes a specific quality statement on access to surgery, which should be offered to patients regardless of their chronological age.[18] The proportion of older women given active treatment has also been identified as a key quality indicator as part of the standard.[18]

To benchmark progress against this quality measure, NICE states that the NHS should collect data on the proportion of people older than 70 with early invasive breast cancer who received breast-conserving surgery. Over time these data will allow comparison between different providers and commissioners of treatment rates among older women and support closer interrogation of patterns of treatment, identifying any restrictions that may form part of local NHS practice.

Specialist guidance provided by the Eastern Cooperative Oncology Group is commonly used by surgeons to determine the prognosis of breast surgery based on individual patient assessment against a performance scale.[30] There is no specific mention of age and clinical opinion suggests that all patients scoring 0 and 1 on the performance scale should be eligible for surgery.

The Association of Breast Surgery guidelines (2009) make reference to age when considering factors to reflect in a patient's care plan, but no age-related, treatment-limiting factors are highlighted.[31]

Before any surgical procedure requiring an anaesthetic, a patient's physical status is analysed and classified. The common mechanism employed for this is ASA grading (see Box 5).

Key findings

Figure 1 (above right) shows the rates of elective breast excision procedures by age across three consecutive years (2008–2011).

Despite the fact that incidence of breast cancer peaks in the 85+ age group, the surgery rate peaks for patients in their mid-60s and then declines sharply from approximately the age of 70.[2] The peak for patients in their late 60s can reasonably be explained by a combination of increased incidence and active participation in the screening programme.

Our clinical commentator suggested the following factors as possible causes of the decline in treatment rate:

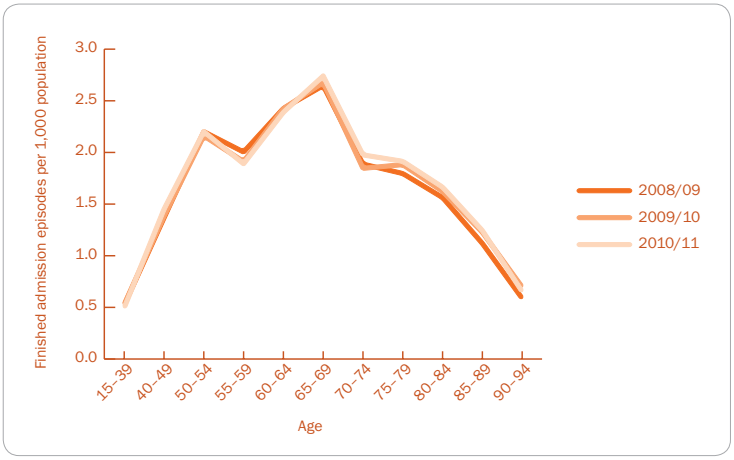

Figure 1 Rate of elective breast excision procedures, by age

- The absence of routine screening for over-75s, meaning that fewer asymptomatic cancers will be identified in this age group.
- The increased likelihood of comorbidities, meaning that more women are deemed unfit for surgery.
- Later presentation owing to lower levels of awareness among older women, meaning that surgery may not be appropriate.[32] The expert commentator suggested that cancer campaigns aimed at younger women may have had the unintended consequence of making older women think they were less likely to get cancer.
- Quality-of-life considerations (as opposed to mortality) may be more important in treatment decisions for the oldest patients, in light of the side effects of surgical treatment and recovery regimes. Surgeons need to be mindful of this when considering treatment approaches for women with comorbidities. Put simply, the negative effects of the treatment must not be more severe than those of the disease itself.

Surgery is most effective in early-stage disease. Lower levels of awareness among older women are therefore likely to have an impact on both surgery rates and clinical outcomes. Poor awareness may also contribute to lower levels of patient expectation about the benefit that treatment could have, meaning that patients are less likely to choose invasive options. It should be noted that the attitudes of older women to cancer treatment may have been shaped many years ago, meaning that they have a particularly negative perception of the side effects and impact on quality of life. It is therefore welcome that the Department of Health is piloting breast cancer awareness programmes specifically targeting the over-70s.

Expert commentators have pointed out the trade-off between quality of life and the desire to treat cancer effectively. Nonetheless, surgeons have observed a trend towards healthier older patients, suggesting that some older women may be missing out on curative surgery when they are fit to receive it. Addressing this will require a greater focus on the treatment of older patients, including considering methods to limit the intensity of treatment, such as less-invasive surgery. It is therefore welcome that NICE guidance is explicit that surgery should be offered to all women for whom it may be suitable, irrespective of age.[29]

The attitudes of older women to cancer treatment may have been shaped many years ago, meaning that they have a particularly negative perception of the side effects and impact on quality of life

7 Coronary artery bypass graft surgery

Indication

Coronary artery bypass graft (CABG) surgery is performed to treat cases of severe coronary heart disease (CHD), which occurs when the coronary arteries become narrowed and blocked by a build-up of cholesterol and fatty deposits. CHD incidence increases with age.[33]

The most common indication for elective CABG surgery is chronic stable angina, which is recurring chest pain caused by a lack of oxygen reaching the heart muscle, owing largely to a narrowing of the coronary arteries. Patients who have disease of the left main coronary artery, and those with disease of all three major coronary arteries and abnormal function of the left ventricle, are primary candidates.[34] If left untreated, the condition can be life threatening. Emergency procedures are indicated for patients with unstable angina following a heart attack or a blood clot. Emergency CABG is defined as being performed pending or during a heart attack.

Treatment

Once contracted, CHD requires lifelong management. Mild to moderate CHD can be managed with lifestyle and diet changes and appropriate medication such as statins and vasodilators. Alternatives to CABG include aggressive medical therapy and angioplasty (mechanical widening of the artery), but CABG remains the favoured treatment option for long-term outcomes.[34]

During CABG, a healthy artery or vein from the body is grafted to the blocked coronary artery. The grafted vessel bypasses the blocked portion of the coronary artery, creating a new path for blood to flow to the heart muscle. Traditionally CABG is performed 'on-pump' (when the heart is stopped), but more recently the 'off-pump' technique (when the heart is actively beating) is being practised with some evidence of fewer complications, including reduced incidence of post-operative stroke.[35] Both CABG techniques are captured in the data below.

Overall mortality relating to CABG is 3–4%.[36] Stroke occurs in 1–2% of cases, primarily in older patients; mortality and complications also increase with age and are particularly prevalent in the 70+ age bracket.[36] While the potential of CABG to deliver positive outcomes across all age groups is widely recognised, there is some evidence to suggest that age is considered to be an independent risk factor.[36]

Guidance

NICE interventional procedure guidance 35, *Off-pump coronary artery bypass grafting* (2011), makes no specific reference to age and recommends that surgeons are trained in both on and off-pump techniques.[37]

The Society for Cardiothoracic Surgery commentary around clinical outcomes data suggests that increasing age is strongly associated with increased mortality following CABG surgery, but does not make any specific recommendations linked to age.[38]

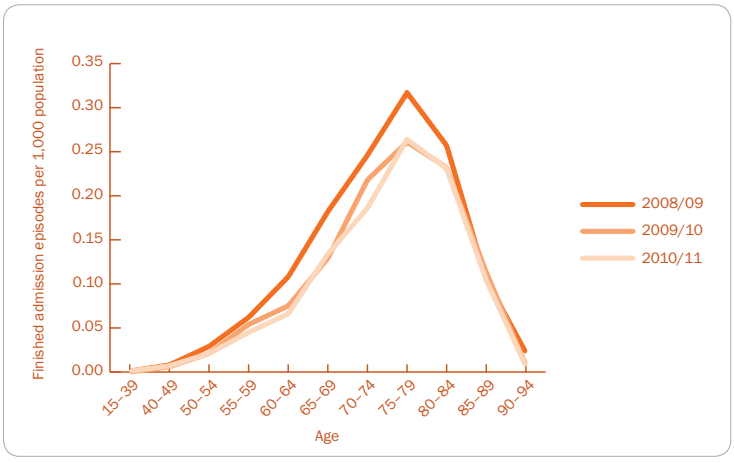

Figure 2 Rates of elective coronary artery bypass graft procedures, by age

The European Society of Cardiology's *Guidelines on myocardial revascularization* highlight that while age is one of the most important risk indicators, older patients experience a similar or greater benefit from early invasive procedures.[39]

Risk calculators exist for this procedure, for example the 'logistic EuroSCORE' measure, which takes into account age among other measures such as gender and level of comorbidity[40] to generate a mortality risk figure, which is then used alongside clinical judgement to assess a patient's suitability for cardiac surgery. It is of note that age is factored in alongside comorbidities, so it is considered an independent factor within this mechanism.

Key findings

Figure 2 (left) shows the rates of elective CABG surgery by age across three consecutive years (2008–2011). The curve demonstrates that elective CABG surgery rates peak in patients in their late 70s and then begin to decline, with a sharp decline in patients aged in their early 80s and over.

To place these data in context, prevalence of CHD increases markedly with age, so the decline in provision of elective CABG in older age cannot be explained by incidence alone.[41] Clinical opinion suggests that among the factors likely to account for this decline are comorbidities and decisions taken by older patients to decline surgery.

Older patients are statistically more likely to present for surgery with more risk factors and reduced functional levels. Often this will delay surgery and deter patients from having surgery.

Notably, in our clinical commentator's experience, geriatricians are only involved in the CABG care pathway on an ad hoc basis for specific indications and are not systematically engaged in the decision. Older patients with comorbidities can be 'optimised' for CABG surgery, tailoring pre-operative and post-operative care to maximise the suitability of patients for surgery, but the extent to which this is common practice is unclear.

Elective CABG surgery rates peak in patients in their late 70s and then begin to decline, with a sharp decline notable in patients aged in their early 80s and over

8 Hip and knee replacement

Indication

Total hip and knee replacements are most commonly performed because of progressive worsening of severe arthritis in the joint, generally seen with ageing, congenital abnormality or prior trauma. Arthritis of the joint will commonly lead to an elective procedure, whereas hip and knee fractures will normally require an emergency procedure. Falls are the main cause of joint fractures and older people are disproportionately affected, with high incidence of osteoporosis in older women commonly leading to fractures and resulting in emergency surgery.

It is estimated that osteoarthritis causes joint pain in 8.5 million people in the UK and recent figures show that approximately 12% of adults aged 65 and over have osteoarthritic pain in their hip.[42] People over the age of 65 make up the overwhelming majority of recipients of joint replacement surgery and women are statistically more likely than men to require such surgery.[43]

Treatment

All types of hip and knee surgery – from mini-incision (keyhole) procedures to complex open cases – are included in the data analysed in this report. Surgery involves removal of the worn cartilage from both sides of the joint, followed by resurfacing of the joint with a metal and plastic implant that looks and functions much like a normal joint.

Significant advances have been made in both hip and knee-replacement procedures in recent years and surgery is a proven, predictable and durable solution for end-stage arthritis, allowing relief of debilitating pain and a return to independence for the patient. Referral for elective surgery should be made before a patient experiences prolonged and established functional limitation.

For most patients joint replacement is the optimal long-term solution, as injections of corticosteroids can provide only temporary symptomatic relief.

Guidance

Hip and knee replacements are recommended by NICE for all patients with severe arthritis who have not responded to non-surgical interventions.

The NICE clinical guideline *The care and management of osteoarthritis in adults* (2008), recommends that '*patient-specific factors (including age, gender, smoking, obesity and comorbidities) should not be barriers to referral for joint replacement therapy*'.[44]

Related NICE interventional procedures guidance and technology appraisal guidance make no reference to age.[45,46] NICE is referenced in a clinical knowledge summary on the NHS Evidence website as '*having reviewed a large number of studies and concluded that there is very little evidence on which to base decisions about who to refer*', in relation to hip and knee surgery.[42]

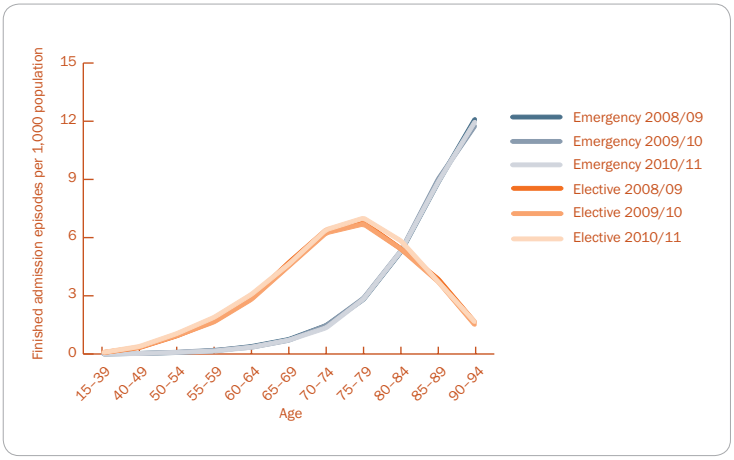

Figure 3 Rate of elective and emergency hip replacement procedures, by age

Key findings

Figure 3 (right) represents the rates of emergency and elective hip replacement procedures across three consecutive years (2008–2011).

The figure shows little variation in overall surgical rates by year, but the following trends are apparent:

- The rate of elective surgery increases with age up to a peak of 75, then declines sharply.
- Emergency hip surgery is relatively uncommon in patients under the age of 70, with a sharp rise in the rate of emergency surgery from the age of 70 upwards.
- In patients aged in their mid-80s and over, emergency surgery is more common than elective surgery.

It is important to note that people not receiving elective surgery for osteoporosis may not be ending up as emergency cases. This is because elective and emergency surgery are commonly attributable to different diagnoses (osteoarthritis and fracturing, respectively). The very high rate of emergency hip surgery in patients over 85 poses an urgent question for the NHS in terms of fracture prevention in general, particularly given the significantly higher risks to mortality and morbidity presented by emergency procedures.

Financial factors prior to referral may also be a barrier to this type of surgery. As described earlier in this report, there is evidence of rationing in the commissioning of hip and knee replacement surgery according to age.

Figure 4 (opposite) shows the rates of elective knee replacement procedures by age across three consecutive years (2008–2011). While emergency surgery to treat hip fracture is common, data show that emergency surgery on the knee is uncommon. Our data analysis is therefore based on elective rates only.

The figure denotes little variation in surgical rates by year, but there is a clear trend in surgical rates by age: the rate of elective knee replacement surgery begins to decline

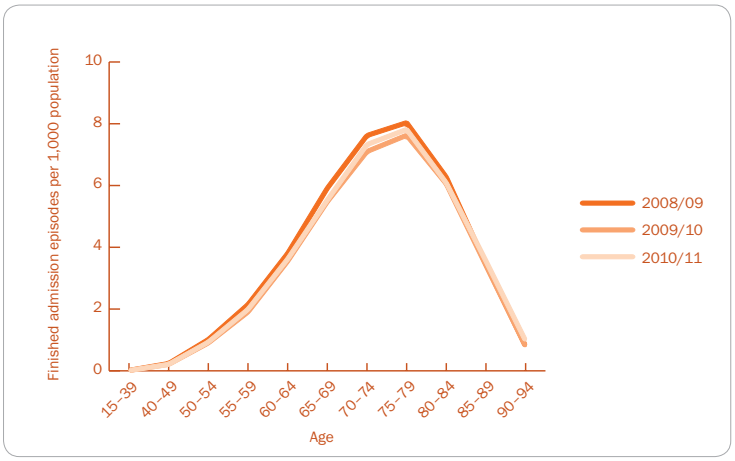

Figure 4 Rate of elective knee replacement procedures, by age

sharply after the age of about 79. A strong observational link can be made between the chronological age at which rates of both hip and knee elective procedures begin markedly to reduce.

The opinion of our clinical commentator is that the decline of elective hip or knee replacement operations in patients over the age of 79 is in part due to patients opting out. One example given is that some older patients may act as carer to a spouse or other family member, and immobility during recovery and rehabilitation may not be an attractive prospect. However, the extent to which these factors discourage older patients from undergoing surgery is unclear.

A recent study in the *BMJ,* 'Equity in access to total joint replacement of the hip and knee in England: cross sectional study', examines factors affecting access to hip and knee replacement surgery in England and concludes that there is evidence of inequality of access that adversely affects patients over the age of 85.[47] The data in our report can be interpreted as reinforcing this conclusion.

9 Colorectal excision

Indications

Colorectal excision is a relatively broad term covering procedures that involve the removal of part of the bowel and some of the surrounding tissue. The operation can be either open or laparoscopic. It is undertaken to treat several conditions – colorectal (bowel) cancers, diverticular disease and Crohn's disease are the most common.

More than 40,000 new cases of colorectal cancer are diagnosed each year in the UK. In 2010/2011, 22,048 colorectal excision procedures were undertaken on individuals with a form of the disease.[48] This represents 17% of the total procedures for that year. The incidence of colorectal cancers increases with a patient's age and more than 70% are diagnosed in people aged 65 or over.[48]

The probability of developing diverticular disease increases with age: an estimated 5% of people over 50 are affected and 50% of people over 90. It occurs when the inner lining of the bowel breaks through bowel's muscle wall, creating bulges called diverticula.

Crohn's disease is the inflammation of the lining of the bowel. It affects approximately 60,000 people in the UK, with between 3,000 and 6,000 new cases diagnosed each year.[49] The condition can affect an individual's ability to absorb fluids and nutrients and can cause diarrhoea and pain. Crohn's disease typically has a much earlier age of onset that colorectal cancer or diverticular disease, between the ages of 10 and 40.[49,50]

Fact Box:
More than 70% of colorectal cancers are diagnosed in people aged 65 or over

Treatment

Provided a colorectal cancer is not too advanced, surgery is the main treatment and may be combined with chemotherapy, radiotherapy or biological therapy. For those patients who do not undergo excision surgery, these adjuvant therapies may be delivered without surgery. For patients with advanced disease, palliative treatment options such as colorectal stenting can relieve the symptoms.

A colon resection is indicated for patients whose diverticula become infected (diverticulitis) and who experience symptoms more than once; alternative surgery is performed on patients with infections in their abdomen caused by the diverticula. It is thought that approximately 20% of patients with diverticular disease will experience an inflammatory complication of the disease that may require surgery.[51]

Approximately 75% of Crohn's disease patients who have disease in the small bowel

will have surgery in the first ten years after diagnosis to remove the most aggravated part of the bowel, though it is not curative in the long term.[52,53]

Aside from surgery, drugs can be used to treat all of these conditions, though surgery is the only curative treatment for diverticular disease.

Guidance

The NICE technology appraisal guidance document *Laparoscopic surgery for the treatment of colorectal cancer* notes that the incidence of colorectal cancer increases with age, but does not provide direct information or guidance on if and how to treat older patients.[54] The NICE clinical guideline *Diagnosis and management of colorectal cancer* also does not make recommendations on what surgery is appropriate for this group of patients or when it is appropriate.[55] On the criteria for deferring treatment, the technology appraisal guidance is non-prescriptive with respect to age and other clinical issues.

Interestingly, NICE's cancer service guidance notes that decisions about which form of investigation should be used at any point in the diagnostic process should depend on the patient's '*symptoms, age and general condition*'.[55]

The Association of Coloproctology of Great Britain and Ireland's *Guidelines for the Management of Colorectal Cancer, 3rd edn,*[56] include a number of recommendations that are pertinent to age, such as:

'*Surgery for colorectal cancer should be avoided if the hazards are deemed to outweigh the potential benefits, i.e. when the patient is medically unfit for surgery.*'

The guidance does reference a study linking age to outcomes[57] and it is further noted that '*more than a quarter of patients over 90 died within 30 days of their surgery compared with just over 10% of those aged between 80 and 89*'. Data on the cause of death for these patients would inform a deeper analysis of surgical outcomes.

NICE has not produced any guidance regarding diverticular disease or Crohn's disease, except for technology appraisals for individual drugs. A clinical guideline on Crohn's disease is due to be published in late 2012. Quality standards for both topics are included in NICE's proposed library for development.

The Association of Coloproctology of Great Britain and Ireland has produced guidance for the treatment of diverticular disease,

which was published in 2011. The guidance recognises that '*the mortality rate for both elective and emergency colectomy is higher in the > 50 years age group*', but does not make recommendations for treatment based on the age of a patient.[59]

British Society for Gastroenterology guidelines for the treatment of inflammatory bowel diseases, including Crohn's disease, note the increased incidence of the diseases in younger patients, but make no recommendations for treatment based on age or perceived fitness for surgery.[60]

Our clinical commentator also noted that ASA grading (see Box 5) would be assessed at a pre-admission clinic, alongside specific checks for heart and lung function. In addition, there are a number of mortality prediction tools available to colorectal surgeons that can be used to inform discussions of risk and benefit with the patient.[61]

Key findings

Figure 5 (above right) shows the rates of colorectal excision procedures that were undertaken in the NHS between 2008 and 2011. It shows clearly that treatment rates increase rapidly up to the age bracket of 65–69, after which they decline. The figure also shows that treatment rates increased year on year between 2008 and 2011.

The National Bowel Cancer Screening Programme started in 2006 and was fully implemented by 2010, covering men and women between the ages of 60 and 75. This is likely to account for the increasing treatment rates observed year on year between 2008 and 2011.

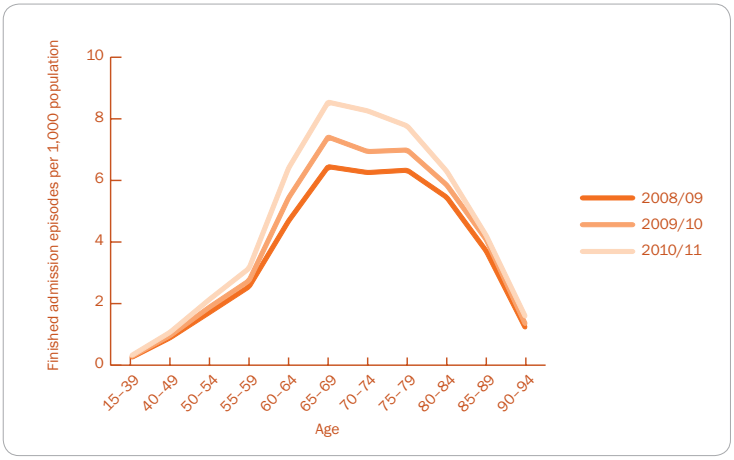

Figure 5 Rate of elective colorectal excision procedures, by age

Despite the higher incidence of Crohn's disease in the earlier age brackets, the decline in treatment rates in patients over the age of 69 does not correlate with the increased incidence of colorectal cancers and diverticular disease in older patients.

For colorectal cancers, the decline in treatment rates in older patients may be a result of the following factors, which influence the risk–benefit discussion between the patient and his or her clinician when deciding whether to undergo the procedure:

- the impact of a patient's comorbidities on the level of risk associated with undergoing the procedure, and the potential post-operative side effects;
- the stage and growth rate of the patient's tumour; and
- the life expectancy of the patient.

It is not clear, however, whether these factors alone explain the decline in surgery.

It is also important to note the palliative treatment options, which are available for patients with the disease who are not treated with excision. Clearly, however, it is important that patients are not referred to palliative treatment unless all reasonable curative treatment options have been exhausted.

Diverticular and Crohn's diseases present less risk to a patient's life than colorectal cancer, and this will have a further impact on the risk–benefit profile associated with a colorectal excision procedure. Furthermore, there is a perception that some older patients may be more willing to live with symptoms than younger patients and this can influence their own decision whether to undergo treatment. However, given the role of surgery in reducing symptoms and, in the case of diverticulitis, reducing long-term mortality, it is important that these patients are encouraged to consider surgical treatment. This requires effective communication from both primary and secondary care professionals of the risks and benefits of the procedure to support shared decision-making with the patient.

10 Radical prostatectomy

Indication

Ten thousand men a year die from prostate cancer and the incidence of the disease increases with age.[62] Diagnosis will occur either as a result of symptoms or testing based on an individual's risk of developing the disease. Risk factors for prostate cancer include age, ethnicity and a family history of the disease.[63] Prostate cancers vary in how rapidly they grow and spread through the body – those that spread beyond the prostate (metastasise) pose a significant risk to mortality as curative treatments become less effective. Of all the men who develop the disease, half will die as a direct result of it.[64]

Treatment

The removal of the entire prostate and seminal vesicles (radical prostatectomy) is used as a treatment for men with localised or locally advanced prostate cancer. It aims to remove all of the cancerous cells before they spread to other parts of the body. The most common side effects associated with the procedure are incontinence and erectile dysfunction, caused by damage to the nerve that is wrapped around the prostate gland. This risk can be minimised through the use of robotically assisted techniques.[65] Around 65% of prostatectomies in England are currently performed laparoscopically, of which a quarter are performed with the assistance of the Da Vinci robot.[66] The data presented cover all methods of undertaking the procedure.

A number of non-surgical treatment options for prostate cancer also exist, including radiotherapy, brachytherapy and active monitoring for changes in the cancer's pathology or volume. The latter of these recognises the fact that a great number of men die with, but not of, prostate cancer, and that tumours can remain benign with limited or no symptoms for a long time, sometimes indefinitely.

Guidance

A clinical guideline for the diagnosis and treatment of prostate cancer was published by NICE in February 2008.[67] The guideline recommends that men should be offered radical prostatectomy or radical radiotherapy if they have intermediate-risk localised cancer, or high-risk localised cancer '*when there is a realistic prospect of long-term disease control*.' The guideline notes that age should be one of the risk factors for prostate cancer that should be covered in discussions with a patient when deciding whether to have a prostate biopsy.

However, the guideline does not include suitability criteria for men who are being considered for the treatment, and makes

no reference to age with respect to clinical decision-making. In addition, interventional procedure guidance has been produced by NICE specifically for the laparoscopic procedure and recommends it strongly based on the current evidence for its safety and efficacy.[65] As interventional procedure guidance, it does not make recommendations regarding patient suitability for the procedure.

Guidance from the British Association of Urological Surgeons (BAUS)[68] for surgical MDTs on treating prostate cancer highlights '*Age/co-morbidity/life expectancy*' as a key consideration for the MDT when determining which treatment to recommend for an individual. This criterion is included in the guidance referring to all stages of prostate cancer. Furthermore, age and comorbidities are mentioned in tandem throughout the guidance, though distinctly. For example:

'*Treatment strategies are influenced by the stage of disease and by an interaction between the risk of disease progression, survival and key patient characteristics, such as age, lifestyle and general health. The discussion of these factors is of crucial importance in determining the most appropriate way forward. For example, age and the presence of comorbidities may be a restrictive factor when considering surgery.*'

As such, the guidance promotes the use of a person's age as an independent factor in determining which treatment to recommend a patient, though it is not clear on what basis as comorbidity and life expectancy are mentioned as separate factors.

Anecdotal evidence also suggests that ten-year life expectancy considerations exist in the clinical culture of the NHS. This raises the issue of accurate life expectancy estimation and awareness of the factors affecting assessment of life expectancy, including the use of appropriate actuarial life expectancy tables.

Pre-operatively, various tools for measuring life expectancy, comorbidity and the likely stage of the disease are available for use by surgeons in England, including the Charlson Index,[69] Partin tables[70] and the Memorial Sloan-Kettering nomogram.[71] The Charlson table uses age as a factor affecting ten-year life expectancy; notably, however, Partin tables and the nomogram, which predict surgical outcomes, do not include age as a criterion.

Fact Box:
Ten thousand men die from prostate cancer every year

Key findings

Figure 6 (overleaf) shows the rate of open prostatectomy procedures that took place in each of the last three years. The data show a clear trend, with treatment rates increasing

significantly across sequential age ranges up to the 65–69 bracket, then declining sharply across each of the subsequent age brackets. The data also show that the rates of treatment in the 60–74 age brackets have increased slightly in the last three years.

Data regarding treatment rates in men who underwent the procedure as an emergency admission were also analysed. However, these procedures account for a very small proportion of overall treatment numbers (only 0.75% of the total number of FAEs in 2010/2011) and therefore the sample is too small to be able to discern any significant trends.

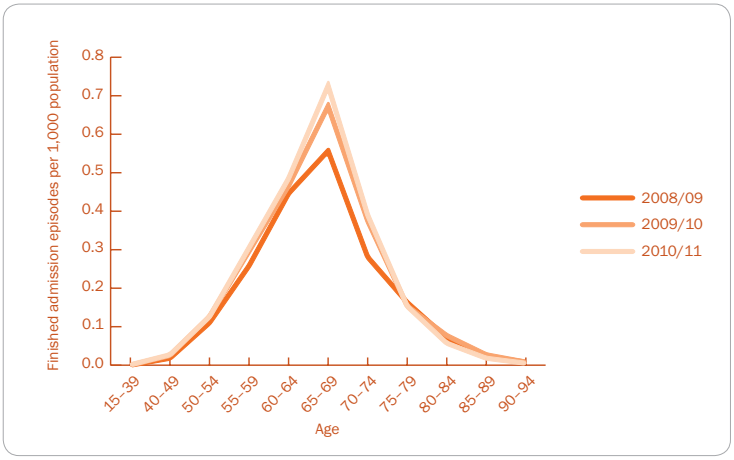

Figure 6 Rate of elective excision of prostate procedures, by age

The incidence of prostate cancer increases with age. Surgical treatment rates for the disease do not match the number of new cases being diagnosed in each age bracket of the population. Our clinical commentator noted several factors that may contribute to this observation:

- Several clinical factors are important when considering a patient's appropriateness for radical prostatectomy, including previous history of major abdominal surgery, good cardiac function, continence and the absence of other pelvic cancers. At a population level older patients are more likely to have complicating comorbidities.
- Other equally effective treatment options for prostate cancer exist and these may be favourable for older patients when assessing the risks and benefits of the various options available.
- Our expert commentator indicated that evidence for the benefits of prostatectomy over other treatment options for patients over the age of 65 is lacking. Commonly, radiotherapy is offered as the primary treatment for patients over 70 as it is less invasive than surgery. Watchful waiting regimes are also increasingly employed for older patients as their life expectancy decreases, with some trials of watchful waiting versus radical prostatectomy showing little benefit in men over the age of 65.[71]

Our clinical commentators have suggested that life expectancy of at least ten years is sometimes used as an informal criterion for assessing the benefits of surgery. It is not clear, however, whether this is used to decide if surgery should be offered or to shape the advice that may be given to patients considering it as an option. It should be noted that statistically a man of 75 will have a life expectancy of 11 years.[14]

11 Cholecystectomy

Indication

An estimated 19% of the female population and 10% of the male population have gallstones, which are caused by the stagnation of bile in the gall bladder. Gallstones are also more prevalent in older people. Other risk factors include ethnicity, obesity, rapid weight loss and various medications including some forms of birth control. Around 15% of people with gallstones will experience symptoms as a result (gallstone disease)[73] and the incidence of gallstone disease increases with age.[74]

Symptoms of gallstone disease include inflation of the gall bladder caused by gallstones (cholecystitis), biliary pain, jaundice, pancreatitis and common duct stones (choledocholithiasis). These symptoms can become life threatening if left untreated, particularly if the gall bladder becomes infected or the pancreas is severely inflamed.

Treatment

Gall bladder removal, or cholecystectomy, is indicated for patients with symptomatic gallstone disease. This is the most effective intervention for treating gallstone disease and laparoscopic (keyhole) cholecystectomy has largely replaced open procedures in the NHS because patients recover more quickly. Alternative treatments to surgery include the use of acid medication to dissolve the stones (ursodeoxycholic acid) or the use of ultrasound to break them up (lithotripsy). However, these methods are only effective in around 10% of patients.[75]

Guidance

NICE has produced interventional procedure guidance for single-incision laparoscopic cholecystectomy (SILC) only. The guidance was published in May 2010 and advises on the safety and efficacy of the procedure.[76] Evidence around this procedure is limited as the majority of cholecystectomies are undertaken laparoscopically using multiple excisions, which is less complex but causes more scarring. The SILC guidance does not include guidance regarding patients' suitability for treatment.

The British Society of Gastroenterology produced guidance in 2008 for the management of common bile duct stones (CBDS), which states that:[77]

'*Cholecystectomy is recommended for all patients with CBDS and symptomatic gallbladder stones, unless there are specific reasons for considering surgery inappropriate.*'

Fact Box:
An estimated 19% of the female population have gall stones

No further guidance is given in relation to suitability for treatment with cholecystectomy, including biological or chronological age, though the guidance does note that the risk of exploratory work, often undertaken alongside cholecystectomy, can be greater in older patients: '[the] *use of T-tubes, and increasing age appear to increase risk of complication for LCBDE* [laparoscopic common bile duct exploration].'

Key findings

Figure 7 (right) shows the rate of elective cholecystectomies that took place in the NHS between 2008/2009 and 2010/2011, broken down by the age of the patient. The rates are very similar in all three years, indicating that the epidemiology of the disease remained relatively consistent in the three years examined.

The graph shows that procedure rates increase for each age group up to the 65–69 bracket, after which surgical rates decline at an increasing rate. The most marked decline is seen in the 75–79 and 80–84 brackets.

Given that the incidence of gallstones increases with age, it is clear that the pattern of treatment outlined in Figure 7 does not correlate with incidence. A number of factors may explain why this decline in treatment rates is observed, some of which are detailed below:

- A decline in the number of patients in those age groups presenting with symptoms.
- Comorbidities, assessed using tools such as ASA grading (see Box 5), resulting in fewer older patients being recommended

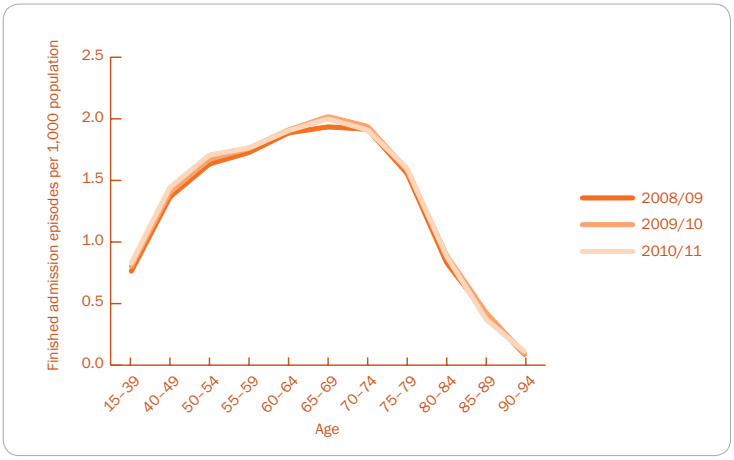

Figure 7 Rate of elective cholecystectomies, by age

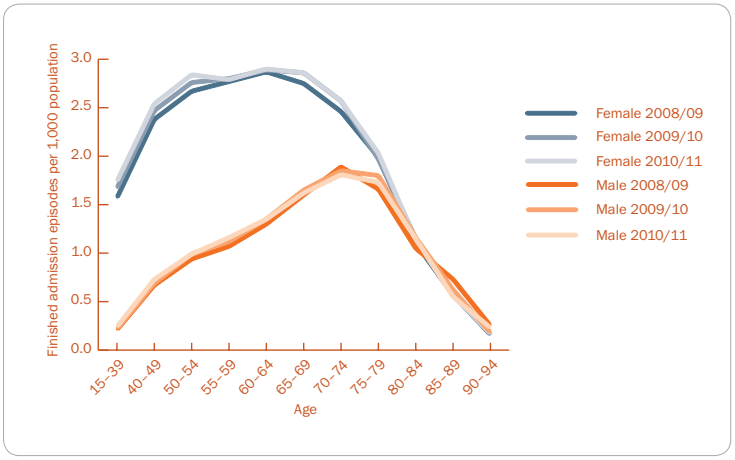

Figure 8 Rate of cholecystectomies, by age and gender

for surgery owing to concerns about the patient's ability to cope with anaesthesia.

» Fewer older people choosing to undergo surgery because they perceive their symptoms as minor or manageable.

Figure 8 shows the different surgical rates for cholecystectomies observed in the female and male population, clearly showing that rates are markedly higher in females under the age of 75, though interestingly the rates for the different genders largely align after the age of 75.

The higher rate of procedures among women between the ages of 15 and 74 reflects the epidemiology of gallstones, which are more prevalent in women. It is interesting to note the similar treatment-rate pattern for men and women over the age of 75. There is no clear clinical explanation as to why this might be the case, but it is suggested that decline in treatment rate in women over the age of 75 may indicate that treatment prior to 75 has in part prevented the need for surgery in the over-75s.

12 Inguinal hernia repair

Indication

Inguinal hernias, otherwise known as groin hernias, are the most common type of hernia. They occur when intra-abdominal fat or part of the small intestine protrudes into the inguinal canal because of a weakness in the lower-abdominal muscles around the opening of the inguinal canal. The inguinal canals are two passages in the lower front of the abdominal muscles, which are located on each side of the groin.

Inguinal hernias are more common in men owing to the development of the male reproductive organs in the womb: both the spermatic cord and testes descend from the inguinal canal into the scrotum and the canal opening sometimes does not properly close after birth. Evidence suggests that, at a population level, age is a key risk factor for developing hernias.[78]

A significant proportion of detected hernias are asymptomatic and some minor inguinal hernias can be massaged back into place. However, many hernias become symptomatic after tissue swelling causes them to get 'stuck' (incarceration), which can jeopardise the flow of blood to the trapped tissue (strangulation). This is more likely to occur the longer a hernia is left untreated and can cause severe infection and tissue death, which can become life threatening.

Treatment

Incarcerated hernias can be repaired through surgery, which relocates the hernia and either repairs the abdominal muscle wall with stitching, or uses a modern flexible mesh to effectively plug and reinforce the gap in the muscle wall (tension-free repair). Both techniques are possible using open surgery but laparoscopic surgery is favoured for the latter and has become the standard treatment for the majority of patients. However, a clinician may recommend that asymptomatic hernias are monitored for signs that they are becoming symptomatic and at risk of strangulation, rather than recommending immediate curative treatment for the hernia.

Guidance

NICE published a technology appraisal of laparoscopic inguinal hernia repair in September 2005,[79] which recommends laparoscopic surgery as a treatment option for the repair of inguinal hernias. It does not outline restrictions in the type of patient suitable for the procedure, though it notes that an individual's suitability for general anaesthesia should inform the type of procedure they receive, as different

combinations of local and general anaesthetic may be required depending on the point of entry used to repair the hernia.

Guidance from the European Hernia Society recommends that '*All male adult (>30 years) patients with a symptomatic inguinal hernia should be operated on using a mesh technique*', and notes the preference for undertaking an endoscopic (laparoscopic) procedure for the active working population because of the socio-economic benefits.[80] This implies that retired individuals are less of a priority for laparoscopic procedures. The guidance notes that not all hernias require surgery – particularly if they are asymptomatic. Elsewhere, however, it notes a study that concludes that some elderly men with significant comorbidities could benefit from elective surgery in order to avoid the higher risks associated with emergency surgery.

Neither pieces of guidance therefore refer to chronological age as a factor in decisions to undertake surgical inguinal hernia repair, though they note that an individual's level of comorbidity and employment status can be used to determine when and what type of procedure is undertaken.

Key findings

Figure 9 (left) shows the rate of elective procedures for inguinal hernia repair for each year between 2008/2009 and 2010/2011. The graph shows a clear trend, with a marked incline in rates up to the 75–79 age bracket followed by a marked decline. Interestingly, the graph also shows that the rates of treatment have slightly decreased in the majority of age brackets over each of the last three years.

The decline in surgery rates with age does not match the incidence–age profile of the condition. Our clinical commentator suggested factors that may cause this disparity, including:

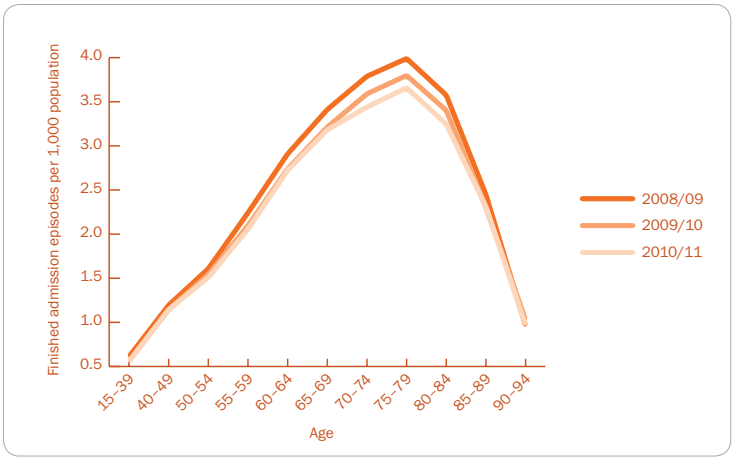

Figure 9 Rate of elective inguinal hernia repair procedures, by age

» Watchful waiting may be an appropriate alternative to surgery in some cases.
» Some older patients may choose not to undergo a procedure, particularly given that they may be asymptomatic at the point of referral.
» The actual or perceived level of post-operative care and support may additionally influence the decision to treat.

Figure 10 (right) shows the rate of emergency procedures that were performed for inguinal hernia repair for each year between 2008/2009 and 2010/2011. Emergency procedures present a greater risk of surgical mortality than elective procedures.

Notably, the graph shows that the rate of emergency procedures undertaken increases exponentially with the age of the patient. This is true all the way up to the 85–89 age bracket, after which the rate drops slightly.

The figures show that the peak for rate of emergency procedures is in the 85–90 age bracket, some ten years after the peak for elective procedures. This suggests that some emergency surgery may have been prevented by earlier elective surgery. It may also indicate a proportion of serious hernias that were previously asymptomatic and not monitored.

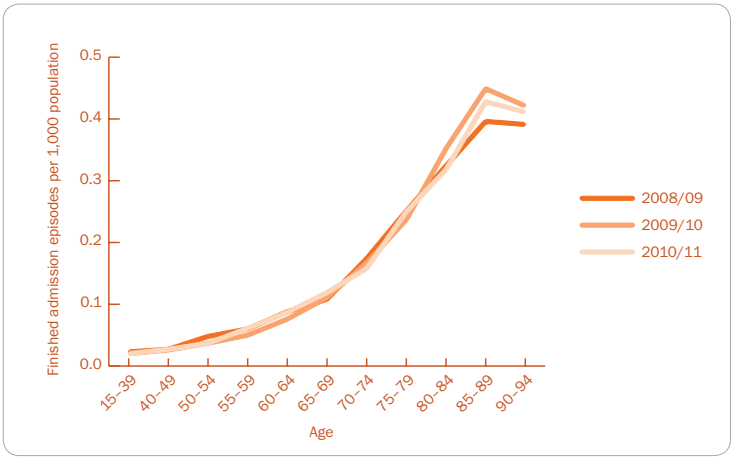

Figure 10 Rate of emergency finished admission episodes (FAEs) for inguinal hernia repair procedures, by age

Evidence suggests that at a population level, a key risk factor for developing hernias is age

Conclusions and recommendations 13

Surgery can significantly improve health outcomes both in terms of survival and quality of life. However, across a range of key procedures, surgery rates decline with age, despite the fact that the conditions being treated are more common among older people. In some instances observed emergency rates increase with age while elective rates are shown to fall, which might indicate a lack of early, preventative care for older patients.

The extent to which the decline in access to elective treatment is appropriate varies according to procedure and to each individual clinical case. We suggest a number of possible factors that may explain this decline. These factors may be interconnected and may occur together or alone. Firm conclusions about the relative bearing of these factors on decisions goes beyond the scope of this report, however they require further investigation in order to satisfy moral and legal imperatives in relation to age.

Possible factors affecting access to surgery for older patients

Clinical factors

The existence of a comorbidity or poor ASA scores (see Box 5), for example, may mean that the risks of treatment outweigh the benefits. In some instances there may be scope to optimise a patient's condition through effective management of comorbidities in primary and secondary care settings. At a population level, the correlation between comorbidities and age is recognised. However, there should be no conflation of the issues surrounding comorbidity and chronological age within a patient's individual package of care: a person's fitness for surgery must be objectively assessed. More work is needed to evaluate the extent to which tools such as ASA grading and risk calculators help surgeons and other clinicians to navigate complex issues and avoid potential harm caused by inappropriate surgery, while ensuring that their decisions are objective and promote age equality.

Separately, the stage of the disease may be more advanced in older patients on initial presentation, meaning that surgical treatment is no longer a viable option. Although this represents a legitimate clinical factor for the surgeon, the reasons for late presentation must be considered. They may be because of low levels of patient awareness, under-referral, or limited investigation of signs and symptoms by clinicians. These challenges must be addressed.

Clinical approaches

The way that individual clinicians approach the treatment of older people based on their own experience, attitudes and evidence:

- A patient's chronological age and their biological age may be conflated – the decision to withhold treatment may not be made on the basis of a comprehensive and objective assessment but on a series of assumptions about fitness in older age. This could be due to outdated perceptions of how demanding a treatment regime may be, or a lack of awareness about demographic changes and the increasing fitness of older people.
- The clinical benefit of providing treatment may be questioned when relative life expectancy is shorter.
- Communication with patients to discuss risks and benefits, to inform and to reflect on issues and anxieties, may be limited or ineffective.
- There may be a shortage of tools and strategies that help clinicians make objective decisions about how to treat older patients. Geriatricians play a key role in helping to evaluate and manage risk, and promoting shared decision-making approaches. Effective MDT working to bring together physician, surgeon, anaesthetist and geriatrician is critical.
- Clinicians may lack the confidence to treat patients where there is a dearth of evidence to justify doing so – older patients are under-represented in audit data and in clinical trials.

Patient awareness and preference

Patients may lack the information and support they need to make an informed decision about whether surgery is right for them or not. Even

with the right information and support, patients may actively opt out of treatment because of concerns about the risks associated with surgery or their independence and mobility during recovery.

It is also clear that actions and behaviours across other parts of the patient pathway not covered by this report – in a primary care setting, in referral centres or as part of the wider commissioning process – may affect the rate of referral, which would have an impact on treatment rates. Policies or decisions in relation to restricted referrals may be based on population-level assumptions about the utility of treatment in older populations. Where these are not evidence based or objective, they are against the spirit and the letter of the legal framework.

Commissioners and providers also have a duty to deliver supportive care across the patient pathway, particularly where patients undergo invasive treatment. Pre and post-operative services, such as stoma nurse visits or physiotherapy, will help make surgery a viable and successful option and must be made available in line with need. Similarly, the input of Medicine for the Care of Older People clinicians after surgery can mean that older patients who may once have responded poorly to surgical procedures can now expect much better outcomes.[18]

More broadly, steps should be taken to reduce the need for surgery among older people – through early condition management or falls prevention for example. The need for this is clearly demonstrated by the rise in emergency hip replacement operations by age. High-quality, integrated health and social care services are critical to improve the outcomes and experiences of patients as they grow older.

If access to surgery for older people was improved, the following significant health gains could be delivered:

- people would live longer;
- the impact of long-term conditions would be reduced; and
- recovery from episodes of ill health would be enhanced.

These factors reflect the domains in the NHS Outcomes Framework and addressing them in the context of older people should be a key priority for the NHS Commissioning Board.

As the population ages, the inequities in access to care among patients of different ages will become more acute. All those with an interest in improving health outcomes should work together to safely optimise surgery rates for older people.

Overleaf we set out some recommended steps for achieving this.

Recommendations

Informing and communicating with patients

Older people may be less aware of the signs and symptoms of disease or may be less willing to seek medical help, perhaps dismissing symptoms as an inevitable part of ageing rather than a sign of potentially serious ill health. Equally, older people's perceptions about surgery may have been formed many years ago and may not reflect the realities of modern medicine. This could also be applied to health professionals with responsibility for referring people in the first place. The NHS must address these issues if access to surgery for older people is to be increased.

Recommendation	Overall responsibility
1 Disease awareness campaigns should be targeted at the groups in society most at risk. Where this is older people, specific communications programmes should be developed. The pilot programme to raise awareness of breast cancer in the over 70s is a potential model for this.	Public Health England
2 Providers of NHS care should make age-appropriate information for patients on surgical procedures common to older people available, drawing on the expertise of the professions and the voluntary sector.	NHS providers and medical and patient charities
3 Patient decision aids should be developed for common surgical procedures. These should be targeted at groups in society where surgical treatment rates are lower than expected based on the estimated prevalence of relevant conditions.	Department of Health
4 Competencies and arrangements for shared decision-making in relation to surgery should be assessed through appraisal and revalidation processes.	General Medical Council and individual surgeons
5 Clinicians should inform patients if surgery has been ruled out for a condition where it would normally be considered, and provide reasons.[81] There should be no informal age 'cut-offs' and older patients and their families must be supported to challenge this where they suspect it is happening.	Surgeons and commissioners of surgical services

Improving the evidence base

Most clinical interventions are initially tested on younger people, meaning that some clinicians may not feel confident in using them to treat older patients. This situation cannot be allowed to continue.

Recommendation	Overall responsibility
6 Funders of research should require that studies are conducted in the age group that is most common for the disease in question unless there is a compelling reason otherwise.	Research funders (public and charity)
7 In responding to the ban on age discrimination in the NHS, the National Institute for Health Research (NIHR) should publish a strategy for improving the evidence base for interventions in older people.	NIHR
8 Building on the work undertaken by the National Cancer Equality Initiative and the Pharmaceutical Oncology Initiative,[19] the Department of Health should work with the medical royal colleges to further investigate clinical attitudes towards ageing and the impact that this can have on making decisions on treatment. The study should explore the impact of clinical and non-clinical factors on access to treatment for the older patient population.	Department of Health and royal colleges
9 Surgical specialties should accelerate work to record and publish accurate and comprehensive outcome data to improve the evidence base on the benefits of treatment for older patients. The Adult Cardiac Surgery Database[82] produced by the Society of Thoracic Surgeons is one example of good practice in this area.	The Royal College of Surgeons and surgical specialty associations

Developing guidance

In order to support providers and commissioners of NHS care in delivering the most appropriate care for older patients, guidance should be developed to support consistent practice.

Recommendation	Overall responsibility
10 Following the example set in the NICE quality standard on breast cancer, all further NICE quality standards should make explicit reference to age where there is evidence that older patients are not receiving the same high-quality treatment as other age groups.	NICE
11 NICE clinical guidelines and specialty guidance produced by surgical specialty associations should include additional guidance on the management of complex needs and comorbidities, how to optimise patient fitness ahead of surgery and arrangements for post-operative care.	NICE
12 The Royal College of Surgeons and surgical specialty associations should explicitly address age equality in future guidance.	The Royal College of Surgeons and surgical specialty associations

Delivering the most appropriate care

Delivering high-quality care for older people should be an organising principle for healthcare providers. In order to achieve this, the needs of older patients should be reflected in training, service organisation and through NHS payment systems.

Recommendation	Overall responsibility
13 Training for acute specialties should include dedicated components on treatment of older people.	Health Education England
14 Geriatricians should be involved more routinely in MDTs for conditions that are common in older people. Such practice should be rewarded through the tariff, either through the use of the Commissioning for Quality and Innovation (CQUIN) framework or through best-practice tariffs.	The Royal College of Surgeons and the Royal College of Physicians
15 Providers should be required to present in their quality accounts an analysis of treatment rates for older people across common surgical procedures. Where there is deviance from a national benchmark, providers should set out how access to surgery for older patients will be improved in line with clinical need.	NHS providers and NHS Commissioning Board
16 Performance monitoring and incentives for providers should take into account the need to optimise patients for treatment in the acute setting and provide appropriate post-operative support in line with their needs.	Department of Health, NHS Commissioning Board and CCGs

Evaluating impact

Disaggregating information on the quality of care by age should become routine practice.

Recommendation	Overall responsibility
16 The NHS Information Centre for Health and Social Care should routinely publish data on surgical procedures disaggregated by five-year age groups to promote the analysis of trends in treatment rates over time.	NHS Information Centre for Health and Social Care
18 NHS Right Care should publish an atlas of variation for common surgical procedures and other major interventions according to age and geography.	NHS Right Care Programme
19 National clinical audits should routinely publish data disaggregated according to age. Where validated tools exist to assess biological as opposed to chronological age as part of the clinical decision-making process, their usage should be recorded and evaluated through national clinical audits.	The National Clinical Audit and Patient Outcomes Programme
20 Providers should be required to publish details of local conversion rates (the percentage of patients referred to a surgeon who go on to receive surgery) as a means of assessing geographical variation and investigating primary care referral as a possible barrier to access.	NHS Providers
21 Surgical MDTs should review their own treatment rates according to age. The use of such reviews should be incorporated in processes such as appraisal and revalidation.	Surgeons and MDT members

Delivering high-quality commissioning for older people

In order to deliver the improvements in health outcomes described in the NHS Outcomes Framework, commissioners of NHS services should prioritise efforts to improve services for older people.

Recommendation	Overall responsibility
22 Health and Wellbeing Boards should ensure that joint health and wellbeing strategies address the health and social care needs of older patients to prevent the need for surgery wherever possible. They should also ensure that patients can access surgical interventions in line with their clinical needs, with the right pre and post-operative support in place.	Health and Wellbeing Boards
23 Given the ban on age discrimination in the NHS, the Commissioning Outcomes Framework should include specific measures relating to treatment for older people in order to incentivise good commissioning practice.	NHS Commissioning Board and NICE
24 The Department of Health should prioritise work to remove the upper age limits within Domain 1 of the NHS Outcomes Framework to ensure that the NHS prioritises life-saving interventions for patients of all ages and is measured for progress across all age groups.	Department of Health and NHS Commissioning Board
25 Where there are allegations of rationing of interventions according to age, as opposed to clinical need and potential benefit, these should be investigated by the commissioners of that service and escalated to the NHS Commissioning Board where appropriate.	Service commissioners and NHS Commissioning Board

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