



# Reshaping surgical services: principles for change

The Royal College of Surgeons of England

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# Foreword

Clearly we all want the best outcome possible from our healthcare. A growing number of patients, clinicians, managers and politicians are realising that the NHS cannot remain the same as it tries to achieve this target.

The make-up of the UK population is changing. People are living longer, which brings new challenges for the way our health services provide care. The way a young person is treated in day surgery is very different to the care required for an increasing number of elderly patients with multiple conditions or dementia, whose personal needs may be as important as their clinical requirements.

Advances in medical science and technology have also caused changes. More patients can be treated without requiring an overnight stay in hospital, and greater specialisation in healthcare means it is often better to deliver complicated care in centralised centres of excellence.

It is clear that not every hospital can or should treat all patients and all conditions. This may be easy for all of us to agree with in theory. Yet it becomes much harder to understand when it affects *our* local hospital, particularly if moving services to another location means that we have much further to travel.

In the current financial climate, we become naturally cynical about the motives behind service changes even when there is a genuine desire to improve patient care. This is particularly true if changes are presented without any patient involvement and the consultation process appears tokenistic.

Many of us hold the belief that the NHS should provide the same services and treatments to everyone. So sometimes we object to the unfairness of proposed changes – why should our local service be moved when other people in other areas have better access to high-quality care?

The principles that any reshaping of services should follow, as outlined in this document, are to be welcomed. As a patient group, we highlight the importance of effective communication at every opportunity. It is absolutely vital that patients are consulted in an open way from the outset of any proposals right through to the changes actually being effected.

**Susan Woodward**  
Lay Chair, RCS Patient Liaison Group

# Introduction

The NHS is a cherished public institution, with a founding principle of universal access to healthcare, providing care and support ‘from cradle to grave’. As an organisation that employs more than one million staff and costs £104 billion a year to run, its decisions often become the subject of highly charged political debate because of its central importance to national life and its position in local communities. This inevitably makes change a difficult and painful process. Rarely will all parties agree on the direction the NHS should take, let alone the implementation.

The College is not a regulator but, as a professional body, our overriding duty is to act impartially, to protect patients and to ensure safe, high quality surgical services. We believe that there is a growing appreciation of the need for service change among patient groups, NHS staff and politicians. Where based on clinical evidence, the College supports this emerging consensus while ensuring safeguards are in place to protect patients.

The College’s prime responsibility is the improvement of surgical standards to support high-quality patient care, which includes protecting the training of surgeons. This is why the College has decided to set out the challenges facing the health service when considering reconfigurations of surgical services. There are currently more than a dozen reconfigurations planned for the NHS in England and several in Wales, which are likely to have a major impact on patients, their carers, surgeons and all NHS staff.

**This document makes the case for a different approach to reshaping of services from one that has been taken in the past.** We believe that if services are to be changed, the whole pathway of care – not just the surgical intervention – for patients with specific conditions must be considered. This should encapsulate how a patient would access services from primary care, to initial secondary or tertiary care referral, diagnostic tests, hospital treatment, discharge, follow-up and rehabilitation. It may be that certain aspects of the pathway can continue to be made available locally, while other aspects may be delivered in specialist centres.

In this document, we explain why we feel patients must be fully informed and involved in changes to their local services. Every day surgeons across the country talk to patients about their treatment options when they face the possibility of having an operation, so as a group of professionals we are close to their interests and their concerns. Patients want to be active partners in their care. It is only right that they should want to be involved in the decisions around the provision of that care and treatment, in a process that is not tokenistic.

This document also sets out the factors that need to be considered when the health service is considering reshaping services and there is a checklist at the end of this report detailing those points. The College sees its role as the patients' advocate. We wish to work with patients to ensure that local health economies provide the best possible surgical care – locally when possible but centrally, in specialist units, when necessary for the best patient outcomes.

# The changing nature of surgery and the NHS

The NHS, and within it the delivery of surgical care, has changed dramatically over recent years. The NHS is being asked to make efficiency savings, while also facing increasing costs of new technologies and drug therapies, a rising demand for healthcare from a rapidly ageing population often with complex health needs, and increased expectations from the public.

Successive governments have proposed various ways to reconfigure health services with limited success. Thirty years ago there were major protests around plans to reorganise services in London under the Turnberg review. Recently, the Prime Minister has faced a series of questions in the House of Commons about hospital reconfigurations affecting large areas of London, the Midlands and the North East. During this period, public concern and political opposition have proved major stumbling blocks to change. Yet innovation is essential, and condemning change without considering the opportunities for improvement fails to serve the best interests of patients.

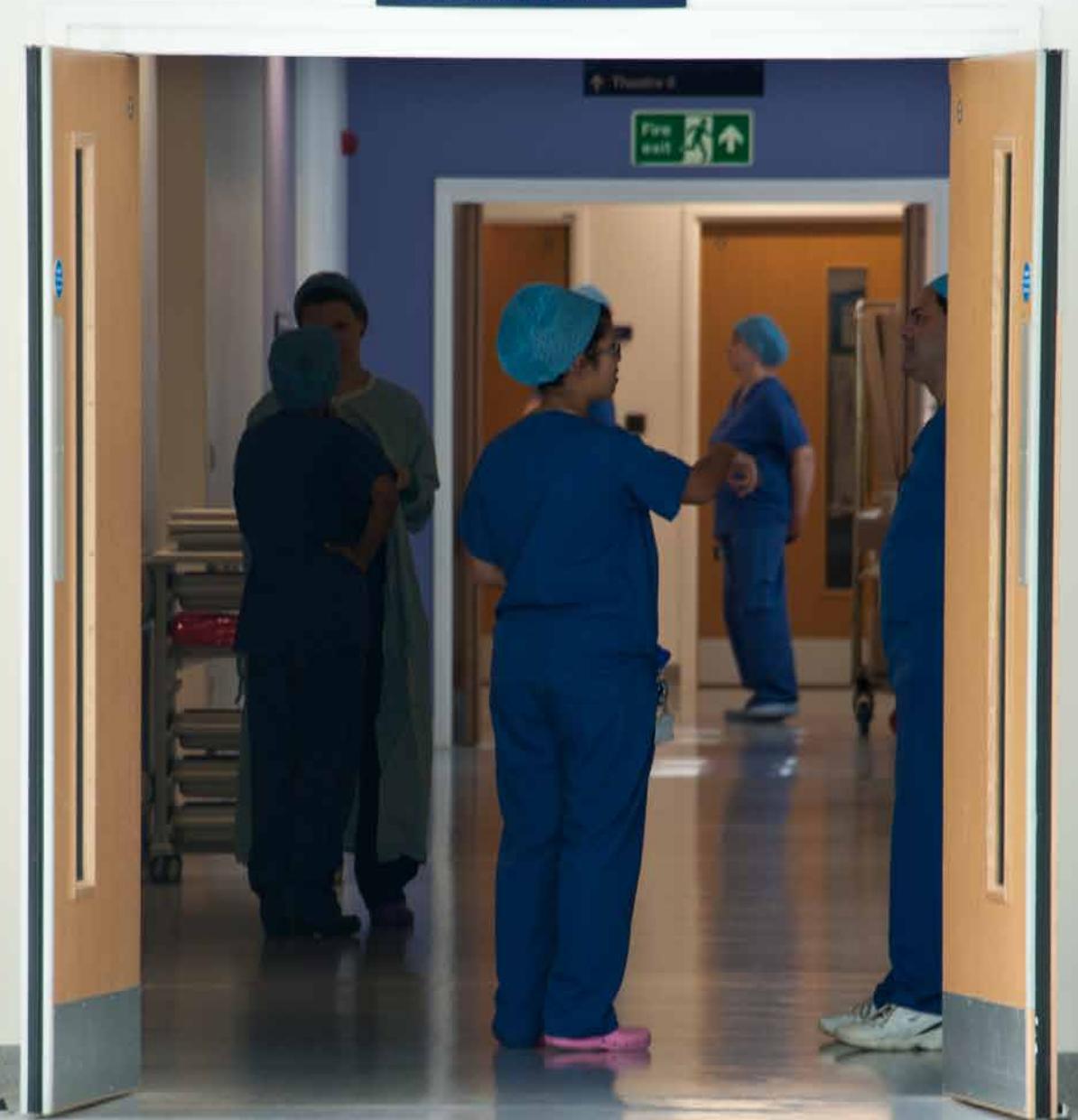
Since the Hospital Plan of 1962, acute care has been based on the concept that every member of the public should have access to the services of a district general hospital, which would provide virtually every form of care necessary. Surgery in those days was very different. It did not take place in multidisciplinary teams and was less informed by the measurement of outcomes, which we now know are essential for improvements in care. Patients were given relatively little information about the operation and very few options for alternative treatment. The average bed stay was around 11 days, compared with the common scenario now of either same-day or next-day discharge.

In our 2006 publication, *Delivering High-Quality Surgical Services for the Future*, the College outlined its views on the reshaping of surgical services as a starting point for the debate around the future of surgical services.<sup>5</sup> Since that time there has been a growing acknowledgement that the existing model of the district general hospital may not be able to deal with all eventualities. A recent King's Fund report outlined this view, stating that 'there is increasing recognition that services such as emergency surgery may be unsafe out of hours, and the provision of these services needs to be



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concentrated in fewer centres that are better able to provide senior medical cover.<sup>6</sup> With the impending introduction of seven-day working, this will add further strain to an already overstretched service, which may add to the pressure for reconfiguration. Support for local communities, however, must continue wherever possible.

The Royal College of Physicians recently demonstrated how services have changed in its report *Hospitals on the Edge?*. It states that ‘it is increasingly clear that we must radically review the organisation of hospital care if the health service is to meet the needs of patients. We must act now and we must act collaboratively if we are to ensure patients receive the care they deserve now and in the future.’<sup>7</sup>

### **Innovation and research**

The current pace of development in science and technology is considerable. In healthcare, innovations have produced a variety of new therapies to treat everything from heart disease to joint degeneration and injury. These developments have the potential to improve care and treatment options dramatically for many patients but they also introduce a level of complexity and cost in medical interventions that will have an impact on the healthcare system.

Advances mean that procedures that previously would have required long stays in hospital, such as hernia operations, can now be done as day cases. The average length of stay in hospital is currently less than 6 days and 80% of all patients have stays of less than 3 days (HES 2009–2010). In the past 5 years the number of acute beds in England has fallen by just under 9,000 (8%) to just over 100,000 beds.<sup>1</sup>

In his 2007 report Lord Darzi hypothesised that ‘the ability to provide more surgery locally, coupled with greater specialisation for complex cases, could result in an 80/20 split for planned surgery in future. Local hospitals could carry out 80% of surgery, mainly as day cases and short stays, with the remaining 20% of planned surgery being carried out at specialised centres, such as those for trauma and cancer.’<sup>8</sup>

Properly coordinated, patient-focused care should mean that when specialised surgical services are provided at a distance from the patient's home, patients will be able to receive as much of preoperative care as possible at a nearby health facility, only having to travel further afield to undergo their operation. Once discharged, follow-up care and rehabilitation may also take place locally. This removes some of the concerns that patients might have about having to travel back and forth to a distant hospital to receive care. In the event of complications occurring locally, modern methods of communication should allow a local facility to access specialist advice. Reshaping of surgical services needs to be seen in this context and the planning of care must take into account the whole patient pathway.

### **Changing demographics and an ageing population**

Since the NHS's inception in 1948, the population of Britain has increased rapidly. In 1948 the population was 49.8 million, compared with 62 million today, with the over-60s making up 22.6% of this number. Life expectancy has also increased significantly, from 65.9 years for men and 70.3 years for women in 1948, to 78.1 and 82.1 respectively today.<sup>9</sup> The Office for National Statistics estimates that the number of people in Britain over the age of 65 will increase by 65% (to almost 16.4 million) during the next 25 years.<sup>10</sup>

Many conditions that require surgical intervention become more common with age. Life expectancies and older people's fitness are improving each year; however, comorbidities and complex clinical conditions often increase alongside a person's advancing biological age, with 65% of people admitted to hospital being over 65 years old.<sup>11</sup> The number of people aged 85 and over in the UK reached 1.3 million in 2008 and accounted for 2% of the population. Providing high-quality care for this group of patients represents a major challenge to the health service because of the complexity of their cases. The fact that people are living longer is something to be celebrated, but there is a need to recognise the reality of the subsequent pressures on the NHS, for this is a concern that will only increase. The majority of hospital users and their carers may

be concerned about access and transport to facilities, particularly if they rely on public transport or on others to take them to hospital.

This shift in demographics presents a significant challenge, which the NHS must adapt to meet and there is evidence that it is not currently doing so. In our recent report *Access All Ages*<sup>12</sup> we discuss ways of adapting to this changing landscape of population demographics, which includes specialised training and specialised pre- and postoperative care for those over 65. Recent data from Dr Foster Intelligence also suggest that many acute hospitals have high bed occupancy, with the elderly and those with multiple comorbidities occupying beds.<sup>13</sup> At the other end of the spectrum, the College's Children's Surgical Forum has brought together standards for the organisation and delivery of surgical care to the young.<sup>14</sup>

### **Financial and workforce challenges**

Under the previous government the need for efficiency savings of £20 billion over four years was identified in a programme known as The Nicholson Challenge. In the coalition government's October 2010 spending review, a tough financial settlement was imposed on the NHS, a level of saving that the Health Select Committee considers to be unprecedented. The financial challenge will likely continue for many years after 2015.

Surgeons are concerned that this financial pressure is leading to short-term cuts that will result in a piecemeal dismantling of services and loss of patient care. While the reshaping of surgical services is unlikely to offer a cost saving, it is vital that comprehensive and methodical changes are made that have clinical backing and focus on ensuring the highest quality of patient care. In order for any reshaping of surgical services to be effective it needs to be properly funded and managed.

The changes to the working week brought in by European regulations continue to be a major impediment to providing good continuity of care in hospitals. The European

Working Time Regulations (EWTR) apply to almost all types of workers, including doctors and surgeons, which has meant that NHS trusts have had to make drastic changes in how they staff hospitals. Additionally, the SiMaP ruling means time on-call counts as work and the Jaeger ruling means that compensatory rest must be taken immediately if any failure to achieve 11 hours' rest occurs. This has put surgical trainees onto full shifts, which limits their access to training opportunities. According to College research and analysis of NHS workforce and Hospital Episode Statistics (HES) data, every month 400,000 surgical hours are lost owing to the EWTR.

The change in workforce patterns has meant that patients now see repeated handovers between clinicians during their time in hospital and, with this the risks increase. There are also problems in seven-day working, particularly at night-time and weekends, as a report from the Academy of Medical Royal Colleges recently sets out.<sup>15</sup> Studies also show that there is a 10% increase in mortality at weekends, when there are fewer senior staff on site.<sup>12</sup> Where there is clinical evidence supporting it, surgical reshaping will make optimum use of scarce staff and resources and provide high-quality training to enhance patient safety. With specialist resources and equipment in fewer locations, and a higher volume of patients with the same surgical conditions, staff will have more experience and expertise to ensure the highest patient safety levels.

Maintaining high standards of training for doctors is crucial when reorganisation of hospital services is being considered. The College's prime responsibility is the improvement of surgical standards to support high-quality patient care and this includes protecting the training of surgeons and other healthcare professionals. Surgical training is crucial to ensure that the next generation of surgeons has the necessary skills and experience to perform at the highest possible level. Surgery is a craft specialty requiring practical experience that cannot be learned only from textbooks or educational courses. Shortened hours and full-shift working reduce



the amount of time trainees can spend with their consultant trainers. This needs to be taken into account when considering any reshaping of services.

### **Outcomes**

There are a number of national clinical audits and registries related to surgical interventions that enable surgeons, hospitals and patients to see how a particular surgical unit is performing in comparison with others. As audits become more sophisticated in nature, they can provide an excellent method of gathering information and evidence about the quality of a given service. This can help local health economies to benchmark performance, share learning from high performing units and identify services that may not be meeting minimum standards. Audit data can also provide a vital part of the evidence base to support the reshaping of surgical services, in areas where improvements in the quality of care can be realised.

Recent unit-based audits in vascular surgery, the reorganisation of stroke care and trauma services, and the comprehensive, clinically-led review of children's heart services have all demonstrated that concentrating specialist surgical services into fewer, larger centres of excellence can improve outcomes and in some circumstances save lives.

### **Case study 1 – Vascular services**

A recent Vascular Society audit into death rates after a particular type of abdominal surgery – abdominal aortic aneurysm (AAA) – showed that the hospitals treating the highest volumes of patients have mortality rates that are under half of those seen in hospitals undertaking the lowest volume of AAA procedures.<sup>16</sup> Moreover, the relationship between volume and outcome is not just limited to outcomes after elective AAA surgery. Evidence suggests larger volume units have a lower turndown rate for treating patients with ruptured AAA, lower complication rates after carotid surgery (an operation to prevent stroke) and higher rates of revascularisation in patients with limb-threatening ischaemia (reduced blood supply).<sup>17</sup>

The Vascular Society concluded: 'It is no longer acceptable for emergency vascular care to be provided by generalist surgeons and radiologists who do not have a specialised elective vascular practice' and advises commissioners that AAA repair should only be undertaken in hospitals that perform at least 100 elective procedures over any three-year period.<sup>18</sup>

### **Case study 2 – Children's heart services**

The Safe and Sustainable clinically led review of children's heart surgery services concluded that the reshaping of centres would ensure the best patient care: 'Operating on children's hearts is truly demanding and has become more complex over time. Such complex surgery is best delivered by large surgical teams who can guarantee care at all times of the day or night. By concentrating surgery into seven centres we can continue to improve outcomes and reduce the side effects of surgery. Larger teams of surgeons will result in fewer cancelled operations, reduce the strain on individual surgeons and ensure the service is sustainable for the long term.'<sup>19</sup>

### **Case study 3 – Stroke services**

In 2008 Lord Darzi, Professor of Surgery at Imperial College, led a full, independent study of health services in London, conducting a detailed review of stroke services and concluding that 'dedicated, high-quality, specialist stroke units save lives. In order to ensure sufficient volumes of work to maintain specialist staff expertise, to support high-tech facilities, and to allow comprehensive consultant presence, specialised services need to be centralised in fewer hospitals catering for large populations.'<sup>20</sup>

In 2009, four major stroke trauma centres were created along with five further hyper-acute stroke units. Each unit has on-site access to vascular and neurosurgical interventions. After immediate care is received at one of these specialised centres, patients are then transferred to a local stroke unit to continue recovery. One of the early successes of the stroke plan was the increase in the use of thrombolysis, a

drug treatment that breaks up the blood clots that cause strokes, from 3 % in 2009 to around 18 % between April and June 2011, which is higher than any other major centre in the world. Furthermore, the introduction of urgent carotid surgery has further improved the outcomes for those patients who are suitable for surgery and this requires 24/7 access to imaging services and the appropriate medical staff.

#### **Case study 4 – Cancer care**

Cancer care is complex and models of care need to be considered carefully on a disease-by-disease basis. For example, rare tumours will benefit from treatment by a small number of experts. Common tumours may be treated effectively by sharing best information and delivering care locally. Some tumours, such as head and neck cancers, are of intermediate incidence but require very substantial resources to effectively treat them. This includes specialised diagnostics (CT, MRI, PET scans, cytology and histopathology), surgeons, oncologists, specialist nursing, speech and language therapy, dieticians, dentists, psychologists and community services.

In 2000 the Secretary of State launched The Cancer Plan, with the promise of eradicating wide local variations in outcome (a postcode lottery for access to treatments) and bringing the UK up to the highest outcome standards in Europe. As well as investment, there was to be remodelling of services to facilitate the improved outcomes.

In the past decade many changes have occurred, with patient experience and clinical excellence at the heart of the services. The redesign of services has caused significant upheaval in many instances. Each model of care carefully balanced the advantages of specialisation against the increased inconvenience of travel and possible lack of choice.

#### **Case study 4 – Major trauma services**

In the case of major trauma centres, the NHS concluded that ‘as major trauma is so uncommon, it is not possible for all hospitals to have the equipment and specialist

doctors needed to treat it effectively. A major trauma centre is a hospital in which patients can be operated on immediately, if necessary, and where there is a full range of trauma specialists, including orthopaedics, neurosurgery and radiology teams.<sup>21</sup> As a result, in April 2012 22 new centres specialising in treating patients with major trauma opened across England, where it is hoped that deaths from major injury will reduce as much as they did in America (by 25 %) when service reshaping took place and major trauma centres were identified there.<sup>22</sup>

### **Case study 5 – Emergency surgery**

Concerns about the delivery and future viability of emergency general surgery are such that the College believes the NHS Commissioning Board should consider establishing a Strategic Clinical Network to oversee the delivery of safe, efficient care and ensure a whole systems approach. In addition, best practice tariffs could usefully be developed to reward the delivery of high-quality emergency general surgical services. Such changes have significantly changed emergency orthopaedic surgery, including hip fractures.

The College believes that emergency general surgery should be delivered via operational networks of providers to enable collaborative working, common standards of care and good patient transfer arrangements, according to clinical need. The network will enable the patient to be treated at the most appropriate hospital depending on the complexity of the case and the resources available to treat.

The RCS will shortly be producing a policy document on the future arrangements for emergency general surgery.



## **Interdependency and integration of services**

Many services offered within the hospital setting are interdependent. This issue of interdependency of different pathways of care needs careful consideration in relation to the reshaping of services. Removing an existing service, or indeed introducing a new service, will undoubtedly have implications for other areas of the hospital and could destabilise certain services. One size does not fit all and the implications for related services cannot be extrapolated from one case to the next. Ultimately the sustainability of a hospital may be put at risk, as well as the ability to attract and retain skilled surgical and nursing staff.

When services are reshaped it is essential that appropriate preparation is in place before any changes are made. This may mean running some services in parallel during a changeover, ensuring that communication between services is prioritised to ensure a patient's care isn't disrupted and that sufficient time and resources have been allocated to ensure transitions are made as smoothly as possible.

There also needs to be a clear understanding about the costs of service change. Reducing, removing or replacing a service will not necessarily result in cost savings. In fact service changes predicated on saving money are rarely successful. The impetus therefore must be on improving services and securing best outcomes for patients.

The move towards the integration of primary, secondary and tertiary services has the potential to streamline a patient's care from initial referral until discharge. Closer integration can be a first step to the reshaping of services.

## **Rural areas**

Successive surveys have shown that patients understand the need for some services to be reconfigured. Faced with the choice between travelling further to obtain the best

treatment, or attending a local health facility and running the risk of achieving poor outcomes, many patients would chose the former.

The College recognises that larger units located some distance from peoples' homes create difficulties for patients, and their friends and families, in terms of time and effort to attend appointments, accessibility and equity of access. In rural areas these problems are even greater. Fully staffed and well-equipped smaller units in localities could effectively triage and refer only the most appropriate patients for specialist care and this would greatly reduce congestion at the central point. But decentralisation would require the wholesale adoption of cultural change and a significant investment in telemedicine and technological support. It remains of concern, however, that where local units have remained open, the staff and services have become severely destabilised and their ability to deliver a safe and efficient service may have diminished.

There is a need to ensure that patients have access to urgent surgical opinion when needed, and in order to deliver this it may mean that surgeons and consultants in particular will need to become part of larger networks rather than being tied to a single institution, hospital or site. The use of information technology to link sites together will be essential. Further training may be needed for paramedics to stabilise patients requiring surgical care as well as strengthening of ambulance services and emergency care networks. This will ensure that patients needing immediate access to emergency surgery or other specialised services can be routed appropriately and promptly. In certain areas consideration may need to be given to alternative means of transportation, such as helicopter services, for sick individuals.

# Engaging patients, carers and families

Patients and the public need to be at the centre of the debates surrounding the reshaping of local services. When reshaping is being considered the following issues are often central to the debate.

## Transport

The most common cause for concern is transport links between the local hospital and an element of the service that may be moved to another location. This is not a trivial concern, and transport planning should be factored in at the very earliest stage for patients who may face long and difficult journeys to get to hospital. Commissioners and local authorities must take these concerns into account and act upon them. Health and Wellbeing Boards should be well placed to ensure this. As described, elements of patient care can and should continue to be delivered locally where possible.

## Having a voice

National Voices, a coalition of more than 200 different health and social care charities, has addressed the issue of reshaping services, and pointed out that current processes for involving people in service changes are not fit for purpose, owing to ‘too much tick-box consultation that doesn’t really change anything’. The College is concerned that lip service is often paid to consultation with the public when there needs to be a far greater effort from the beginning to reach out to local communities, set out the various options, and communicate clearly. Using proper feedback mechanisms and visiting community groups to incorporate their views into a strategy are two means of improving communications and creating a proper partnership between patients and health service leaders.



## Showing improvement

Reshaping services is often seen as moving parts of a jigsaw around, when the focus should be on describing improvements. Commissioners and providers involved in service change need to ensure that the quality of service is maintained before, during and after the service change takes place. This may involve offering services in parallel, in two or more separate locations, while the service change is implemented. Commissioners and providers must constantly seek patient feedback about their experiences and take these into consideration as they evaluate the impact of service change.

# Conclusions

The demands placed upon the NHS in terms of changing patient needs and expectations, increased specialisation, the availability of new treatments and technologies, and the challenging financial environment mean that in many cases maintaining the ‘status quo’ will not be an option. The NHS must demonstrate that it can deliver safe and effective care to patients, while ensuring the efficient use of taxpayers’ money.

In addition, the creation of the NHS Commissioning Board (NCB) and Clinical Commissioning Groups (CCGs) in England will change the way in which services are delivered. With the emphasis being placed on commissioning for local populations, networks of care and universal access to consistent standards of care within and across English regions could be undermined. As a national organisation we believe that patients should receive equally high standards and access to care, irrespective of geographical location.

Too often reorganisations result in patients and their carers or families being pushed to one side of the debate, their questions ignored or their approach labelled as Luddite by the health service. This cannot continue. The public, which funds our NHS, needs to be at the centre of the decision-making process. Where there are problems, these need to be addressed with honesty and proper debate, informed by facts. It is imperative that patients must be fully involved in changes to their local services.

Furthermore, local and national politicians can have an important bearing on any reorganisation. It is often the case that a natural reaction of the local community is to protect their local services. Politicians should engage with the clinical case for reshaping as much as public concerns and support solutions that improve patient treatment and care. Once a decision has been made, it should be implemented quickly as delays can affect future planning of services.

For surgeons, any reshaping of services will be disruptive both professionally and personally. It is essential that, when the reshaping can be advocated on clinical grounds

and the principles outlined in this document followed, any subsequent changes are fully supported.

Patients are at the centre of all that we do. As a standard-setting body, it is our overriding duty to patients to support the reshaping of surgical services where there is clinical evidence that the minimum standards are not being met or if reshaping of the service can improve the quality of treatment, services and outcomes.

# Principles to be followed

The RCS supports the reshaping of services when it is based on clinical evidence. The list below sets out the principles that we believe any proposals to reshape surgical services must meet.

1. Reshaping of services should be based on sound clinical evidence that it will be beneficial to patients and staff, rather than it being considered for purely economic or administrative reasons.
2. There is clinical evidence that concentrating specialist surgical services into fewer, larger centres of excellence can save lives in certain circumstances. It is right that the NHS should look at the long-term benefits when considering any reorganisation.
3. Reshaping of surgical services should only take place where improvements in the quality of care are needed and can be realised. In some cases, there will be an evidence base that suggests service change will produce better outcomes for patients; in other cases, the reshaping of services might need to occur because surgical units are unable to meet minimum standards for safe service provision.
4. More consideration needs to be given to how to support communities in rural areas who need access to good emergency surgery. Strengthening of ambulance services and emergency care networks will ensure that patients needing immediate access to emergency surgery or other specialised services can be routed appropriately and promptly.
5. The requirement for, and implications of, service change needs to be thoroughly and exhaustively researched. If services are to be changed, the whole pathway of care for patients with specific conditions must be considered. This should encapsulate how a patient would access services from primary care, to initial secondary care referral, diagnostic tests, hospital treatment, discharge, follow-up and rehabilitation.

6. The views of patients must be sought early on. Patients must be involved not just in responding to a consultation about service change, but in understanding and building the case for change and putting together the potential options for consultation.
7. Patient transport is key to the public's sense of security and belief in the reshaping of services. The most common cause for concern is transport links between the 'local' hospital and an element of the service that may be moved to another location. It is important that a transport infrastructure is in place for any reshaped service.
8. Commissioners and providers involved in service change need to ensure that the quality of service is maintained before, during and after the service change takes place. This may involve offering services in parallel, in two or more separate locations, while the service change is implemented. Commissioners also need to ensure that any removal of services brought about by reshaping does not affect the stability of related services.

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