Royal College of Surgeons

ADVANCING SURGICAL CARE

A question of balance

The extended surgical team

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Foreword

Older surgeons will remember with some fondness the surgical 'firm' that used to exist in days gone by. It was a team, made up of doctors, with the different members of that firm having different, but complementary, roles. It provided high-quality continuous care for surgical patients while being a supportive structure for juniors, in which an apprenticeship-like philosophy prevailed.

Such structures are almost impossible to recreate nowadays, with the reduction in working hours, the prevalence of shift working and the gradual reduction in the number of juniors working in surgery, particularly at the most junior levels. These changes are unlikely to be reversible and, without change, those junior doctors that remain will be increasingly stretched to deliver service, at the expense of their training and to the detriment of patients.

In order to improve care and to enhance the training experience for juniors, new models of care are required, and we must create new 'extended teams' that will include consultants, doctors in training and SAS[1] doctors, but which will be supplemented by other, non-medical practitioners. These practitioners have to date developed somewhat haphazardly, but it seems likely that in future they will play a significantly increased role in the care of surgical patients.

This report explores the potential roles of such practitioners and makes recommendations as to how they should be integrated into surgical care, for the benefit of patients and surgical trainees and the service.

Our sincere gratitude goes to all those who have given up their time to engage with, and inform, this work. The research team has conducted more than 150 interviews with NHS staff at 9 hospitals in England and Wales. This report seeks to provide a platform for the stories, experiences and ideas shared in that work.

We are also grateful to the doctors in training who responded to our trainee survey, and those who completed our diary exercise. These activities have helped us to understand how foundation doctors and surgical trainees spend their time on shift, and the perceived educational value of the tasks they undertake. Particular thanks go to Dr Thomas G Gray, Specialty Registrar in Obstetrics and Gynaecology, at Sheffield Teaching Hospital NHS Foundation Trust, who developed the smartphone app for the diary exercise and allowed us to use it free of charge.

[1] Staff, Associate Specialists, and Specialty doctors

We would like to thank the presidents, vice-presidents and other senior representatives of the surgical specialty associations who completed our survey. They provided us with a valuable insight, inter alia, into current perceptions of surgical training, the time available to train, and how their perceptions of the educational value of tasks compare with those of trainees.

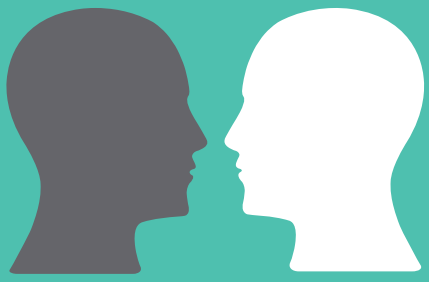
We also heard from representatives of practitioners in the extended surgical team. This has included representatives of physician associates, surgical care practitioners, and advanced nurse practitioners. The information they have shared has enabled us to create a baseline of the wider surgical team, routes of entry, training pathways and skill sets.

Finally, I would like to thank the research team who undertook this work, especially Sally Williams for her drive and expertise, but also the Leadership Fellows who undertook much of the research including many of the visits and interviews. The College has invested considerably in supporting the next generation of surgeons, most notably with support for our Research Fellowships, but the Leadership Fellows are a new departure and are something that we would wish to enhance in the future. Work such as this demonstrates their value!

Ian Eardley
Vice President
The Royal College of Surgeons of England

This project in numbers

This report is informed by...



137

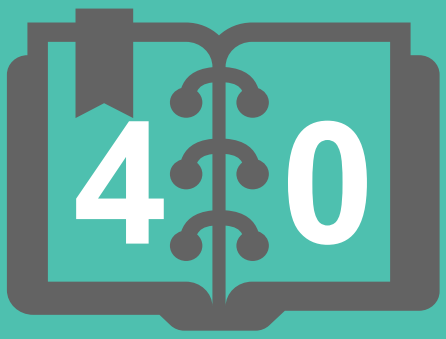
Face-to-face interviews
with NHS staff at 9 hospitals in England and Wales

16

Telephone interviews

990

Survey responses
from foundation doctors, core trainees and higher surgical trainees in surgery, who responded to our trainee survey



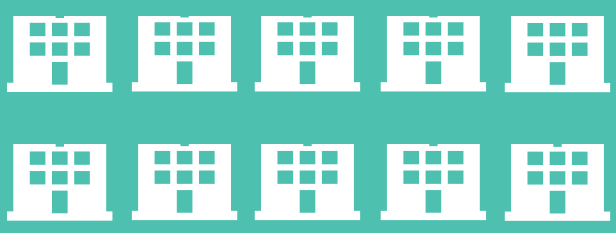
Analysis of workplace diaries
kept by 40 doctors in training

22

Presidents, vice presidents
and other representatives of the surgical specialty associations who completed our survey

10

Organisations
representing practitioners in the extended surgical team



The diagram above illustrates the key components of the extended surgical team at the hospitals we visited for the report. This is not intended to be comprehensive and a number of other staff play a vital role in the wider surgical team – including ward and theatre staff, administrative staff, allied health professionals and service managers. This diagram focuses upon medical staff and non-medical staff who may sometimes perform medical duties. See The Surgical Team page 15.

*Other doctors whose role does not require them to be on the specialist register or possess a National Training Number

Summary

The surgical workforce has been depleted by reductions in the numbers of doctors in training in surgery, and changes to their working hours and shift patterns. Frequent reference has been made to 'filling gaps' in rotas, particularly at night, and 'plugging holes' in ward and theatre cover. The reality is that the medical element of the surgical workforce has changed and surgical departments need to redesign their teams in response – as one senior NHS manager told us: 'The gaps are not really gaps anymore; this is what we have'.

Changes to the surgical workforce have had an impact on the training provided to tomorrow's surgeons. This report – co-funded by Health Education England (HEE) – explores perceptions of surgical training held by those in positions of leadership across surgery, as well as doctors in training. The findings of two surveys and a diary exercise give rise to concern about the time available for training for doctors in core and foundation training, about the demands placed upon them to cover the service, and their exposure to common surgical conditions. These findings are compounded by perceptions from some NHS staff at eight case study sites we visited that doctors in training today are less competent – and less useful to the service – than they used to be, and that newly qualified consultant surgeons are often less confident. These perceptions, while anecdotal, will confirm worries expressed by many within the surgical profession about the state of surgical training.

At a time when junior doctors are in dispute with the government over a proposed new contract, this report challenges the status quo that doctors in training should be the default providers of frontline medical services. Growing numbers of non-medical staff can, with appropriate training, provide medical services to patients. Furthermore, this report shows that patient care, surgical training, and consultant teams can be enhanced by embracing non-medical practitioners into the surgical team.

The experiences of eight case study sites visited for this report were overwhelmingly positive. These sites were selected on the back of intelligence that they had introduced innovative models of inpatient care using the wider surgical team, and they show how such arrangements can work well. Managers, surgeons, trainees and practitioners themselves painted a picture of multi-professional teams working together effectively to provide better continuity of care for patients, greater efficiency of discharge and in theatres, and smoother running clinics.

This report found no basis for concern at the eight sites we visited that greater use of non-medical practitioners – including in theatres – dilutes surgical training opportunities for junior doctors. A recurrent theme from more than 150 interviews conducted was that use of non-medical practitioners enhances surgical training.

The extended surgical team can enhance training by:

- Enabling doctors in training to leave the wards to attend teaching or theatres;
- Allowing trainees to stand in the best vantage point in theatre for learning;
- Helping new doctors settle into rotations more quickly;
- Reducing the occasions that higher surgical trainees are called out of theatre;
- Giving consultants confidence to step out of the room and leave senior trainees to operate with a skilled assistant;
- Enabling doctors in training to be almost supernumerary in some settings.

Where these benefits were seen, roles had been properly planned in response to a specific need and established in departments with a clear vision and strong surgical leadership. While there are many positives, there are also potential drawbacks – potential because they tend to be theoretical. Avoiding these potential pitfalls will rely on consultant surgeons, in particular, taking an active role in managing expectations in all members of the extended team, including doctors in training.

There are currently few easy routes by which to extend the surgical team. It takes commitment from both within the surgical team and the wider organisation, and a clear vision of what is needed and the type of team needed to deliver it. At the moment, where this is happening at all, it is doing so on a fairly *ad hoc* basis.

There are also sizeable challenges in terms of defining the scope of practice for non-medical practitioners, as well as challenges around accountability, governance, career progression and sustainability. The roles we observed were highly specific to their context and reflected an *ad hoc* approach to plugging holes and gaps. We need to move away from filling gaps to defining sustainable models for configuring the surgical team. This report goes some way to providing the baseline information needed to do this.

We have identified seven areas that give rise to recommendations:

Promoting the potential of the extended surgical team

1. The College and HEE should devise a programme of work to raise awareness of the potential offered by the extended surgical team – as outlined in this report. Key stakeholders that the College will wish to influence include NHS employers, health service commissioners, surgeons and service users

Developing standards to support the extended surgical team

2. The College should support the service to take a more strategic approach by providing guidance on the factors to consider in modelling the extended surgical team, such as surgical specialty considerations around the need for doctors in training to gain experience of providing cover on the wards

3. The College and HEE should work with NHS employers to develop guidance, aimed at surgeons and employers, on the following:

- Indemnity arrangements (for physician associates in particular)
- Governance – including on involving non-medical practitioners in clinical governance mechanisms and team infrastructure
- Accountability mechanisms – including with regard to line management arrangements for non-medical practitioners undertaking medical roles
- How to define the parameters of scope of practice for non-medical practitioners – including what is meant by 'independent operating' and the level of supervision expected

4. The College should develop standards to guide the evolution of physician associate roles within surgical specialties – unless, or until, statutory regulation is introduced for these practitioners it falls to employers to navigate the limitations around prescribing and the qualifications they look for; currently, anyone can call themselves a physician associate

5. The College should work with HEE to enhance the professional aspects of training for these practitioners, including leadership, team working, training and research

Defining the College's relationship with non-medical practitioners

6. The College should work closely with organisations representing non-medical practitioners to identify the ways in which resource can be made available to support the extended surgical team

7. The College should explore ways to align non-medical practitioners with the surgical profession and develop their identity as part of the surgical team, including the potential offered by the development of a faculty (within the College), the need for voluntary registers for certain groups of practitioner, and issues relating to recertification

Supporting surgeons as 'champions of change'

8. The College should help surgeons to understand the role they can play as champions of change and leaders of new models of surgical teams within their organisations

9. The College should clarify the expectations on consultant surgeons in leading multi-professional teams, as well as in providing ongoing oversight and competence assessment for practitioners undertaking medical roles

Supporting doctors in surgical training

10. The College should provide guidance for doctors in training in surgery on the extended surgical team and the non-medical practitioners they may find themselves working alongside. Such guidance should include how these roles can support them, and the steps they can take to derive greatest benefit from their training

Examining the implications for workforce planning

11. HEE should review the approach to workforce planning in respect of the roles highlighted in this report, paying particular regard to the lead-in time needed to train people to fill these roles (a minimum of two years)

12. HEE should consider whether physician associates are being trained in sufficient numbers to support the surgical workforce, and whether clinical placements are giving sufficient exposure to surgery to attract physician associates into surgical departments once qualified

13. The College should consider the implications of this report for future surgical workforce planning

Understanding patients' perspectives

14. HEE should undertake focused work to understand the impact on patients of services provided by non-medical practitioners, including procedures and surgical interventions. This should include assessing the importance of offering choice with regard to non-medical practitioners undertaking procedures

15. HEE should lead work to streamline the range of titles in use for non-medical practitioners, and to more clearly define when a title should be used – the health careers website (run by HEE) provides a good foundation from which to undertake this work

16. The College should develop a programme of work to raise awareness among service users of the roles played by different members of the extended surgical team and what this means for their care

Contents

The Surgical Workforce in the UK

Across all specialties...

15,469

Doctors in foundation training

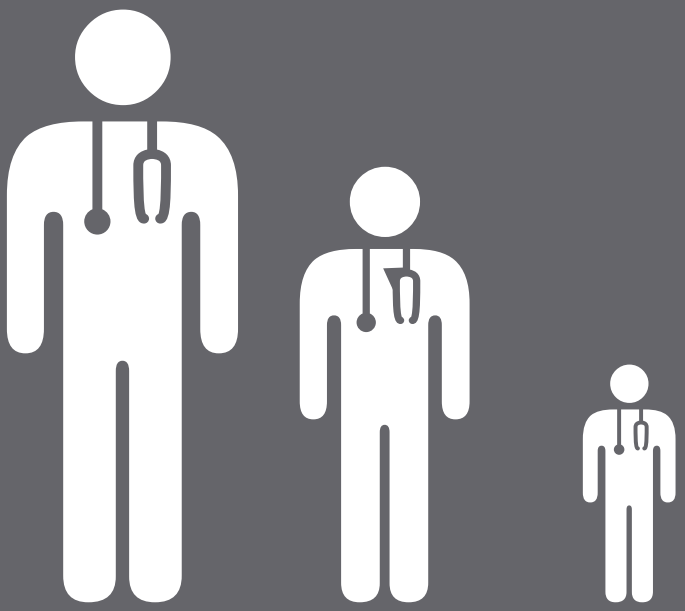
(GMC, 2015f)

32,672

Doctors training to become a specialist

(GMC, 2015f)

In surgery (in 2013)...



13,166

Doctors working in surgery on the specialist register

(GMC, 2015f)

5,491

Surgery trainees in the UK

(GMC, 2015f)

1,679

SAS surgeons

(excluding temporary posts)

(Number of SAS doctors is 9,036)

(Health & Social Care Information Centre, 2015)

Largest specialties

Medicine & surgery

the two largest specialties – grew faster than the rest between 2010 and 2013

(GMC, 2014c)

Largest surgical specialties

Trauma & Orthopaedics and General Surgery

are the two largest surgical specialties – both in the number of procedures performed each year and the size of the surgical workforce (RCS, 2015a)

28%

Historically, surgery has had the lowest proportion of women in senior roles; now 28% of surgical trainees are women

(GMC, 2015g)

3,170 Operating Theatres

in the NHS in England alone

(NHS England, 2015)

Introduction

The dispute over a proposed new contract for junior doctors has brought to the fore the pressure currently on doctors in training within the NHS to deliver a large and expanding clinical service, particularly at night and at weekends. This reliance is out of step with the number of doctors in training in some hospital specialties, and particularly in surgery.

In 2011, the General Medical Council (GMC) warned that 'young doctors' did not appear to have taken on board the fact that around half of the medical specialty training posts in England in the coming years would be in general practice, whereas the number of posts in surgical specialties was shrinking. Since then, the number of posts for doctors in core surgical training offered nationally has fallen from just over 700 in 2012 (Health Education Kent, Surrey and Sussex, 2012) to less than 550 indicative posts in 2016 (Health Education Kent, Surrey and Sussex, 2016), and many posts for foundation doctors have been redistributed from surgical departments into the community, in line with the Broadening the Foundation Programme initiative (Health Education England, 2014). While this has been happening, the surgical workload has increased. There was a 27% rise in the number of admissions for surgical procedures between 2003-2004 and 2013-2014 (The Royal College of Surgeons of England, 2015a).

Meanwhile, the needs of patients keep evolving, which has an impact on the way services are configured. There are a number of factors, including technological advancements in surgery, an ageing population, the growing numbers of people living with multiple illnesses, and changes in treatment approaches. The need for more complex interventions is expected to drive service redesign, with a move to larger centres delivering complex, high-tech therapies (Joint Committee on Surgical Training, 2013). It is envisaged that networks of smaller units, delivering less complex care, will surround these. Such changes have already been seen in cancer and trauma services.

Against this backdrop there have been calls to disentangle the relationship between doctors in training and the service (shorthand for providing NHS services) to loosen some of the ties, and to explore different ways to meet the needs of the service while maintaining high standards of training. The Joint Committee on Surgical Training (JCST), 2013, has said:

> *'The service should not be dependent on trainees for the delivery of care... their status should be that of trainee first and service provider second.'*

The implication of this approach, according to the JCST, is that the service will increasingly be delivered by non-training grades, possibly consultants, 'and perhaps by other types of healthcare worker'.

The Royal College of Surgeons of England (2014a), 'the College', has echoed this sentiment:

> *'Time for training is an issue that must be addressed by reducing the reliance on trainees to deliver the service and by looking at the role of the wider team.'*

The College believes that one option of relieving the pressures highlighted above is to recreate the surgical team and explore new ways of providing care along the surgical patient pathway. It has said:

> *'By freeing up time spent on service delivery, and by considering the role played by members of the wider team, trainees can concentrate on developing practical surgical skills at an earlier stage.' (Ibid.)*

It is in this context that this report considers the wider, or extended, surgical team. It challenges the status quo that doctors in training should be the default providers of frontline medical services, and reports on units that are utilising multiprofessional teams to provide services – incorporating new roles for non-medically qualified staff – while safeguarding surgical training.

Aims of the Extended Surgical Team project

The College was commissioned to undertake this project by Health Education England (HEE). The aim of the project has been twofold. First, to explore new models for providing surgical inpatient care by considering the apportioning of tasks specifically among foundation doctors and core trainees. Second, to develop a better understanding of the wider surgical team.

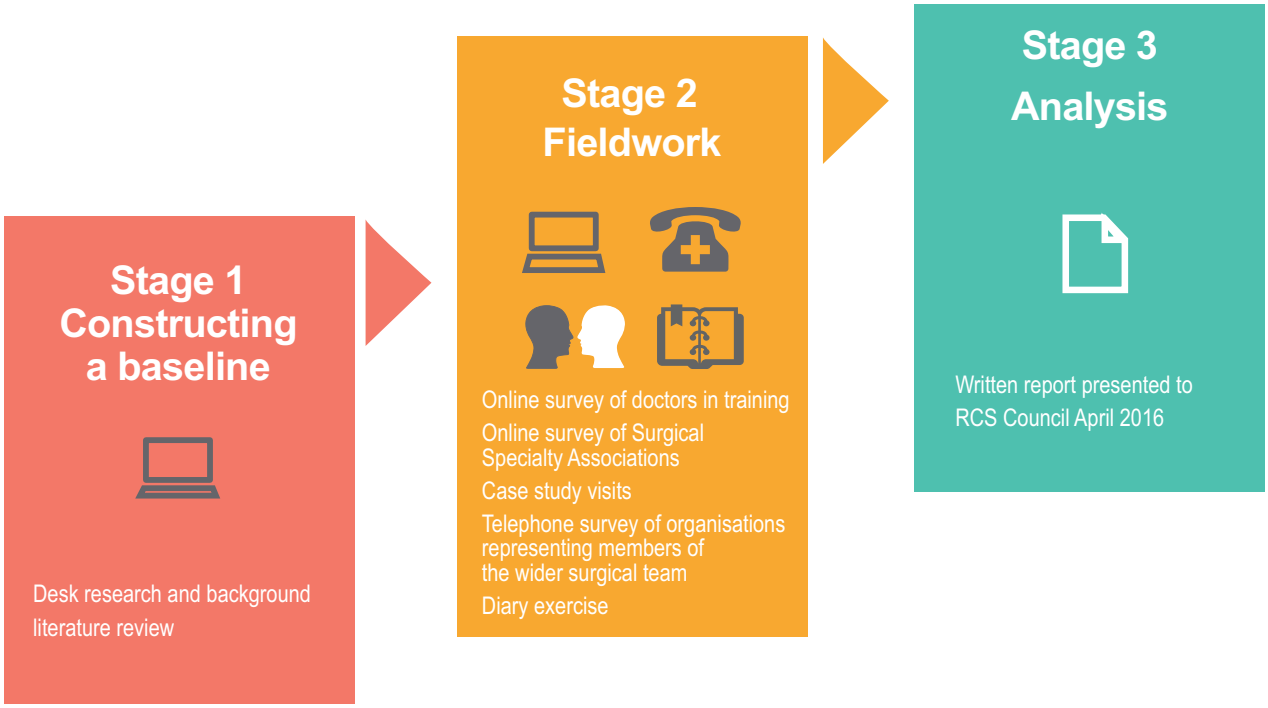
Key objectives:

- To undertake a task analysis to understand i) which tasks foundation and core trainees currently undertake and ii) which tasks could potentially be done by other members of the wider surgical team.
- To gain a better understanding of the skills and competencies of different members of the wider surgical team, to inform an assessment of their capability to perform tasks currently carried out by foundation and core trainees.
- To develop new models of inpatient care for the wider surgical team that seek to improve i) the quality of patient care and ii) the quality of surgical training.

Approach

Our focus has been on the pathway for surgical inpatients – from admission to discharge, in both the operating and non-operating environment. We wanted to establish an understanding of the current position, in terms of how doctors in training spend their time on shift. We then sought to identify new models for surgical inpatient care, using the wider surgical team.

The project was launched in May 2015. The fieldwork was completed by the beginning of February 2016.



The surgical team

A number of staff, from a variety of disciplines, are a vital part of the extended surgical team. See page 5 for the main groups of medical staff, as well as non-medical practitioners who sometimes undertake medical duties.

Attention frequently focuses upon consultant surgeons and doctors in surgery. However, surgical patients are also looked after by doctors from other non-surgical specialties (including anaesthetics, geriatrics, medicine and paediatrics) and GP trainees. Some units have more developed perioperative medicine or formal shared care arrangements (for example, where a patient comes under the joint care of an orthopaedic surgeon and an ortho-geriatrician).

Many SAS surgeons (Associate Specialist, Specialty Doctor and Staff Grade surgeons) have great experience dealing with surgical patients. They often help with running the surgical unit and teaching more junior colleagues. Many units have also employed other doctors, whose roles do not require them to be on the Specialist Register, into positions such as 'junior clinical fellow' from which the opportunities for career advancement can be poor.

Terminology

One of the challenges that has confronted us has been around terminology. The use of multiple titles – sometimes even for the same role – doed not help. Titles, where agreed, are also subject to revision – for example, what were once advanced scrub practitioners are now known as surgical first assistants, and physician assistants have been renamed physician associates. A key aspect of this project has been to understand what it means to be, say, an advanced nurse practitioner as opposed to a nurse practitioner, or a surgical care practitioner. In doing so, we seek to get behind the titles to focus on roles and skillsets.

For this report, we have referred to the range of roles collectively as ‘non-medical practitioners’. Some may consider this term pejorative. We do not mean it to be so in the slightest. We use it to describe a wide range of staff who are members of the surgical team, but who have simply not trained as doctors. We recognise that these practitioners are often highly experienced, and trained to Master’s postgraduate level. Many are regulated healthcare professionals in their own right.

We are also mindful of what has been referred to as ‘the substitution agenda’. This refers to the concept where doctors are substituted with non-medical staff – particularly nurses in advanced practice. This concept is considered demeaning by some nurse leaders, who point out that nurses in advanced roles have a distinct skillset, and have an added value that is about more than simply filling the shoes of a junior doctor.

Overall, our recommendations suggest embracing the wider surgical team to the benefit of patient care first and surgical training second. The aim is to value a diversity of roles and skillsets; not to crudely substitute doctors in training with other staff groups.

Research

An overview of the five distinct research exercises undertaken for this report is given below. Details of the methodological approaches of each can be found in the appendices.

Research	Purpose	Findings
Online survey of doctors in training	This survey of doctors in training explored the apportioning of tasks specifically among foundation doctors and surgical trainees (with a particular focus on doctors in core training and ST3s). The objective was to undertake a task analysis to understand: • What tasks foundation and core trainees currently undertake • The perceived educational value of each task. The survey achieved 729 responses from doctors sent the survey by their postgraduate dean in three regions – a response rate of 25% among surgical trainees and 27% amongst foundation doctors. A further 261 responses were received via promotion of the survey over the internet.	Section 2
Online survey of the Surgical Specialty Associations	This survey of the presidents and other office holders of the 19 surgical specialty associations, as well the Association of Surgeons in Training (ASiT), provides an insight into: • Perceptions of how much of trainees' time is spent in actual training • The perceived educational value of all the tasks that currently fall to them • Which tasks could be undertaken by other members of the wider surgical team.	Section 2
Case study visits	To learn about new models for providing surgical inpatient care, we conducted semi-structured interviews with a range of staff at eight NHS hospitals (our 'case study' sites) and a shorter, targeted visit to a ninth hospital unit. We looked at how non-medically trained staff are being deployed in surgical teams, and the impact of these roles on the quality of patient care and surgical training.	Section 3
Telephone survey of organisations representing the wider surgical team	To gain a better understanding of the skills and competencies of different members of the wider surgical team, and to inform an assessment of their capability to perform tasks currently carried out by foundation and core trainees, we carried out a telephone survey with 10 organisations representing these groups of practitioners.	Section 4 and Appendix A
Diary exercise	To explore how much time doctors in training spend on tasks that potentially could be done by non-medical staff, we ran a diary exercise. We invited doctors in training to record their daily activity – on an hourly basis – using a smartphone app over seven days. They were asked to rate the activity and suggest whether another member of the wider surgical team could perform it. Forty trainees participated.	Section 2

Surgical training today

The case for innovation in how we conceive, build and deploy the surgical workforce is introduced in the previous section. Here we examine this in greater detail. Specifically, we highlight perceptions of surgical training held by those in positions of leadership, and we seek to compare these to the practical, day-to-day experiences of surgical trainees. Our understanding is informed by the findings of two online surveys, commissioned specifically for this project: the first, of almost 1,000 doctors in training (see Appendix B for more details); and the second, a survey of surgical specialty representatives (Appendix C).

Perceptions of surgical training

In its first edition of *The State of Medical Education and Practice* (General Medical Council, 2011), the General Medical Council (GMC) highlighted that doctors need a higher level of core competence than training programmes deliver. It sought a fundamental review of the shape of postgraduate training. *The Shape of Training Review* (2013) highlighted the need to re-think current arrangements for postgraduate medical education and training. It reported that the changing needs of patients demand

> *'a better balance between doctors who are trained to provide care across a general specialty area, and those prepared to deliver more specialised care.'*

The College's response to the *Shape of Training Review* emphasised that a 'one size fits all' approach does not work for medical training, and that medical specialties should tailor the way they implement the review's recommendations (The Royal College of Surgeons of England, 2014a). This reflects that surgery is a 'craft' specialty, requiring sustained practical as well as theoretical training over many years. It is distinguished from many other medical specialties by a requirement that future surgeons must juggle time spent on the wards and in clinics with hours spent in theatre, learning their craft.

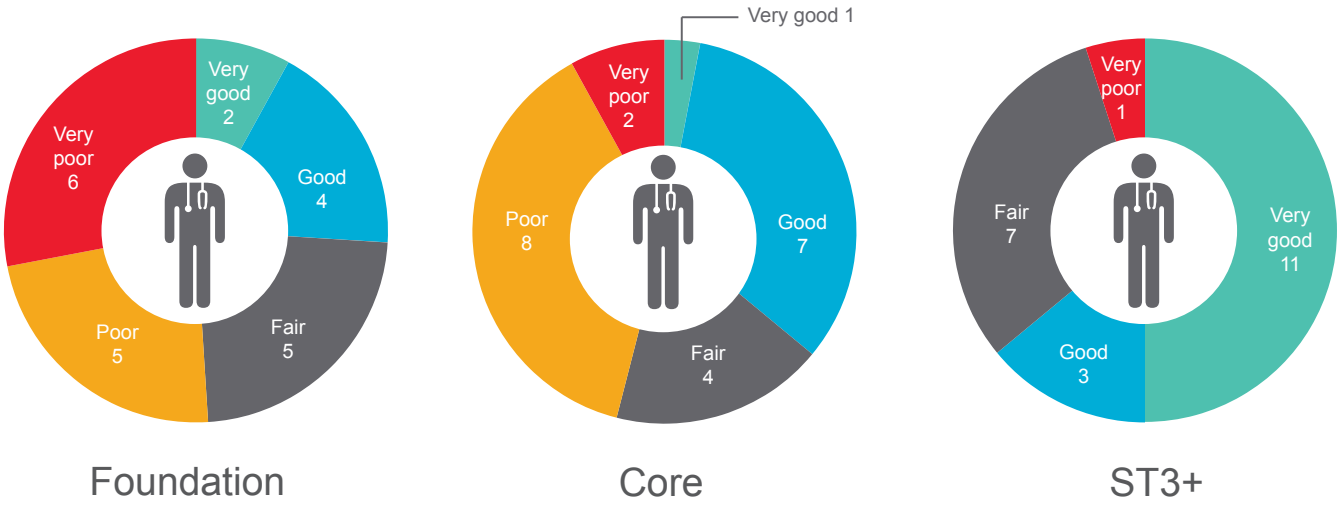
> *'Surgeons need to be able to perform in differing conditions and circumstances, respond to the unpredictable, and make decisions under pressure, frequently in the absence of all the desirable data.' (Intercollegiate Surgical Curriculum Programme, 2013, p8)*

Some doctors in training in craft specialties report a concern that they do not get enough repeat-experience of procedures to attain full competency (GMC, 2014a). While repetition does not equate to competence, there are real concerns about volume. The GMC has said:

> *'Because of the variety in presentations of some clinical conditions there is always, especially in craft specialties, a need to see all the different possibilities'. (Ibid.)*

Chart 1: How would you rate the quality of training for your specialty/subspecialty at each stage of training?

Base: 22 surgical specialty representatives



The quality of training for foundation doctors and core trainees was rated lower than for higher specialty trainees: 11 survey respondents rated training for foundation doctors in their speciality as poor or very poor. 10 of the 22 rated core training poor or very poor. In contrast, only 1 rated specialty training as very poor and 14 rated it good or very good

In providing evidence to the *Shape of Training Review*, the GMC cited: 'frequently voiced concern from some craft specialties that doctors in training can no longer access the volume of clinical exposure and experience necessary for them to achieve mastery of their craft' (GMC, 2013). In its regional review of medical education in Kent, Surrey and Sussex, the GMC (2015e) reported that F2 doctors on surgical rotations at one hospital were 'rarely able to go to theatre' owing to problems recruiting middle-grade surgeons, which meant they were left staffing the wards and rarely able to attend their protected teaching.

The evidence gathered for this report is that the majority of concerns regarding surgical training focus on foundation doctors and core surgical trainees, rather than higher surgical trainees. We heard from 22 specialty representatives, many of them presidents and vice-presidents, across a whole spectrum of surgical specialties and subspecialties, as well as an association run by higher surgical trainees.[2] They generally rated higher specialty surgical training positively. Only one respondent rated the quality of higher specialty surgical training as 'very poor' and none considered it to be poor. In contrast, 11 respondents rated the quality of training for foundation doctors as poor or very poor, and 10 said this of core training (see Chart 1).

These perceptions align with satisfaction levels reported by doctors training in surgery. The GMC highlights that surgery consistently has the lowest average satisfaction score compared with other specialties, but there are significant differences in satisfaction between the three main stages of training. The findings from the GMC's National Training Survey 2014 show a satisfaction score of 72.1% for foundation training and 77.2% for core training (up to ST3). The satisfaction score for ST4 onwards jumps to 85.5%, which represents the biggest difference in satisfaction scores between foundation training and ST4 onwards in any of the specialties (GMC, 2014b). The relatively low satisfaction among foundation doctors inevitably makes them less likely to pursue a surgical career; for doctors in core training their surgical training progression will be slowed.

[2] The Association of Surgeons in Training (ASiT)

Surgical leaders are mindful of these challenges and have been exploring ways to enhance the surgical experience of doctors in foundation and core training in particular. One of the main difficulties has been in meeting quality indicators used to assess the quality of surgical training placements.

The number of operating and clinic sessions doctors in training should attend varies by specialty. However, a generic quality indicator for core surgical training states that doctors in training should attend five consultant supervised sessions per week. The findings of a survey of doctors in training by the JCST (undated) for 2011/12 and 2012/13 show that fewer than 60% of placements were meeting this indicator. The Joint Committee observed:

> *'Many responses indicated that trainees, particularly those at the lower level, had to undertake routine clinical work of little educational/training benefit, which prevented them from acquiring new skills. This seemed to be a particular problem when there was little/no ward cover from junior doctors.' (Ibid.)*

It also reported issues in the majority of the surgical specialties, with trainees missing training opportunities in order to provide cover for absent colleagues or to fill rota gaps.

The JCST's Core Surgical Training Committee reported that responses to the 2013/14 JCST survey demonstrated ongoing tensions between service delivery and core training, with 46% of respondents indicating that they did not attend 5 consultant supervised sessions per week, as set out by the JCST quality indicator. Further, 27% of respondents said they were required to undertake routine clinical work that prevented the acquisition of new skills, and 19% reported missing training opportunities owing to providing cover for absent colleagues or filling rota gaps. These findings were attributed to a lack of junior-level rota cover, which resulted in core trainees having to spend time undertaking routine ward work (JCST, 2014).

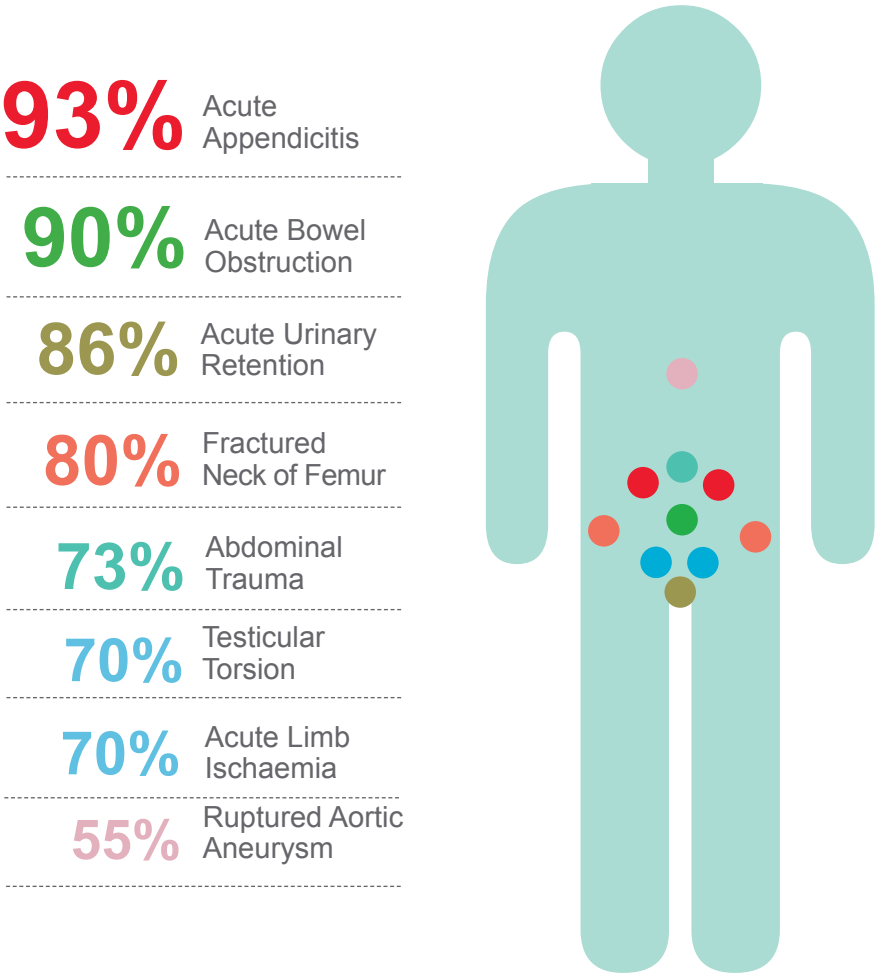
Doctors in training in trauma and orthopaedic surgery (grades ST1–8) were asked specialty-specific questions as part of the National Training Survey for 2015. The vast majority were confident that they had met curriculum outcomes for all the operations they had performed/assisted in during the preceding six months. Still, only half (52%) responded that they were fully confident of this; 43% were partially confident and 6% were not at all (GMC, 2015a). Further, 28% reported that they had been withdrawn from a training opportunity once or twice in the previous 4 weeks, to cover a service gap from leave or other absences; 6% reported that this had happened to them 3 or 4 times (*Ibid.*).

There are clearly variations between surgical specialties when it comes to training opportunities. When specialty trainees in urology were asked as part of the National Training Survey whether they were confident that they had gained enough experience in theatre for their current stage of training, 79% responded that they were (GMC, 2015b).

The questions asked of specialty trainees in urology and in trauma and orthopaedics above were not asked of doctors in core surgical training, but other questions provide some insight into the training opportunities for these doctors. When core surgical trainees were asked whether their post offers significant educational opportunities, just over three-quarters (77%) said 'yes'. That left almost a quarter (23%) who responded 'no' (GMC, 2015c). Only 10% of core trainees reported spending 5 to 6 consultant supervised sessions operating on elective or emergency procedures in an average week (*Ibid.*). Most CT1s and CT2s reported spending between 3 to 4 (40%) or 1 to 2 (39%) consultant supervised sessions in theatre.

Chart 2: Surgical trainees that have diagnosed and managed this condition (%)

Base: 229 doctors in training



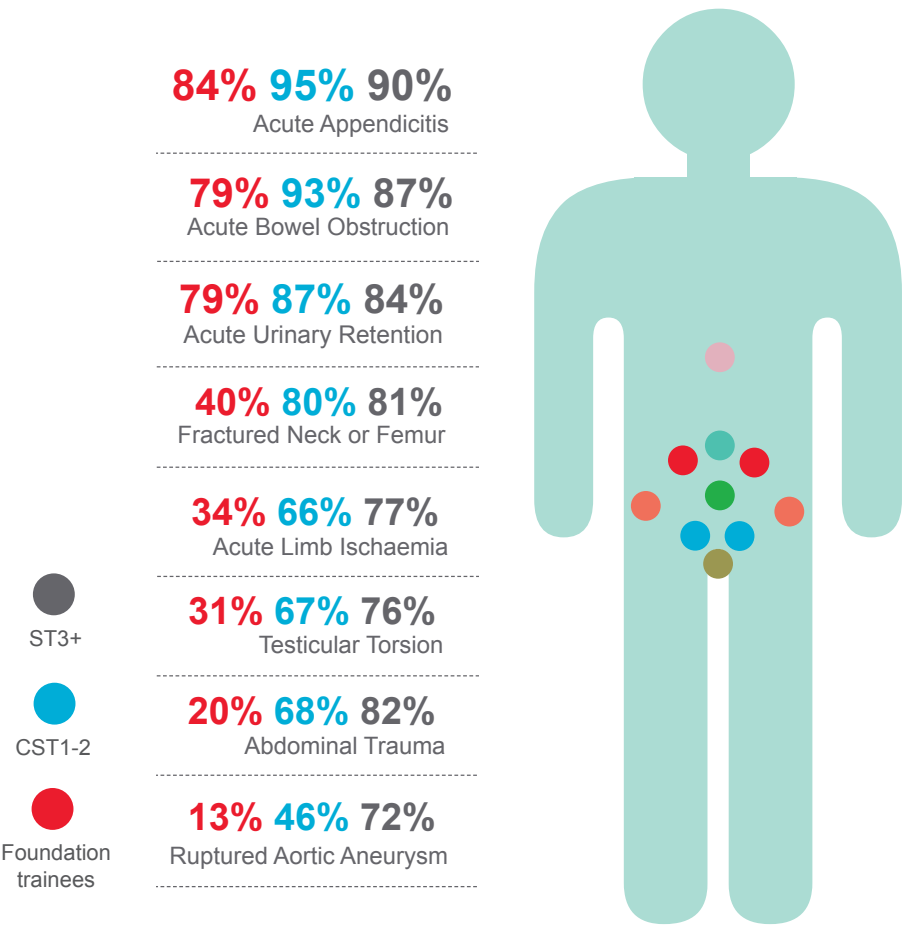
Exposure to common surgical conditions

To understand what impact this is having, we asked those holding office at the surgical specialty associations whether they felt that doctors in training are getting sufficient exposure to common surgical conditions, as well as sufficient opportunity to perform common surgical procedures. Specialty representatives were marginally more likely to take the view that doctors in training are getting sufficient exposure and experience in these areas – 12 specialty representatives considered that these doctors are getting sufficient exposure, whereas 10 felt that they are not. So how does this measure up with what doctors in training told us?

Our survey of almost 1,000 doctors in training revealed that levels of confidence in diagnosing common surgical conditions are high across trainee groups. As would be expected, exposure to common surgical conditions is greater in surgical trainees than in foundation doctors. Their confidence in diagnosing these conditions is also higher. Yet more than a quarter of surgical trainees had not had exposure to four common surgical conditions: acute limb ischaemia, abdominal trauma, ruptured aortic aneurysm, and testicular torsion (see Chart 2). This is, perhaps, reflective of a move towards more themed (ie biased towards a particular surgical specialty) core surgical training in recent years. Unsurprisingly, confidence in diagnosing these four conditions was lower than for other common surgical conditions.

Chart 3: Experience of common surgical conditions by stage of training (%)

Base: 990 doctors in training



As expected, exposure to common surgical conditions increases with experience

While exposure to common surgical conditions increases with experience, the overall picture is one that will perhaps give rise to a concern that surgeons in training are not getting sufficient exposure to be able to claim a mastery of their craft. See Chart 3.

It is extremely difficult to pinpoint whether concerns over surgical training in the early years are translating to less competent, confident surgeons. Some of those we interviewed at the case study sites highlighted that the jump from core trainee to ST3 was harder than ever before, owing to insufficient operating experience at core level. One ST3 told us:

> *'There is nothing like being the primary surgeon, which is what happens when you become a registrar – you can be doing operations on your own that you haven't ever done before.'*

Anecdotal accounts are that many newly qualified surgeons today are less experienced, and less confident, than their predecessors. This was a theme arising from many of the interviews we conducted with NHS surgical teams. We heard this not only from senior surgeons, but also from medical directors, senior nurse leaders, and doctors in training. One senior surgeon summed it up as follows:

> *'As it is, new consultants are less able to reach decisions than consultants of old.'*

A perceived increase in having two attending surgeons in theatre – dual-consultant operating – was thought by some interviewees to reflect a decline in confidence among new consultant surgeons. There can be many reasons why dual-consultant operating takes place – for instance, an increasing frequency in dual operating in vascular surgery has been explained by issues of patient safety with a declining availability of trainees (Vascular Society, 2014). What this feedback signifies, however, is a wavering confidence in new consultant surgeons among some of their colleagues, which perhaps deserves further investigation.

Time for training in a 48-hour week

Key to understanding current perceptions of surgical training are changes in the time available for training. A tension that has probably always existed between service delivery and protected time for education and training has been exacerbated by the Working Time Directive (1998). The Directive, which applied to doctors in training from 1 August 2004 impose a maximum limit on working time of 48 hours per week on average.

These restrictions in working hours are supported by evidence showing the detrimental impact of fatigue on doctors' performance. The GMC cites studies that show surgical performance is impaired after a single night of sleep loss, with surgeons taking longer to perform operations and making more mistakes, and patients suffering twice as many complications if their surgeon performed procedures after a night of interrupted sleep (GMC, 2011).

Set against this is concern about having sufficient protected time for learning and practical 'hands-on' training, while at the same time meeting service commitments. The reduction in working hours has piled pressure onto service rotas in the acute setting, with hospitals needing to deliver 24/7 acute service rotas and typically using full shift rotas to deliver this service. The number of doctors in the rota determines the proportion of the time that the trainee spends delivering acute 'on-call' care, and the proportion of time that the trainee is available for elective training. Improving Surgical Training (The Royal College of Surgeons of England, 2015b) reported that, taking into account annual and study leave, for a trainee to be able to spend at least 50% of their time attending daytime, weekday, elective sessions, there needed to be at least 10 doctors on that rota. Further, if doctors on that rota are unable to work, or if the posts are not all filled, given the hospital's imperative to maintain an acute service, it is not uncommon for the remaining doctors to be pulled away from elective training opportunities to cover the acute rota.

A taskforce, chaired by a former President of the Royal College of Surgeons, and including representatives from other Royal Colleges and relevant stakeholders, considered the impact of the working time regulations on the training of doctors in the UK, and by extension on the delivery of high-quality patient care. It reported that the regulations had impacted adversely on surgery and acute medicine in particular, and that local trusts had had mixed success in finding ways to manage rotas so as to mitigate the impact (Independent Working Time Regulations Taskforce, 2014). As a consequence, training and education in some acute specialties had proved very difficult to implement

> *'with the constraints of the directive preventing trainees from achieving the skills and experience required for their specialty.'*

Specialty representatives responding to our survey were more likely than not to consider that there is not enough time for training in their specialty in a 48-hour week (see Chart 4). The quotes from specialty representatives (see page 25) provide some insights into the reasons why.

Chart 4: Do you believe there is enough time for training in your specialty in a 48-hour week?

Base: 22 surgical specialty representatives

More voted no than yes in response to this question. 13 answered that there is not enough time for training in their specialty or subspecialty in a 48-hour week. 8 answered yes and 1 said they didn't know.

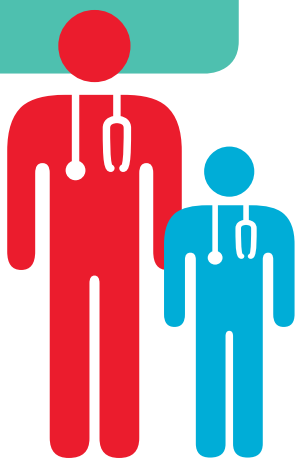
Reduction in working hours

Our survey findings show that trainees in surgical posts work significantly longer hours, on average, than they are required to work. Higher surgical trainees reported working 51.1 hours per week, on average (see Chart 5).

Core and higher surgical trainees were more likely than foundation doctors to report that there is enough time for training in their current post. Only 29% of foundation doctors reported that their current post provided enough time for training. In contrast, 60% of higher surgical trainees reported that there was enough time for training in their current post. Doctors in core training sat between these two groups.

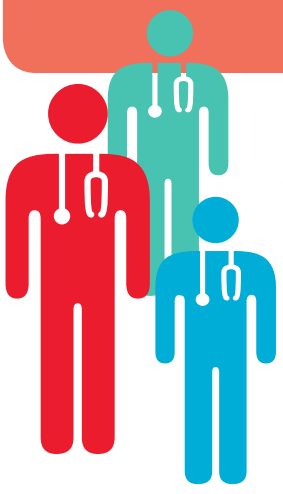
'I support the College looking at reducing the burden of admin at every level and I also believe ridding us of the EWTD[3] will improve the training, career prospects and the retention of surgeons in the UK'

British Association of Plastic, Reconstructive and Aesthetic Surgeons



'EWTD[3] and junior doctors' hours have completely destroyed surgical teams. SHOs are merely task-based rather than team-based; registrars are absent as often as they are present'

Society of British Neurological Surgeons



'The loss of flexibility of working hours and patterns makes it more difficult to train in the timeframe required'

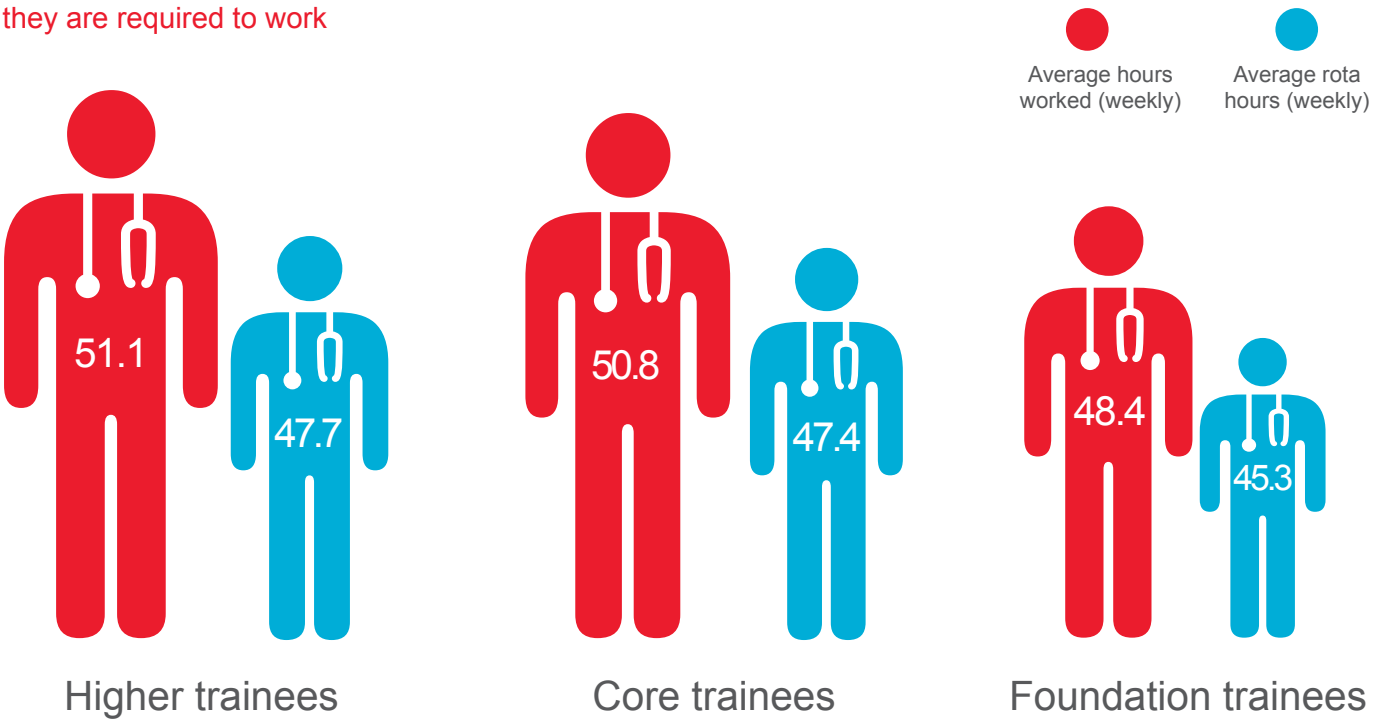
British Transplant Society

[3] EWTD: European Working Time Directive

Chart 5: Average weekly hours for trainees in surgical posts

Base: 990 doctors in training

Trainees in surgical posts work significantly longer hours, on average, than they are required to work



Overall, the 990 respondents were required to work an average of 45.8 hours and actually worked 49 hours on average, per week. Foundation doctors are required to work fewer hours than core and higher surgical trainees – and the hours they actually work are fewer than for surgical trainees.

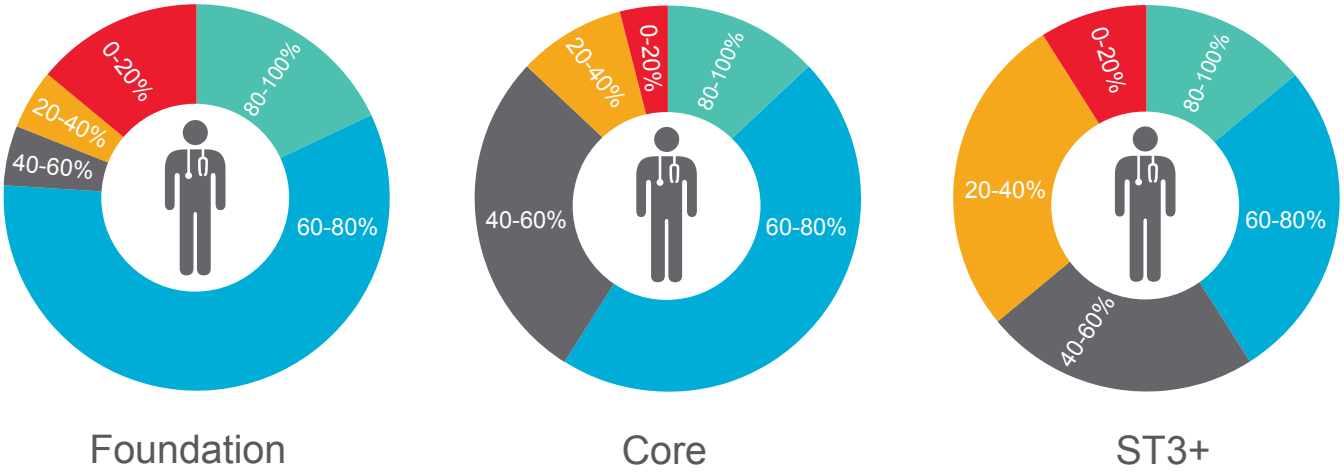
We also asked doctors in training whether they considered there is enough time for training in a 48-hour week. This time foundation doctors were more likely to consider that there was enough time – 55% said this – and higher surgical trainees were less likely to respond positively to this question – only 44% thought there is enough time for training in a 48-hour week.

In the case study sites, some interviews highlighted the challenges created by a 48-hour working week. One senior surgeon told us:

> *'We have to try and cram everything into a 48-hour week – not just training, but experience, so that they [trainees] feel comfortable and proficient.'*

Chart 6: During an average week, what proportion of trainees' time in your specialty is spent delivering 'service requirements', rather than training?

Base: 22 surgical specialty representatives



Most respondents thought foundation and core trainees spend 60–80% of their time on service delivery. Four voted higher (80–100%) for foundation trainees, and 3 for core trainees.
Views were more spread for higher specialty trainees: 6 said 20–40%; 5 said 40–60%; and another 6 said, 60–80%. We were surprised and concerned that 3 thought higher specialty trainees spend 80–100% of their time on service delivery.

Balancing service requirements with training

It is tempting to dichotomise 'service', on the one hand, and training on the other. Tensions between these two are frequently highlighted. Further, there is a sense that the balance has shifted too far towards service at the expense of training, particularly in the early years of surgical training (Eardley, 2015). It is doctors in foundation and core training who tend to be hit hardest by the need to cover any gaps in rotas, although some of the specialty representatives told us that ST3s – at the transition point into higher specialty training – are also affected.

In our survey of specialty representatives, respondents generally thought that doctors in foundation and core training spend 60-80% of their time on 'service delivery' – although some thought the figure more like 80-100%. Views were mixed over the time higher surgical trainees spend on service delivery; 3 thought that 80–100% of their time was spent on service delivery (see Chart 6).

This also aligned with the findings of our survey of doctors in training. Higher surgical trainees reported that less than half their time (49%) is spent delivery service requirements, whereas core trainees reported that 59% of their time is spent on service requirements. Foundation doctors were more likely to report that a higher proportion of their time – 74% – is spent on service delivery.

Rota issues

As the quotes below and right show, issues with the way rotas are organised underpin the concerns by specialty representatives about service requirements interfering with training opportunities. This supports the findings of a survey of the UK surgical trainee workforce by The Association of Surgeons in Training (2014). This found that 71% of more than 1,200 surgical trainees surveyed felt that rota arrangements had a negative impact on on their training; and 72% reported attending the workplace on their days off in order to train.

‘FT and core have little focus on surgery. ST3 and above have rotas that only allow one-to-one tuition, with little opportunity to carry out group teaching’

Society of Academic and Research Surgery

‘The shift patterns at a junior level means that many of their hours of “work” are spent out of hours, away from the optimal training times’

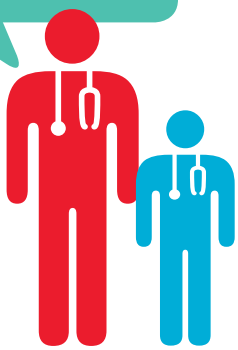
Society for Cardiothoracic Surgery in Great Britain and Ireland

‘The main problem is the shift work rotas, which significantly reduce both elective exposure and emergency exposure in order to be SiMAP/Jaegar/ New Deal etc compliant’

Association of Surgeons in Training

‘Core trainees struggle to get enough basic operative experience and it is a similar story for ST3s. Too much emergency surgery is still being done at night when training opportunities are reduced’

Association of Upper Gastrointestinal Surgery



‘In cardiothoracic surgery they need to be in theatre at least two days a week, if not more. Too often for various reasons they end up doing other duties and so cannot develop their skills/experience’

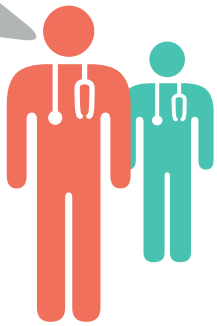
Society of Cardiothoracic Surgery in Great Britain & Ireland

Time spent in theatre

The scheduling of time in theatre, arrangements for emergency surgery, and different models of working – marking a move away from the ‘firm’ and apprenticeship-type models – were also cited as factors that were undermining training opportunities. This is seen in the quotes from surgical specialty representatives.

‘We must change training – especially for the FY and core – otherwise they see surgery as a poor choice for a satisfying career and sustainable work–life balance. The previous ‘trade-offs’ for my generation – large financial rewards, respect in the community etc – are no longer there’

Association of Breast Surgery



‘The reduction in hours and the fragmentation of the “Firm” has had a negative impact on surgical training. We all do our best to try and mitigate against this but there is a limit to what we can do’

Association of Upper Gastrointestinal Surgery

Loss of the firm and apprenticeships

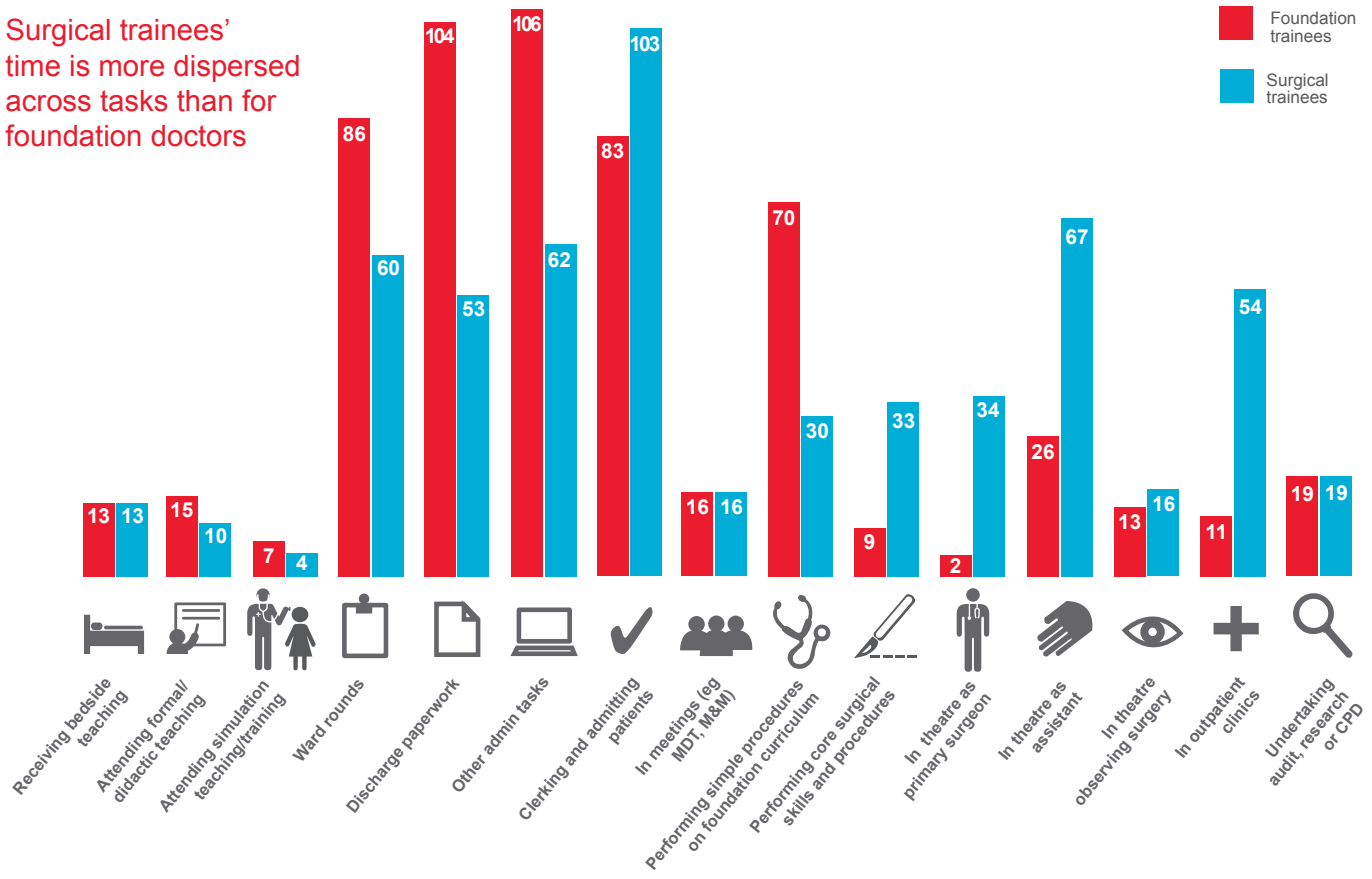
One senior surgeon at a case study site told us that the breaking up of firm structures was ‘a huge shame’ for consultants and juniors, and meant that doctors in training rarely work with the same person twice – which itself was thought to undermine their training. At the Norfolk and Norwich University Hospital, doctors in core training in orthopaedic surgery work rotas that are arranged into week-long blocks (of outpatients, theatre lists, wards, etc). They reported that this rota arrangement is suited to self-directed learning and enabled them to focus on the training experience, with 75% of their time spent on the ward and educational work. But they also cited downsides to not having a team-based rota, including a lack of familiarity with patients and operating with a number of different surgeons.

‘My personal view is that training is much better when it is done around a firm structure so you have trainees for a period of at least six months. Then they get to do more and be involved and trusted. I also believe apprenticeship in the sense of seeing and doing is far better than artificial training on courses.’

British Society for Surgery of the Hand

Chart 7: Mean amount of time spent during doctors last shift (minutes)

Base: 990 doctors in training



Foundation doctors spend significantly longer on ward rounds, paperwork and other administrative tasks, and performing simple practical procedures. Surgical trainees spend significantly longer clerking and admitting patients, performing core surgical skills, and in outpatient clinics. Time for teaching is low for both groups.

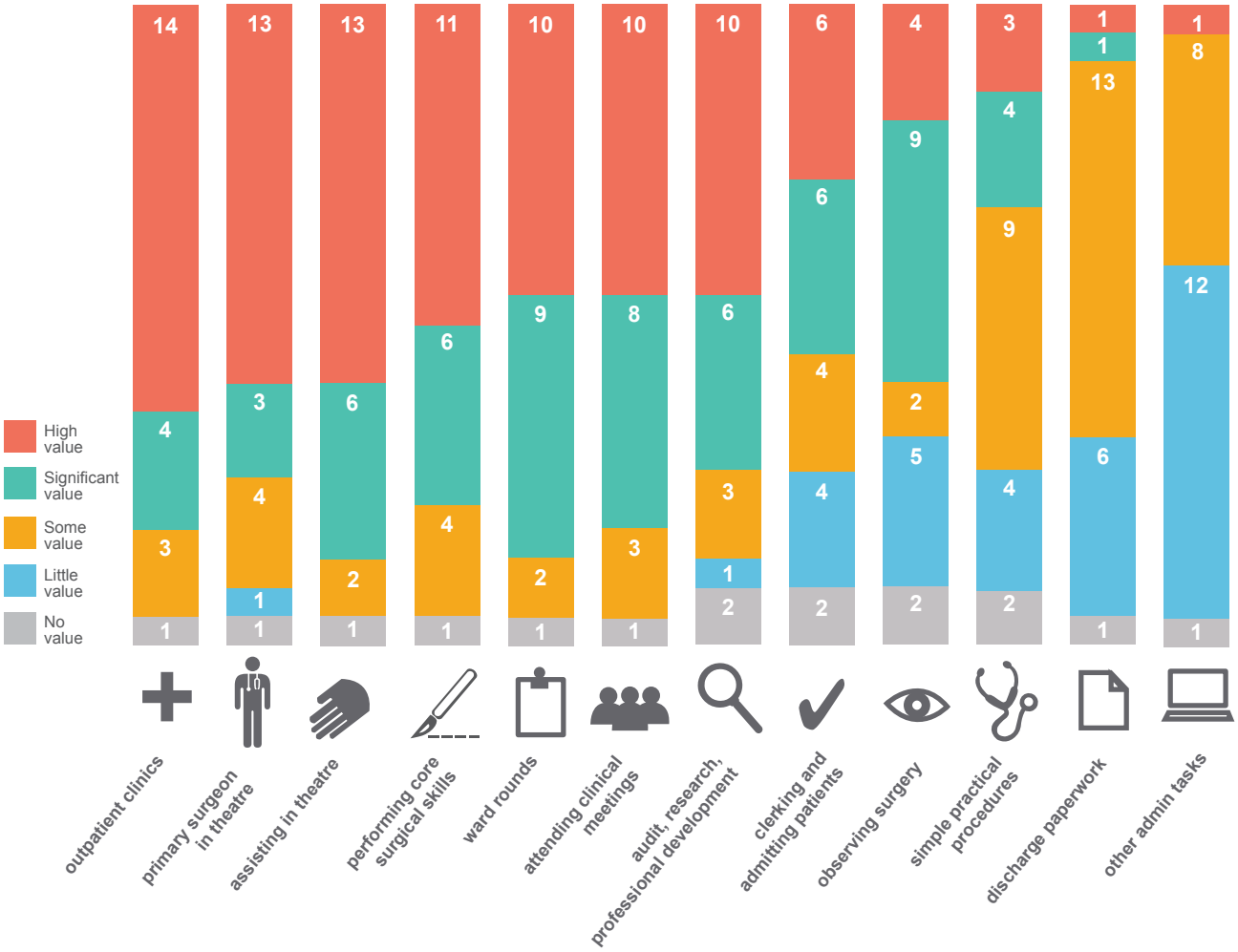
The College supports a return to apprenticeship-style training (Eardley, 2015; The Royal College of Surgeons, 2014a), as signposted by *The Shape of Training Review*, which recommended that doctors train and work alongside a small number of trainers and within specific teams. This is driven by a need to 'create a much closer link between service and training so that all service delivery provides meaningful learning and training' (*Shape of Training Review*, 2013).

Our survey of doctors in training revealed the extent to which service requirements dominate doctors' time on shift. We found that only a very small proportion of trainees' time is given over to focused teaching. Across our sample of nearly 1,000 doctors, less than half an hour, on average, was spent receiving bedside teaching or attending formal teaching sessions. Most time – an average of six hours a shift – was spent undertaking ward rounds, completing discharge paperwork and other administrative tasks, as well as clerking and admitting new patients. See Chart 7.

This is not to say that these tasks do not hold educational value for doctors in training, because they can – see page 31. It is, however, a question of balance. It is also about what is valued: receiving teaching scored highly across foundation doctors and surgical trainees in term of its

Chart 8: How much educational value does each task have to surgical training for core trainees?

Base: 22 surgical specialty representatives



educational value – yet the survey findings show that little time is currently dedicated to this.

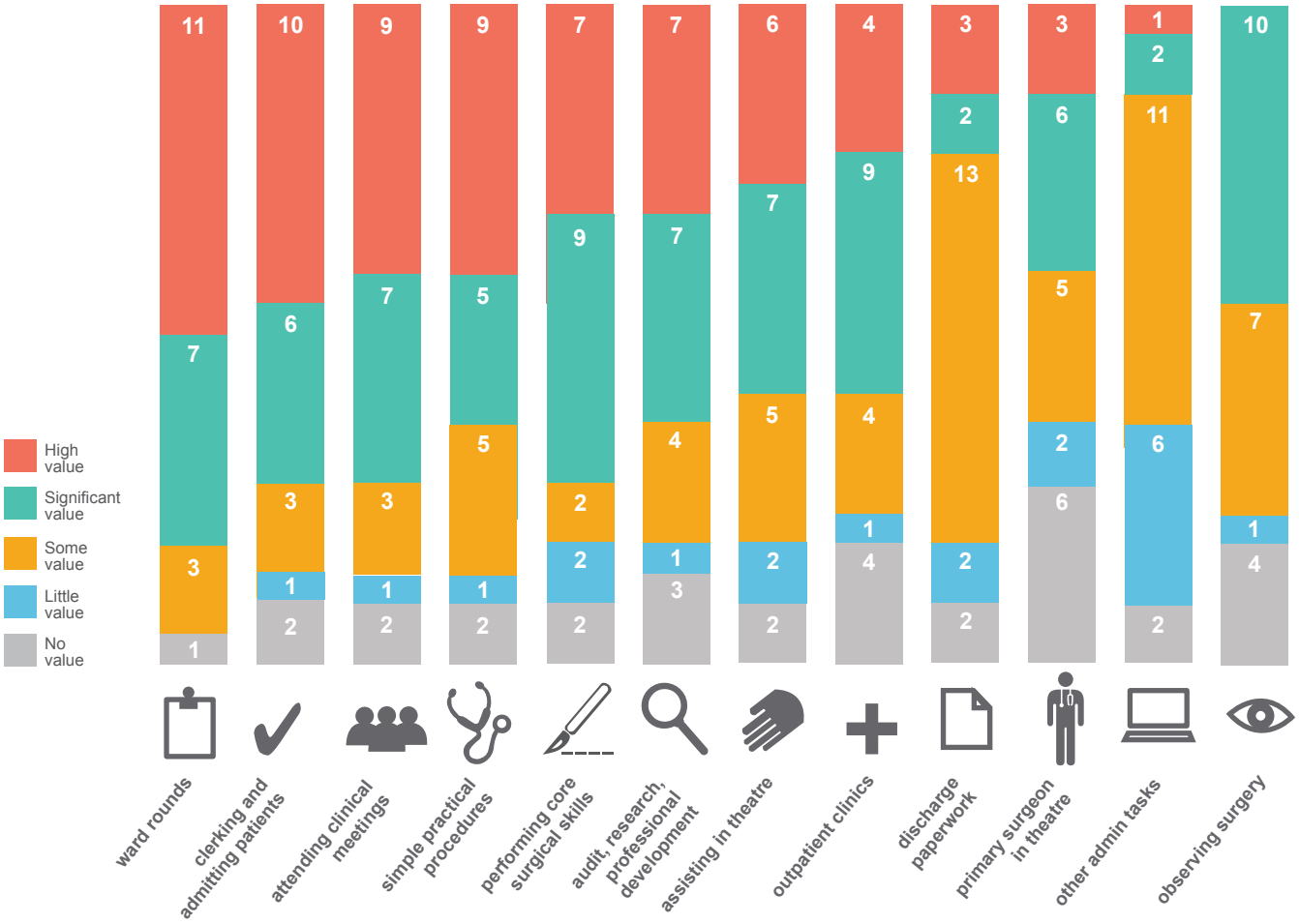
The educational value of tasks

One of the recommendations arising from the work of the Independent Working Time Regulations Taskforce (2014) was that more work should be done to identify 'service' and 'education' elements in the work of doctors in training. It is against this backdrop that we sought to understand the perceived educational value of tasks.

Specialty representatives rated some of the tasks performed by doctors in training as having little or no perceived educational value. For example, 13 of the 22 specialty representatives thought administrative tasks held little or no educational value for doctors in core training: seven thought this about completing discharge paperwork, six for clerking and admitting patients, and the same number about performing simple practical procedures (see Chart 8). Relieving doctors in core training of some of these tasks, therefore, has the potential to benefit

Chart 9: How much educational value does each task have to surgical training for foundation doctors?

Base: 22 surgial specialty representatives



their training, which in turn would have a knock-on effect for higher surgical training.

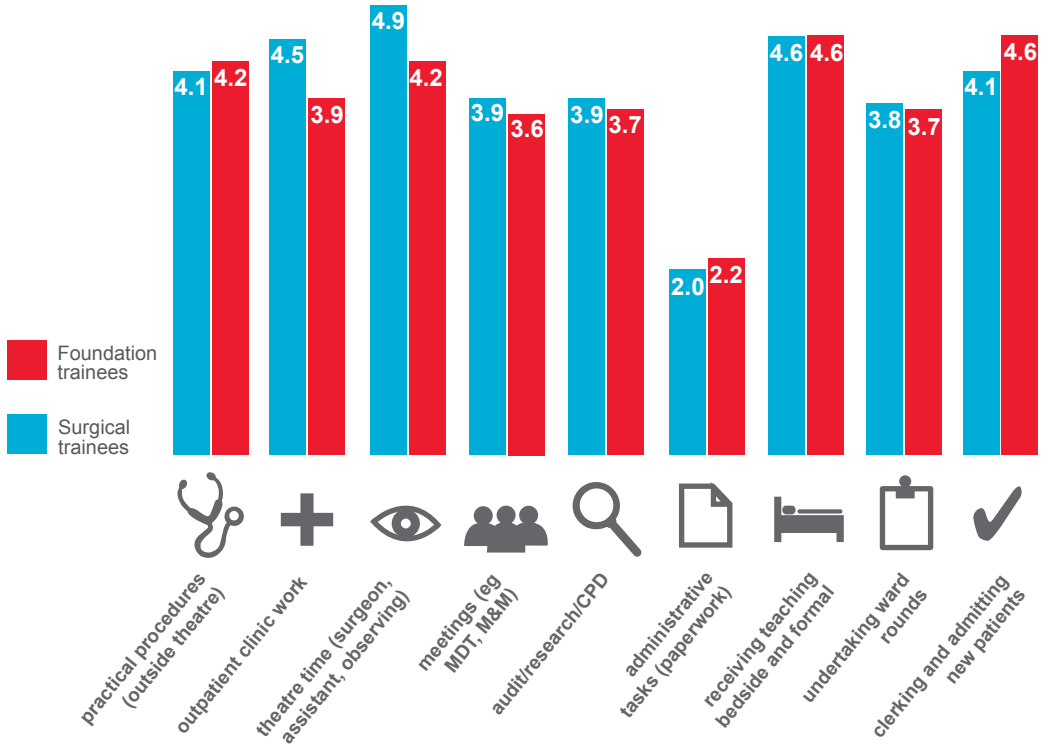
Specialty representatives tended to highlight the same three areas – discharge paperwork, administrative tasks and clerking patients – as being of little value for higher surgical trainees. They also generally placed little value on performing simple practical procedures and, to a lesser degree, performing core surgical skills for doctors at this stage of their training.

The educational value ascribed to tasks rightly varies according to the stage of training. Being the primary surgeon in theatre comes low down the list of valued tasks for foundation doctors, but top for doctors in higher specialty training. Clerking and admitting patients was thought to have little value for higher surgical trainees, rather more value for core trainees and most thought it had high or significant value for foundation doctors. In fact, most tasks were thought to have some educational value for foundation doctors, and often significant or high value. This even included administrative tasks (although they came low on the list) – see Chart 9.

In terms of where educational value lies, a majority of specialty representatives thought that outpatient clinics held significant or high educational value for doctors in core training, and there was no task that specialty representatives collectively considered to be of no value.

Chart 10: Mean educational value score (1–5) for each task

Base: 990 doctors in training



Foundation doctors place highest educational value on receiving teaching, and clerking new patients.

Surgical trainees place highest educational value on theatre time, receiving teaching and outpatient clinic work.

These views chimed with the findings from our trainee survey – see Chart 10. Doctors in training scored administrative tasks lowest in terms of educational value – these are tasks to which they report giving a significant proportion of their time on shift (see Chart 7, page 30). For foundation doctors, clerking and admitting new patients scored highly for educational value, along with receiving bedside and formal teaching. For surgical trainees, greater educational value was derived from spending time in theatre and outpatient clinics. With experience, there appears to be a greater appreciation for the educational value of a wider range of tasks.

The findings from the diary exercise completed by 40 doctors in training – a mix of FY2s, doctors in core surgical training and higher surgical trainees at ST3 and ST4 – also contribute to our thinking here. The 40 doctors reported that around half their working sessions were spent on tasks that they considered to be educational – the other half were not regarded to be educational. Most of the tasks they performed related to direct clinical care, followed by administrative activities – see Chart 11.

Direct clinical care activities were most likely to be ward rounds, followed by assisting in theatre and doing foundation-level practical procedures. See Chart 12.

Chart 11: Diary exercise: number of tasks recorded

Base: 40 doctors in training

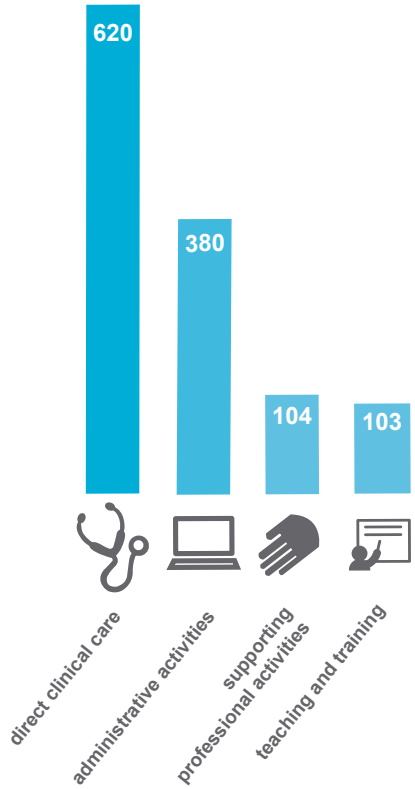
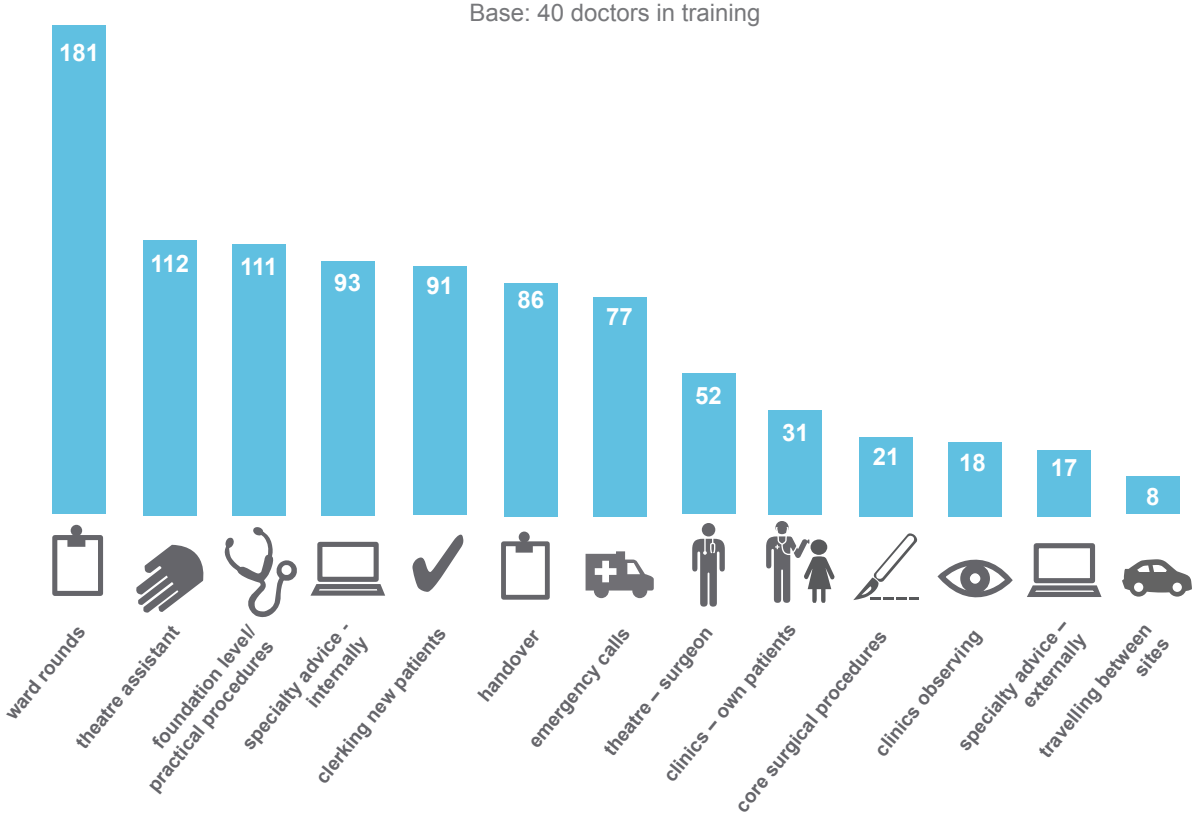


Chart 12: Diary exercise: number of recorded tasks – direct clinical care

Base: 40 doctors in training



Administrative tasks were the second most commonly reported category and, of these, the most demanding tasks in terms of the number of activities were those associated with prescribing. See Chart 13.

These findings highlight difficulties in identifying the 'service' and 'education' elements in the work of doctors in training, as the two are so closely intertwined. 'Bear in mind that a lot of training is gleaned through service', said the medical director at one trust we visited. The medical director at another agreed: 'Some service is good for training'.

Even tasks that are administrative can hold educational value. For example, a number of senior doctors at the case study sites believed discharge summaries were valuable in terms of learning about the handover of care to others. One medical director said: 'Writing a good discharge summary is a skill that juniors need to develop, and is key to patient flow'. Harnessing technology here may help, they thought. They also highlighted the value of administrative tasks in terms of learning how to manage theatre lists, plan clinics, and prioritise workloads.

The message that came through loudly from our research is that it is a question of balance – clerking enough patients to have developed confidence across a breadth of presentations, writing enough discharge letters to be competent in the handover of care to others, and so on. 'It's the volume of it that is the issue', said the surgical tutor at one site. Finding that right balance is where attention needs to focus.

Chart 13: Diary exercise: number of recorded tasks - administrative activities

Base: 40 doctors in training

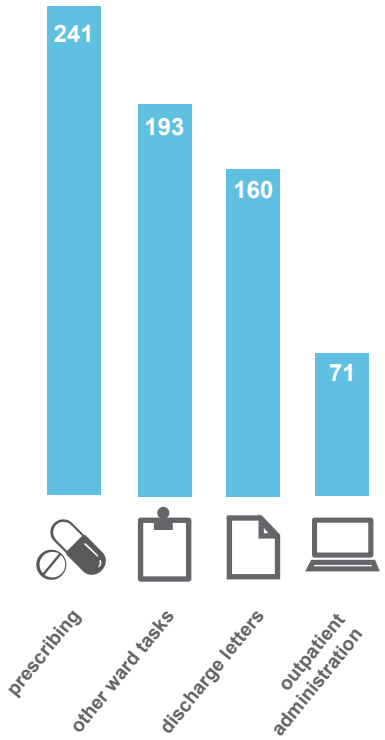
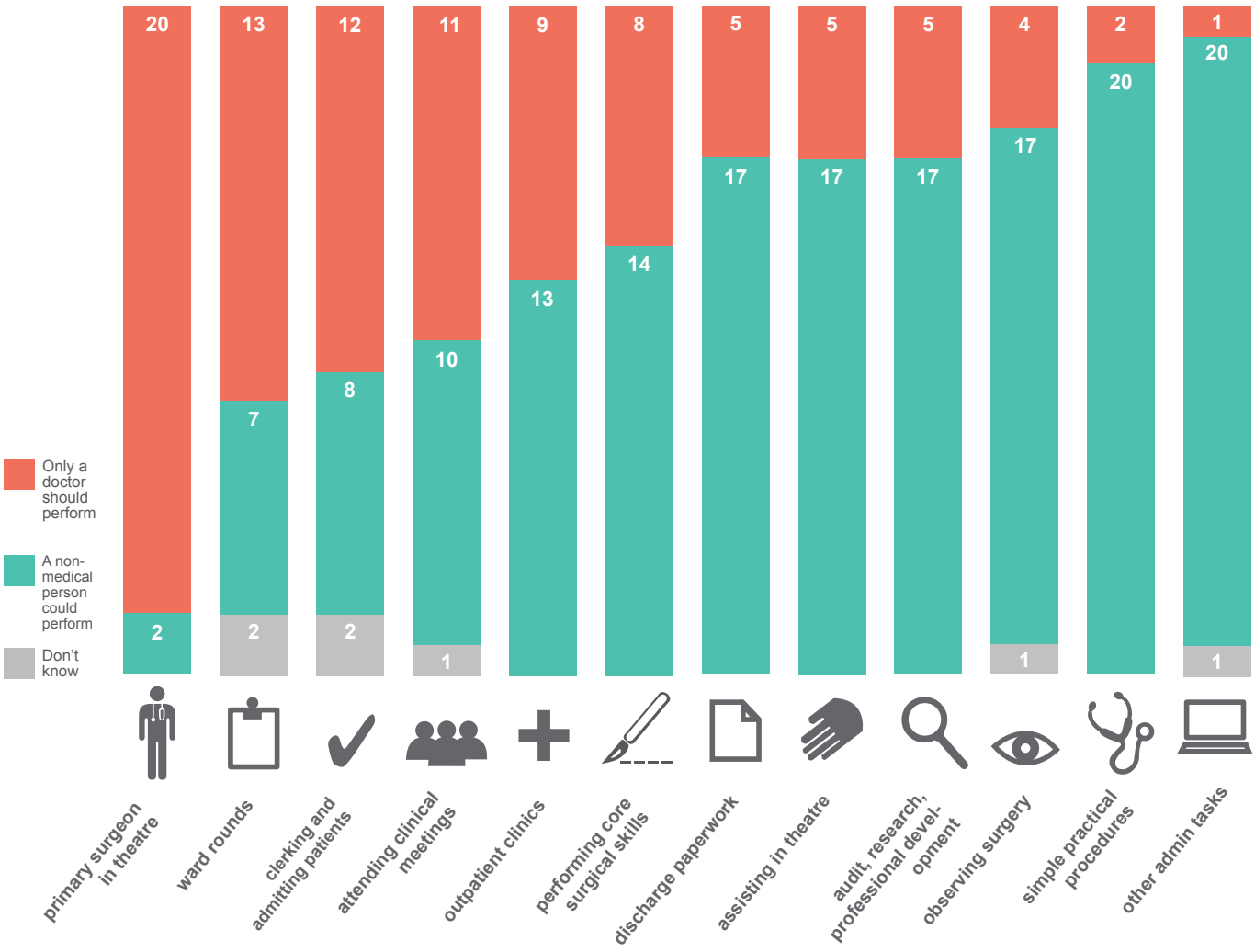


Chart 14: Which tasks would you be comfortable for a non-medical team member to perform?

Base: 22 surgical specialty representatives



The potential offered by the extended surgical team

Our survey of specialty representatives suggests that there is potential for some of the workload currently falling to doctors in training to be taken on by other, 'non-medical' team members. Advanced nurse practitioners, surgical care practitioners, administrators and ward clerks were thought by specialty representatives to hold the most promise in this regard.

A majority of specialty representatives responded that they would be comfortable with a non-medical team member performing a range of tasks, including simple practical procedures, completing discharge paperwork and assisting in theatre.

There is some resistance to the idea of non-medical staff performing roles that traditionally have been the preserve of doctors. Specialty representatives were more likely to feel uncomfortable with non-medical staff undertaking ward rounds, clerking or admitting patients, or attending clinical meetings; nine thought only a doctor should participate in outpatient clinics; and five thought that only a doctor should complete discharge paperwork, despite this being one of the tasks some rated as having little or no educational value to surgical trainees (see Chart 14). A significant majority believe that only a doctor should be the primary surgeon in theatre; still, two responded that they would be comfortable with another, non-medical team member taking on this role.

The wider team

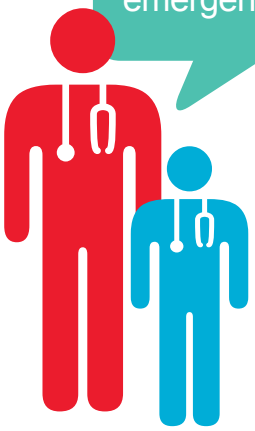
A number of the medical directors and senior surgeons at the case study sites tended to be open to non-medical staff taking on almost any role, including doing simple procedures independently, provided they had the right training. One medical director said: 'The hardest thing doctors do is not procedures, it is diagnosis'. Such views probably reflect the successful experiences with extended roles in the hospitals we visited, as well as the pressures these hospitals were under as a consequence of a reduced medical workforce. However, resistance within a couple of the sites to the idea of non-medical staff operating independently suggested this was a line that some felt should not be crossed.

The 40 doctors who participated in our diary exercise were asked to indicate whether they thought each task they completed could be performed by a non-medical practitioner. The vast majority of tasks – 74% – were considered unsuitable for non-medical practitioners to perform – only 26% were thought to be suitable. Given the vast array of tasks that non-medical practitioners already perform, this finding suggests a lack of understanding among doctors in training of the potential contributions of the wider surgical team.

To gain an understanding of the potential offered by the extended surgical team, we visited eight NHS hospitals that have reconfigured some of their surgical teams in ways that we considered to be innovative and exciting. Section 3 reports on what we learnt during these visits.

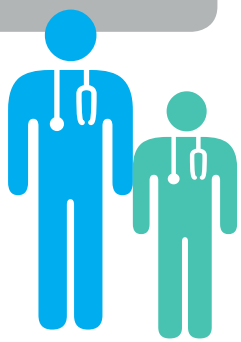
'I would like to see the 24/7 service delivered by a team of nurse practitioners. And the trainee called in for emergencies only'

Society for Cardiothoracic Surgery in Great Britain and Ireland



'The service could be delivered by specialist nurses – and trainees could do their learning "on-call" but once they are competent at out-of-hours care they could then spend more time concentrating on theatre work'

Society for Cardiothoracic Surgery in Great Britain and Ireland



'Better use of others' skills and medical skill devolution is essential for future healthcare survival. Many of the skills regarded as medical can be easily taught to others and are not the preserve of doctors. We have had a skill mix for a long time in our team (nurse consultants, consultant radiographers, etc) and it is very successful'

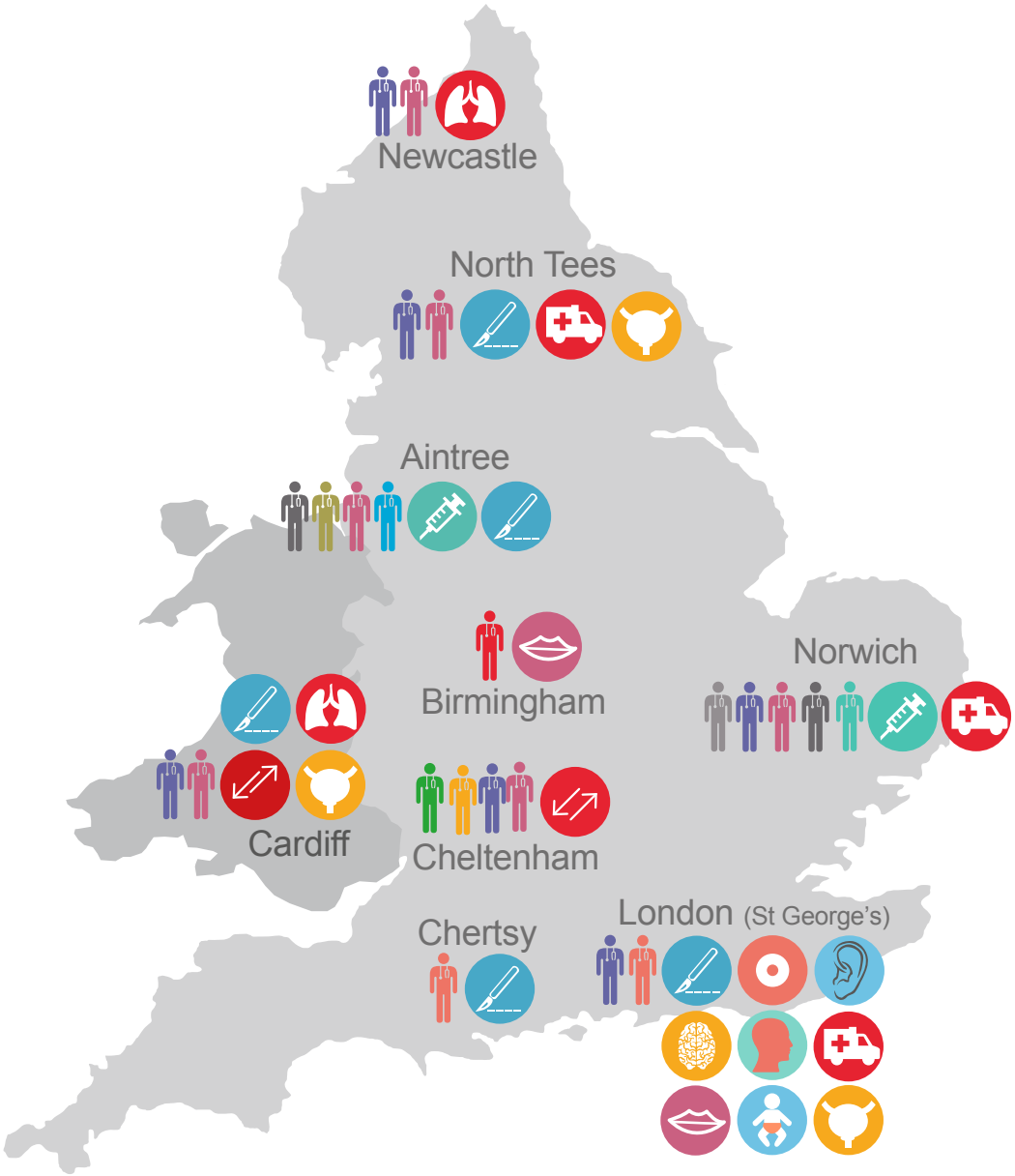
Association of Breast Surgery

New models for delivering care

Map shows sites visited, specialties and practitioners

The surgical specialties we visited at each site:

- General surgery
- Orthopaedic surgery
- Urology
- Anaesthetics
- Oral & maxillofacial surgery
- Vascular
- Neurosurgery
- Cardiothoracic surgery
- Breast surgery
- Ear, nose & throat surgery
- Plastic surgery
- Paediatric surgery



The practitioners

- Prescribing pharmacist
- Surgical first assistant*
- Physician associate*
- Physicians' assistant (anaesthesia)*
- Surgical care practitioner*
- Clinical nurse specialist
- Consultant nurse
- Assistant practitioner
- Clinical support worker
- Maxillofacial prosthetics
- Nurse practitioner*/ advanced nurse practitioner*

*Advanced nurse practitioner
Clinical nurse specialist
Specialist nurse practitioner
Surgical nurse practitioner
Emergency surgical practitioner
Orthopaedic nurse practitioner
Trauma practitioner
Urology nurse practitioner

*Appendix A contains further details about these practitioners

We conducted visits to eight NHS hospitals (seven in England and one in Wales) to explore new models for inpatient care using an extended surgical team. The components of the extended team who it comprised – and the roles each person played – varied considerably, with arrangements often bespoke to the particular needs of the surgical specialty. That said, a number of key areas of learning emerged that will be relevant across all surgical departments – and it is these themes that we focus on here.

In addition to the study sites, we also conducted a targeted visit to a ninth hospital to find out more about the unique extended surgical team in maxillofacial surgery. Details of this team can be found in Section 4.

In total we conducted interviews with more than 150 NHS staff.[4] *Further details about the visits we conducted can be found in Appendix D.*

New models

A reduction in the numbers of doctors in training has been the main driver behind the creation of new models of surgical care in most of the case study sites. One director of medical education told us that 'the perfect storm of trouble', created by the working time regulations and reductions in the numbers of doctors in training had led them to look at a range of alternative staffing models – including utilising clinical fellows, advanced nurse practitioners, physician associates and recruiting doctors from overseas. Even where numbers of doctors in training had remained static, changes in their working patterns and in expectations regarding training led some senior clinicians to feel that they had simply become less useful to the service than they once were.

Surgical units at the case study sites had often confronted the reality that they could no longer rely on doctors in training to cover the service in a way that some other specialties have yet to encounter.

While we have described the staffing models as 'new' – because they mark a departure from traditional, medical models – they are not new to the case study sites. We also recognise that some hospital-based medical specialties, such as neonatology, have a long tradition of using enhanced practitioners. Many specialist nursing roles have developed in an outpatient setting, offering services such as gastroscopy and urodynamics, and roles that are allied to the long-term care of patients with chronic disease (eg heart failure nurse specialists and oncology clinical nurse specialists). Our focus at the case study sites was on the inpatient pathway for surgery.

[4] 137 face to face interviews; 16 telephone interviews

Administrative support

In this report, we give attention to practitioners who provide clinical expertise to the surgical team. It should also be noted, however, that administrative staff play a crucial role in supporting the surgical team.

Other work conducted by the RCS has identified units that have introduced a model whereby several 'Doctors' support workers' undertake administrative tasks 8am–9pm, 7 days per week. These workers are Band 3 or Band 4, and usually working towards an NVQ (National Vocational Qualification) or apprenticeship. Other units have a hybrid clinical and administrative role at Band 3 or Band 4. These staff usually come from a healthcare assistant background and perform basic clinical duties and administration. The benefits include helping doctors in training.

The mid-point on the pay-scale for Band 3 is £17,000 and for Band 4, £20,000. So these roles are significantly cheaper to the service than the clinical roles featured elsewhere in this report.

A further advantage is that recruitment can often be achieved at a local level without depleting senior clinical staff from the team. Staff starting on Band 3 or Band 4 are limited to simple tasks, but require only a few weeks' initial induction and thereafter development on an NVQ or apprenticeship basis (with training days, for example). These staff can only ever act as assistants. They cannot work at night, be on call or deal with uncertainty or risk.

University Hospital of Wales

There is a long history in Cardiff of looking at alternative roles. The hospital was one of the first to have a surgical first assistant, as the introduction of laparoscopic surgery at the hospital in the early 1990s created a new demand for skilled assistance beyond the level of a scrub nurse. This role was the precursor for the surgical care practitioner roles featured here.

Staff also described how they have been exploring different ways to provide junior doctor cover for 15 years. Recruitment problems, the hospital-at-night system, and the changing medical landscape have all driven a need to examine different roles at the Cardiff and Vale Health Board. For example, a decision by the Wales Deanery to remove core trainees from cardiothoracic surgery had had implications not only for that specialty, but had also created a problem in terms of staffing the on-call rota, which had a particular impact at night. It led the hospital to look at introducing advanced nurse practitioners to fill these gaps.

Today there are 60 nurses working in extended roles in surgery at this hospital, including clinical nurse specialists and research nurses, as well as advanced nurse practitioners.

The models used within Cardiff have evolved over time. Specialist nurse practitioners were originally allocated to firms in general surgery, covering both elective and emergency work. While this model had many positives for consultants and patients, it was thought to

have undermined exposure to learning opportunities for doctors in training. The model was revamped so that specialist nurse practitioners were used in the emergency stream only. 'It is better because they are not overlapping with the firm structure,' said one consultant.

Senior nurse managers at this site advocated ward-based teams as their favoured model. However, a key aspect of learning from Cardiff is that a number of models will need to co-exist, depending on the needs of the service. For example, specialist nurse practitioners in the surgical assessment unit are assigned to the unit. Elsewhere in the hospital, advanced nurse practitioners are assigned to particular consultant teams. Variations in whether surgical care practitioners work along the patient pathway or only in theatre reflect the organic evolution of these roles.

University Hospital of Wales – Cardiff

Job title	Specialty	Role	Model
Specialist Nurse Practitioners	General surgery	Specialty role Band 7 to 8a	Four SNPs in general surgery. Own rota, daytimes only. Work exclusively in the emergency general surgery stream. Two on shift at a time: one on surgical take (ward-based), the other on surgical assessment unit (receive patients via GP referrals and A&E). Work one weekend in four (general surgery and vascular wards). Non-medical prescribers.
Surgical Care Practitioner	Vascular	Specialty role Band 7	One vascular SCP works along the patient pathway from pre-assessment to ward, theatre and discharge. Works with three consultants. Assists with ward rounds, perioperative care, bloods, catheters, consent, wound closure. Will assist in clinics (new patients and preadmission clinic).
Surgical Care Practitioners	Cardiothoracic surgery	Specialty role Band 7	There are two surgical care practitioners for cardiothoracic services. Spend 90% of time in theatre, harvesting veins independently, first/second assistant. 10% of time spent on ward tasks, but are not allocated to the ward.
Surgical Care Practitioners	Gynaecology	Specialty role Band 7	There are three SCPs in gynaecology. Theatre-based roles. One experienced laparoscopic nurse specialist can insert ports, dissect/ resection work (under direct supervision). The others perform first assistant roles, such as retraction, knot tying, use of diathermy and wound closure. Consent patients. No ward role, but will review patients who stay in overnight. Run pelvic pain clinic. Previously ran colposcopy clinic.
Surgical Care Practitioner	Urology	Specialty role Band 7	SCP in urological robotics. Role includes assisting as first assistant in theatre, retraction, suctions, retrieving specimen, closure of wounds. There are aspirations to extend the role to take on flexible cystoscopy lists, but SCP only works four weekdays at present. As well as theatre, does outpatient clinic, pre-assessment, preoperative clinic and telephone follow-ups.

St George's Hospital

Activity at St George's to extend the surgical team was described as 'work in progress for the last five years'. It was initiated as a consequence of the Modernising Medical Careers programme introduced in 2005, which saw the combined ear, nose and throat (ENT), oral maxillofacial (OMF) and plastic surgery department experience a marked reduction in numbers of doctors in training.

The hospital established a 24/7 committee to address a shortage of medical cover in this department – and this led it to consideration of extending the roles for advanced nurse

practitioners (ANPs). ANPs with the attributes for specialist practice were identified and an in-house clinical training programme was established. The training was provided by the clinical lead and higher surgical trainees, and covered all aspects of acute ENT management. This included knowledge in specialist interventions such as draining peritonsillar abscesses and use of flexible naso-endoscopes, as well as assessing and managing acute emergencies.

The ANPs did this training alongside doctors at what was 'senior house officer' (SHO) level, and sat an examination at the end – their performance in the exam matched that of the doctors in training. This cohort of ANPs were renamed Specialty Nurse Practitioners (SNPs), to reflect the specialty knowledge they had gained in ENT, OMF and plastics. Today five SNPs provide cover at night, alongside higher surgical trainees and ANPs in more generic roles. Doctors in foundation and core training are released from having to provide night cover.

The general surgery department at St George's Hospital has retained arrangements whereby core trainees provide cover at night, owing to the value it is thought to have for their training. However, much of the ward work at night is done by ANPs, who cross-cover surgical and medical wards. The ANPs call the core trainees for issues that require medical input, while the core trainees cover accident and emergency and are encouraged to focus on areas that benefit their training.

The two distinct models within the division for surgery at St George's offer a pathway for hospitals considering extending ANP roles. The use of ANPs working alongside core trainees in general and vascular surgery could be a stepping-stone to a model whereby ANPs become specialty trained and effectively replace doctors in the early years of training at night. Such a model will be suitable only where it is felt that providing night cover is not important for doctors in the early years of training.

St George's University of London offers an MSc in physician associate studies and is reported to produce 20 to 30 physician associates annually. St George's Hospital recruits roughly a third of the trained physician associates each year. We met with six of the current physician associates working across five surgical specialties.

St George's Hospital – London

Job title	Specialty	Role	Model
Specialist Nurse Practitioners	ENT Maxillofacial Plastics	Specialty role, cross-cover these specialties at night Band 8-8a (band 7 while training)	Two specialist nurse practitioners per night shift cover A&E, wards, pediatrics, neonatal and renal unit. Occasionally assist in theatre. Work as direct replacement for F2s and doctors in core training (who are released from night cover), alongside doctors in higher surgical training and ward-based advanced nurse practitioners (generic roles). SNPs undertake tasks that F2s would have done, including discharge and treatment planning. Own SNP rota – 13 shifts a month, nights only.
Advanced Nurse Practitioners	General surgery	Generic role Band 7-8	Ward-based tasks, call on core trainees for medical input. Core trainees cover A&E and focus on areas that benefit their training.
Physician Associates	Breast Orthopaedic Neurosurgery Paediatric surgery Urology	Specialty-specific Band 7-8	Ward-based and assist in theatre, when needed (frequency varies according to specialty). Attend ward rounds and help with ward jobs. Clerk patients, perform simple practical procedures, discharge planning, discuss imaging requests. Some work alongside junior doctors as part of the medical team rota; others are on own rota (no core trainees in paediatric surgery). Some are involved in clinics. Some perform diagnostics (eg cystoscopy). Currently work weekdays only.

Norfolk and Norwich Hospital

In a decade, the trauma and orthopaedics department at the Norfolk and Norwich University Hospital went from a ratio of one SHO per consultant to one for five consultants. This reflected a reduction in trainee numbers in the early years – from 18 to 7 – and an expansion in consultant numbers (there are now 24 consultants). Difficulties in recruiting trust-grade doctors, combined with concern about the quality of those doctors, led the hospital to introduce orthopaedic nurse practitioners to undertake much of the ward work previously done by core and foundation doctors.

This hospital also describes itself as the first in the country to appoint surgical assistants – now called orthopaedic surgical care practitioners. Today there are five such practitioners; three are theatre-based, where the service need is described as greatest, but two cover the whole patient pathway.

The extended surgical team in orthopaedics also includes a prescribing pharmacist – this is a role that a number of other hospitals are interested in, especially given the restrictions on physician associates when it comes to prescribing.

Norfolk and Norwich University Hospital – Norwich

Job title	Specialty	Role	Model
Surgical Care Practitioners	Orthopaedics	Specialty role Band 7	Five surgical care practitioners support 24 consultant-led surgical teams. Two follow the patient pathway (pre-assessment to follow-up). Three have clinical audit/data compliance roles. All assist in elective theatres and cover trauma theatre Friday afternoons to cover trainees' attendance at teaching. Manage bone bank and surgical site surveillance. Typical surgical tasks include: supporting solo ST5/6/Fellow operating; undertaking delegated surgical interventions including full wound closure and allograft preparation; and educational support for medical and paramedical students.
Orthopaedic Nurse Practitioners	Orthopaedics	Specialty role Band 6-7 (8a for lead ONP)	Ten orthopaedic nurse practitioners based on three orthopaedic wards. Work pattern includes weekends and bank holidays. Plan is to extend cover to evenings and extend along patient pathway to include preoperative assessment. A single 'SHO' covers the wards. Do clinical examinations and consent certain operations. Most are independent prescribers. Undertake ward rounds (independently or with registrar or consultant), order x-rays and bloods. Sometimes refer patients to consultants. Tried different rota arrangements: ward-based rota, then consultant-based teams; currently 'buddy system' where two ONPs cover four consultants.
Prescribing pharmacists	Orthopaedics	Specialty role Band 8a	Two prescribing pharmacists support prescribing by the ONPs. Prescribe all routine preoperative medicines. Write discharge TTOs. Audit drug charts and provide informal training to doctors in training in the early years and orthopaedic nurse practitioners.
Assistant practitioners	Orthopaedics	Generic role Band 4	70 assistant practitioners across the hospital, of which three work on the orthopaedic wards. Created to pick up Band 5 nursing roles. Specialise in specific areas (eg catheterisation, bladder scans). Cannot administer medication. Work to nationally defined competency framework.
Physicians' assistant (anaesthesia) (in training)[5]	Anaesthetics	Generic role Band 8a (trained)	Five PA(A)s in training. 2:1 model – 1 PA(A) and one doctor in training work under supervision of one consultant anaesthetist, who must be present during induction and extubation. Expected to work in day case surgery mainly, although 1 PA(A) will work in emergency theatres.
Physician Associates (in training)	Yet to be decided		From January 2016

[5] Physicians' assistants (anaesthesia) are non-medical practitioners that work as part of the anaesthesia team. They are included here for the parallels with physician associates and also because surgeons are increasingly likely to work alongside them in theatre.

St Peter's Hospital

St Peter's Hospital, in Surrey, recognised three years ago that the workforce in general surgery was insufficient in number, particularly after foundation doctors were taken out of surgery. The colorectal and urology teams decided that they needed to develop their own workforce. The Medical Director had come across physician assistants in the United States and was struck by the high calibre of the people attracted to those roles. It was felt that the UK equivalent – physician associates (PAs) – could offer a solution to St Peter's. The Medical Director said: 'The hospital likes the idea of PAs because it's a more stable workforce.' The first PA was appointed in 2014. There are now four, covering the colorectal and urology departments, which are the two busiest surgical teams in the hospital.

At other sites we visited, there was a good deal of uncertainty over how PAs can be used within surgical teams. The experience at St Peter's and also at St George's illuminates the positive impact they can have, both on the wards, but also in theatres and clinics.

St Peter's Hospital – Chertsey

Job title	Specialty	Role	Model
Physician Associates	General surgery (colorectal)	Generic role Band 7	Four physician associates, who are predominantly ward-based, rotate across colorectal surgery and urology. Help with administrative jobs following ward rounds, covering acute surgical inpatients and performing simple practical procedures. Assist in theatres as required. Clerk patients on the surgical assessment unit. They are beginning to extend their role into outpatient clinics (depending on level of experience). They have their own rota and there is always a PA on duty at weekends.

University Hospital of North Tees

Emergency surgical admissions to the University Hospital of North Tees are described as very high in comparison with neighbouring trusts. Pressure on the emergency on-call and seven-day working were key drivers at this hospital for extending the surgical team. As with other sites, trainee numbers were insufficient and trust grade and locum doctors were being brought in to fill gaps. The hospital had spent heavily on locums and had concerns about the quality of service they provided, so it has developed extended practice non-medical roles as an alternative model for supplementing the surgical workforce. The Chief Executive said: 'NHS hospitals have to be the future of training doctors, but if we cannot fill rotas or see people quickly enough then it is the right thing to do.'

The hospital already had a tradition of extended nurse roles in areas such as accident and emergency and paediatrics, so used this as the basis to extend nursing roles in surgery. Trauma practitioners were introduced first, and have since been added to, with other surgical practitioners tailored to specific surgical specialties. The Nurse Director said: 'The gap they are filling in the rota is ward cover, so nurse practitioners on the wards work as the doctor on the ward.'

University Hospital of North Tees – Stockton-on-Tees			
Job title	**Specialty**	**Role**	**Model**
Trauma Practitioners	Orthopaedics (trauma)	Specialty role Band 7 (Band 6 while training)	Five trauma practitioners work on the orthopaedic wards. They work alongside F1s and core trainees, and they provide weekend cover. Ward-based. Facilitate timely admission of hip fracture patients and co-ordination of trauma lists. Perform nerve blocks, review sick patients, liaise with anaesthetists and order investigations (including x-rays and ultrasound).
Emergency Surgical Practitioners	General surgery	Specialty role Band 7 (Band 6 while training)	Four emergency surgical practitioners cover general and acute surgical wards, and the surgical assessment unit. Work closely with F1s and F2s. Part of the on-call team. Clerk patients and discuss their management with higher surgical trainees. Take bloods, order admission investigations, chase results, discharge and arrange follow-up plans.
Urology Nurse Practitioner	Urology	Specialty role Band 7 (Band 6 while training)	This nurse practitioner supports the F1 on the ward. There are no core trainees. Predominantly ward-based, although also runs a specialist clinic and looking to offer community outreach for removal of urinary catheters. Covers complex catheter and other specialist queries.
Surgical Care Practitioners	Orthopaedics General surgery (colorectal)	Specialty roles (orthopaedic SCPs) and subspecialty (spinal, upper limb) Band 7 (Band 6 while training)	There are seven surgical care practitioners (six from a nursing background, one operating department practitioner), predominantly theatre-based. They mostly work alongside consultants who do not have any doctors in training on their team. They only do elective lists (trauma lists are reserved for doctors in training). The spinal and upper limb SCPs also attend clinics and the wards, and the upper limb SCP performs carpal tunnel decompression lists independently (with indirect consultant supervision).

Aintree University Hospital

The surgical division at Aintree University Hospital had not yet experienced a marked reduction in the numbers of doctors in training, but rotas were becoming more stretched, particularly out of hours. 'We need to wean ourselves off our dependence on doctors in training out of hours,' said the Deputy Medical Director. Keeping the hospital safe out of hours was the most pressing issue for him. This hospital was planning its future workforce needs on the back of this. 'I'm envisaging a future where non-medical practitioners, who are suitably trained and experienced, are participating in on-call rotas alongside doctors in training,' he told us.

Almost a decade ago, one of the consultant colorectal surgeons was establishing a laparoscopic service and advertised for a surgical first assistant to provide skilled assistance in theatre. It was the first role of its kind in the hospital. After six months in the role, the surgical first assistant (who previously had been a scrub nurse for four years) undertook advanced scrub practitioner training levels 1 and 2 to extend her skills further. She subsequently gained a Master's level qualification and a bespoke role as surgical care practitioner in colorectal surgery was created for her.

In other surgical departments, advanced nurse practitioners had been introduced to increase cover on the wards and in outpatient settings. When we visited, this hospital was at the beginning of the journey in terms of the extended surgical team. It was anxious to take a coordinated, strategic approach to this, identifying gaps and then creating extended roles to fill them.

Aintree University Hospital – Liverpool			
Job title	**Specialty**	**Role**	**Model**
Surgical Care Practitioner	General surgery (colorectal) Dermatology	Specialty role Band 8a	Sole surgical care practitioner in the hospital. Covers full inpatient pathway, providing ward-based peri-operative care and theatre assistance. About 50% of time spent in theatre. Sees patients post-operatively on the ward (including when they are given news of histology) and carries out telephone follow-up calls. Trained to see patients in clinics but does not do this currently because of a clash with dermatology lists. Will assess and diagnose and perform surgical interventions under indirect or peripheral supervision. Some independent operating on dermatology lists. Can work as a surgical first assistant for other surgical specialties. Attached to colorectal team. Conducts ward rounds independently, or with F1s. (There were no core trainees on the colorectal team at the time of the visit.) Runs enhanced recovery programme.
Surgical First Assistant	Across surgical specialties	Generic role Band 5–7	There are nine surgical first assistants in the hospital. Theatre-based. Flexible rota and booked by consultants to act as first assistant on elective lists when there are rota gaps due to nights or leave, or to assist with particularly complex cases. Second assistant if trainee attends or they are cancelled. Can do suturing, surgical ties, catheterise, hold camera. Pre and post-operative visits to patients, but do not take consent. Not attached to a team.
Clinical Support Worker	Surgery and medicine	Generic role Band 3	'Advanced healthcare assistant'. Ward-based. One on surgical wards, weekdays only. Supports foundation doctors by performing simple practical procedures, like venipuncture, blood gases, cannulas, nasal gastric tubes, dressings, administrative tasks. Plans to expand the number of these roles.
Physicians' Assistant (Anaesthesia)	Anaesthetics	Specialty role Band 8a	Three PA(A)s. Can run the theatre list alone but work under the supervision of a consultant anaesthetist who must be present during induction and extubation.
Physician Associate	Medicine	Generic role	A handful of physician associates are expected mid-2016, including some from the US. They are likely to work in A&E, acute medicine and medicine for the elderly.

Freeman Hospital

One of the key distinctions between the models is whether non-medical practitioners are integrated into the junior doctor medical rota or have their own separate rota. The latter arrangement was more common across the case study sites, but at the Freeman Hospital in Newcastle the junior doctor medical rota for cardiothoracic surgery comprises ten surgical nurse practitioners and two core trainees. As a small specialty, cardiothoracic surgery will always find it difficult to staff an acute out-of-hours rota 24/7 with junior doctors. The hospital had responded by employing nurse practitioners to fill 10 of the 12 slots on the on-call rota. The two doctors in core training who fill the other two slots are effectively supernumerary, other than their on-call commitments, which amount to 14 shifts on the ward during a 4-month rotation. This was designed to ensure that doctors in core training gained exposure to ward management tasks, while at the same time increasing their opportunity to attend theatre and clinics.

Freeman Hospital – Newcastle			
Job title	**Specialty**	**Role**	**Model**
Surgical Nurse Practitioner	Cardiothoracic surgery	Specialty role, ward-based Band 7 (band 6 while training)	Ten surgical nurse practitioners cover the ward, with clinical support from a registrar. Work shift system on a rota with two core trainees (including nights and weekends). Tasks similar to those done by doctors in training on the wards, including ordering investigations, blood gases, catheterisation, discharge paperwork and escalating to on-call higher specialty trainee. Most are nurse prescribers.
Surgical Care Practitioner	Cardiothoracic surgery	Specialty role, theatre-based Band 7	Three surgical care practitioners work in paediatric and adult theatres. Skilled first or second assistant. Perform technical skills such as conduit harvesting, camera holding and wound closure, including sternotomy incisions. Actively involved in training specialty trainees in the early years, and facilitate withdrawal of direct consultant supervision by providing expert assistance for senior higher surgical trainees.

Cheltenham General Hospital

Cheltenham's vascular department has had surgical care practitioners since 2002. The roles were introduced to help augment the roles of doctors in core and higher surgical training in theatres in the context of reduced trainee numbers. The department went from four to two higher surgical trainees and from two core trainees to one. The introduction of advanced nurse practitioners into the vascular department was accompanied by a contraction in foundation doctors (from three to one F1) and was designed to support those foundation doctors who remained while helping to make up for those who were gone. The medical director highlighted significant scope for further expansion of advanced nurse practitioners, starting with providing weekend cover to the wards. He could envisage a model for the future where wards are staffed entirely by non-medical practitioners reporting to registrars.

Cheltenham General Hospital – Cheltenham			
Job title	**Specialty**	**Role**	**Model**
Advanced Nurse Practitioner	Vascular	Specialty role Band 7	Three advanced nurse practitioners (ANPs) cover the ward weekdays between 8am and 6pm. An ANP is on the ward round each morning. Predominantly ward-based role, but also attend outpatient clinics, pre-assessment clinics and run claudication clinics. Two are nurse prescribers.
Surgical Care Practitioner	Vascular	Specialty role Band 7 (one band 6)	Three surgical care practitioners work closely with two or three consultants. Theatre: Spend approximately half of time in theatre as first or second assistant. Meet and mark patients coming to theatre and take consent. Liaise with anaesthetist / theatre staff and complete the surgical safety checklist. Wards: Review postoperative patients on wards. Prepare discharge summaries. Clinics: Review follow-up patients, see new patients and list for theatre for simpler procedures, like varicose vein stripping. Run foam sclerotherapy clinics and perform Botox injections for excess sweating in parallel to consultant clinic. Audit/research: Add data to mandatory National Vascular Registry, assist with department research. Involved with teaching, clinical governance, and morbidity and mortality meetings.
Clinical Nurse Specialist	Vascular	Specialty role Band 6	Five clinical nurse specialists run the county-wide leg ulcer service, alongside two research nurses and a band 8 manager. These roles are primarily outpatient-based but they review some inpatients on request. Some of the nurses have a split role and also work on the wards for part of each week.
Consultant Nurse	Vascular	Specialty role Band 8b	There is one vascular consultant nurse who works primarily at Cheltenham but does some work in Swindon, reflecting the regional nature of vascular surgery. Half of the role is clinical: running vascular clinics (some independently), assessing inpatient referrals, and inputting to diabetic foot service patients. She also performs foam sclerotherapy and participates in multidisciplinary meetings. The remaining 50% of time is spent in activities related to research, leadership and education.

We look at these models further below and we consider the impact they are having in four key areas:

- Patient care
- Doctors in surgical training
- The consultant-led team
- Financially

Impact – patient-centred care

The benefits to patient care of having an extended surgical team were lauded at the hospitals we visited. Key among these benefits was continuity of care.

Continuity of care is fundamental to high-quality care. Cornwell *et al* (2012) argue; 'Without it, care is unlikely to be clinically effective, safe, personalised, efficient or cost-effective.' Continuity is especially important for older people with multiple health problems who are more likely to spend time in hospital and for longer. So anything that improves continuity of care should benefit the quality of patient care overall.

Having practitioners whose roles span the patient pathway – from outpatient clinic, to admission, to theatre, and sometimes also outpatient review – highlighted the benefits of this in terms of providing patients with genuine continuity of care.

> In Norwich, two of the orthopaedic surgical care practitioners work along the entire patient pathway, from pre-assessment to discharge and follow-up (including running a post-operative telephone clinic for upper limb patients).
>
> In Cheltenham, patients were reported to really appreciate seeing the familiar face of a surgical care practitioner preoperatively, once in theatre and postoperatively.

We heard some scepticism over the extent to which practitioners are able to follow patients along the patient pathway. One senior nurse described it as a 'myth' that staff follow the patient along the pathway – in reality staff tend to follow the consultant. One nurse director said that any hospital that has surgical care practitioners along the whole patient pathway needs to ask whether it also needs advanced nurse practitioners and doctors in training on the wards and in clinics. Generally, however, models that traced the patient pathway were thought to bring benefits for patient care as well as using the skill sets of practitioners to best effect.

Wards: We heard how extended non-medical roles enhance continuity of care on the wards. This is particularly important as since the introduction of the working time regulations with the associated impact on doctors' working patterns, patients are often reviewed by many different doctors, even during a short inpatient stay. In contrast, non-medical practitioners on the wards will often work every weekday between set hours (or, as seen at St George's Hospital, will cover the night shift). It means a familiar face for patients, which in turn can help establish good relationships and the development of trust between patients and staff as well as enhancing continuity of care.

Acute assessment units: Where extended nursing roles, in particular, are used to help with the emergency 'take', or run surgical assessment units, benefits in terms of improved patient flow and reduced waits for patients were often highlighted. These roles can help to expedite patient

Specialist nurse practitioners working on the surgical assessment unit at the University Hospital of Wales *'run the show'*. One core trainee described their impact as follows: 'They keep doctors in line, make sure patients are prioritised, keep an eye on scans…one of their main roles is to make everything more efficient.' Higher surgical trainees echoed this, adding that the specialist nurse practitioners have the clinical experience to know 'when to call a registrar if a patient is sick'.

care, for instance by arranging scans and chasing results. This supports doctors in training to focus on tasks that most require their attention.

Theatre: The impact of extended roles in theatres on patient-centred care is less visible, but no less important. The journey to the anaesthetic room is often not easy for patients and there is benefit in having knowledgeable non-medical practitioners on hand to answer questions and provide support. It can also aid handover of care, both in the anaesthetic room and in theatre, particularly where practitioners have knowledge of the patient and have met them pre-operatively. Practitioners who are fully engaged in the patient's care can also smooth the transition to and from theatre, by helping to ensure that blood results and other paperwork is gathered together before a patient is sent for.

An audit of minor operative cases performed by a surgical care practitioner at St Mary's Hospital in London found that 100% of patients were *'totally satisfied'* with the care that they received; 98% were happy to see a surgical care practitioner and would recommend the practitioner to others (Martin *et al*, 2007). In terms of awareness that it would be the surgical care practitioner performing the surgery, 67% were aware and 33% were not. However, the vast majority (98%) of patients felt that it would have made no difference to the outcome if a doctor had performed the surgery.

In Norwich, the orthopaedic surgical care practitioners (SCPs) perform delegated surgical interventions (such as full wound closure for joint replacement) under *'proximal'* supervision, by which the consultant may leave the theatre environment for a known location (e.g. office or clinic) but remains contactable by phone at all times. This applies to qualified SCPs who have demonstrated they are able to practise without direct or indirect supervision (Jones *et al*, 2012). It distinguishes them from the surgical first assistant role that always requires *'direct'* supervision (i.e. the consultant or operating surgeon remains present).

Outpatient clinics: The benefits of these roles for patients attending outpatient clinics are again in terms of supporting the smooth running of clinics, which should translate to shorter waits for patients.

Physician associates in urology at St George's Hospital attend clinics in a patient education role. If a patient is listed for surgery, they will talk them through what is involved and answer their questions. They also do some assessments of patients attending clinics for review.

Two orthopaedic surgical care practitioners in Norwich work along the patient pathway and see patients in the pre-assessment clinic. They will identify patients who are not fit for surgery or who require further investigations and perioperative optimisation. This helps to avoid delays for patients by making sure that a holistic approach has been taken with regard to their needs before they arrive as inpatients.

Potential drawbacks: Of central importance is determining need and, specifically, designing the surgical team around the needs of patients. Roles that were less successful had evolved without consideration of the patient pathway and without proper assessment of where greatest need lay. A potential drawback is where a department relies on a small number of non-medical practitioners, or even practitioners in lone roles. Under these circumstances there is a risk of significant disruption to patient care if the practitioner were to be absent or leave.

Another issue is the way that patients regard extended or new roles for non-medical practitioners, particularly when they are undertaking tasks that were traditionally done by doctors. An anecdotal perception was that who the patient sees is less important than the fact that the person caring for them is competent. No issues were raised at any of the case study sites regarding complaints about members of the extended surgical team. However, this is an area that requires further investigation.

We held a meeting with patient representatives to explore patients' perspectives on the use of the extended surgical team. Two of the main issues that arose from this discussion related to clarity over roles and communication with patients. Patient representatives expressed concern over the plethora of different titles and inconsistency over what is meant by the same title in different locations. They agreed that the most pressing priority for many patients is to receive care from someone who is competent and that whether it is a doctor or a non-medical practitioner will generally be less important. However, there was a sense that patients should be given a choice when it comes to having a procedure performed by a non-medical practitioner, even though the practitioner will be working under some level of supervision. Importantly, patient representatives felt that patients should be told if a procedure is to be performed by a non-medical practitioner and given the option to decline this, even though it may mean having to wait longer for treatment by a doctor.

Impact – surgical training

The roles we observed appeared to be benefitting surgical training in a number of ways. Further, staff fulfilling these roles consistently emphasised the importance of training for doctors and that their role was to support this. As one surgical care practitioner said: 'We're there to be service cover and to enhance the training of doctors, and if you're not there for that then you're in the wrong role.'

Doctors in training at the case study sites generally rated their training very favourably. When comparing their current job with previous jobs where the extended roles featured here were absent, their current posts were usually described as being less onerous due to a better sharing of the workload across the extended team.

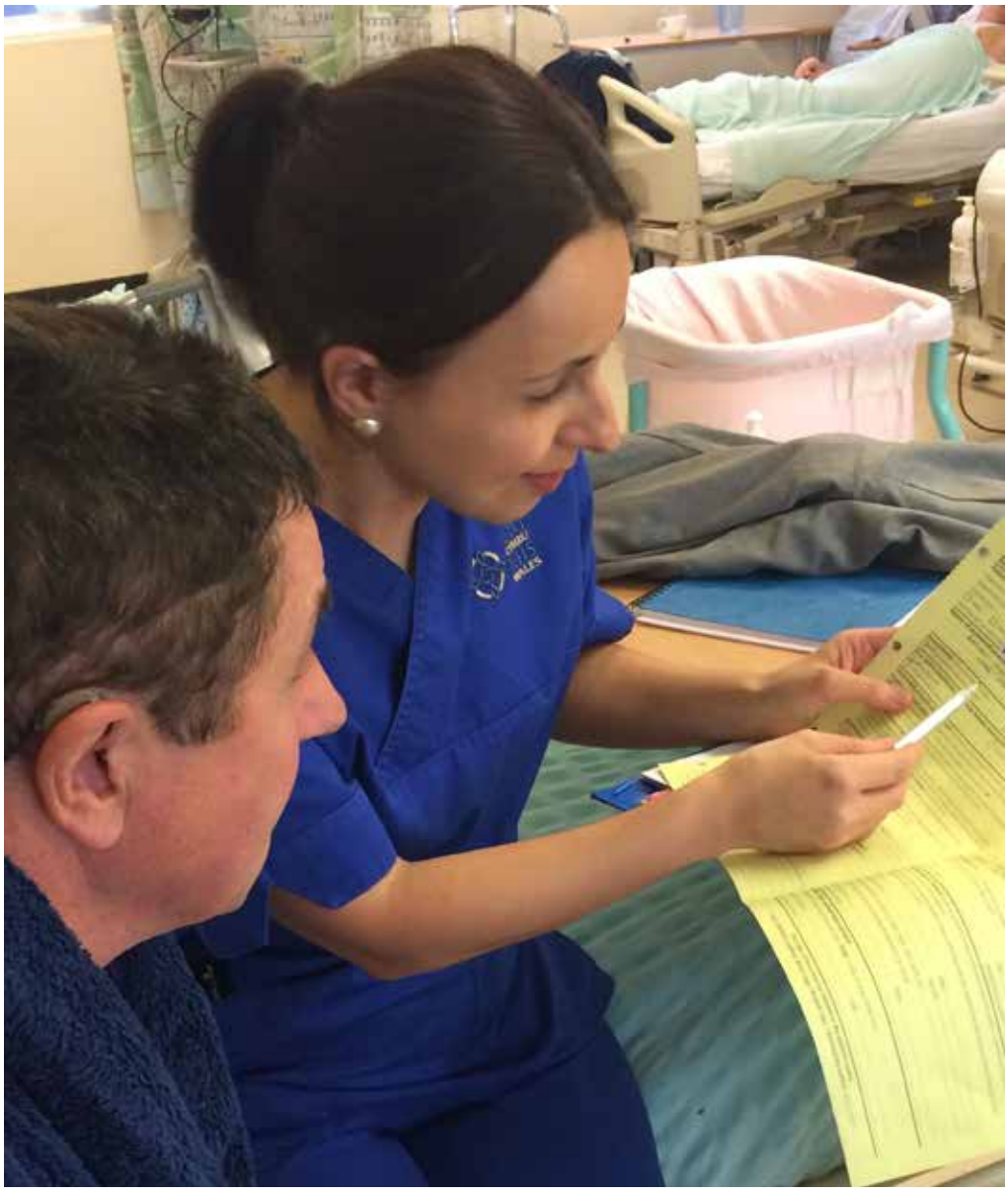
> Doctors in training in general surgery at the University Hospital of North Tees described having good exposure to learning opportunities. Core trainees said that very little of their role was not of educational value. Foundation doctors said they were not 'swamped with service' and felt most supported when on call (possibly reflecting the presence of trauma or emergency surgical practitioners). One higher surgical trainee said: 'The attitude to training here is unbelievable'.

Wards: We heard many accounts that having non-medical practitioners on the wards as part of the surgical team eases the workload for foundation doctors and core trainees in particular. Non-medical practitioners with specialty knowledge will be able to guide doctors in training who do not want to specialise in that area, including foundation doctors and GP trainees. Practitioners from a nursing background – particularly advanced nurse practitioners – tend to have a better grasp of the options available regarding discharge and how to navigate other services necessary to facilitate discharge. They also provide an interface between doctors and ward nurses.

Core trainees at the Norfolk and Norwich University Hospital said they had been freed on the orthopaedic wards from much of the paperwork and did not generally write discharge letters. Orthopaedic nurse practitioners had also released core trainees from having to do cannulas and drug charts.

At Cheltenham General Hospital we were told that advanced nurse practitioners had reduced the burden of generating TTO forms (for medicines 'to take out' on discharge) on overstretched F1 doctors. Moreover, the quality of discharges was thought to have improved, reflecting the time it takes for doctors in training to get up to speed with the jargon used by the consultant surgeons, which the advanced nurse practitioners were already familiar with.

Sharing the workload enables doctors to concentrate on tasks that have greatest benefit for their training, including attending theatre and formal teaching sessions.



At St George's Hospital, the doctors in core training we met were delighted not to have to provide night cover (with cover instead provided by specialist nurse practitioners). One described it as *'a real luxury'*; another said they felt *'more refreshed'*. They said it made for a far less onerous rotation, during which they could focus on passing their exams, spend time in theatre and become really proficient at elective lists.

The CT2s in urology at St George's were described by one higher surgical trainee as *'almost supernumerary*', as *'PAs run the wards'*. A senior surgeon at the hospital expressed aspirations to make all foundation and core trainees in ENT supernumerary, in order to remove the repetitive tasks *'day in, day out'*.

Doctors in training in cardiothoracic surgery at the Freeman Hospital were able to spend more time in theatre following the introduction of ten surgical nurse practitioners to the wards. The hospital reported the impact of this was evidenced by improved results in the General Medical Council trainee survey.

Another way in which the extended surgical team supports trainees includes helping doctors in training to settle into a new post more quickly. Being a constant presence means that they know how the hospital works and this can assist doctors in training logistically as well as clinically at the start of an attachment. This can be particularly advantageous at changeover time for doctors in training, especially in August, when the newly qualified doctors commence their training.

At the University Hospital of Wales, numbers of specialist nurse practitioners in general surgery are doubled for some weekends in August in order to support new doctors in training. Trainees at this site clearly appreciated this support, describing these practitioners as 'our guardian angels'. One core trainee said: 'Junior doctors are better supported with nurse practitioners around.'

Doctors in higher surgical training also reported benefits on the wards. This included easing their service load, enabling them to leave the ward when on call, and reducing the times they get called out of theatre.

One higher surgical trainee at St George's told us: 'In a hospital this busy, if you had an SHO rather than a SNP [specialist nurse practitioner] you wouldn't leave the hospital.' This doctor said that, if a specialist nurse practitioner called her in, she knew that she was really needed, adding 'their knowledge base is invaluable'.

Theatre: The primary way that these roles support training in theatre is by enabling doctors in training to go to theatre – providing cover so that they can do so. Doctors in training in the early years also benefit from informal teaching. A number said surgical care practitioners had taught them how to suture or close a wound once the surgeon has left the theatre. Physician associates in neurosurgery reported teaching doctors in training how to perform lumber punctures.

At the Freeman Hospital, surgical care practitioners play an important role in training core trainees, for example, in how to harvest a vein. The SCPs reported that they will show a doctor in training how it is done, then supervise them taking a vein. 'Eventually, you can stand there not scrubbed and guide them through', said one surgical care practitioner.

'If they can come to us with no theatre skills and they can leave with good basic skills then we have done a good job', said one surgical care practitioner in cardiothoracic surgery at the University Hospital of Wales.

Doctors in higher surgical training also highlighted the value of having a reliable, familiar assistant in theatre.

At the Norfolk and Norwich University Hospital, higher surgical trainees were very positive about the orthopaedic surgical care practitioners. Benefits included allowing doctors in training to be on the right side to train (being first assistant can mean not being at the best vantage point for training). As one higher surgical trainee said: 'You don't learn much from holding on to a leg.'

At Cheltenham General Hospital, the surgical care practitioners in the vascular department explained that sometimes they will harvest the vein while the consultant gives the trainee their full attention on another aspect of the procedure. On other occasions they will assist the consultant 'at the top end' if the trainee prefers to be harvesting the vein. 'You've got to be flexible and just meet whatever the needs are at the time', said one surgical care practitioner.

Higher surgical trainees suggested that the constant presence of surgical care practitioners gives consultants the confidence to step out of the room, leaving senior trainees to operate independently. In this respect, these roles help the gradual withdrawal of supervision for more senior doctors in training, to proximal consultant supervision (Jones *et al*, 2012).

In Norwich, one senior surgeon described the value of the orthopaedic surgical care practitioners as follows: 'They are a solution to having assistants in theatre when we didn't have juniors, but also they provide the interface when trainees need to do cases without the boss being there'.

Outpatient clinics: Doctors in training did not report many interactions with non-medical practitioners in clinics. However, we heard that these roles can support their training by enabling consultants to give more time and input to trainees.

Potential drawbacks: While most of the accounts we received from doctors in training were overwhelmingly positive, one or two aired concerns that some practitioners could undermine training opportunities. A particular concern related to non-medical staff in theatre playing an increasingly important role as first assistant and a fear that this could see doctors in training left on the side-lines. We actually heard very few first-hand examples where this had happened – concerns were largely theoretical or based on anecdotal accounts from trainees at other centres. Even at one of the case study sites where one surgeon acknowledged that the presence of surgical care practitioners could sometimes reduce practical opportunities for

trainees, this surgeon thought this was outweighed by the benefits in terms of assisting and teaching doctors in training when performing simpler procedures.

Further, the surgical care practitioners we met emphasised that their role was to support training, not to undermine it. As the lead orthopaedic surgical care practitioner in Norwich said: 'Our job has never been to push trainees out but to provide them with opportunities.' Higher surgical trainees at Norwich echoed this; they said there had never been any conflict and that the surgical care practitioners step down if there are too many people at the table. Similarly, the surgical care practitioners at North Tees, Cardiff and other sites all said they would step out of theatre if a doctor in training wishes to attend and assist.

Nevertheless, the case study sites also highlighted learning in terms of how to manage any potential conflict. For example, in North Tees, surgical care practitioners had been pulled off the trauma lists in order to maximise the training potential of these lists. Trauma practitioners are now ward-based only as this was where they were felt to be most valuable.

A potential pressure point is when a non-medical practitioner is being trained in how to perform a procedure. During these periods, opportunities to carry out or assist with a procedure may have to be shared between the non-medical practitioner and the doctor in training. However, even then, we heard that there are plenty of practical learning opportunities on offer – the issue is not about a shortage of opportunity but it may mean that consultant surgeons have to be mindful about how these opportunities are shared out. 'It's up to consultants to ensure everyone has a fair crack of the whip. It just requires a bit of care', said one surgeon.

While we heard positive reports that having an extended surgical team lightens the service load for doctors in training, not everyone considered this to be positive. Some concern was raised that, by not doing nights, doctors in training in ENT, maxillofacial and plastic surgery at St George's Hospital might miss out on valuable learning, which could undermine their ability to handle emergencies. One young doctor observed that, unless they did a rotation at another hospital, a core trainee could progress to higher specialty training without having done any 'ENT nights'. Getting the right balance is key. As one more senior trainee told us: 'A certain level of night shift is really helpful in learning how to look after sick patients but you can feel saturated.' It was suggested that a better balance might be achieved by: having a long rota for trainees (say, 1 in 12); mixing the trainee rota to give exposure to other specialties; and having doctors in training work in parallel with specialist nurse practitioners.

There was a sense at some of the case study sites that the more doctors in training in the early years were freed from tasks and became almost supernumerary, the more they needed to be self-directed in their learning and clear about what they wished to achieve from each

placement. One higher surgical trainee observed: 'It's very easy now to slip under the radar.' It may also mean doctors in training need to plan their attendance at theatre in advance. At another site, a higher surgical trainee remarked that it is a very different operative experience for junior doctors when they are supernumerary and can come and go from theatre as they please, as opposed to when they are needed and relied on to be there. Some doctors in training felt that they needed to become more assertive in theatre to ensure they attain the learning they require. For some, this means making sure that they are standing in the right place at the table to learn.

There was concern that being supernumerary on the wards would also undermine the learning gained from working under pressure and dealing with sick patients. One higher surgical trainee expressed concern that an emphasis on freeing up trainees to operate could undermine a holistic approach and assist surgical trainees only in how to be a good technician, not a good surgeon. 'It's not satisfying to only operate', said this doctor.

Impact – the consultant-led team

The surgeons, clinical directors and medical directors we interviewed all had very positive views on the extended team roles. Those that we came across had arisen largely as a consequence of gaps in medical rotas and so were regarded as a solution to the difficulties facing departments struggling to deliver service requirements.

Consultants felt supported by a cadre of practitioners who were well known to them and to whom they could delegate a wide-range of tasks with confidence. The term 'assured care' was used by several surgeons, who said that their non-medical staff could be trusted to do what was asked of them. 'If you ask them to do something they do it', said one clinical director.

The stability of the team was also a factor highlighted by a number of surgeons.

A consultant vascular surgeon at Cheltenham General Hospital said this of the surgical care practitioners in his department: 'From a consultant perspective it is nice and comforting having a stable team. You know their strengths and competencies. You know that for the more complex vascular procedures you don't have to worry "do I have anyone to assist me today?".' This surgeon thought that continuity of the surgical care practitioner role almost recreates 'the old fashioned firm structure'.

The potential for coordination of patient care is another key advantage. Whether on the wards or in theatre, these non-medical practitioners are credited with keeping patient flow moving, by proactively chasing, following up and coordinating care. The impact of having competent individuals to coordinate in this way was felt by doctors in training as well as consultants.

At the University Hospital of North Tees, doctors in training said that the nurse practitioners on the wards 'get patients out quicker because they get discharge summaries done'. Other ways in which they help patient flow is by calling patients in for scans, chasing results and ordering x-rays. A dedicated discharge coordinator for orthopaedics and general surgery had been appointed, following a pilot that had made savings of around £150,000 by reducing length of stay.

Many told us that it was hard to separate the role from the individual. Indeed, one of the striking aspects of our visits was how roles evolved according to the dependency on personality and characteristics of the individual filling them. This was the case particularly where there were just one or two non-medical practitioners in the surgical team.

Wards: Surgeons reported positively on the delivery of tasks that they delegated to non-medical practitioners. We often heard that they felt able to place greater reliance on these practitioners carrying out a task and they were regarded as a reliable pair of hands; more so, sometimes, than doctors in training.

> The medical director at the Norfolk and Norwich University Hospital described the impact of the orthopaedic nurse practitioners as follows: 'This role provides the reassurance that existed in the past, of a colleague who works with your team so that you have confidence that tasks are completed, and problems identified and reported promptly.'

Theatres: A number of surgeons emphasised the benefits of having a familiar face in theatre and the continuity this provided for them. Whether this has an impact in terms of the quality of patient care is as yet unknown. Instinctively though, having a surgeon who is assisted by someone known to him or her, and who has an understanding of the surgeon's personal preferences and ways of working, is a preferable operating environment to one where the surgeon is unfamiliar with the supporting team.

Consultant surgeons can often be frustrated at the lack of assistance for operating lists. Whether it is a long complex case or a simple day-case procedure, having a regular assistant on hand has numerous benefits – not least in improving patient and theatre safety. An assistant who is familiar with aspects of preparing the patient for the operation – positioning, prepping and draping, checking the correct instruments are available and a familiarity with the steps of the procedure – massively aids the smooth running of the operation and enhances theatre productivity. Added to this, the increasing complexity of surgical procedures – including minimally invasive procedures, such as robotics – means the need for skilled assistance has never been greater. This latter issue is particularly pertinent since the role of an assistant in robotic surgery often has no educational or training value, particularly for junior trainees. However, without a skilled 'table-side' assistant the case cannot proceed.

> At Aintree University Hospital, the lone surgical care practitioner was credited with smoothing pathways where surgeons could not agree on a standardised approach. She also prompts the scrub nurses on the approach used by different consultants. (A lack of consistency in scrub nurses was an issue.) One senior clinician described her as 'very good at keeping the surgeons on track'.

> Similarly, in Cardiff, the surgical care practitioner for vascular surgery was credited with making sure 'things are done smoothly and organised on time'. She was described as being a type of 'clinical facilitator', acting as a go-between for nursing staff and doctors, with tasks as broad as helping with paperwork and identifying deteriorating patients.

Surgeons also described how having a trusted, familiar practitioner in theatre gave them confidence to enable doctors in training to do more in theatre – knowing that they would be assisted by someone experienced. This meant that surgeons could focus more on training (rather than themselves assisting the doctor in training). For higher surgical trainees, it increased their confidence in leaving them in theatre to operate independently, in the

knowledge that they had an experienced assistant. Surgeons were often reported to seek feedback on doctors in training from staff such as surgical care practitioners.

A number of senior doctors said that surgical care practitioners in theatre provide an excellent level of technical skill and assistance.

> In Norwich, one senior surgeon described the orthopaedic surgical care practitioners as follows: 'For consultants, they are the one regular thing in theatre.' Another surgeon remarked: 'The finest assistant I've ever had has been a surgical care practitioner.'
>
> At Aintree, one of two surgeons who regularly works with the surgical care practitioner said: 'It means that there is one face you know when you walk into theatre.' Another surgeon said: 'She's bright, able and knows her limits and wants to develop the unit.'

Outpatient clinics: At a number of the case study sites, non-medical practitioners in extended roles or new roles – like physician associates – were assisting consultants in clinics. In some places, such Cheltenham, advanced nurse practitioners were running their own clinics (eg claudication clinics) and surgical care practitioners ran clinics in parallel to consultant clinics. Here, and at other places, practitioners would list new patients for theatre for the simpler procedures and review follow-up patients. Sharing the load with a non-medical practitioner helps consultants to complete clinics.

Potential drawbacks: We questioned whether doctors in training might find it difficult to join a team characterised by strong working relationships between surgeons and non-medical practitioners. We heard some anxieties from trainees when they had first joined these units. However, we did not hear any accounts of where doctors in training had experienced difficulties and, if anything, the non-medical practitioners had played an important role in helping trainees to be assimilated easily and quickly into the team.

One issue that was highlighted is a danger that having a highly efficient non-medical practitioner – on whom consultant surgeons place reliance – can potentially lead to a vulnerable service should that practitioner leave or be absent. We heard at one hospital that having an experienced surgical care practitioner had supplanted the need for a theatre 'bible', which caused some senior staff to worry about an overdependence on the surgical care practitioner. Further, it may mean that disparities between surgical preferences are accommodated – we heard how surgical care practitioners were very good at explaining to other theatre staff and doctors in training how each surgeon liked to work – instead of moving towards agreed protocols.

Impact – financial

None of hospitals we visited said that the introduction of new and extended non-medical roles had been driven by financial imperatives. Most senior managers we interviewed considered that the models outlined above were unlikely to be much cheaper than models populated by doctors in training. Recouping the costs of filling gaps in medical rotas with locums was sometimes a consideration, but a bigger concern with locums was quality. For the units that we visited, the benefits in terms of filling gaps, stability of the workforce and continuity of patient care took precedence over financial concerns.

Nevertheless, financial considerations are a reality for any hospital and these are not cheap roles. Most of the roles we learnt about were paid at band 7 or 8a.[6] Some surgical departments were under pressure to make the introduction of new and extended roles cost neutral. Some had to top up funds that would otherwise have been used for doctors in training or for the hospital-at-night system.

The cost benefit of new and extended roles tends to be more evident when roles are properly aligned in rotas – in other words, where the practitioners work as part of medical rotas, not in addition to them (and therefore, their role does not give rise to concern about additional staff cost). At some sites, questions had been aired over the benefit derived from non-medical practitioners working on separate rotas (for example, 9–5pm on weekdays) or where advanced practitioners were unable to prescribe and worked as assistants to junior doctors instead of in properly advanced roles. In these scenarios the cost benefit was less visible.

[6] Agenda for Change pay bands and points from 1 April 2015 (England): Band 7 £31,072 to £40,964; Band 8a £39,632 to £47,559

At the University Hospital of North Tees, the trust management had supported nurse practitioners working alongside doctors. However, the medical director said that departments have been told that there needs to be a defined end point where there are fewer doctors because of the increased numbers of nurse practitioners. ‘We cannot have double running forever’, he said.

One of the main benefits articulated for these roles is in increasing efficiency on the wards and in theatres. Such gains are hard to quantify and yet the financial climate is likely to put departments under pressure to demonstrate the worth of these roles to the organisation.

At Aintree, colorectal surgeons had been exploring ways to demonstrate the financial value attached to the surgical care practitioner. ‘She provides a valuable link across the pathway but she doesn’t see patients in clinics and so doesn’t have activity’, said one surgeon. Her skills and attributes are not easily measurable outputs, which has made it difficult to develop a business model in support of the role. So they have created a niche for her in dermatology, which provides an activity work stream.

Another consideration is whether there is resource for in-service training and continuing professional development for non-medical staff in new and extended roles. Training budgets are already under pressure – and one chief executive pointed out that his trust now employs 30% more clinicians than a decade ago and that the training budget had not kept up with this growth. The development of new and extended roles will increase demand on these budgets.

The University Hospital of North Tees has set up the ‘finest project’, which is looking at developing a non-medical faculty for nurses and other non-medical staff through which participants can access multidisciplinary training. It is also exploring arrangements for nurses to rotate, as doctors do, through surgery, medicine and the community – to provide for more rounded nurse training. At this trust, the non-medical education and training budget is held by the Clinical Director for Education and Training, who can flex how this budget is used alongside the medical and dental education levy.

One hospital highlighted that it had no allowance for study leave for anyone other than doctors in training. It was conscious that physician associates will be among the non-medical staff who will require provision. ‘It is something we will have to address. It will open a can of worms’, said one medical director. At another site, surgeons were mindful that practitioners wanted to expand their knowledge base, but again felt thwarted by a lack of budgetary allocation for their ongoing training and development.

Consultants with responsibility for training and overseeing non-medical practitioners may require allocation within their job plans specifically for these roles. This will become increasingly pressing as physician associates grow in number, given their annual commitment for structured performance assessments.

While finances may not have driven the development of non-medical roles in the sites we visited, the reality for most NHS hospitals is that consideration needs to be given to how these roles are funded. It is likely that, at the very least, they will need to be cost neutral to be practical and sustainable.

The overriding message from these models is that a non-medical workforce working as part

of an extended surgical team can have a significant, positive impact on patient care, surgical training and consultant-led care. The next section examines issues relating to the scope of practice for these roles, including where the boundaries may lie in terms of what tasks they can perform.

Defining scope of practice

There is not a large existing pool from which to recruit fully-trained surgical nurse practitioners or surgical care practitioners and physician associates are still small in number (particularly in surgery). More often hospitals have to grow their own practitioners in-house. This has led to significant variations of these roles in different hospitals – such as the level and nature of postgraduate qualification, whether or not they can prescribe – even across the small number of case study sites we visited. Indeed, today there is a plethora of non-medical titles – and one of the objectives of this report is to provide a better understanding of these different groups. See appendix A for an overview of, among other things, entry and training requirements for five non-medical practitioner roles.

In this section we explore issues around scope of practice. These are fundamental to understanding the potential of non-medical practitioners for the wider surgical team.

Fluidity around scope

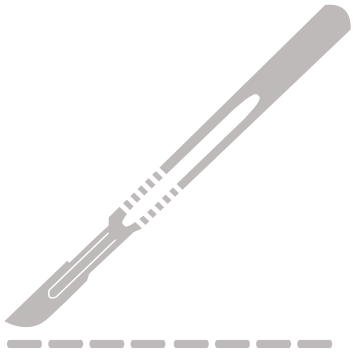
The roles we observed at the case study sites are highly tailored to the local setting. This is one of their key advantages – how they offer a responsive, flexible solution to a particular need. It means, however, that it is not easy to draw a line around scope of practice or to pick a role off the shelf.

Scope of practice is more clearly defined for some groups of practitioners than for others. The RCS, the Perioperative Care Collaborative and the Association for Perioperative Practice (AfPP) have, together, defined the roles and responsibilities for three groups of practitioner: scrub practitioner, surgical first assistant, and surgical care practitioner (Hall *et al*, 2014). See table 1 page 66.

Even where there is a fairly defined scope of practice, this tends to flex in practice. It reflects the way these roles have been introduced, developed and grown – tending to be heavily dependent on the personalities of those who happen to fulfil them, and the receptiveness of the surgeons and other staff working alongside.

For some roles, fluidity in terms of scope of practice reflects the extended nature of the role. For example, in its position statement on advanced level nursing, the Department of Health (2010) describes a level of practice – not a specialty or a role. Nurses working at

advanced level are expected to *'appropriately define the boundaries of their practice'*. The statement continues that tasks do not define advanced level practice. It means that there are few boundaries to limit the scope of practice for advanced nurse practitioners – which holds advantages in terms of offering flexibility for the extended surgical team – and that much rests on the individuals defining their own scope of practice. However, it presents a challenge for organisations in terms of ensuring consistency in the development of roles, which is important to support local governance systems. There is guidance that employers can draw on – including a competence framework for orthopaedic and trauma practitioners (Royal College of Nursing, 2012a) and for advanced nurse practitioners (2012b) – but, still, much relies on employers being able to define a practitioner's scope of practice.



We heard from the non-medical practitioners we met how they could take on a wide range of tasks from inserting cannulas and preparing discharge summaries to inserting a chest drain on the wards. In theatres, the non-medical practitioners reported performing an array of tasks from assisting with laparoscopic procedures and closing wounds after certain procedures to harvesting veins and, in one case, running a carpal tunnel decompression list independently.

A unique team – maxillofacial prosthetists

The Queen Elizabeth Hospital Birmingham boasts the largest maxillofacial prosthetics centre of its kind in the UK, catering to a population of 1.8 million. It has trained half of all maxillofacial prosthetists across the country. The team of six maxillofacial prosthetists (excluding those in training) are an integral part of the extended surgical team.

The pay banding for the prosthetists ranges from 6 for trainees to 8 for lead specialists, 8b for the consultant deputy manager and band 9 for the consultant head of department. As part of modernising scientific careers, maxillofacial prosthetics was incorporated into healthcare science in 2008 and it is one of the few healthcare scientist roles that involve direct patient contact. They are regulated by the General Dental Council.

Responsible for taking impressions, making and fitting prostheses, among others the unit works with patients who have congenital, traumatic and cancer acquired facial deformities. Many patients travel from outside the region to access the highly specialised services provided here, explains Steve Worrollo, Consultant Maxillofacial Prosthetist and Healthcare Sciences Manager.

'It's a great team', says Deputy Manager and Consultant Maxillofacial Prosthetist, Stefan Edmondson, with surgical registrars always in and out of the lab. The prosthetists attend the maxillofacial, plastics and ear, nose and throat multidisciplinary team meetings and advise in theatre, guiding the surgeons with positioning of implants and in the surgical reconstruction to obtain optimum aesthetic results. '*Our knowledge of surgery is very comprehensive*', says Steve Worrollo. He explains: *'We go into theatre with multiple surgical disciplines, which gives us a great understanding in jointly perfecting and developing improved techniques and outcomes.'*

They have their own stand-alone clinic, where they take impressions and see patients independently to fit prosthesis and appliances. Some patient relationships can last a lifetime, with patients returning to the clinic over years for new fittings and adjustments.

Steve Worrollo and Stefan Edmunson

The lab *'impacts positively on everybody's practice'.* Doctors in training spend at least one year of five in the Queen Elizabeth, working alongside the prosthetists. *'We try to engender in trainees that the lab is an essential part of our lives'*, says Stephen Dover, Consultant Oral and Maxillofacial Surgeon, who adds he likes having the prosthetists in theatre to consult when it comes to hands-on fitting of implants. *'They are an intrinsic part of the team for me, as I hope I am for them.'*

Roles and responsibilities	Scub Practitioner	Surgical First Assistant	Surgical Care Practitioner
Enhancing communication between theatre, patient and ward, including preoperative assessment and postoperative care evaluation	√	√	√
Involved in team completion of surgical safety checklist for all surgical interventions as part of the Five Steps to Safer Surgery	√	√	√
Assisting with patient positioning, including tissue viability assessment	√	√	√
Skin preperation prior to surgery	√	√	√
Draping as required	√	√	√
Application of dressings as required	√	√	√
Male urethral catheterisation, providing training has been undertaken and evidence of competence can be demonstrated	√	√	√
Use and maintainence of specialised surgical equiptment relevant to area of working	√	√	√
Assist in the transfer of patient to postoperative/anaesthetic care unit	√	√	√
Cutting of superficial sutures (eg skin sutures)	√	√	√
Superficial skin and tissue retraction	√	√	√
Assistance with superficial wound closure	√	√	√
Cutting of deep sutures and ligatures under direct supervision of the operating surgeon		√	√
Nerve and deep tissue retraction (NB retractors should not be placed by a surgical first assisstant but by the operating surgeon)		√	√
Handling of tissues and manipulation of organs for exposure or access		√	√
Assisting with haemostasis in order to secure and maintain a clear operating field, including indirect application of surgical diathermy by the operating surgeon		√	√
Assisting with haemostasis in order to secure and maintain a clear operating field including direct application of surgical diathermy			√
Application of haemostats and ligaclips to blood vessels			√
Ligation of blood vessels as delegated by the operating surgeon			√
Use of suction as guided by the operating surgeon		√	√
Camera manipulation for minimal access surgery		√	√
Insertion of secondary laparoscopic ports under the supervision of the operating surgeon			√
Assistance with wound closure		√	√
Closure of wounds as delegated by the operating surgeon, including, • drain insertion • local anaesthetic infiltration			√
Provision of interventional assistance as delegated and required by the operating surgeon			√
Application of cast bandages			√
Elements of preoperative assessment and postoperative care			√
Specialist interventional skills specific to employing specialty			√

Chart reproduced from Hall *et al* (2014)

We asked staff at the case study sites to correlate the non-medical practitioners with stages of medical training. Generally, across the variety of roles we came across, they are thought to correlate with doctors in foundation and core training – although the most experienced work to a level beyond this. This was particularly true for practitioners in advanced nursing roles, who usually have many years of clinical experience behind them. However, physician associates were also rated highly for the breadth of tasks they were able to perform, as the following quotes show:

> *'The PAs [physician associates] are pretty much able to do everything the SHO can do'*, one higher surgical trainee at St George's Hospital told us. This was echoed by a higher surgical trainee at St Peter's Hospital, who said: *'If a PA is good then it doesn't matter what you give them.'*
>
> One senior surgeon said: *'Physician assistants, given time, will be as good as any foundation doctor and core 1 trainee; the exceptional ones will be as good as core 2 and junior registrars'*.
>
> *'Because they stay on, our PAs are by now more experienced than our CT2s'*, said one higher surgical trainee.

One ST6 at the Freeman Hospital described the standard of care provided by the senior nurse practitioners as equivalent to that given by core trainees. They added that the senior nurse practitioners do not question decisions and instead just carry them out. This sentiment was echoed by a number of interviewees – a sense that non-medical staff get on with tasks efficiently (often reflecting a protocol-driven approach), whereas doctors in training, rightly, are more likely to question instructions – which reflect a difference in culture and training.

Uncertainty around delegation

There are drawbacks to the somewhat fluid arrangements that surround scope of practice. Firstly, it creates a lack of clarity among doctors in training over what tasks they can appropriately delegate to non-medical practitioners in the extended surgical team. This issue was raised mostly regarding physician associates and reflects the newness of their roles. We heard from doctors in training that they delegate tasks to physician associates on the basis of trust and confidence that the individual could perform the task safely. Reliance was also placed on the physician associate to speak up if they were being asked to take on a task that they did not feel comfortable doing. These arrangements appeared to be working well at the two sites we visited that have physician associates.

What can PAs do?

The 2015 census of physician associates found that they perform a vast array of medical tasks and procedures (UK Association of Physician Associates, 2015). These are listed below, in order of frequency (starting with the most frequently performed):

Take medical history
Perform physical examination
Patient education
Interpret electrocardiograms
Take bloods / venepuncture
Psychiatric assessment
Pelvic examination
Intravenous cannulation
Arterial blood gas
Urinary catheterisation
Suturing
Nasogastric tube placement
Joint aspiration / injection
Nerve blocks
Cervical smear
Incision and drainage of abscess
Dislocation reduction
Fracture reduction
Casting / splinting
Mole removal
Skin biopsy
Surgical first assisting
Lipoma removal
Chest tube insertion
Fetal heart tones
Contraceptive implant placement and removal
General new-born examination
Intubation
FAST (ultrasonography for trauma)
Lumbar puncture
Haematoma blocks
Paracentesis (draining fluid from abdomen)
Thorasentesis (draining fluid from chest)
Antenatal care
Fitting of diaphragm
IUD placement and removal
Pulmonary lung function tests
Central line insertion
Arterial line insertion
Bier blocks (intravenous regional anaesthetic)
Port placement
Participate in cardiac catheterisation
Cardiac stress testing
Perinatal care
Antenatal ultrasonography
Skin cancer removal
DEXA scanning
OGD (upper gastrointestinal endoscopy)

Doctors in training at core level were most likely to express uncertainty over what physician associates are able or unable to do and the tasks that should be delegated to them. The more experienced trainees were generally more sanguine about this – although there was a sense that better clarity of the scope of the role would be a help to them also. This reflects that the physician associate role is still in its infancy in the UK.

There was some uncertainty among doctors about the surgical first assistant role. A number of doctors in training reported being unsure whether they had worked with a surgical first assistant at units where they existed – and some surgeons were unclear about the parameters of this role when compared with an operating department practitioner. This is despite the efforts made to clarify the parameters of this role, as seen in table 1. The need for practitioners to work within their scope of practice when performing the surgical first assistant role has been underlined by cases where practitioners have been dismissed by their employers for acting outside their scope of practice, for example, by inserting a pin into a patient – classed as a surgical intervention – during an orthopaedic procedure (Association for Perioperative Practice, 2016).

This uncertainty around what can, and should, be delegated to non-medical practitioners can undermine the effective utilisation of these practitioners. Senior staff in a couple of the case study sites expressed concern that roles had evolved across the organisation without a clear overarching vision for how they knitted together. There was anxiety about duplication and also whether non-medical practitioners were being used effectively. A recurring concern centred on the number of non-medical prescribers within the hospital and whether the hospital had a handle on this.

Limitations

There are few limitations to scope of practice for advanced nursing practice and surgical care practitioner roles. One of the biggest changes for practitioners from a nursing background who start working to the medical model[7] is in conducting consultations and working without specific protocols.

At one site, we heard how the differences between some surgical nurse practitioners and doctors was evident when medical emergencies occur on the wards – especially when a patient has an urgent medical problem that falls outside the specialty area the surgical nurse practitioner has been trained in. This can be an issue particularly where practitioners are highly specialised but it is also true for doctors in training confronted with problems outside their specialty area. It is about recognising unfamiliar conditions and managing these.

[7] The medical model refers to the set of procedures in which all doctors are trained, including complaint, history, physical examination, diagnosis and treatment.

On the upside, the expertise of non-medical practitioners within their field will often exceed that of doctors in training (in the early years) who are rotating through the department.

Inevitably, there will be a knowledge gaps among non-medical practitioners, particularly in areas such as anatomy and physiology. Many sites placed emphasis on regular, often weekly, educational meetings with non-medical staff to develop their knowledge base and skill set. At St Peter's Hospital, the four physician associates rotate between colorectal surgery and urology. This is designed to ensure that when they are on call or working on the surgical assessment unit, they can draw on a broad elective experience. Two newer physician associates are 'buddied' with more experienced ones for similar reasons.

The main limitation for non-medical practitioners tends to be independent prescribing – because they are not subject to professional regulation, physician associates cannot prescribe. Ordering x-rays and CT scans is another limitation for physician associates due to IRMER regulations (despite many physician associates having completed IRMER training).[8]

Non-medical prescribing

There is a clearly defined route to becoming an independent prescriber for non-medical practitioners from a nursing background. This does not apply to staff from other backgrounds and it can create issues for some types of role.

At the University Hospital of North Tees, six of the seven surgical care practitioners come from a nursing background. The seventh was previously an operating department practitioner and has been unable to take the university module to become a non-medical prescriber. The university course is a requirement for surgical care practitioners at this trust, and non-medical prescribing is now one of the course's stipulated modules – which means that future entry to operating department practitioners is effectively barred. A surgical care practitioner we came across at the Royal Glamorgan Hospital also came from an operating department practitioner background and had confronted the same barrier. She found it a major limitation to her role.

At the Norfolk and Norwich University Hospital, one of the four physicians' assistants in anaesthesia (in training) that we met was from a nursing background. He could prescribe as a nurse, but said that his regulation by the Nursing and Midwifery Council did not recognise the area of practice he was moving into. His practice as a physicians' assistant in anaesthesia is subject to voluntary registration only, meaning he cannot prescribe in this role. This concern was shared by the physicians' assistant in anaesthesia at Aintree, who similarly felt unable to rely on his professional regulation for the clinical role he had taken on.

The situation regarding physician associates is more straightforward, if no less frustrating for them. As they

[8] Training in the Ionising Radiation (Medical Exposure) Regulations 2000 (amended 2006) IR(ME)R.

are not yet a regulated profession, they are not able to prescribe, full stop. The physician associates who we interviewed expressed frustration at this restriction – citing the modules in pharmacology completed as part of their training. In practice, physician associates reported preparing prescriptions, drug charts and TTOs (medicines for patients 'to take out' on discharge) for doctors to sign. They were less likely to ask nurse prescribers to sign prescriptions as they perceived them to be outside the medical model that they align themselves to. Not being able to prescribe is *'inconvenient and it's definitely a barrier to patient care'*, said one experienced physician associate. It is worth noting that the physician associates we met for this project were unanimous in their aspirations for statutory professional regulation. The Scottish Government is reported to be keen that physician associates should be able to prescribe (GMC, 2015d), while there are ongoing discussions between NHS England and the various regulators regarding regulation of this group.

For hospitals, too, this can definitely be a barrier: it limits what physician associates can do out of hours – and given that delivery of out-of-hours care is one of the drivers for the introduction of this group, it is a major concern. Hospitals are looking at a number of ways to address this prescribing restriction for physician associates. This includes putting them into teams where there are lots of doctors around, and introducing prescribing pharmacists to support them and doctors in training (whose prescribing was described by one medical director as *'haphazard'*). Another option is for the hospital to indemnify physician associates to prescribe – so that either physician associates are trained so that they have the capability to prescribe, or their role is combined with another practitioner who can prescribe, such as a prescribing pharmacist.

Pharmacist independent prescribers

Samantha Sparrow is one of two prescribing pharmacists based in the orthopaedic pre-assessment clinic at the Norfolk and Norwich University Hospital. She takes a drug history from patients and prescribes as necessary – she sees 100% of elective inpatients. This role is assigned to foundation doctors (F1s) for general surgical and urology patients. An audit she conducted of drug charts for orthopaedic patients showed that prescription errors on admission have fallen from 70% to 4% since the introduction of pharmacists to pre-assessment. This indicates, she says, that pharmacists are able to replace doctors safely in this role.

Samantha also covers elective and emergency inpatients on the orthopaedic wards. Her duties include supporting orthopaedic nurse practitioners with their prescribing – she, like them, is overseen by a designated medical prescriber – and prescribing TTOs ('to take out' medicines). Her role has helped achieve a target of having 90% of discharge letters completed within 24 hours. She reviews inpatient drug charts and conducts a weekly antimicrobial ward round with a microbiologist.

She participates in morbidity and mortality meetings where drug errors are discussed, and has assisted the wards to develop a number of protocols. Samantha describes it as a unique role that is well supported within the hospital.

To qualify as an independent prescriber, a pharmacist must complete a part-time programme – typically over six months – accredited by the General Pharmaceutical Council. Supplementary prescribers can undertake a conversion course to become a qualified independent prescriber over about four days (General Pharmaceutical Council, 2016).

Extending scope of practice

Many of the non-medical practitioners we met aspired to extend their scope of practice further. A number of the advanced nurse practitioners had done additional training to develop specialist skills, such as insertion of central venous catheters.

At St George's Hospital, aspirations expressed by the physician associates included expanding their role into accident and emergency, doing teaching, running their own theatre list for things like abscesses and chest drain insertion, and undertaking a master's degree in breast diagnostics – in order to interpret MRI and mammograms for cancer.

The physician associates at St Peter's Hospital voiced aspirations to perform endoscopy and cystoscopy independently. Another wanted to learn how to do lumbar puncture and abscess drainage. The colorectal surgeons we met with were supportive of these aspirations. *'We've got to be less territorial and more competence-based',* is how one put it.

With many hoping to extend their roles further, it raises the question of where – and how – do you draw the line?

We interviewed one physiotherapist working in an extended role who lists patients for surgery and will cover clinics for consultant surgeons when they are away – see page 71.

Supporting Consultant Surgeons

Martin Scott is a clinical specialist physiotherapist working in the specialist shoulder and elbow unit at Nottingham University Hospitals NHS Trust. He works four days a week at band 8a and it is clear that the department benefits hugely from his pivotal presence. He describes how closely he works with consultants in the unit, and how well his role complements theirs.

The specialist unit has four consultants and serves a complex caseload. Martin tends to work with patients on complicated rehabilitation. His role is partly clinic-based, including a primary care triage and treatment clinic and a postoperative orthopaedic follow-up clinic. He also assists in a consultant clinic, seeing secondary and tertiary new patients as well as follow-ups.

He takes from the consultant's list whatever cases look suitable, describing himself as *'quite able to take the bulk of cases'*. He sees the patient, refers them on and lists them for surgery as necessary. This includes complex cases referred to the tertiary centre by other consultants seeking a specialist opinion. He can continue to run a clinic when the consultant surgeon is on leave.

He estimates, in total, he has seen about 6,000 patients over the last five or six years and says consultant feedback is that he is generally more accurate in making a diagnosis than the surgical registrars.

He was headhunted into his current role – where he has shared some training with doctors – and has a master's degree in health services research. He also, separately, and externally, attends events of the British Shoulder and Elbow Society, which he values highly.

Martin feels he and the surgeons complement each other well. He doesn't spend time in theatre but acts, as he sees it, as an *'interface with surgeons'* – by bringing a different perspective.

'A lot of orthopaedics isn't cut and dry', he says, and observing different consultants at work means he learns their different styles. They, meanwhile, value his take on patients: he and they both feel he looks at a case from a different angle. *'It is why we work well as a team'*, he says.

Independent operating

A move towards independent operating for certain procedures was identified in some units but there was caution in other units about this and many of the medical staff we interviewed drew the line at non-medical practitioners performing surgical procedures, such as carpal tunnel decompression or hernias, independently.

One surgical care practitioner we met at the University Hospital of North Tees specialises in upper limb surgery and performs carpal tunnel decompression operations independently. He sees new patients, adds them to the list, takes consent, performs the procedure and reviews the patient afterwards. Doctors in training sometimes observe him performing this procedure. This surgical care practitioner is clinically accountable to a consultant surgeon but works in a very autonomous way.

As alluded to earlier, a number of the doctors we met expressed discomfort at the idea of a non-medical practitioner performing procedures with this level of autonomy. Some of the surgical care practitioners we met also articulated reservations here and some said they would not be comfortable to work so autonomously. For example, another surgical care practitioner at the University Hospital of North Tees specialises in spinal work. He also sees new patients in clinic, lists them for surgery and assists during operations. He is trained to do injections independently but has decided to do these only under supervision.

A vascular surgical care practitioner at the Royal Glamorgan Hospital described how she started working independently with vein stripping and now treats varicose veins with radiofrequency, does 'lumps and bumps', and also amputation of toes. She reported that the consultant surgeon needs to be present in the hospital but not with her in theatre. She has aspirations to run independent clinics, including a 'scan and plan clinic' – it was not clear whether consultant surgeons would be on hand to provide some element of supervision for such clinics.

At other hospitals, moves into independent operating for certain procedures have been blocked. The surgical care practitioner at Aintree University Hospital, for instance, is the only one of her kind in the hospital. Her role has grown organically and has expanded over time. The role has raised questions over where autonomous decision making sits. She was supported by some of the colorectal surgeons to train to perform hernias independently. However, resistance from other consultant surgeons had meant abandoning plans for hernias, at least for now. Instead, she has completed six months' training in dermatology and has been signed off as competent to carry out punch biopsies and punch excisions under the peripheral supervision of a consultant dermatologist.

In all these instances, much rests on what is meant by the term 'independent'. In terms of performing surgical procedures, clarity is needed over whether a surgeon will be in theatre, supporting unscrubbed, in the theatre staff room, or elsewhere in the hospital. An audit of minor operative cases (including excision of lipomas, sebaceous cysts and suspicious naevi under local and general anaesthetic) performed by a surgical care practitioner at St Mary's Hospital in London concluded that it was *'feasible and safe'* (Martin *et al*, 2007). The authors described this surgical care practitioner as having carried out the minor procedures *'independently under direct supervision of a surgical consultant'*, adding that she worked as a member of the surgical team and not as an independent practitioner in a one-stop setting. This study highlights the importance of clarity over what it means to work independently and the level of supervision associated with this. These issues need explicit prospective consideration.

Training requirements

Ultimately, the scope of practice for any non-medical practitioner relies on the training that they receive. Many of the consultant surgeons and medical directors we met said they were comfortable with non-medical practitioners performing a wide range of tasks *providing* that they had been appropriately trained.

This is another area that is not straightforward. The main non-medical practitioner roles have their own curricula and the educational requirements are clearly set out within them. As chart 15 shows (page 73), these roles usually require a postgraduate qualification, often at master's degree level. This creates the impression of uniform and structured routes of entry but in practice the qualifications that practitioners take can be enormously varied.

For instance, physician associates who train in the UK can currently study at one of nine universities (with eight more courses coming soon and others in the pipeline). However, other staff can adopt the title 'physician associate' and at one of the case study sites we met a physician associate who had not undergone physician associate training in the UK (or the US), and instead had been appointed on the basis of their clinical experience.

The University Hospital of North Tees requires its trauma practitioners to demonstrate competences in three areas: physical assessment skills, taking consent, and non-medical prescribing. They attend a course at nearby Teeside University, which lasts around 18 months and satisfies the hospital's requirements for these roles. Funding for the course comes from tier 2 monies, so it is free at the point of use for the hospital. At other hospitals, we heard that nurse practitioners in advance level roles satisfied the requirement for a master's degree but had not always done a master's degree in advanced level practice. For example, one nurse practitioner we met had a master's degree in postgraduate teaching and training, and had supplemented this with modules in clinical assessment and prescribing.

Nursing managers at a number of the sites were keen to standardise the approach to advanced level practice, including being prescriptive about core modules and optional modules.

Some of those we met voiced concern at the length of time it takes to train practitioners – which requires a great deal of forward planning – and highlighted a need to expand programmes for physician associate training in particular.

'We need to bring scale and capacity to the training of PAs', said the medical director at St Peter's Hospital. He

is exploring setting up a master's level qualification for physician associates in conjunction with the Royal Holloway (currently there is a mix of MSc courses in physician studies and postgraduate diplomas). He believes the diploma in physician associate studies is unlikely to attract sufficient candidates to meet the needs of the service. *'No-one will pay £9,000 a year to do a diploma after having done a degree.'* Funding the programme is an issue. One option is to offer physician associates in training apprenticeships and to contract them into working at the hospital for two years after they qualify.

Another issue regarding training is the cost involved in taking nursing staff in particular off the wards, assessment units and emergency departments in order to attend courses. *'It is expensive at this point'*, said one nursing director. Even when practitioners have attended external courses, they will often need in-house training to shape them for the specialty or context that they are needed for. This can mean a large investment for consultant surgeons in training non-medical practitioners.

It all comes back to defining the scope of practice for non-medical practitioners – deciding what is needed in a given context and setting boundaries for practice. All within the extended surgical team need to have clear expectations of what is required of them individually and how different roles interrelate. Setting boundaries and expectations is a task that consultant surgeons will need to play a key role in. For advanced nurse roles, it demands consultant surgeons working with nurse managers to define scope of practice and the training requirements – both in-house and external – needed to deliver non-medical practitioners fit for the role.

Non-medical practitioners in the surgical team

The fluidity around scope of practice means there are few hard and fast rules. Chart 15 below provides an overview of the patient areas these four main groups of non-medical practitioner work in, and also whether they are restricted in respect of the two key limitations of scope of practice: prescribing and ordering x-rays and CT scans.

Chart 15:

	Qualification	Limitation		Clinical settings[9]					
	Postgraduate requirement	Prescribe	Order x-rays, CT scans	Preop assess.	Theatre	Ward	Clinic	Acute take	On-call
Advanced nurse practitioner	Master's degree (2 years)	√	√	√	√	√	√	√	√
Surgical care practitioner	Master's degree (2 years)	√	√	√	√	√	√	√	√
Physician associate	Postgraduate diploma or Master's degree (2 years)	X	X	√	√	√	√	√	√
Surgical first assistant	Work-based or undergraduate study module	X	X	√	√	X	X	X	X

[9] Practice parameters vary according to site and are dependent on local service needs. For example, advanced nurse practitioners do not commonly go into theatre, but are able to where the role requires this. (The specialist nurse practitioners at St George's Hospital in London are an example.)

Rising to the challenges

The staff we interviewed at the case study sites were overwhelmingly positive about the ways in which the extended surgical team was working in their units. However, they also highlighted challenges around making this work. There are currently few easy routes by which to extend the surgical team. It takes commitment from both within the surgical team and the wider organisation, and a clear vision of what is needed and the type of team needed to deliver it. At the moment, where this is happening, it is doing so on a fairly ad hoc basis.

In this section we explore five key areas of challenge:

- **Resistance**
- **Accountability**
- **Governance**
- **Career progression**
- **Sustainability**

We also touch on some of the wider implications of embracing and expanding non-medical roles.

Overcoming resistance

We heard that surgical departments within the case study sites had often been early adopters of new models to configure teams. As with any change, however, elements of resistance were reported. Some felt this was territorial in nature, while others attributed it to a lack of understanding of non-medical roles and fear of a loss of control.

Often resistance manifested itself as consultants and doctors in training asking non-medical practitioners whether a doctor had seen a patient before agreeing to any requests or referrals from the practitioner. At all the case study sites, this resistance had mostly dissipated and had been replaced by acceptance of new and extended non-medical roles as an integral feature of the surgical team.

Overcoming resistance is rarely a quick process – the resistance can take a couple of years to dissipate. Here there would appear to be a distinction between roles that are aligned with the nursing model and newer roles aligned with the medical model. Physician associates can be *'totally green and no help at all'* – as one senior doctor put it – when they first start. Indeed, we heard that it can take between 6 and 12 months before a physician associate becomes a really useful team member. Advanced nurse practitioners, on the other hand, will already have many years' nursing experience under their belt. The challenge can be in assimilating them into the

medical model. We heard that resentment for advanced nurse practitioner roles sometimes comes from other nursing staff – suggesting a conflict over whether these extended roles are part of nursing or have moved on, into the medical domain.

Approaches to deal with these issues included holding meetings with medical staff to explain new roles and, as one senior surgeon said, *'reinforce the new world'*. Physician associates at St George's Hospital have developed a poster that introduces their role and they attend induction sessions for doctors in training. The physician associates in urology have created a core condition matrix to explain what they are able to do. At Aintree, cultural work had begun to explain the potential offered by extended roles, to identify individuals who could step into these roles and to generate support for multi-professional teamworking. *'If you bring these roles in and you don't have buy-in from the team then they won't work'*, said one senior manager.

'It takes time to let go of the fact that others can do the job as well as you can', one senior surgeon said. A recurring message was that there is a balance to be struck between doctors letting non-medical roles provide greater assistance, without letting go of too much, and retaining doctors' professional status.

Accountability

Creating clear lines of accountability for non-medical staff in the extended surgical team was highlighted as an issue at all the case study sites. This is an area where thinking needs to be applied across the organisation, to ensure that these roles are properly supported within the hospital's governance systems.

For nurse practitioner roles, contact with consultant surgeons tends not to be formalised. During training, consultants often act as educational supervisors but once competencies have been signed off the mechanism for overseeing or appraising nurse practitioner-type roles tends to fall to nursing structures, even though the practitioners may be performing a largely medical role.

Models that draw staff from different clinical disciplines into the medical domain raise dilemmas in terms of accountability and line management. This is a particular issue for nurses working in advanced practitioner roles on medical rotas and surgical care practitioners from nursing backgrounds working in medical teams.

Our research has found that staff in these roles are usually clinically accountable day-to-day to consultant surgeons but line managed as nurses. The problem highlighted to us is that staff in these roles are spending increasing amounts of time performing medical tasks that fall outside the nursing jurisdiction. These practitioners often reported that their nursing managers had little understanding of their role and were not in a position to assess their competence. The more medical the tasks, the more likely it was that they wanted to be line managed by consultant surgeons and made to feel a part of the medical team.

Accountability for nurses performing medical tasks

Accountability arrangements for the specialist nurse practitioners (SNPs) at St George's Hospital were described as *'blurred'*. Clinical accountability is to two surgeons but line management accountability is to a nurse manager. This was described by the specialist nurse practitioners as unsatisfactory as their nurse manager can only appraise their nursing role, yet most of the activities they perform are medical. Their nurse manager explained that the plan had been for them to be managed in the same way as doctors in training, but that this had not happened. She added that nursing and medical teams need to work together to manage these roles in a way that had not been achieved to date. She said: ***'They are working in a medical model on a day-to-day perspective but they are then being managed from a nursing perspective – but of course they do need some of that because they need their nursing registration.'***

The surgical care practitioners (SCPs) at the Norfolk and Norwich University Hospital are all from a nursing background and line managed by a nurse manager. They saw their prime reporting line as being to the surgeons and emphasised their autonomy as independent practitioners. The orthopaedic nurse practitioners (ONPs) at this hospital also voiced a preference for being managed as part of the medical team, which they thought would enable greater flexibility in working hours and address issues like banding. The orthopaedic nurse practitioners expressed eagerness to demonstrate their competences, but struggled to do so in the absence of a competence framework. Their preference would be to work through a portfolio, which again would align them more closely with the medical model.

Some practitioners from nursing backgrounds questioned whether their registration with the Nursing and Midwifery Council remained relevant as they felt so far removed from nursing practice. Some nursing managers emphasised that nursing staff needed to work within the limits of their competence. But what does this mean when their competence extends into the medical model? Others considered that staff from nursing backgrounds are able to manage duality of professional accountability through the nursing model and managerially through the medical model.

It is evident that these roles call for sophisticated structures for accountability – professional, clinical and managerial. A number of interviewees agreed that surgeons should be providing input into appraisals for nursing staff who are undertaking medical tasks but the mechanism for enabling this had not yet been introduced at the sites we visited.

Processes are also lacking for ensuring the ongoing competence of staff working in an extended non-medical role. One surgeon had looked at pulling assessments from the Intercollegiate Surgical Curriculum Programme (the curriculum for doctors training in surgery) to assess the competence of surgical care practitioners but found these to be too oriented for surgical trainees. Guidance on line management and on creating personal development plans for staff in these types of roles was highlighted as much needed.

Lines of accountability tend to be clearer and neater for staff aligned to the medical model. The physician associates we interviewed were accountable to, and managed by, surgeons within the department. They were also subject to structured assessments that mirror those used for doctors in training. As part of the requirements of the voluntary register for physician associates, they must undertake continuing professional development that incorporates annual workplace-based assessments, in order to recertify every six years (which also involves retaking the national exam). This includes completing two mini-CEX assessments annually (eight in the first year after qualification) and conducting case-based discussions.

Governance

For arrangements that rely on non-regulated roles – like physician associates – it falls to employers to ensure that their governance systems adequately protect patients and staff. The Scottish Government is reported to be keen that the General Medical Council's remit is extended to cover physician associates, reflecting its aspirations to expand their use in Scotland, which is currently inhibited by the lack of any regulatory framework (GMC, 2015d). The General Medical Council has indicated that it would be prepared to consider this issue if the four governments of the UK were all to seek this. However, it has also said: *'The question of whether we should regulate physician associates raises a broader question about the place of uni-professional modes of regulation in a healthcare environment that is increasingly about teams, multi-professionalism and systems'* (GMC, 2015d)

It also means giving consideration to arrangements for indemnity. Practitioners registered with the Nursing and Midwifery Council or Health Care and Professions Council are required to have professional indemnity in place as a condition of registration. For physician associates, the expectation is that the employer will pick up the cost of indemnity cover. This is an area that hospitals would appreciate guidance on. In the absence of this, St George's Hospital has developed its own indemnity cover for physician associates from scratch.

For practitioners who are not subject to professional regulation, hospitals may place importance on identifying suitable proxies. The policy at St George's Hospital is to employ only those physician associates who are on the voluntary register. In contrast, St Peter's Hospital had a more diverse approach and one of its physician associates was someone with considerable experience in different clinical roles but who was not eligible to join the voluntary register. There is a need for guidance for hospitals around all this.

Another consideration is how these roles integrate with internal governance structures. For practitioners who work anti-social hours – nights only, say – there are obvious barriers to getting involved with governance mechanisms, such as participating in morbidity and mortality meetings. However, we heard that other non-medical practitioners are simply not involved in directorate business. This may reflect a lack of clarity of expectation of these roles – but, given the experience and capability of many of the staff we met, and the time they spend on patient-facing activities, it is a missed opportunity not to involve them in clinical governance.

There is also something about supporting these roles to become self-directing in terms of governance and their own development. It was not apparent at the sites we visited that forums had been established for non-medical staff in new and extended roles. Some were lone roles, lacking peers with whom to share ideas, and played an isolated role within the wider team. Even where there were teams of four or more, some reported a degree of isolation. Unless non-medical staff are pulled into the surgical team in meaningful ways, there is a risk that they become something of a lost tribe.

Career progression

These roles tend to require significant investment in terms of releasing staff to attend university courses as well as providing in-house training. It often takes two years to train a practitioner to work at the level of the staff featured here. Hospitals are understandably anxious to retain them.

Senior staff at the case study sites were very keen to retain their non-medical staff and often to expand their numbers further. Managerial staff expressed anxiety about the absence of structures for career progression and concern that their non-medical team members would hit a ceiling in their current roles, which would prompt them to move elsewhere.

This was rather less of a concern for staff from a nursing background, who were perceived as having more options in terms of career progression, with opportunities for sideways moves into management. Still, an anxiety remained that if they moved into a managerial role they would be lost from clinical practice, with ramifications for the surgical team they had become a part of. Further, there are different challenges for staff from nursing backgrounds, including different restrictions around nursing hours, quite separate approaches and budgets for study leave, and issues about taking from the nursing pool.

The non-medical practitioners we met came across as highly motivated, capable and ambitious. Those who had extended their roles – such as advanced nurse practitioners – usually had many years of experience and were now working at a very senior level clinically. A couple reported feeling bored, having reached a ceiling, but were content to stay in their role, aware that finding another to stretch them further would itself be a challenge. Many reported high levels of professional satisfaction and morale.

Some were looking to expand their skill set further within their existing role. For others, sustainability of working pattern was an issue. The specialist nurse practitioners at St George's Hospital reported that working nights only was unsustainable and discouraged people from applying for these roles. They also felt disconnected from some of the structures that are important to sustaining teams – such as team meetings or participating in governance. An increase in their numbers – from five to seven – was hoped to alleviate this.

A number of the case study sites were introducing pathways for career progression. The surgeons we interviewed were keen to support the non-medical staff within their teams. We heard of one instance where an individual had created their own role and this had been accommodated as a means of retaining that individual's expertise within the team. Surgeons appeared to have more leeway to create opportunities for career progression for physician associates, who are clearly aligned with the medical model, and are line managed by surgeons – see page 80. For practitioners from nursing backgrounds, lines of accountability tended to run via the nursing line, which gives surgeons less control over career progression opportunities for these staff.

Career progression for physician associates

'From the outset we want to support them to retain them', one colorectal surgeon at St Peter's Hospital said about their four physician associates (PAs). Surgeons were keen that the PAs stay with the hospital long term. Two general surgeons have taken the lead for developing and overseeing the four PAs. They run a weekly teaching session for them and are committed to their regular assessment and appraisal. The PAs have rotated through two surgical departments and there are plans to extend this so that they gain a broad spectrum of experience. The surgeons here believe that diversity of experience is vital to retaining them. *'We can't keep them contained on the wards for the next 10 to 15 years',* remarked one surgeon. There are plans to introduce a model whereby PAs have an 'educational week' each month, spent in theatres and clinics.

At St George's Hospital, breast surgery stood out as a specialty that had given careful thought to a career structure for its two PAs, with plans to support them in their third year to do a master's degree in breast diagnostics.

Career opportunities

One avenue for career progression is around training of doctors. Many of the senior medical and nursing staff we interviewed envisaged potential for non-medical practitioners to formalise the roles they currently play in teaching doctors in training. This would require some cultural change. While most of the doctors in training we met valued being taught how to do certain things by non-medical practitioners – whom they often perceived as expert in certain procedures – we also heard some rather more territorial views from young doctors who questioned the value of having non-medical staff teaching doctors.

Other opportunities for career progression may lie in developing a hierarchy within extended roles, such as introducing a lead physician associate, or a line of progression from surgical first assistant to surgical care practitioner. Appointing a lead role could be a win–win situation – as it provides for one person to focus on governance and role development. The Norfolk and Norwich University Hospital was poised to appoint a lead orthopaedic nurse practitioner at band 8a. *'If we're going to push the boundaries and extend roles then we don't want to put a glass ceiling above it'*, remarked a senior manager at another trust.

For some, progression is about extending scope of practice. *'I don't want there to be a pyramid, I want flexibility'*, said one physician associate from the US who works and trains physician associates in the UK. She said: *'I began my career seeing less complex patients, but over the years I see more and more complex patients with less and less supervision – that is my progression.'*

Sustainability

Probably the single most important factor in terms of sustainability of these roles is having support from the surgical team. We observed that these roles have grown and thrived in departments where the surgeons have supported and often championed them. In the case study sites, there was usually an individual surgeon or pair of surgeons driving the development of new and extended non-medical roles within their department.

These roles are vulnerable when only one surgeon in a department is supportive – we heard of instances where the surgeon sponsoring the role left and the role fell to the wayside. Equally, some raised concerns about situations where only one role of its type existed within the organisation.

There is a risk of burn-out where too few roles exist to support the service. A number of the non-medical staff we met had become victims of their own success – with an increasing array and volume of tasks falling to them. We heard anecdotally that, at one trust, doctors in training were leaving tasks that previously they would have done at night for the next morning, knowing that non-medical practitioners would then pick them up. For ward staff, pressure was coming from nurses as well as doctors. Some reported that nurses on the wards were increasingly reluctant to do tasks such as cannulation, knowing that non-medical practitioners would do these things if they did not. With doctors in training described as being increasingly *'hands-off'*, a need was identified for more practitioners to manage the additional work.

A recurring theme was that some of these roles draw on an already stretched nursing pool. Extending the roles of nursing staff to take on tasks that once fell mainly to doctors can of course put undue pressure on the nursing workforce. Some sites had addressed this by training healthcare assistants to pick up some nursing tasks. For example, specially trained 'assistant practitioners' at the Norfolk and Norwich University Hospital specialise in specific tasks, such as catheterisation or bladder scans. These roles were described as *'prestigious'* and can offer a route of entry to a nursing degree. The hospital is looking locally at options for accelerated nurse training. This sits well with government plans to create a new nursing support role – provisionally called 'nursing associates' – which could also be a new route for those wishing to become a registered nurse (Department of Health, 2015).

At the University Hospital of Wales, nursing managers were exploring how to fill the gaps left by advanced nurse practitioners on the wards. They are considering how to create career pathways for nurse practitioners and nurse specialists, so that they bring nurses into the organisation at a junior level and take them through a career pathway. In addition, they are exploring how extended roles can be used to educate other staff, including whether nurses in enhanced roles should work shifts on the wards to maintain their general nursing competence, but also to support ward nurses with their specialist knowledge.

Wider implications

These roles take time to grow, which means workforce planning three, four and five years ahead. It demands a level of sophistication to workforce planning that the NHS has traditionally lacked.

All the organisations we visited were resolutely committed to training doctors and could not envisage that changing. However, for organisations under pressure, and where there is not a strong teaching ethos, this commitment might not be so relevant. Growing their own staff enables hospitals to exert more control over the workforce needed to meet their specific needs; it also offers more scope to do things differently, and to use staff skill sets in innovative ways to overcome some of the decisions made by training and education commissioners.

The attractions of a stable workforce, with consultants leading teams of extended non-medical staff and the advantages associated with these, could have implications for how and where the training of doctors takes place. We have already witnessed moves to shift more doctors into primary care and the community. The extended surgical team may play an important role in covering the gaps created by this shift.

It might also mean that some hospitals consider whether they really can provide training across all specialties – resulting in a re-centralisation of teaching and training. Ultimately, for hospitals, it comes down to striking the right balance between the competing priorities of service and training. Some saw a role for the RCS in helping to strike this – and to actively support the development of the extended surgical team.

The final section of this report examines what role the College can play in further developing the extended surgical team and where Health Education England can have an impact in supporting this.

Thinking of extending the surgical team in your hospital?

Key advice

1	New models should be driven by clearly identified needs – primarily, by the need to improve patient care and the patient experience as well as to optimise surgical training.
2	Ideally, adoption of new and extended non-medical roles should reflect a strategic approach to the multi-professional workforce – there needs to be support across the organisation, and these roles need to be fully integrated into governance structures and standard operating procedures.
3	Be clear about routes of entry and create pathways for existing staff to grow into these roles.
4	Understand the commitment required in terms of in-house training and competence assessment – it may mean making sure there is time in consultant job plans for this.
5	Make sure there is clarity over lines of accountability – clinically, managerially and professionally – and how ongoing performance will be assessed (particularly for staff undertaking medical tasks).
6	Develop a structured pathway for career progression – to help retain bright and able staff but also to maximise the benefit the service can derive from these roles.
7	Identify budgets to support continuing professional development and study leave requirements, in order to develop and enhance these roles.
8	Invite those who are sceptical to see how such roles could help them – having consultants introduce and explain the wider team also validates the new set-up.
9	Titles can be an artificial barrier – *'It's not important what you call them, it's more about what training they have had to give them the competencies'.*
10	Acknowledge the role played by the multi-professional team in training junior doctors – this should lead to clearer expectations of this training.
11	Deploy the multi-professional team in ways that make best use of their skill set, and delegate the right level of autonomy and decision making – don't just give them the tasks that junior doctors are not doing.
12	Consider how to utilise the leadership capabilities of these staff – particularly experienced staff working in extended roles – to the benefit of the wider workforce.

Recommendations

The findings of this project support embracing the extended surgical team, to the benefit of patient care first and surgical training second. The aim in doing this must be to value a diversity of roles and skill sets and not to crudely substitute doctors in training with other staff groups.

It appears evident that there is potential to share some of the tasks that doctors in training currently perform with a wide range of non-medical practitioners. Deploying the wider team effectively and avoiding potential drawbacks – including for doctors in training – comes down to striking the right balance. This means ensuring that doctors in training have sufficient exposure to tasks that inform their learning and development but are not drowned by tasks that do not hold good educational value (administrative tasks in particular).

We have identified seven areas that give rise to recommendations:

Promoting the potential of the extended surgical team

There has been some suspicion about the impact of the extended surgical team, especially in terms of diluting opportunities for surgical trainees. This report explodes some of the myths around the extended surgical team and illustrates the positive impact it can have.

1. The Royal College of Surgeons and Health Education England should devise a programme of work to raise awareness of the potential offered by the extended surgical team – as outlined in this report. Key stakeholders that the College will wish to influence include NHS employers, health service commissioners, surgeons and service users.

Developing standards to support the extended surgical team

There is a need to take a more strategic approach to developing the extended surgical team. This does not mean being prescriptive about how the team should look: it is evident from our research that no single model for the extended surgical team will suit all contexts. Different approaches will be suitable for an assessment unit, the ward environment, theatres and the hospital-at-night system. The model selected will also need to take account of the surgical specialty, the size of the consultant team and the number of doctors in training. Within each model, the size and shape of the wider team will vary widely. The roles we observed were generally very specific to local circumstances, demanding specialty-specific skill sets.

2. The College should support the service to take a more strategic approach by providing guidance on the factors to consider in modelling the extended surgical team, such as surgical specialty considerations around the need for doctors in training to gain experience of providing cover on the wards.

3. The College and Health Education England should work with NHS employers to develop guidance, aimed at surgeons and employers, on the following:

» Indemnity arrangements (for physician associates in particular)
» Governance – including on involving non-medical practitioners in clinical governance mechanisms and team infrastructure
» Accountability mechanisms – including with regard to line management arrangements for non-medical practitioners undertaking medical roles
» How to define the parameters of scope of practice for non-medical practitioners – including what is meant by 'independent operating' and the level of supervision expected

4. The College should develop standards to guide the evolution of physician associate roles within surgical specialties – unless, or until, statutory regulation is introduced for these practitioners, it falls to employers to navigate the limitations around prescribing and the qualifications they look for; currently, anyone can call themselves a physician associate.

5. The College should work with Health Education England to enhance the professional aspects of training for these practitioners, including leadership, teamworking, training and research.

Defining the College's relationship with non-medical practitioners

The College has been keen to improve standards for the whole surgical team and it has demonstrated this by approving and publishing the revised surgical care practitioner curriculum in 2014 (RCS, 2014b).

Many of the non-medical practitioners we met would like the College to play a more active role in their area of practice. Representatives of surgical care practitioners voiced an aspiration that this project would spur the College into demonstrating greater support for these roles after a period of what some perceived as disengagement. Even for roles that, at a glance, appear more generic, there is much opportunity for the College. There is a tendency for roles that begin generically to become more specialty-specific over time – this was seen with some of the physician associate positions we observed. Some expressed frustration with the title 'physician associate' and considered the College could undertake work to align physician associates working in surgery more closely with surgical disciplines.

6. The College should work closely with organisations representing non-medical practitioners to identify the ways in which resources can be made available to support the extended surgical team.

7. The College should explore ways to align non-medical practitioners with the surgical profession and develop their identity as part of the surgical team, including the potential offered by the development of a faculty, within the College, the need for voluntary registers for certain groups of practitioner and issues relating to recertification.

Supporting surgeons as 'champions of change'

One the biggest factors influencing the expansion of the non-medical workforce is the consultant in charge of the unit and their willingness to consider multi-professional working. Without the support and leadership of consultant surgeons, the extended surgical team will not thrive. This report suggests that this would be a missed opportunity, both in terms of meeting the growing demands of the service and also in enhancing surgical training.

8. The College should help surgeons to understand the role they can play as champions of change and leaders of new models of surgical teams within their organisations.

9. The College should clarify the expectations on consultant surgeons in leading multi-professional teams as well as in providing ongoing oversight and competence assessment for practitioners undertaking medical roles.

Supporting doctors in surgical training

While this report paints a positive picture in terms of the benefits that the extended surgical team can have for surgical training, the findings also suggest that doctors in training may need to adapt in order to reap the benefits. This includes doctors in training becoming more self-directed in their learning and clear about what they wish to achieve from each placement as well as planning their attendance at theatre in advance and making sure they are standing in the right place at the table to learn.

10. The College should provide guidance for doctors in training in surgery on the extended surgical team and the non-medical practitioners they may find themselves working alongside. Such guidance should include how these roles can support them and the steps they can take to derive greatest benefit from their training.

Examining the implications for workforce planning

Expanding the extended surgical team has implications for workforce planning.

11. Health Education England should review the approach to workforce planning in respect of the roles highlighted in this report, paying particular regard to the lead-in time needed to train people to fill these roles (a minimum of two years).

12. Health Education England should consider whether physician associates are being trained in sufficient numbers to support the surgical workforce and whether clinical placements are giving sufficient exposure to surgery to attract physician associates into surgical departments once qualified.

13. The College should consider the implications of this report for future surgical workforce planning.

Understanding patients' perspectives

While this report outlines benefits for patient-centred care from extended surgical teams, we do not yet have a good understanding of how patients receive this care or how they perceive non-medical practitioners. This is an area that requires further investigation.

14. Health Education England should undertake focused work to understand the impact on patients of services provided by non-medical practitioners, including procedures and surgical interventions – this should include assessing the importance of offering choice with regard to non-medical practitioners undertaking procedures.

15. Health Education England should lead work to streamline the range of titles in use for non-medical practitioners, and to more clearly define when a title should be used – the health careers website (run by Health Education England) provides a good foundation from which to undertake this work.

16. The College should develop a programme of work to raise awareness among service users of the roles played by different members of the extended surgical team and what this means for their care.

References

Association for Perioperative Practice (2014). *Frequently asked questions: the surgical care practitioner.* Available at: http://www.afpp.org.uk/careers/Standards-Guidance (accessed 25 May 2016).

Competence and Curriculum Framework for the Physician Associate (2012). Available at http://www.fparcp.co.uk/ (accessed 26 February 2016)

Association for Perioperative Practice (2016). *Specialist Interest Group Newsletter: Advancing Surgical Roles.*

Cornwell J, Levenson R, Sonola L, Poteliakhoff E (2012). *Continuity of care for older hospital patients. A call for action.* London: King's Fund. Available at: http://www.kingsfund.org.uk/sites/files/kf/field/field_publication_file/continuity-of-care-for-older-hospital-patients-mar-2012.pdf (accessed 15 February 2016)

Department of Health (2015). *Nursing associate role offers new route into nursing.* Available at: https://www.gov.uk/government/news/nursing-associate-role-offers-new-route-into-nursing (accessed 29 February 2016).

Department of Health (2010). *Advanced Level Nursing: a Position Statement.* Available at: https://www.gov.uk/government/publications/advanced-level-nursing-a-position-statement (accessed 27 February 2016)

Eardley I. Shape of Training: where are we now? *Bull R Coll Surg Engl* 2015; 97: 103–105. http://publishing.rcseng.ac.uk/doi/full/10.1308/147363515X14134529301787 (accessed 10 February 2016)

General Medical Council (2015a). *National training survey programme specific reports. Question items for trauma and orthopaedic surgery (all results) for 2015.* Available at https://webcache.gmc-uk.org/analyticsrep/saw.dll?Dashboard (accessed 5 February 2016)

General Medical Council (2015b). *National training survey programme specific reports. Question items for urology (all results) for 2015.* Available at https://webcache.gmc-uk.org/analyticsrep/saw.dll?Dashboard (accessed 5 February 2016)

General Medical Council (2015c). *National training survey programme specific reports. Question items for core surgical training (all results) for 2015.* Available at https://webcache.gmc-uk.org/analyticsrep/saw.dll?Dashboard (accessed 5 February 2016)

General Medical Council (2015d). *The scope of medical regulation: physician associates.* Council meeting paper. Available at http://www.gmc-uk.org/14___The_scope_of_medical_regulation___physician_associates.pdf_64608156.pdf (accessed 28 February 2016)

General Medical Council (2015e). *Regional review of medical education and training in Kent, Surrey and Sussex: 2014–15.* Available at: http://www.gmc-uk.org/KSS_regional_report.pdf_63211578.pdf (accessed 28 February 2016)

General Medical Council (2015f). *The state of medical education and practice in the UK: 2015.* Available at http://www.gmc-uk.org/SOMEP_2015.pdf_63501874.pdf (accessed 5 February 2016)

General Medical Council (2015g). *The state of medical education and practice in the UK: 2015. Reference tables – doctors in training. Table 216, Doctors in training in Surgery by gender.* Available at http://www.gmc-uk.org/Reference_tables_about_doctors_in_training.pdf_63507482.pdf (accessed 5 February 2016)

General Medical Council (2014a). *Quality assurance report for academic training.* Available at http://www.gmc-uk.org/Academic_training_report_and_responses___Final.pdf_58315393.pdf (accessed 4 February 2016)

General Medical Council (2014b). *National training survey 2014: Key findings.* Available at http://www.gmc-uk.org/NTS_2014__KFR_A4.pdf_56706809.pdf (accessed 5 February 2016)

General Medical Council (2013). *GMC response to the Shape of Training Review Call for Ideas and Evidence.* Available at http://www.gmc-uk.org/8___GMC_response_to_the_Shape_of_Training_Review_Call_for_Ideas_and_Evidence.pdf_51057309.pdf (accessed 4 February 2016)

General Pharmaceutical Council (2016). *Pharmacist independent prescriber.* Available at: https://www.pharmacyregulation.org/education/pharmacist-independent-prescriber (accessed 28 February 2016)

Glassdoor (2016). *25 Best Jobs in America.* Available at https://www.glassdoor.co.uk/Best-Jobs-in-America-LST_KQ0,20.htm (accessed 26 February 2016)

Hall S, Quick J, Hall A, Jones A. Surgical assistance – who can help? *Ann R Coll Surg Engl (Suppl)* 2014; 96: 244–246

Health Education England (2014). *Broadening the Foundation Programme.* Available at https://www.hee.nhs.uk/sites/default/files/documents/Broadening%20the%20foundation%20report.pdf (accessed 23 February 2016)

Health Education England (undated). *Health careers: Physician associate.* Available at https://www.healthcareers.nhs.uk/explore-roles/physician-associateassistant/physician-associate (accessed 26 February 2016)

Health Education Kent, Surrey and Sussex (2016). *Post Information.* Available at http://www.ksseducation.hee.nhs.uk/recruitment/hekss-national-recruitment/core-surgical-training-overview/post-information/ (accessed 22 February 2016)

Health Education Kent, Surrey and Sussex (2012). *Core Surgery recruitment for NHS. 2012 CST CT1 Recruitment Statistics.* Available at http://www.surgeryrecruitment.nhs.uk/useful-information/2012-cst-ct1-recruitment-statistics (accessed 22 February 2016)

Health & Social Care Information Centre (2015). *NHS Workforce Statistics – March 2015, Provisional statistics.* Available at: *http://www.hscic.gov.uk/workforce* (accessed 22 April 2016)

Independent Working Time Regulations Taskforce (2014). *The Implementation of the Working Time Directive, and its Impact on the NHS and Health Professionals.* The Royal College of Surgeons of England: London. Available at: https://www.rcseng.ac.uk/policy/documents/wtd-taskforce-report-2014 (accessed 7 February 2016)

Intercollegiate Surgical Curriculum Programme (2013). *The Intercollegiate Surgical Curriculum: Educating the surgeons of the future. General Surgery*. Available at http://www.gmc-uk.org/general_surgery_curriculum_2013.pdf_59413012.pdf (accessed 4 February 2016)

Joint Committee on Surgical Training (2014). *Core Surgical Training Committee Annual Report.* Available at http://www.jcst.org/archive/docs/annual-report-for-core/view (accessed 5 February 2016)

Joint Committee on Surgical Training (2013). *Shape of Training Review: Response of the Joint Committee on Surgical Training.* Available at http://www.jcst.org/key-documents/docs/response-to-the-shape-of-training-review/view (accessed 5 February 2016)

Joint Committee on Surgical Training (undated). *Annual report for the JCST trainee survey.* Available at http://www.jcst.org/quality-assurance/documents/jcst-trainee-survey/first-survey-annual-report (accessed 5 February 2016)

Jones A, Arshad H, Nolan J. Surgical care practitioner practice: one team's journey explored. *JJ Perioper Pract* 2012; 22: 19–23.

Martin S, Purkayastha S, Massey R, Paraskeva P, Tekkis P, Kneebone R, Darzi A (2007). 'The surgical care practitioner: a feasible alternative. Results of a prospective 4-year audit at St Mary's Hospital Trust, London.' *Ann R Coll Surg Eng* 2007; 89: 30–35.

NHS England (2015). *Operating Theatres in NHS Organisations in England, Quarter 2 2015–16.* Available at https://www.england.nhs.uk/statistics/statistical-work-areas/cancelled-elective-operations/supporting-facilities-data/ (accessed 4 February 2016)

Perioperative Care Collaborative (2012). *Position statement: Surgical First Assistant (formerly the 'Advanced Scrub Practitioner')*. Available at: http://www.afpp.org.uk/ (accessed 26 February 2016)

Quick J, Hall S. The surgical assistant: are you compliant? *J Perioper Pract* 2014; 24: 195–198

Royal College of Anaesthetists (2008). *Physicians' Assistant (Anaesthesia) Curriculum Framework.* Available at http://www.rcoa.ac.uk/system/files/TRG-PA%28A%29-CF.pdf (accessed 26 February 2016)

Royal College of Nursing (2012a). *A competence framework for orthopaedic and trauma practitioners.* Available at: https://www2.rcn.org.uk/__data/assets/pdf_file/0010/476047/004316.pdf (accessed 25 May 2016)

Royal College of Nursing (2012b). *Advanced nurse practitioner: an RCN guide to advanced nursing practice, advanced nurse practitioners and programme accreditation.*

Royal College of Surgeons of England (2015a). *Surgery in Numbers: England.* Available at: https://www.rcseng.ac.uk/media/media-background-briefings-and-statistics/surgery-and-the-nhs-in-numbers (accessed 28 September 2015)

Royal College of Surgeons of England (2015b). *Improving surgical training: proposal for a pilot surgical training programme.* Available at: https://www.rcseng.ac.uk/surgeons/supporting-surgeons/regional/events/documents/rr-improving-surgical-training-19-nov-2015 (accessed 25 May 2016).

Royal College of Surgeons of England (2014a). *Royal College of Surgeons Position Statement: Shape of Training Review.* Available at http://www.rcseng.ac.uk/policy/documents/PositionstatementDec2014FINAL.pdf (accessed 4 February 2016)

Royal College of Surgeons of England (2014b). *The curriculum framework for the surgical care practitioner.* Available at: https://www.rcseng.ac.uk/surgeons/training/docs/surgical-care-practitioner-curriculum (accessed 26 February 2016)

Shape of Training (2013). *Securing the future of excellent patient care. Final report of the independent review led by Professor David Greenaway.* Available at http://www.shapeoftraining.co.uk/static/documents/content/Shape_of_training_FINAL_Report.pdf_53977887.pdf (accessed 4 February 2016)

Association of Surgeons in Training (2014). EWTD *Taskforce Submission*. Available at http://www.asit.org/news/EWTD_Task_Force (accessed 4 February 2016)

Working Time Regulations (1998). Available at http://www.legislation.gov.uk/uksi/1998/1833/contents/ (accessed 7 February 2016)

UK Association of Physician Associates (2015). *2015 UKAPA Census Results.* Available at http://static1.squarespace.com/static/544f552de4b0645de79fbe01/t/55db4d74e4b0bd802305b2c0/1440435572672/2015+UKAPA+Public+Census+Results.pdf (accessed 26 February 2016)

University of Southampton (undated). *MSc Advanced Clinical Practice (Advanced [Nurse] Practitioner).* Available at http://www.southampton.ac.uk/healthsciences/postgraduate/taught_courses/msc_adv_clin_practice_practitioner.page (accessed 27 February 2016)

Vascular Society (2014). *Vascular Surgery UK Workforce Report 2014. Results of a Survey of the Consultant Vascular Surgery Workforce in the UK.* Available at http://www.vascularsociety.org.uk/wp-content/uploads/2014/07/VS-UK-Workforce-Report.pdf (accessed 7 February 2016)

Appendix A: Non-medical practitioners in the extended surgical team

This appendix provides an overview of five types of non-medical practitioner.

Physician associate (PA)	
Definition of role	'*a new healthcare professional who, while not a doctor, works to the medical model, with the attitudes, skills and knowledge base to deliver holistic care and treatment within the general medical and/or general practice team under defined levels of supervision*'. (Competence and Curriculum Framework for the Physician Assistant, 2012)
Background	The US has used physician assistants since the 1960s. They grew out of a need for highly skilled healthcare professionals to deliver care in underserved populations. The physician assistant role in the US was recently declared one of the *'best jobs in America'* with an average take-home salary of $97,000 – just under £70,000 (Glassdoor, 2016). American-trained physician assistants were first introduced into the UK workforce in 2003, in the West Midlands. They have been renamed physician associates in the UK. The Royal College of Physicians launched the Faculty of Physician Associates (PAs) in July 2015, which is responsible for organising certification and recertification examinations for PAs (every six years) and accrediting university programmes. The Faculty also holds the PA Managed Voluntary Register. According to the latest census, there are approximately 223 practising PAs in the UK and 191 PAs in training (UK Association of Physician Associates, 2015).
Entry requirements	Two routes of entry: 1. Biomedical or biological science degree (2:1 hons) 2. Prior experience as a registered healthcare professional (most commonly nurse, healthcare assistant or paramedic)
Training	PAs have to meet a nationally approved standard of training and practice, required under the competence and curriculum framework for physician associates laid down by the Faculty of Physician Associates. The two year training programme focuses principally on general adult medicine in hospital and general practice, rather than specialty care (Health Education England, undated). It includes *'significant theoretical learning'* in the key areas of medicine. There will also be 1,600 hours of clinical training, taking place in a range of settings, including 350 hours in general hospital medicine. Trainees typically spend 80 hours in mental health, surgery, obstetrics and gynaecology, and paediatrics. Trainee PAs must pass their programme assessments as well as a national examination of knowledge and skills. They must retake the national exam every six years, and meet CPD requirements in order to recertify (Competence and Curriculum Framework for the Physician Assistant, 2012).
Typical tasks	Taking medical histories, performing examinations, diagnosing illnesses, analysing test results, developing management plans
Professional accountability	No statutory professional regulation
Banding	Typically starting on band 7 (Health Education England, undated)

Surgical first assistant (SFA)	
Definition of role	'*The role undertaken by a registered practitioner who provides continuous competent and dedicated assistance under the direct supervision of the operating surgeon throughout the procedure, whilst not performing any form of surgical intervention'* (Perioperative Care Collaborative, 2012).
Background	Formerly the 'Advanced Scrub Practitioner', the surgical first assistant (SFA) role was reviewed by the Perioperative Care Collaborative following a call from the RCS for greater clarity in relation to the range of titles in use. The PCC clarified that an SFA must be an additional member of the surgical team and, specifically, must be in addition to a scrub practitioner, who has a different role. The SFA role should be pre-scheduled within theatre list planning where possible.
Entry requirements	Must be a registered nurse or operating department practitioner
Training	1. Experienced registered practitioners (nurses or operating department practitioners) must undertake additional, nationally recognised SFA training, which involves completion of an in-house training package supported by the Surgical First Assistant Competency Toolkit by the Association for Perioperative Practice. Higher education institutions that offer accredited modules for SFAs must ensure that the programme offered is up to date and follows the recommendations of the Perioperative Care Collaborative. This includes incorporating the specified responsibilities and title of the SFA into the programme (Quick and Hall, 2014). 2. The College of Operating Department Practitioners BSc programme provides students with the knowledge and skills to perform the SFA role. Consolidation of practice is required for newly registered operating department practitioners. Each route requires employee support, governance and clinical control.
Typical tasks	Tasks that distinguish the SFA from a scrub practitioner include: • Cutting of deep sutures and ligatures under direct supervision • Nerve and deep tissue retraction (retractors should not be placed by an SFA but by the operating surgeon) • Handling of tissue and manipulation of organs for exposure or access • Assisting with haemostasis in order to secure and maintain a clear operating field (including indirect application of surgical diathermy by the operating surgeon) • Use of suction as guided by the operating surgeon • Camera manipulation for minimal access surgery • Assistance with wound closure (Perioperative Care Collaborative, 2012) • SFAs are not allowed to undertake tasks considered to be a surgical intervention. Excluded activities: application of direct electrosurgical diathermy to body tissue, applying haemostats or ligaclips to vessels, cast bandaging, suturing skin or any other tissue layers. These activities fall within the remit of the surgeon, supervised surgical trainee or surgical care practitioner and not the SFA (Perioperative Care Collaborative, 2012; Quick and Hall, 2014).
Professional accountability	Registered practitioners (Nursing and Midwifery Council or Health and Care Professions Council)
Banding	Typically remain part of the operating theatre establishment on band 5–6

Surgical care practitioner (SCP)	
Definition of role	*'A registered non-medical practitioner who has completed a Royal College of Surgeons accredited programme (or other previously recognised course), working in clinical practice as a member of the extended surgical team, who performs surgical intervention, pre-operative care and post-operative care under the direction and supervision of a Consultant surgeon'* (RCS, 2014b)
Background	SCP role was first developed in the UK in the late 1980s, when a cardiac surgeon's assistant was appointed to harvest the long saphenous vein for coronary artery bypass grafting. In the early 1990s, the adoption of laparoscopic approaches increased the need for skilled assistance. Today, the SCP has developed in most surgical specialties, from a theatre-based practitioner to an integral member of the wider surgical team, who is often involved at different points along the inpatient pathway.
Entry requirements	The minimum requirements for entry to a recognised SCP programme are: 1. Evidence of an ability to study at level 7 or above (ie at master's degree level) 2. Registration as a healthcare professional (usually nurse, operating department practitioner or physiotherapist) 3. Evidence of at least 18 months of post-registration experience (RCS, 2014b)
Training	The minimum academic standard for the SCP programme is a two-year programme, normally undertaken part time, consisting of at least 120 credits at master's level or equivalent (RCS, 2014b). Registered practitioners undertake a master's qualification in their chosen specialty (eg cardiothoracics, urology, general surgery). The two-year course is based on the recently revised SCP curriculum framework 2014 endorsed by the RCS (RCS, 2014b). SCPs are required to spend a minimum of 2,200 hours gaining clinical knowledge, with 1,100 hours spent in theatre. SCPs in training are assigned a clinical and educational supervisor – a consultant surgeon and a lecturer within a higher education institution – who assess progress and set goals. SCPs in training also complete workplace-based assessments, including case-based discussions, mini-CEX and DOPS.
Typical tasks	• Preoperative assessment, including clinical history taking and physical examination • Enhancing the communication link between theatre, patient and ward • Involvement in the team completion of the surgical safety checklist • Assisting with the preparation of the patient, including urinary catheterisation, venepuncture, patient positioning and preparation • Providing assistance with surgical procedures • Some technical and operative procedures according to individual scope of practice • Facilitating the training of trainee surgeons • Arranging appropriate pre and postoperative investigations • Post-operative care – including wound assessment and management • Evaluation of care, including the discharge process, follow-up and outpatient activities (Association for Perioperative Practice, 2014)
Professional accountability	Registered practitioners (Nursing and Midwifery Council or Health and Care Professions Council)
Banding	Typically on band 7 (Association for Perioperative Practice, 2014)

Advanced nurse practitioner (ANP)	
Definition of role	The Department of Health (2010) has defined advanced practice as: *'where the registered nurse is working at a level well beyond initial registration, using their existing knowledge and skills to inform and further develop their practice…Nurses working at an advanced level use complex reasoning, critical thinking, reflection and analysis to inform their assessments, clinical judgements and decisions. They are able to apply knowledge and skills to a broad range of clinically and professionally challenging and complex situations…Nurses working at advanced level are at the forefront of their area of practice.'*
Background	ANPs are well established within the healthcare community, although the concept of what is advanced practice has changed over time. Within surgical practice, ANPs were predominately clinic and ward-based, but have extended into the theatre setting and acute assessment units. There have been calls for the ANP title be protected; technically, anyone can use the title as it stands.
Entry requirements	The exact entry requirements for the MSc in advanced clinical practice will vary (and at some of the case study sites we met ANPs with different types of master's degree). The requirements for the University of Southampton (undated) programme: • A first degree (2:2 Hons or above) • Current professional registration with relevant body (eg Nursing and Midwifery Council) • Current job contract in a clinical or clinically related area (and a clinical mentor able to assess their practice) • At least two years relevant post-registration clinical experience (three before commencing the non-medical prescribing module) • A reference from current employer confirming practice and mentor support
Training	Master's degree in advanced practice. It takes 2–3 years part time, during which generic training is followed by specialist training in the nurse's chosen field of practice. The master's qualification is the minimum required for the ANP role and is followed by a period to develop the advanced clinical skills required.
Typical tasks	With respect to clinical and direct care, nurses working at an advanced level: • Practise autonomously and are self-directed • Assess individuals, families and populations holistically using a range of different assessment methods, such as physical examination, ordering and interpreting diagnostic tests or advanced health needs assessment • Have a health promotion and prevention orientation, and comprehensively assess patients for risk factors and early signs of illness • Draw on a diverse range of knowledge in their decision making to determine evidence-based therapeutic interventions – which will usually include prescribing medication and monitoring the effectiveness of interventions • Plan and manage complete episodes of care (in partnership with others), and delegate and refer as appropriate • Use their professional judgement in managing complex and unpredictable care events and capture the learning from these experiences to improve patient care and service delivery • Draw on an appropriate range of multi-agency and inter-professional resources in their practice • Appropriately define the boundaries of their practice (Department of Health, 2014) Not all ANPs are independent prescribers but they can complete a non-medical prescribing course.
Professional accountability	Registration with the Nursing and Midwifery Council
Banding	Typically at band 7

Physicians' assistants (anaesthesia) are non-medical practitioners who work as part of the anaesthesia team. They are included here as surgeons are increasingly likely to work alongside them in theatre and an understanding of their role can only be helpful in this respect.

Physicians' assistant (anaesthesia) (PA (A))	
Definition of role	PA(A)s work under the direction and supervision of a consultant anaesthetist. Typically they work in a 2:1 model where there is one consultant anaesthetist supervising two PA(A)s or a trainee anaesthetist and a PA(A) simultaneously in two operating theatres. PA(A)s can develop specialist skills in regional anaesthesia such as axillary blocks and provide sedation for specific interventions.
Background	Anaesthetics has many of the struggles that effect all specialties; including reduction in training numbers, increased workload together with the added pressure of increasing theatre productivity. PA(A)s were introduced in 2004, with the potential to support the service.
Entry requirements	Two routes of entry: 1. At least three years clinical experience as a registered healthcare professional (eg nurse or operating department practitioner) 2. Biomedical science or biological science honours degree (2:1 Hons)
Training	Physicians' Assistant (Anaesthesia) Postgraduate Diploma at the University of Birmingham. This is a two year intensive programme, the standards of which are set by the Royal College of Anaesthetists and laid out in the curriculum framework (Royal College of Anaesthetists, 2008). Graduates spend an additional three-month probationary period in clinical practice.
Typical tasks	• Preoperative interviewing and physiological and psychological assessment of patients • Collecting patient information (taking a history, physical examination, laboratory, radiographic and other diagnostic data) • Implementing the anaesthesia care plan • Administering and/or participating in the planned administration of general anaesthetic for a variety of surgical and medically-related procedures • Using a broad variety of techniques, anaesthesia agents, drugs and equipment in providing anaesthesia care • Teaching, supervising and assessing other team members
Professional accountability	No statutory professional regulation. Managed Voluntary Register held by the Association of Physicians' Assistants (Anaesthesia). Can become an affiliate of the Royal College of Anaesthetists.

Appendix B: Trainee survey methodology

An online survey was developed in consultation with Mr Ian Eardley, Vice-President, RCS. The survey was targeted at foundation doctors and surgical trainees (up to ST3).

The link to the survey was publicised to CST1–2 and ST3 surgical trainees through the websites and social media platforms of the RCS, the Association of Surgeons in Training, and the British Orthopaedic Trainees Association – 261 responses were received via this route.

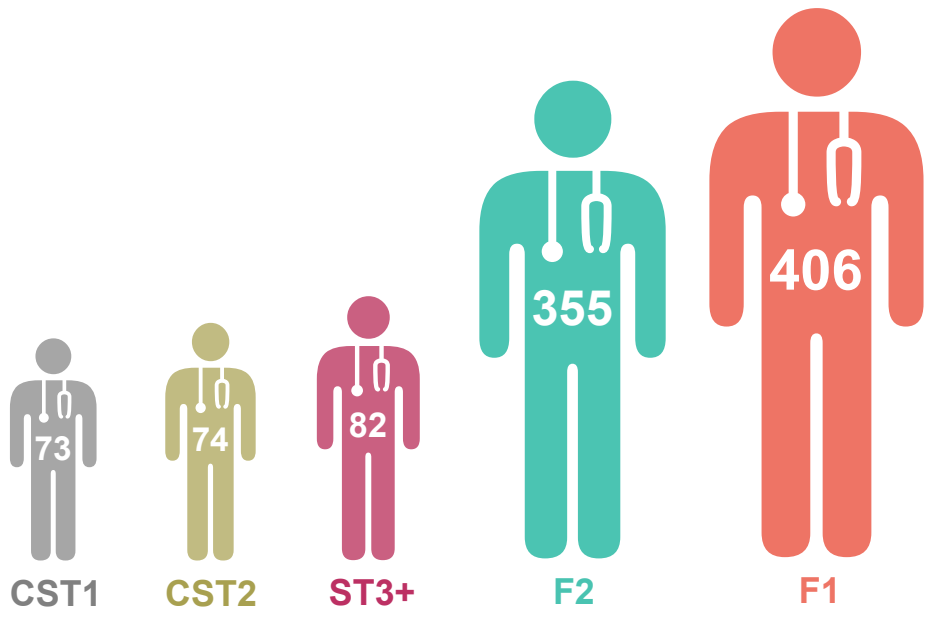
All surgical trainees (CST1-2, ST3) in three regions of England (East Midlands, Yorkshire and the Humber and London) were sent the survey directly by email from their postgraduate dean (sample 664; responses 167 = **25% response rate**).

All foundation trainees in two of these regions (East Midlands and Yorkshire and the Humber) were sent the survey directly (sample 2,056; responses 562 = **27% response rate**).

The survey was in the field for four weeks during July 2015. This was timed to coincide with the end of most training posts so that data were captured when trainees felt most comfortable and experienced in their working environment. The survey remained open for a further four weeks, during August 2015, for surgical trainees only.

Analysis was performed in SPSS version 21. All statistical tests described are two-tailed and a significance value of $p<0.05$ was deemed to signify statistical significance.

We received **990 responses in total**. Overall, these represent around 5% of all foundation doctors in the UK and surgeons in training in England. There were 4,371 surgeons in training in England in 2014 (RCS, 2015a) and 15,395 foundation doctors in the UK in 2013 (GMC, 2014). In all, 15% of respondents were core surgical trainees, 8% were higher surgical trainees (ST3 or above) and 77% were foundation doctors – see graphic below.



Greatest representation was from trainees working in general surgery and trauma and orthopaedics, followed by urology – this reflects the size of these surgical specialties. The vast majority (98%) were in full-time training.

The gender profile of the survey respondents reflects the higher proportion of men who train in surgery. General Medical Council figures show that in 2013, 57% of doctors in training in the UK were female (GMC, 2014c). For this survey, 52% of respondents were women.

Half of the trainees who completed the survey did not intend to pursue a career in surgery; 13% were undecided.

All survey respondents who were willing to provide their contact details were entered into a prize draw to win an iPad to incentivise a good response rate.

Appendix C: Surgical specialty associations survey methodology

An online survey was developed in consultation with Mr Ian Eardley, Vice-President, RCS. The survey was targeted at the 19 surgical specialty associations listed below. In addition, the survey was sent to the Association of Surgeons in Training, a professional body and educational charity that promotes excellence in surgical training across all ten surgical specialties. It is distinct from the surgical specialty associations in that it is run *'by trainees for trainees'*.

The link to the survey was sent directly to 76 individuals holding positions of office at these associations (eg president, vice-president, honorary treasurer, honorary secretary). These we have referred to as 'specialty representatives' in this report.

The survey was sent by email on 9 September 2015. Reminders were sent on 23 September and 12 October 2015.

In all, 22 responses were received, across 14 of the associations – 11 responses were from presidents and six from vice-presidents.

Since the target sample was relatively small, the responses do not lend themselves to statistical analysis. Therefore, reporting of the findings has been in terms of numbers rather than percentages.

The following associations were invited to participate in the survey:

Association of Breast Surgery

Association of Coloproctology of Great Britain and Ireland

Association of Surgeons in Training

Association of Surgeons of Great Britain and Ireland

Association of Upper Gastrointestinal Surgeons of Great Britain and Ireland

British Association of Aesthetic Plastic Surgeons

British Association of Endocrine and Thyroid Surgeons

British Association of Oral and Maxillofacial Surgeons

British Association of Paediatric Surgeons

British Association of Plastic, Reconstructive and Aesthetic Surgeons

British Association of Surgical Oncology

British Association of Urological Surgeons

British Orthopaedic Association

British Society for Surgery of the Hand

British Transplantation Society

ENT UK

Society of Academic and Research Surgery

Society of British Neurological Surgeons

Society for Cardiothoracic Surgery in Great Britain and Ireland

Vascular Society of Great Britain and Ireland

* Associations in bold text responded to the survey

Appendix D: Case study sites and approach

We invited eight hospitals to participate in this project as case study sites. The hospitals were selected on the back of intelligence that they were actively exploring, or had already introduced, new models of inpatient care using an extended surgical team. The hospitals we approached also provided a good geographical spread across England and included one site in Wales.

In approaching hospitals, we were mindful to cover a range of surgical specialties and a breadth of roles.

The eight case study sites were:

- Aintree University Hospital, Aintree University Hospitals NHS Foundation Trust
- Cheltenham General Hospital, Gloucestershire Hospitals NHS Foundation Trust
- Freeman Hospital, Newcastle upon Tyne Hospitals NHS Foundation Trust
- Norfolk and Norwich University Hospital, Norfolk and Norwich University Hospitals NHS Foundation Trust
- St George's Hospital, St George's Healthcare NHS Trust
- St Peter's Hospital, Ashford and St Peter's Hospitals NHS Foundation Trust
- University Hospital of North Tees, North Tees and Hartlepool Hospitals NHS Foundation Trust
- University Hospital of Wales, Cardiff and Vale University Health Board

We conducted visits between October 2015 and February 2016. At each hospital, we spent between one and two days conducting interviews with members of the extended surgical team (such as surgical care practitioners, advanced nurse practitioners and physician associates), doctors in training and consultant surgeons. Our questions explored how the wider surgical team was being used within the hospital and the impact of these roles, particularly in respect of the quality of patient care and on surgical training. We also explored aspirations for these roles and the potential for their further development or expansion as well as role boundaries and limitations. Our attention focused on the pathway for inpatients – from admission to discharge.

Additionally, at each site, we interviewed the trust medical director (and often also the chief executive, nurse director and/or clinical director for the relevant specialty) as well as senior staff with responsibility for oversight of non-medically qualified staff. A key line of inquiry for these interviews was about the environment needed to support non-medical roles in the surgical team.

We asked doctors in training to complete a short online survey after our visit, to enable us to benchmark their views and experience against the wider survey of doctors in training that we conducted during the summer of 2015. Unfortunately, responses to the survey were too low to provide for meaningful analysis. We also asked doctors in training at the case study sites to participate in our online diary exercise and these data have been incorporated into the overall findings for the diary exercise.

In addition to the case studies above, a targeted visit was made to the following site:

» Queen Elizabeth Hospital Birmingham, University Hospitals Birmingham NHS Foundation Trust

The visit focused on the maxillofacial prosthetics department and the role of the maxillofacial prosthetists. We met with two consultant maxillofacial prosthetists, a consultant oral and maxillofacial surgeon, and a senior doctor in training (ST6).

Appendix E: Gathering a baseline of the wider surgical team

We set out to construct a baseline of information about the wider surgical team. The aim was to gain a better understanding of the skills and competences of different practitioners to inform an assessment of their capability to perform tasks currently carried out by foundation and core trainees.

We conducted telephone interviews with the following ten organisations:

Advanced Nurse Practitioner Forum – provides support for qualified and aspirant advanced nurse practitioners (part of the Royal College of Nursing)

Advanced Practitioners UK – e-learning and professional networking resource for advanced practitioners who assess, diagnose and prescribe independently within general practice settings

Association of Advanced Practice Educators – represents a collaborative network of UK higher education institutions that provide advanced clinical practice programmes

Association of Cardiothoracic Surgical Assistants – supports surgical assistants working in cardiothoracic surgery

Association of Physicians' Assistants (Anaesthesia) – representative body of physicians' assistants in anaesthesia in the UK (currently 60 members)

College of Operating Department Practitioners – represents operating department practitioners (part of Unison)

Faculty of Physician Associates – launched in July 2015, following collaboration between the UK Association of Physician Associates (UKAPA) and the Royal College of Physicians. UKAPA was founded in 2005 by American physician associates employed in the UK, in an effort to support and promote the development of the profession in the UK. The Faculty currently has 300 members.

Nurse Practitioner UK – promotes advanced nurse practitioners

Orthodontic Technicians Association – seeks to improve and advance orthodontic laboratory and clinical techniques for the benefit of the orthodontic team and patients (currently 250 members)

Association for Perioperative Practice – 7,000 members who work in the perioperative environment (theatre nurses, operating department practitioners, surgeons, anaesthetists, educators etc.)

Association of Orthopaedic Practitioners UK – promotes the nationally recognised British Casting Certificate and seeks to further develop this qualification at diploma and degree levels

Appendix F: Trainee diary exercise

Doctors at a range of stages of training – from foundation year two (F2) to specialty training level 5 (ST5) – were invited to complete a daily diary exercise using a smartphone app.

The doctors approached included those interviewed at the case study sites and others identified through regional contacts. Only F2 doctors on a surgical rotation and surgical trainees at core or specialty level could participate in the exercise. Fifty doctors were selected on a 'first come' basis.

The surgical specialties covered included: general surgery, neurosurgery, urology, cardiothoracic, orthopaedic, vascular and breast surgery.

Doctors were asked to download a free app to their smartphone. The App 'Healthcare Supervision Logbook' was developed by Dr Thomas G Gray, specialty registrar in obstetrics and gynaecology, at Sheffield Teaching Hospitals NHS Foundation Trust, with support from Health Education England working across Yorkshire and the Humber.

A unique login and password supplied to each doctor in training enabled them to log in daily and record their activity. The latter was achieved by selecting a time interval and allocating an appropriate task from the following subheadings: direct clinical care, teaching and training, administrative activities supporting professional activities.

Doctors in training were encouraged to record events on completion of each unit of activity. However, mindful that this would not always be possible, the day's events could be added at the end of the shift. Data could not be entered retrospectively for the previous day.

A daily reminder email was sent to the doctors in training.

The period of study was from Monday 8 February to Friday 19 February 2016. Doctors in training were asked to record any seven days during this period, including on-call shifts, nights and weekends. An incentive of a £100 John Lewis voucher was offered for completion of the diary exercise.

Forty doctors in training completed the diary exercise within the specified timeframe:

- 7 F2s
- 8 CT1s
- 15 CT2s
- 4 ST3s
- 6 ST4

Appendix G: Glossary

Doctor in training	A doctor in foundation, core or specialty training
Foundation training	The foundation programme is a two-year training programme for doctors after leaving medical school.
F1 doctor	A doctor in their first year of foundation training
F2 doctor	A doctor in their second year of foundation training
Core training	After foundation training, most doctors enter specialty training. Doctors who wish to train in surgery undertake core surgical training (CST), usually for two years.
CST1	A doctor in their first year of core surgical training, sometimes referred to as CT1
CST2	A doctor in their second year of core surgical training, sometimes referred to as CT2
Specialty training	Approved postgraduate training programmes for the specialty. On completion of the programme, doctors receive the Certificate of Completion of Training and can apply to join the specialist register
ST3	Specialty training level 3 is the first year when doctors start training in their chosen surgical specialty, having attained a national training number
Themed training	Themed core surgical training is focused towards a particular surgical specialty. It often entails spending 12–20 months of a two-year programme in the themed specialty, with the remainder spent in allied specialties.
SiMAP/Jaeger/ New Deal	See https://www.hee.nhs.uk/hee-your-area/north-west/education-training/doctors/junior-doctor-advisory-team/doctors-information-portal/european-working-time-directive-new-deal

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