

South East

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Clinical  
**senate**

**The Clinical Co-Dependencies  
of Acute Hospital Services**

**January 2024**

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# Foreword

The first edition of this document was produced in response to a major focus on the future role of acute hospitals. That focus has not diminished over the intervening time period and the acceleration of new and different ways of working driven by the COVID-19 pandemic has prompted a fresh look at what services we provide from acute hospitals, how we provide those services, and how they might be provided differently in the future. Acute hospitals continue to need to better integrate their function with the local community and primary care services, deliver high quality, safe and accessible inpatient care to their populations with a wide range of general and specialist needs, whilst also finding novel and innovative solutions to the growing backlog of elective care. This in itself has also focussed interest on separating and centralising certain aspects of care away from what we traditionally think of as acute care (where a patient receives active, short-term treatment for a condition). There remains uncertainty as to the evidence and need for centralisation, the resultant impact, and the unintended consequences. As we attempt to address these, at the same time it continues to be the case that pre-existing inequalities persist with data showing that between 2019 and 2020, the fall in completed treatment pathways was 35% higher in the most deprived areas of England, compared with the least deprived areas, with a similar picture for cancer referrals. There was also a larger fall in elective activity for people resident in care homes than for the wider population.<sup>1</sup> Service change is a window of opportunity to drive forward the delivery of fair and equitable care; we direct systems and senate review panel members to our recent 'Health inequalities within the southeast region through a service change lens' report<sup>2</sup> for a comprehensive review that describes the areas for systems to consider.

Patients increasingly have multiple medical conditions that require the input of a range of specialists, diagnostics, and treatments to be available for effective inpatient care. Designing systems for such care must address this need through a detailed understanding of the clinical inter-relationship between different services. This can then be a platform to consider the alternative ways these services can be provided, both within individual hospitals and between them, such as via better clinical networking (involving service in-reach and outreach) and by developing increasingly effective telemedicine links and innovative use of new technologies. This will require better coordination and cooperation between provider organisations and complete understanding of what is locally achievable from integrated care boards (ICBs) in order to underpin agreed clinical models.

On this basis the South East Clinical Senate has undertaken a review of the evidence base and the previous clinical consensus view of critical service inter-dependencies for acute inpatient services. The aim was to signpost where the framework for commissioners' future discussions with stakeholders on how their hospital infrastructure is configured might have changed since 2014.

This report provides an update of the comprehensive clinical review of the inter-dependencies between a wide range of acute hospital-based services. In line with the remit of clinical senates, the report provides independent, clinical advice, with significant patient and public involvement. As

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<sup>1</sup> The Health Foundation. Longer waits, missing patients and catching up. <https://www.health.org.uk/news-and-comment/charts-and-infographics/how-is-elective-care-coping-with-the-continuing-impact-of-covid-19>

<sup>2</sup> South East Clinical Senate 'Health Inequalities in the southeast region through a service change lens' [Health Inequalities within the southeast through a service change lens' Health Inequalities within the southeast through a service change lens v.Final .pdf \(secsenate.nhs.uk\)](https://www.secsenate.nhs.uk/wp-content/uploads/2021/05/Health-Inequalities-within-the-southeast-through-a-service-change-lens-v.Final_.pdf)

a generic report that is not county or region-specific, it is hoped that it will prove valuable to integrated care systems (ICSs) and providers throughout the country.

This work has only been made possible by the voluntary contribution of a wide range of clinicians and public and patient representatives from across the southeast region, and I would like to sincerely thank them for their efforts. We have also sought the views of our sister clinical senates, whose detailed knowledge of their services and pathways has been invaluable.

There are of course many factors and perspectives related to hospital configurations other than the clinical one, but it is of fundamental importance to understand the clinical relationships between services before embarking on service change, and it is hoped that this report will add to this understanding and contribute to well informed local debates and planning of hospital-based services.

A handwritten signature in black ink, appearing to read 'Paul Stevens', with a stylized flourish extending to the right.

Paul Stevens  
Chair, South East Clinical Senate

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## Executive summary

Health care systems and their commissioners, in partnership with providers and the public, have to consider the most appropriate configuration of their hospitals so that their clinical services are adequately supported by other specialties, and they are fit for purpose, sustainable, accessible and deliver the highest possible quality of care.

Whilst there are many factors that will need to be considered in hospital configurations, the clinical relationships, and dependencies of hospital-based services on each other is key, whatever their size. There are a host of service specifications defining the standards of care expected from those funded to provide specialised care. Previous work in London (endorsed by the London Clinical Senate) revised quality standards for the wider adult acute emergency pathway (emergency departments, critical care, and the fractured neck of femur pathway), paediatric emergency services (medicine and surgery) and maternity services (labour, birth, and immediate post-natal care) to address variations found in service arrangements and patient outcomes<sup>3</sup> across the capital. This work was informed through extensive engagement with primary and secondary care clinicians, representatives from professional bodies, commissioners and patient, service user and public group representatives. The recent publication of a delivery plan for recovering urgent and emergency care services provides a framework for realising ways of increasing urgent and emergency care capacity.<sup>4</sup> This builds on the best available evidence reviewed in NICE Guidance 94: Emergency and acute medical care in over 16s: service delivery and organisation, published in March 2018.<sup>5</sup> That guidance reviewed the evidence behind key aspects of care articulated in the NHS seven day services clinical standards, including the role of early consultant review after admission to hospital, daily consultant review in hospital, multidisciplinary care, structured handovers and liaison mental health services. To date though, there has not been further work published reviewing the mutual dependencies of the full range of services found in typical acute hospitals, particularly outside of large conurbations where hospitals are generally more widely dispersed.

On this basis, the South East Clinical Senate council agreed to undertake a review of 'The Clinical Co-Dependencies of Acute Hospital Services' paper published by the then South East Coast Clinical Senate. It is hoped that this review will be seen as helpful to Integrated Care Boards, providers, and clinical senates across NHS England.

The literature review was updated and the medical, nursing and education leads across the region were contacted and requested to ask their respective clinical leads to review the sections from the original document covering the original eleven acute services that were chosen as the principal components of acute hospitals: A&E (Emergency Medicine), Acute Medical Take, Acute Surgical Take, Critical Care (ICU), Trauma, Vascular Surgery, Cardiac, Stroke, Renal, Consultant-led Obstetric Services and Acute General Paediatrics. For this update we have also included Respiratory Medicine in the principal components. The South East Clinical Senate had also been separately requested to update the co-dependencies for acute stroke services and this was

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<sup>3</sup> [lon-qual-stands.pdf \(england.nhs.uk\)](#)

<sup>4</sup> Delivery plan for recovering urgent and emergency care services. January 2023. [NHS England » Delivery plan for recovering urgent and emergency care services – January 2023](#)

<sup>5</sup> NICE Guidance 94 [Overview | Emergency and acute medical care in over 16s: service delivery and organisation | Guidance | NICE](#)

undertaken with input from the National Director for Acute Stroke services and the British and Irish Association of Stroke Physicians. We also included additional sections on services relevant to acute care that had not been fully developed and available at the time of publication of the original document.

The clinical dependencies of these major acute services on hospital-based services were reviewed, and the four-level system for describing the strength of the dependencies was revised accordingly: Purple (needing to be based on the same site); Red (visiting or in-reach services sufficient); Amber (patient could transfer to another hospital or site for ongoing care through network arrangements); or Green (loose or no direct relationship).

Influencing the purely clinical considerations are a range of critical cross-cutting themes impacting on the location of hospital-based services or on planning new models of provision, which must be taken into account:

- The patient and public representatives participating in this clinical senate work made a number of strong and clear points. The driver for any service change should be an improvement in patient outcomes and experience; the importance of communication, both between professionals across patient pathways, and between the professionals and patients and their families and carers; making services as local and accessible as possible, including early repatriation to local care as soon as appropriate if the patient had required transfer to a specialist centre; ensuring early and meaningful dialogue with the public and patients about any proposed service change (recognising the wide demographic range of users of the NHS whose views should be taken into account); that changing the configuration of services cannot alone be relied on to fix underlying quality issues; and that for some patients, particularly the frail elderly, a more local service, which may not completely fit the aspirational ideal, may be preferable to one that requires the patient to be treated far from their own and their family's home.
- Two new cross-cutting themes which have assumed increasing importance for the delivery of acute care over the last decade, Perioperative Care of Older People Undergoing Surgery (POPS services) and Virtual Wards, are also included in this updated document.
- The improved IT infrastructure throughout the NHS has enabled improved communication between departments, between and outside of hospitals, and increasingly with patients. Allied to this is the potential impact of artificial intelligence / machine learning on the way services operate in the future.
- Ambulance and transport services are key enablers of greater networking of hospital services, including by extending the competencies and responsibilities of the paramedic profession. However, they are a finite resource, and the additional demands on these services, such as for secondary transfer of patients to specialist centres and repatriation, must be fully considered in any service change for their potential impact on frontline 999 ambulance services if an emergency ambulance is required for patient transport for primary conveyance from home to hospitals and back from hospital to the community.

- Staff wellbeing and retention are critical determinants of high-quality care and are high priority for all NHS organisations.<sup>6,7</sup> There are major workforce challenges in delivering the 7 day and 24/7 services both in hospitals and in the community, which themselves are fundamental drivers for change. This relates not just to a pressure to centralise services, but also to rapidly align workforce planning with future NHS and social care needs and new models of care, and to increase the flexibility and adaptability of the workforce to mitigate against shortages in key areas, as well as recognising where shortages do and will exist, and addressing them urgently.
- Due importance should be given to the teaching, training, and research agendas whenever service change is considered. There are opportunities from greater integration of and coordination between providers for all these three areas, which will maximise the skills, recruitment and retention of the workforce, and research activity (and income), but there are also significant risks if pathways become fragmented through poorly planned reconfigurations or expansion in alternative providers.

It was clear from our evidence review and the evidence reviews conducted for NICE Guidance 94<sup>5</sup> that in only a few areas were there randomised controlled trials or high-quality formal studies in this field to guide the assessments. However, there were many guidelines in addition to NICE Guidance 94, particularly from the medical royal colleges and specialist societies, to refer to which specified some of the necessary relationships. In addition, several designated specialties, such as Major Trauma and Vascular Surgery, have NHS England national definitions and requirements as produced by the national clinical reference groups, which are referred to. We have also relied on the clinicians involved in this project to achieve a consensus, based on experience and judgement.

Once the clinical dependencies grid was completed, it became possible to identify core groupings of services required to be based in the same hospital site. In particular, hospitals with emergency departments (EDs) receiving all acute adult patients (an ‘unselected take’) need on-site acute and general medicine, acute surgery, and intensive care units (ICUs). Therefore, such hospitals need to provide the supporting clinical services that are required by all or any one of these four core inter-related acute specialties, and these are described in the report and can be read off the grid. These amalgamated requirements delineate what an emergency hospital should provide on-site as a minimum. Implicit in the definition of acute services is that time is critical, the patient and the care giver must be in the right place at the right time for the right intervention.

The dependencies of the other more specialist services were also reviewed and are identified. Other than services such as Major Trauma Centres or Vascular Surgery Arterial Centres, where requirements are clearly specified, the ‘spoke’ services in these networks, such as Trauma Units, Vascular Surgery network hospitals, or non-interventional cardiology services, are likely to be more heterogeneous, and dependent on the nature of and distance from their network centre or hub, and the existing co-location of related services.

Note should be made that rapidly available acute mental health services (liaison psychiatry) was considered a key requirement of all reviewed acute services. The physical health aspect of patients with mental ill health and the support provided in that direction also needs to be considered. Better

<sup>6</sup> [The courage of compassion | The King's Fund \(kingsfund.org.uk\)](https://www.kingsfund.org.uk/publications/the-courage-of-compassion)

<sup>7</sup> [caring-for-doctors-caring-for-patients .pdf-80706341.pdf \(gmc-uk.org\)](https://www.gmc-uk.org/standards-and-guidance/caring-for-doctors-caring-for-patients.pdf-80706341.pdf)



access to outpatients for community mental health and better in-reach support for mental health units may prevent some acute physical health presentations in mental illness.

Telemedicine-assisted ways of working are identified as powerful enablers of more effective networking and leveraging of specialist services over a wider geographical area, thereby reducing unnecessary patient travel and inconvenience. The impact of development and wider roll out of such technologies will of course affect the grid ratings shown in this report.

It is important to understand that clinical senates are advisory bodies, not statutory, so the recommendations from this report are not mandatory. Given the absence of a large evidence base for this co-dependency review, and a reliance on clinical consensus and judgment in many areas, it must also be acknowledged that consensus of any kind is open to bias on a range of fronts, is not cast in stone, and is challengeable. However, this independent, clinical report aims to provide a baseline from which to have detailed local discussions about necessary co-dependencies and co-locations, and to explore different ways in which services could be delivered if not physically based on the same site.

Finally, developing strong and more integrated relationships between provider organisations and their clinicians within and across regions is essential to maximise the range of options available to provide the highest quality services in the most accessible and sustainable way possible.

## Introduction and background

At the time of publication of the original 'Clinical Co-dependencies of Acute Hospital Services Report', acute hospital services and urgent and emergency services were already under intense pressure to meet the standards demanded of them. That pressure has intensified during the intervening years, not least due to the additional tests of resilience engendered by the COVID-19 pandemic. The NHS's constrained financial resources are challenged by a growing and aging population with increasing co-morbidities,<sup>8</sup> by the development of new and expensive technologies, devices, and therapies, and by the requirements to deliver better and more uniform quality and safety of care whilst also addressing the inequities in both provision of and access to services.<sup>2</sup> These are all against a background of significant multi-professional workforce constraints. However, we have also seen an acceleration in innovation and significant changes in the way we think about and deliver healthcare that at least begin to balance the financial constraints.

The definition of acute care includes the health system components required to treat sudden, often unexpected, urgent, or emergent episodes of injury and illness that can lead to death or disability without rapid intervention. The term acute care encompasses a range of conditions including pre-hospital emergency care, emergency medicine, trauma care, acute surgical care, critical care, urgent care, and short-term inpatient stabilisation. Common to all is that they are time sensitive, regardless of the exact condition. We know that national policy favours centralisation of emergency medical care based on evidence of improved outcomes and efficiency for specific conditions, such as trauma, acute stroke, myocardial infarction, and acute heart failure. We know that the number, age, and complexity of emergency admissions continues to increase. We now also have some evidence that centralisation for unselected emergency admissions may improve mortality and reduces readmission rates, particularly in older, frailer patients. This holds across a broad range of conditions, particularly the commoner cardiorespiratory conditions.<sup>9</sup> Key to this were said to be the presence of senior emergency medicine and critical care decision makers at all times, and timely access to specialist opinion such as, but not limited to, cardiology, gastroenterology, respiratory, stroke, internal medicine, geriatric medicine, general surgery, orthopaedic trauma and critical care. There is also a suggestion from nationally collected hospital episode statistics that centralisation of emergency care and new care models with significant provision of single rooms are having beneficial effects on hospital length of stay with fewer people waiting over 7, 14 and 21 days in hospital. Conversely, a Danish emergency healthcare reconfiguration to centralise the emergency healthcare system nationwide found no change in in-hospital mortality and a slight increase in 30-day mortality overall.<sup>10</sup> However, subgroup analysis showed decreased in-hospital and 30-day mortality for myocardial infarction, stroke, aortic aneurysm, and major trauma.

The distribution of clinical services across hospitals in England evolved over many decades, without an over-arching framework to define the clinically necessary relationships (co-dependencies) between them. More specifically, whether services were co-located (based within the same hospital) or supported each other through other arrangements (e.g., networks and patient

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<sup>8</sup> Head A, Fleming K, Kyridemos C et al. Inequalities in incident and prevalent multimorbidity in England, 2004–19: a population-based, descriptive study. *Lancet Healthy Longev* 2021; 2: e489–97

<sup>9</sup> Price C, McCarthy S, Bate A, et al. Impact of emergency care centralisation on mortality and efficiency: a retrospective service evaluation. *Emerg Med J* 2020;**37**:180–186

<sup>10</sup> Flojstrup M, Bogh SBB, Bech M, et al. Mortality before and after reconfiguration of the Danish hospital-based emergency healthcare system: a nationwide interrupted time series analysis. *BMJ Qual Saf* 2023;**32**:202–213.

transfer) had only partly been determined by objective clinical necessity and published recommendations from the professions. Geographical imperatives, provider ambitions and viability, financial drivers, and historical service location, were major factors in local health system configurations. There was lack of confidence and uncertainty about the evidence base for which acute hospital services needed to be co-located or otherwise related, which made the commissioners' (and providers') job challenging when modelling necessary or desirable future hospital configurations, especially when considering centralisation of services. The original 'Clinical Co-dependencies for acute hospital services' report sought to fill that gap in confidence and address some of the uncertainties.

The recent publication of a delivery plan for recovering urgent and emergency care services provides a framework for realising ways of increasing urgent and emergency care capacity.<sup>4</sup> This builds on the best available evidence behind key aspects of care articulated in the NHS seven day services clinical standards, including the role of early consultant review after admission to hospital, daily consultant review in hospital, multidisciplinary care, structured handovers and liaison mental health services (evidence reviewed in NICE Guidance 94: Emergency and acute medical care in over 16s: service delivery and organisation, published in March 2018).<sup>5</sup> The urgent and emergency care plan provides the beginnings of a blueprint for how hospitals configure, inter-relate, and integrate with primary care and community services and encompasses aspects of pre-hospital care such as frailty and falls services, urgent community response teams and virtual wards. It also hints at innovative ways to address common conditions such as acute respiratory infection and heart failure, continuing the drive to deliver more and better urgent care services out of hospital (including enhanced self-care, better access to out of hospital services such as effective 111 services, extension of the roles of paramedics and pharmacists, seven-day primary and community care services and urgent ambulatory care). However, for patients needing hospital admission, there remains an imperative to ensure that they receive it in a centre that will deliver high quality, sustainable care at whatever time they need it with both patient and provider in the right place, at the right time for the right intervention delivered within a timeframe that maximizes chances of survival and good recovery. It therefore continues to be the case that hospital services be based on the needs of patients, and that there should be an appropriate balance between specialist care delivered by a range of different clinical teams, and the need to deliver coordinated and holistic care in hospitals by generalists.<sup>11</sup> For health systems delivering acute care, a detailed understanding of how the clinical inter-dependencies of hospital services might have changed is required to ensure that any planning for future re-configurations remains clinically appropriate.

Defining necessary co-locations and co-dependencies for hospital services is of relevance throughout the country. There are a number of service specifications defining the standards of care expected from those funded to provide specialised care. Previous work in London (endorsed by the London Clinical Senate) revised quality standards for the wider adult acute emergency pathway (emergency departments, critical care and the fractured neck of femur pathway), paediatric emergency services (medicine and surgery) and maternity services (labour, birth and immediate post-natal care).<sup>3</sup> NICE reviewed the evidence for service delivery and organisation of emergency and acute medical care in over 16s (published in 2018).<sup>5</sup> This was in support of the next steps in the NHS Five Year Forward View, reaffirming key aspects of care articulated in the NHS seven day

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<sup>11</sup> Future Hospital Commission of the Royal College of Physicians. Future Hospital: Caring for Medical Patients. 2013. <https://www.rcplondon.ac.uk/sites/default/files/future-hospital-commission-report.pdf>

services clinical standards, including the role of early consultant review after admission to hospital, daily consultant review in hospital, multidisciplinary care, structured handovers and liaison mental health services. Evidence from centralisation of acute emergency services from Northumberland has since highlighted improvement in mortality and readmission, especially in older, more vulnerable patients.<sup>9</sup>

The South East Clinical Senate had already undertaken a rapid review of acute stroke co-dependencies in light of changes made to acute stroke service delivery in East Kent during the pandemic. Given the changes that we have seen in delivery of healthcare interventions and the acceleration in digital innovation, including point of care testing and near patient monitoring, the South East Clinical Senate have also conducted a review of the original 'Acute Co-Dependencies Report' to describe what may have changed for the main acute services included within the report.

As before, this report focuses primarily on acute non-elective inpatient services and does not address the dependencies of every possible acute general or specialist service. However, we have also included virtual wards and the Perioperative Care of older People undergoing Surgery (POPS) service. The POPS service challenges some of the former assumptions around on-site co-dependencies and virtual wards are gathering significant momentum as reflected in the recently published Urgent and Emergency Care Plan.<sup>4</sup>

We recognised the vital importance of a range of cross-cutting themes and perspectives that had to be taken into account in this report, to balance the purely service-specific judgements of inter-dependencies. Healthcare workforce issues loom large as drivers for change; ambulance and transport capacity and function are critical; the provision of acute mental health care to patients in acute hospitals must be addressed; and the implications of changing the location of services on teaching, training and research must be understood.

Finally, the perspective of patients and the public, alongside clinical considerations, is essential, so that the prime importance of patient experience and outcomes is recognised, and we have ensured their involvement throughout this process.

# 1. Methodology

The South East Clinical Senate council agreed to proceed with a review of 'The Clinical Co-Dependencies of Acute Hospital Services' paper previously published by the then South East Coast Clinical Senate in 2014. This was driven partly by enquiries from other clinical senates in the light of possible changes and new ways of working that had accelerated as a result of the COVID-19 pandemic and also by a separate but related request to update the co-dependencies for acute stroke services in the light of changes to acute stroke services in Kent and Medway made during and in response to the COVID-19 pandemic.

The literature review was updated and the medical, nursing and education leads across the region were contacted and requested to ask their respective clinical leads to review the sections from the original document covering the original eleven acute services that were chosen as the principal components of acute hospitals: A&E (Emergency Medicine), Acute Medical Take, Acute Surgical Take, Critical Care (ICU), Trauma, Vascular Surgery, Cardiac, Stroke, Renal, Consultant-led Obstetric Services and Acute General Paediatrics. For this update we have included Respiratory medicine in the principal components. The update of the co-dependencies for acute stroke services was undertaken with input from the National Director for Acute Stroke services and the British and Irish Association of Stroke Physicians. In this new document we also included additional sections on services relevant to acute care that had not been fully developed and available at the time of publication of the original document. These include virtual wards and the Perioperative Care of older People undergoing Surgery (POPS) service.

The definitions of the 12 major acute services are shown in Appendix B. The supporting services were also unchanged from the original report. The list of 52 supporting services and their definitions are also shown in Appendix B.

## 2.1 Evidence base and literature review

A literature review was updated using the same research strategy as previously but confined to publication years 2014 - February 2023. The same key search terms were used: *reorganisation OR redesign OR sustainab\* OR centralisation OR decentralisation OR configuration OR co-location OR collocation OR colocation OR interdepend\* OR inter-depend\* OR codepend\* OR co-depend\**. Accepted evidence included original research, but also so called 'grey literature' that includes guidelines and consensus statements, harvested from general search engines, domain-specific searches of key sites, sites' built-in search facilities and browsing publications lists. Key documents were also prospectively citation-searched or snowballed.

During the course of this work the evidence to recommendation sections of NICE Guidance NG94<sup>5</sup> were also reviewed. As before, this was not a systematic review, and it is acknowledged that there may be publications or recommendations that have not been captured.

## 2.2 Updating the report in light of COVID-19 and technological advances

In the first instance we contacted the previous contributors to the original report and requested that they review the relevant sections of the report that they had contributed to. To ensure a wide range of views were canvassed, we then wrote to all the medical directors / chief medical officers and chief nurses at all the acute provider trusts within the southeast region asking them to provide us with the contact details for their heads of department for the acute specialty co-dependencies.

A full list of the contributors is found in Appendix A.

## 2.3 Grid and report updating

The original report and separate versions of the three grids were shared with both the original contributors and with the named specialty leads who were also provided with a word version of the original report for their specialty and asked to highlight any alterations with tracked changes. We also asked the medical directors for both ambulance trusts within the southeast region to comment on the ambulance pathways and sections in the original report.

### Grid colour rating scale

The same four-colour grading system, based on Purple, Red, Amber and Green were used as shown in figure 1. In a few cases the cell in the grid is a shaded mixture of red and amber denoting where services can support each other through alternative arrangements such as networks and patient transfer. Note that throughout this document, when a colour rating of a dependency is referred to, it is capitalised.

<b>RAG RATING DEFINITIONS</b>	
The colour describes the dependency of the service in the row, on the support service in the column. Note that both the Purple and Red dependencies describe column services that should not require the patient to move hospitals	
<b>PURPLE</b>	
Service should be co-located (based) in same hospital	
<b>RED</b>	
Service should come to patient (patient transfer not appropriate), but could be provided by visiting / in-reach from another site (either physically, or via telemedicine links) if not based in the same hospital	
2	Within 2 hours
4	Within 4 hours
12	Within 12 hours
24	Within 24 hours
	Not specified
<b>AMBER</b>	
Ideally on same site but could alternatively be networked via robust emergency and elective referral and transfer protocols	
<b>GREEN</b>	
Does not need to be on same site. Appropriate arrangements are in place to obtain specialist opinion or care	

Figure 1. Grid co-dependencies: colour rating scale.

## 2.4 Clinical Senate Review and Validation

The updated report was shared with the South East Clinical Senate (see Appendix C) and with the other clinical senates in England for review and validation of the updated grids.

## 2. Cross cutting themes

### 3.1 Workforce

Since the publication of our 2014 report the NHS continues to experience significant workforce challenges across all healthcare professions. There has also been the impact of the COVID-19 pandemic. New guidance, such as, the NHS 2023/24 priorities and operational planning guidance<sup>12</sup> has a focus on post pandemic recovery, progressing the aspirations of the Long Term Plan (LTP)<sup>13</sup> and transforming the health and care system for the future. This guidance identifies workforce recruitment, retention and training needs through delivery of the NHS people promise<sup>14</sup> and the recently published NHS Long Term Workforce plan (LTWP).<sup>15</sup> The LTWP makes the case for a more strategic approach to workforce planning and proposes actions to be taken locally, regionally, and nationally to address current and future challenges. The workforce challenges that currently exist within the NHS are reflected within the southeast. There are a number of key national drivers which require a workforce solution:

- National Quality Board - Safe Staffing Levels.<sup>16</sup>
- 7 day working – skills mix, new ways of working.<sup>17</sup>
- Employment arrangements – NHS / Any Qualified Provider / Independent Sector.
- Integrating Health and Social Care – One Team,<sup>18</sup> and the health and social care personalisation agenda.<sup>19</sup>
- Dementia and the aging population.

One of the biggest challenges is to understand the requirements for a multi-professional workforce to deliver future service expectations of the population. For example, workforce trends over the last 12 years across the southeast (figure 2) show a major expansion in consultant numbers and allied health professionals (AHPs) but not in midwives and ambulance service numbers (the dip in numbers in 2020 reflects a slight change in the presentation of the NHS Digital data).

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<sup>12</sup> [2023/24 priorities and operational planning guidance](#)

<sup>13</sup> <https://www.longtermplan.nhs.uk/wp-content/uploads/2019/08/nhs-long-term-plan-version-1.2.pdf>

<sup>14</sup> [NHS England » Our NHS People Promise](#)

<sup>15</sup> [NHS Long Term Workforce Plan \(england.nhs.uk\)](#)

<sup>16</sup> NHS England National Quality Board. How to Ensure the Right People with the Right Skills in the Right Place at the Right Time. 2012. <http://www.england.nhs.uk/ourwork/part-rel/nqb/>

<sup>17</sup> Sir Bruce Keogh NHS England. NHS Services, Seven Days a Week. 2013. <http://www.england.nhs.uk/wp-content/uploads/2013/12/brd-dec-13.pdf>

<sup>18</sup> Labour Party. One Person, One Team, One System. Report of the Independent Commission on Whole Person Care for the Labour Party. 2014. [One Person One Team One System \(labour.org.uk\)](#)

<sup>19</sup> Department of Health. Caring for our Future – Reforming Care and Support. 2012. <https://www.gov.uk/government/publications/caring-for-our-future-reforming-care-and-support>



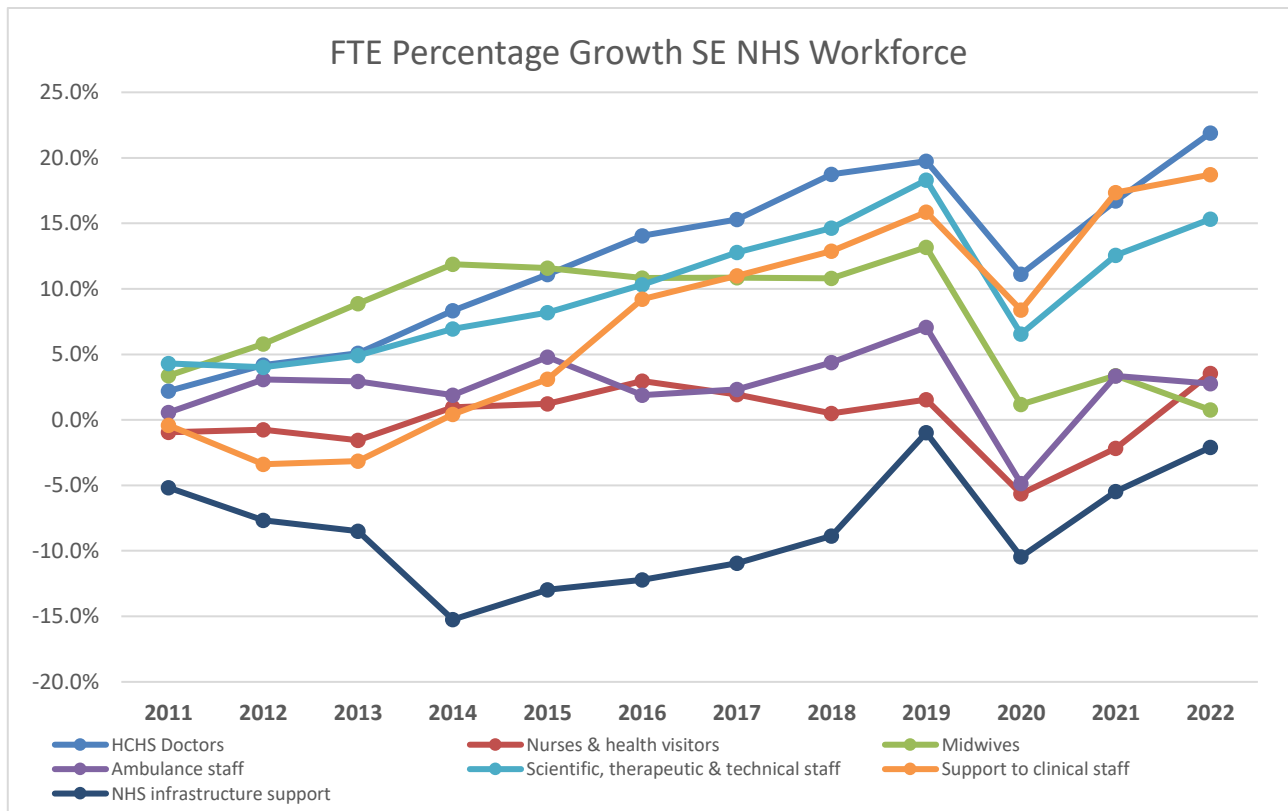


Figure 2. Southeast workforce trends.

## Existing workforce challenges

The composition of the workforce has changed and will need to continue to change. The growing elderly population with increasing comorbidities, frailty and health care needs, and new medical procedures and increasing use and utility of information technology in health care, is constantly changing models of service provision, and the workforce composition and skills required. Allied to that has been the proliferation of virtual wards. In England there were 11,231 beds in virtual wards to which 7,886 patients were admitted in November 2023 (see 3.7 below). The most commonly highlighted risk to growth of the virtual ward programme is the workforce. It is vital therefore that workforce planning takes account of innovations in mode of care delivery when planning new service models.

There are a number of workforce factors which may be drivers for change, or conversely the reorganisation of services may provide some respite for some of the skills shortages, such as:

- ED - Medical, Emergency Nurse Practitioner (ENPs), Physician Associates, Advanced Clinical Practitioners (ACPs), Trainees, Diagnostics.
- Primary Care - GPs, Practice Nurses, Pharmacists.
- Community Care - Nurses; District; Community; Paediatric.
- Social Care - Nursing, Support Staff, personalisation agenda.
- Mental Health - Liaison Psychiatry.

Some of these workforce shortages are about specific professional groups, however many are about skills rather than profession, some examples of which can be addressed in innovative ways, such as:

- Decision making - shared, from senior clinicians to 999 & 111 call centre clinicians and frontline paramedics.
- Acute skills in the community and primary care: e.g., tracheostomies, catheters, Chronic Obstructive Pulmonary Disease (COPD), Urinary Tract Infections (UTIs).
- Innovative use of information technology, near patient monitoring and wearable technologies.
- Multiple complex needs: higher dependencies in the community.
- Managing confusion.
- Managing risk.
- Mental wellbeing: especially anxiety and depression.
- Minor health problems: hydration, diarrhoea and vomiting, mobilisation, and balance.

Many of the above skills are within ambulance services, primary, community and mental health care, and in social care, not just Emergency Departments, which could enhance the capacity of the system to keep people out of hospital. Key enablers include paramedics and ambulance services maintaining current service directories, unifying opening times, and reducing the number of changes to contact information and referral/acceptance criteria.

### What are the key workforce questions that need to be answered when considering the configuration of urgent and emergency care?

- What is the prime workforce challenge for emergency and urgent care: is it staffing the acute hospital-based services to meet constant and increasing demand, or is it meeting the demand outside of hospital with an increased workforce in primary, community, and social care? Or both?
- Do we need new roles, or do we need to better use and develop existing roles?
- Is it just a question of staffing numbers, or is it culture and working practices as well?
- How do the co-dependencies of acute hospital-based services affect workforce issues?

### How can workforce planning meet the challenges of a networked approach to service provision?

It is essential that planned service developments are linked to a realistic and sustainable workforce plan, that prioritises staff wellbeing and retention.

The plans need to ensure sufficient capacity and sustainable recruitment, for 7/7 or 24/7 rotas if required, for the whole workforce. To ensure this can be met, there needs to be identification of the skills required of the workforce, and that they are used where they provide greatest effect. For example, in the outpatient setting, can doctors, nurses and other health care professionals provide the services in different ways?

The workforce needs to be focused where it is needed, and not necessarily where it has historically been. The planning of this will require cultural, organisation and system change. Planning needs to encompass the whole pathway, including the ambulance service who need to have the workforce with the skills to avoid ED attendance where possible, and can transport patients direct to the right community or hospital-based service.

There is wide recognition that the number of patients with mental health needs is increasing, and that staff need to have the skills to identify these patients and ensure they are supported appropriately.

Finally, the planning system needs to consider new ways of working such as technology both in terms of managing the system, e.g., appointments, and the impact on workforce of new technologies such as equipment in acute settings, together with the impact of virtual ward development.

Planning needs to support the requirement for flexibility of roles, and that generalists (across the health care professions) do not always need to become specialists which can lead to inflexible services for patients.

Delivery of frontline health services relies heavily on human interventions and is therefore very dependent on having sufficient skilled staff. Many of these interventions are conducted face-to-face, so options to work from home that are available to professionals in other industries are more limited. It is vital when services are reconfigured, that staff happiness, wellbeing and job-satisfaction are monitored and supported, to aid retention of this valuable resource.

Crucially, workforce commissioning needs to be several years ahead of the service need (given the lead time for the training of professionals in new or extended roles) and we therefore need to identify tomorrow's skills requirements in our workforce planning now. This means that undergraduate training, apprenticeships, postgraduate training, research and continuous professional development must be considered for all members of the multi-professional health and care workforce. Key challenges facing ICBs and providers undergoing reconfiguration in terms of workforce are addressed in our allied report 'Teaching, Training and Research: Workforce considerations for major service change'.<sup>20</sup> In addition to this there is a new resource, 'Effective approaches to workforce planning and modelling for major service change, that can be accessed via NHS England's FutureNHS platform.<sup>21</sup>

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<sup>20</sup> [090124-Teaching-Training-and-Research\\_Workforce-Considerations-for-Major-Service-Change-Final.pdf \(secsenate.nhs.uk\)](#)

<sup>21</sup> [Effective approaches to workforce planning and modelling for major service change](#)

## 3.2 Patient and public perspective

The patient, carer and public perspective on clinical co-dependencies and the configuration of hospital services remains essential to this project.

Balancing decisions that individual patients may need to make between on the one hand, having access to high quality specialised services which may be centralised, and on the other hand access as close as possible to home, all taking account of the patient's age, frailty and health issues, family support, transport and inclusion health populations remains key.<sup>9</sup>

A list of principles was drawn up by the senate patient and public partners. These were:

- Getting the co-dependencies right should mean improved outcomes for patients.
- A need within the clinical debate to remember the patient.
- Good communication along whole patient journey – with patient and carers and between professionals – is essential, delivered in accessible and understandable formats.
- Recognise the needs of the most vulnerable and marginalised populations in a community.
- Ensure good access to diagnostics – theory and practice may be very different.
- There is a good process for patient repatriation following acute specialist intervention.
- Services are well planned and provided in a timely way.
- Good and accessible rehabilitation is readily available.
- Maximise the role of local community services and their effect on patient experience and outcomes.
- Maximise the local network arrangements.
- We cannot rely on changing the location of services to automatically improve the service.
- Patients and the public need to acknowledge and understand the clinical challenge of the co-dependencies / co-location debate.
- Acknowledge that any co-dependency work requires a process of engagement with patients and the public.

Key points from the patient and public perspective captured for the 2014 document remain just as relevant for this update:

- The 'magic wand' factor. This was a strong message to commissioners about ensuring that current and planned services, processes, procedures, and whole patient pathways do and will run smoothly before change takes effect. Services which are failing now need to be fixed as we cannot assume a change in service configuration on its own is a 'magic wand'.
- Evidence and consensus. There is limited evidence available, and ratings are often agreed from a consensus perspective which is subjective and should not be taken to be objective.

- Future public, patient, and carer engagement.<sup>22</sup> This should be at a much broader level and as diverse as possible, to include as many as possible under the protected characteristics to ensure all relevant perspectives are taken into account. It is important to be aware that individual opinions may change over time, depending on circumstances and place in life at that particular time. In certain circumstances patients may choose a service which may not completely fit the aspirational ideal, but for reasons of accessibility may be preferable to one that requires the patient to be treated far from their own and their family's home. Commissioners need to be aware of whose views are driving the insight from engagement. For example, Foundation Trusts have a large membership base, and all hospitals have access to Patient and Public Engagement groups, which could be drawn on for further engagement work. Early engagement will be especially important to avoid perceptions of change being purely cost driven and not necessarily in patients' best interests.
- Staff engagement. This is also important and should start informally as early as possible as staff views and feelings may indirectly reflect patient experience.
- Communication. It is imperative that the patient has the choice to decide. This enables them to feel empowered and part of the decision-making process. When a patient is being transferred or rehabilitated or repatriated to their community, the transition should be seamless, and the right number and skill mix of staff should be in place to facilitate this. Factsheets on how proposed changes would improve the patient journey as well as clinical outcomes are imperative. Patients and the public need to know that changing how services are delivered will result in an improved service because x, y, and z have been put in place. If communication is purely top down or is perceived in that way, it will be harder to reassure patients and the public of the real reasons for change.
- Partnership. The co-dependencies work provides a real opportunity to forge a more equal partnership between patients and health professionals. We must ensure that a full explanation of the patient's pathway is communicated, including treatment, the care plan, named consultants, nurses etc. More importantly, we must ensure that if the patient does have a query they are empowered to ask at any point during their journey and have re-assurance that they will receive a prompt answer, communicated in an appropriate way, with language and words that are understood. This understanding should be clarified. Equally, if they have concerns about their care, that they are encouraged to voice this, so this can be remedied in real time rather than when the patient is discharged, and a complaint has to come through formal channels, such as Patient Advice and Liaison Services (PALS) later.

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<sup>22</sup> [South East Advice & Recommendations | South East Clinical Senate \(secsenate.nhs.uk\)](#) Putting people at the heart of service change. Available on this link after February 2024

### 3.3 Mental health in acute hospitals (liaison psychiatry)

People with mental ill health have significantly worse physical health status than people without mental health problems, represent a significant minority of hospital presentations with acute medical emergencies, and are associated with poorer patient outcomes, longer hospital stays, increased rates of readmission, and higher health care costs.<sup>23</sup> Liaison Psychiatry services are dedicated psychiatry teams based in general hospitals, providing assessment and treatment of mental health problems in the emergency department and on medical wards. As a minimum, liaison psychiatry services are expected to improve the integrated care of physical and mental health problems, and constitute a critical service that should be integral to all acute hospitals.<sup>24</sup> The standards are that:

- Any person experiencing a mental health crisis should receive a response from the liaison mental health service within a maximum of 1 hour of the service receiving a referral.<sup>25</sup>
- Within 4 hours of arriving at an emergency department or when patients are referred for routine mental health care within 48 hours,<sup>26</sup> any person experiencing a mental health crisis should have received the appropriate response or outcome to meet their needs and have an evidence-based care package (informed by NICE) in place.

Services comprise multidisciplinary teams skilled to integrate mental and physical healthcare in people whose mental health problems arise in, or have an impact on management of, physical illness and symptoms. These services are sometimes known as psychological medicine services and are distinct from acute mental health inpatient units and community mental health care.

Such services improve quality of care, dignity, and quality of life for patients, improve mental health skills in non-mental health professionals and reduce adverse events and other risks to the acute hospital. Financial benefits come from reduced avoidable costs and ineffective or inappropriately located management of mental health problems by reduced length of stay, readmissions and investigations, and improved care of medically unexplained symptoms, dementia and long-term conditions.<sup>27</sup>

Mental health problems are common, increasing and more prevalent in acute hospitals than in the community.<sup>26</sup> Mental health problems occur in 30–60% of inpatients<sup>24</sup> and are the presenting feature in 5% of all emergency department attendances.

The position that mental health services should be co-located with major hospitals for most specialties comes from the evidence base which shows that the most benefit is derived from services which are fully integrated with general hospitals, to overcome the divide that has been created by separating these services. The government's mental health strategy 'No Health Without

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<sup>23</sup> van Niekerk M, Walker J, Hobbs H, et al. The Prevalence of Psychiatric Disorders in General Hospital Inpatients: A Systematic Umbrella Review. *Journal of the Academy of Consultation-Liaison Psychiatry* 2022;63:567-578

<sup>24</sup> Joint Commissioning Panel for Mental Health. Guidance for commissioners of liaison mental health services to acute hospitals - Practical Mental Health Commissioning. 2012. [ds4453.pdf \(bmj.com\)](#)

<sup>25</sup> Achieving Better Access to 24/7 Urgent and Emergency Mental Health Care – Part 2: Implementing the Evidence-based Treatment Pathway for Urgent and Emergency Liaison Mental Health Services for Adults and Older Adults – Guidance November 2016 NHS England Publications Gateway Reference 05958

<sup>26</sup> [quality-standards-for-liaison-psychiatry-services---sixth-edition-2020.pdf \(rcpsych.ac.uk\)](#)

<sup>27</sup> Royal College of Psychiatrists. Liaison Psychiatry for Every Acute Hospital: Integrated Mental and Physical Healthcare. 2013. <http://www.rcpsych.ac.uk/usefulresources/publications/collegereports/cr/cr183.aspx>

Mental Health<sup>28</sup> supports the position that this divide must be overcome and notes the high rate of mental health problems in general hospitals that go undetected and have an impact on recovery and cost. The Royal College of Psychiatrists has formulated national standards which supports the position of 24 hour consultant led services based on the general hospital site, and includes suggested response times and roles that these services would provide.<sup>29</sup> There is a role for generic liaison psychiatry services which can serve multiple specialities, but there is also evidence that sub-specialist teams offer increased benefits such as those focused on the emergency department and older people.<sup>30</sup> The latest report from the NHS mental health dashboard details that 60.8% of acute hospitals meet the 'core24' service standard and that 91.8% of liaison psychiatry teams are open / available 24/7.<sup>31</sup>

Maternity and consultant led obstetric services would benefit less from co-located specialist mental health services, and although there is a clear benefit in having rapid access to advice, the focus and recommendations from Royal Colleges and Department of Health and Social Care is effective joint working arrangements and services which can respond across primary and secondary care, and clear pathways for accessing specialist beds in mother and baby units where required.

The co-location and integration of services will address the need for parity between physical and mental health care, which is at the heart of the government's mental health strategy.

### 3.4 Paramedic care and ambulance transport services

The centralisation and co-location of specific specialist services (such as for major trauma, stroke, and primary percutaneous coronary intervention (PCI)) has delivered clear patient benefit and has been embraced by paramedics and ambulance services regionally, services that are key to the effective working of these pathways.

However, as potentially more services coalesce, there will be an impact on paramedics and ambulance services, and any decisions to re-design services must carefully consider this impact and how it affects the capability to continue to respond to patients in communities who are distant from centralised specialist clinical services, and indeed how to best utilise the specialist abilities of the NHS ambulance service system.<sup>32,33,34</sup>

There are four main themes relating to paramedics and ambulance services. Each of these headings summarise the potential impact on, and opportunities for, paramedic and ambulance services if there is increasing centralisation and networking arrangements for acute hospital-based services.

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<sup>28</sup> HMG/DH. No Health Without Mental Health: A Cross-Government Mental Health Outcomes Strategy for People of all ages. 2011. [https://www.gov.uk/government/uploads/system/uploads/attachment\\_data/file/213761/dh\\_124058.pdf](https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/213761/dh_124058.pdf)

<sup>29</sup> Royal College of Psychiatrists. Quality Standards for Liaison Psychiatry (PLAN). 2014. [PLAN standards \(rcpsych.ac.uk\)](https://www.rcpsych.ac.uk/quality-standards/PLAN)

<sup>30</sup> Royal College of Psychiatrists. Who Cares Wins: Improving the Outcome for Older People Admitted to the General Hospital. 2005. [Who Cares Wins \(bgs.org.uk\)](https://www.rcpsych.ac.uk/who-cares-wins)

<sup>31</sup> NHS Mental Health Dashboard. November 2023 publication. Period: Quarter 1 2023/24. <https://www.england.nhs.uk/publication/nhs-mental-health-dashboard/>

<sup>32</sup> NHS England. Transforming Urgent and Emergency Care Service in England. 2013. [http://www.nhs.uk/NHSEngland/keogh-review/Documents/UECR.Ph1Report.FV.pdf](https://www.nhs.uk/NHSEngland/keogh-review/Documents/UECR.Ph1Report.FV.pdf)

<sup>33</sup> Sir Robert Francis. The Mid Staffordshire NHS Foundation Trust, Public Inquiry. The Stationery Office; 2013. [Report of the Mid Staffordshire NHS Foundation Trust Public Inquiry - GOV.UK \(www.gov.uk\)](https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/228836/7432.pdf)

<sup>34</sup> DOH. High Quality Care For All: NHS Next Stage Review Final Report. 2008. [https://www.gov.uk/government/uploads/system/uploads/attachment\\_data/file/228836/7432.pdf](https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/228836/7432.pdf)

## Paramedic practice and patient flow

Paramedic practice is developing in a rapid and sustainable way, and paramedics at all levels of practice can have a positive influence on supporting and promoting redesigned services. The following areas can support improvements to localised and centralised acute hospital services:

- Bypass of emergency departments (EDs) to ambulatory emergency care centres for patients with clear pathology which requires further assessment, monitoring, and treatment. Combining enhanced clinical assessment by paramedics and increased direct access to ambulatory care centres including acute hospital and community based same day emergency care (SDEC) and social care support services can support ED and admission avoidance.
- Planning the time patients are transported for assessment and admission to secondary care by utilising direct booking systems for ambulatory emergency care and acute medical and surgical assessment units.
- Pre-hospital critical care: Critical Care Paramedics (CCP) and community Pre-Hospital Emergency Medicine (PHEM) physicians can treat and monitor patients for longer, optimising care on-scene and safe transport to the appropriate facility. Ambulance services may require additional resources to ensure consistent coverage due to these incidents taking longer to complete than normal ones.

## Impact and opportunities

Centralising services and localising others can be strongly supported through utilisation of the increased skills and capacity of paramedics. In particular, specialist and advanced paramedics can optimise patient flow into primary, secondary and tertiary care, mitigate demand fluctuations, and promote more strategic movements of patients.<sup>35,36</sup>

## Inbound patient transport (including to secondary, tertiary and community facilities)

Building on the previous heading, the increased capability of paramedics and other ambulance clinicians provides greater access to services for patients. Assimilating new ways of working to provide 999 callers with more choice of care facility from scene is a potential benefit of service redesign. However, consideration must be given to the predicted volumes of patients who must travel further by ambulance, and the level of care required whilst in transit must be understood in order for workforce planning to reflect need. There are a range of opportunities which accompany redesign in relation to the inbound flow for patients.

- Improved 'booking' opportunities for accepted patients which support the model of ambulatory emergency care pathways.
- Enhanced clinical decision-making support from within the ambulance service and from specialist services, and remote support for clinicians at the patients' side to facilitate access to such specialty advice.

<sup>35</sup> HSCIC. Ambulance Services, England - 2012-13. 2013. <http://www.hscic.gov.uk/catalogue/PUB14601>

<sup>36</sup> DOH. Taking Healthcare to the Patient: Transforming NHS Ambulance Services. 2008. [http://ircp.info/Portals/11/Future/NHS\\_EMS\\_Policy\\_Recommendation2005.pdf](http://ircp.info/Portals/11/Future/NHS_EMS_Policy_Recommendation2005.pdf)



- Increase the range of entry points into urgent and emergency care beyond just the emergency department.
- Enhancing the provision of services to patients with mental health needs, supporting the Parity of Esteem principles.

## Impact and opportunities

Ambulatory emergency care and innovative ways of booking patients into appointments / clinics are key opportunities that could help offset the impact of increased journey times, and the increased volume of these journeys. Designing better access to healthcare services, at a time most convenient to patients, which is efficient for providers 24/7, and opening up inbound patient pathways which have been previously inaccessible to paramedics is an important consideration when re-designing services.<sup>37,38,39</sup>

## Inter-facility transport

Changes to the geographical location of services resulting from centralisation or new network arrangements between hospitals, must consider the inter-facility transfers which are likely to increase for both planned and urgent care patients. Stepping patients up and down within the network is a natural consequence of the centralisation of services, as well as moving patients between facilities of similar levels. The use of CCPs to support the network (Only a very small proportion of patients (i.e., critically ill) will require CCP / ICU level support during transfers - important to also plan with non-emergency Patient Transport Services (PTS) - also covered in outbound paragraphs below) should be considered, as should utilising the ambulance services to support training and education for clinicians undertaking transfers.<sup>38,39</sup>

## Impact and opportunities

Any increase in inter-facility transfers must be considered in the design phase of planning changes in service locations. The limiting factors of resource availability and skill set must be considered, as mitigations to reduce these will prevent unnecessary delays in patient movement.

There is an opportunity to develop improved awareness of how busy services are and allow ambulance services to work to capacity management systems to rationalise patient movements, which can in turn increase efficiency and effectiveness.<sup>37,38,39</sup>

## Outbound transport (supporting patient flow and discharge planning)

Non-emergency PTS are vital in the effective management of systems. Ensuring that patients can be discharged home and / or moved to centres for rehabilitation is essential in preventing blockages and reduction in patient flow and must be considered as intrinsic to the overall system. For those patients who arrive in a care facility, many will require subsequent onward transfers to

<sup>37</sup>Association of Ambulance Chief Executives (AACE). Taking Healthcare to the Patient 2: A review of 6 years' progress and recommendations for the future. 2011. [Taking Healthcare to the Patient 2: A review of 6 years' progress \(aace.org.uk\)](http://www.aace.org.uk)

<sup>38</sup>NAO. Transforming NHS Ambulance Services. Emergency Medicine Journal: EMJ. 2011. p. 734. <http://www.ncbi.nlm.nih.gov/pubmed/21730096>

<sup>39</sup>NHS Elect. Ambulatory Emergency Care. 2014. <http://www.ambulatoryemergencycare.org.uk/>

other sites – even within an optimised services model. PTS promotes patient flow at the end of the spell and can assist with:

- Supporting the four hour target – enabling admission avoidance for patients breeching due to transport delays.
- Discharge planning to rehabilitation and step-down centres - enhanced care in transit for recently disabled patients, and support for discharge to assess initiatives.

### **Impact and opportunities**

Similar to the impact on inbound patient movements, outbound flow will increase, and the impact of this extends beyond organisational pressures to that of patient comfort and experience. Highly skilled PTS staff with modern vehicles and equipment can enhance the whole care pathway by ensuring that transport is considered intrinsic to high quality, effective and efficient care, if adequately commissioned.<sup>37,38,39</sup>

## **3.5 Imaging (radiology) services**

The role of imaging has changed dramatically in recent times with increasing reliance on all modalities for primary diagnosis and guiding management and a steady increase in the use of more complex modalities as part of the 'routine' work up of patients across all specialities. This is driven by many factors, including evidence supporting the use of early computerised tomography (CT) scans as best practice in the acute surgical take rather than diagnostic laparotomy. There is also evidence for some modalities e.g., magnetic resonance imaging (MRI), that scanning rates need to increase further to optimise patient management. Thus, for many acute specialities it is essential that there is either immediate on-site access to CT and MRI, or access is required within 24 hours. Direct access to imaging pathways could also help rapid dispersal of ED attendances.

Interventional radiology has become an intrinsic part of modern medical and surgical management. Whilst for some specialities access within 24 hours or on a networked basis may be appropriate it is essential to have immediate access for certain specialities, especially vascular surgery arterial centres, and major trauma centres.

It is appropriate for highly specialised or smaller volume imaging services, such as cardiac MRI and nuclear medicine that these can only realistically be delivered on a network basis.

There is a potential separation between the staff and hardware needed for 'image acquisition' (doing the scan) and the staff needed to report the scan, resulting from the ability to transmit images to other remote sites for the reporting. We are also now entering a world where interpretation of diagnostic information obtained from imaging will be assisted by machine learning. This allows increased efficiency and rapid access to expert opinions, although ideally the reporting should be undertaken by staff employed locally and within the NHS for optimal clinical governance.

In the short and mid-term there are some practical issues that mean it is impracticable, or financially challenging, to deliver 24 hour access to certain services at all sites, especially in light of inadequate numbers of appropriately trained and skilled staff, and so a networked solution for rapid or immediate access will continue to be required for a small number of patients. However, it is

likely that further increasing clinical demand will require increasing 7/7 and where necessary 24/7 services on hospital sites.

### 3.6 Perioperative Care of Older People Undergoing Surgery

Increasing numbers of older people are undergoing elective and emergency surgery. This is related to changing demographics, advances in surgical and anaesthetic technique, changing patient expectations and changing healthcare professional attitudes and behaviours. The overall impact is that rates of surgical procedures in older people are now significantly higher than in any other age group.

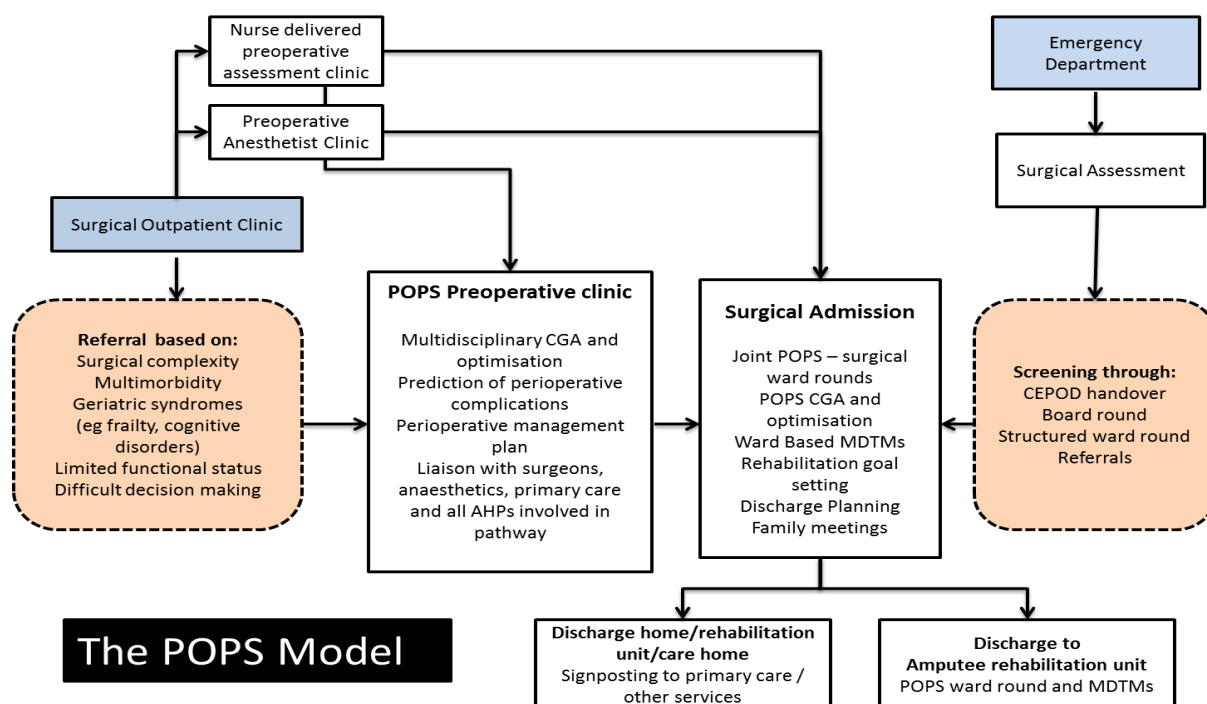
Whilst it is clear that older people have much to gain from surgery in terms of symptom control and life expectancy, they remain at higher risk of adverse postoperative outcome (morbidity, mortality, delayed discharge and longer length of stay) in comparison to younger people. This adverse risk profile is due to factors that are associated with ageing; poor physiological status, multi-morbidity, and geriatric syndromes such as cognitive impairment and frailty. Perioperative care of Older People undergoing Surgery (POPS) is a service that aims to address these issues. It is a geriatrician lead service that uses the skills of the whole multidisciplinary team to provide care for older patients. There is emerging evidence that clinician and patient reported as well as process outcomes can be improved in frail older surgical patients with the implementation of a POPS service.<sup>40,41,42</sup> Figure 3 shows the POPS model of care (courtesy of the POPS team at Guys and St Thomas' NHS Foundation Trust).

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<sup>40</sup> Harari D, Hopper A, Dhese J et al. Proactive care of older people undergoing surgery ('POPS'): designing, embedding, evaluating and funding a comprehensive geriatric assessment service for older elective surgical patients. *Age Ageing* 2007;36:190–6.

<sup>41</sup> Partridge JS, Harari D, Martin FC et al. Randomized clinical trial of comprehensive geriatric assessment and optimization in vascular surgery. *Br J Surg* 2017;104:679–87.

<sup>42</sup> Jasper EV, Dhese JK, Partridge JS, Sevdalis N. Scaling up perioperative medicine for older people undergoing surgery (POPS) services; use of a logic model approach. *Clin Med (Lond)*. 2019;19:478–84.



**Figure 3. POPS model of care (courtesy of GSTT). Abbreviation: CGA (Comprehensive Geriatric Assessment).**

The examples referenced above have all improved perioperative outcomes through comprehensive geriatric assessment and optimisation methodology either in tertiary centres or in a district general hospital setting with a full range of acute medical support.<sup>43</sup> In the southeast region a POPS service has also been implemented in East Kent Hospitals University NHS Foundation Trust (EKHUFT) at the Kent and Canterbury Hospital (K&CH) site in September 2019. The service began in Vascular emergency and elective settings and emergency Urology inpatients and has since rolled out to encompass elective orthopaedic surgery, elective Urology, and elective general surgery. Patients known to POPS are actively monitored throughout their stay for early identification of medical complications. Support with shared decision making and discharge planning, appropriate do not attempt cardiopulmonary resuscitation (DNA CPR) discussions, treatment escalation plans and anticipatory care plans are a routine and core part of the POPS service.

The K&CH site does not have an Emergency Department, or acute medical teams (for example cardiology or health care of the older person services) instead within the surgical pathways the POPS service meets the medical needs of patients through:

- Providing the general medical review of patients.
- Requesting and interpreting necessary pre- and post-operative investigations.
- Working closely with surgical, anaesthetic, and critical care colleagues to make appropriate clinical decisions.
- Being the medical link between the patients and the acute medical specialties based at other EKHUFT sites, for example cardiology and respiratory medicine, reducing the need for the other specialties to review the patients directly.

<sup>43</sup> De La Casas R, Meilak C, Whittle A et al. Establishing a perioperative medicine for older people undergoing surgery service for general surgical patients at a district general hospital. *Clinical Medicine* 2021 Vol 21, No 6: e608–14

- Working closely with the ward nursing and therapy staff to plan safe discharges with patients and families.

The outpatient POPS clinic provides a Comprehensive Geriatric Assessment (CGA) consultation, which aims to streamline the patients' preoperative pathway and reduces the need for patients to be seen by organ specialists and attend multiple hospital appointments. This is achieved by:

- Access to electrocardiogram (ECG), same day echocardiogram if required (facilitated by a dedicated POPS slot per week), blood pressure monitors, cardiac monitors, bed side spirometry, 6-minute walks tests and post void bladder scanning.
- Joint appointments with anaesthetic and / or surgeons based at the same site which is needed especially for complex decision making.
- Links with cardiology are especially important – if preoperative optimisation is required in the form of specialist intervention (examples include pacemakers and diagnostic angiography), these can be requested based on the detailed POPS consultation and preliminary investigations.
- Liaison with multiple other medical subspecialties to ensure robust perioperative plans.
- Referral preoperatively to therapy colleagues to either support with non-operative pathways to optimise function or to make the post-operative therapy plan more efficient.

Key outcomes from introduction of POPS have included reduced length of stay by a mean of 6.58 days in vascular surgical inpatients across the board together with reduced 30-day readmissions; reduction in readmission rates in urology; improved patient satisfaction in both specialties; and increased appropriate advanced and end of life care planning.

POPS services have been developed by leading clinicians over the last nearly two decades, clear guidance is available<sup>44</sup> and help and support in the adoption and spread of this service model is available from the NHS elect POPS network.<sup>45</sup>

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<sup>44</sup> Centre for Perioperative Care (CPOC) September 2021. Guideline for Perioperative Care for People Living with Frailty Undergoing Elective and Emergency Surgery. <https://cpoc.org.uk/sites/cpoc/files/documents/2021-09/CPOC-BGS-Frailty-Guideline-2021.pdf>

<sup>45</sup> [POPs Network \(popsolderpeople.org\)](https://popsolderpeople.org)

## 3.7 Virtual Wards

### Introduction and evidence to date

The concept of the virtual ward care model (which for the purposes of this document also includes Hospital-At-Home) was first introduced in Croydon, England, in 2006.<sup>46</sup> Reducing avoidable use of acute hospital inpatient beds, especially where no procedure and little or no investigation is carried out and admission may not reflect patients' preferences, has since become a focus of healthcare both in the UK and internationally and has been given renewed emphasis by the recent COVID-19 pandemic.

Virtual ward care models<sup>47</sup> provide acute healthcare in a patient's residence as an alternative to traditional hospital inpatient care, either in their own home or in care homes. This can be either a complete substitution for hospital care (admission avoidance or step-up models) or a shorter hospital stay (early discharge or step-down models). Patients are provided with acute clinical care delivered by a multidisciplinary team (MDT) supported by daily clinical review through a variable combination of remote monitoring and face-to-face care. Remote monitoring may incorporate use of apps, technology platforms / dashboards, wearable technology, and devices such as pulse oximeters. Ideally the 3 critical elements of virtual ward technology enablement (electronic patient record, monitoring dashboard and wearable / implanted devices) should be digitally interoperable.

Studies have shown that virtual ward care models provide a safe and efficient alternative to NHS bedded care which is at least non-inferior in terms of key outcomes. Systematic reviews, meta-analyses and evidence syntheses reviewing evidence from studies comparing virtual ward care with acute hospital inpatient care suggest that patients who are supported through an acute illness are able to recover better in their own homes, with less chance of deconditioning and more chance of staying connected to their carers and communities, and experience better outcomes and less reliance on long-term care options.<sup>48,49,50,51,52,53,54,55</sup> (Table 1).

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<sup>46</sup> Lewis G. Case study: virtual wards at Croydon primary care trust. London, UK: The King's Fund; 2006.

[http://www.kingsfund.org.uk/sites/files/kt/field/field\\_document/PARR-croydon-pct-case-study.pdf](http://www.kingsfund.org.uk/sites/files/kt/field/field_document/PARR-croydon-pct-case-study.pdf)

<sup>47</sup> [EoE Clinical Senate Virtual Wards Outcomes Paper - Dec 2023.pdf \(eoesenate.nhs.uk\)](https://www.eoesenate.nhs.uk/EoE_Clinical_Senate_Virtual_Wards_Outcomes_Paper_-_Dec_2023.pdf)

<sup>48</sup> Shepperd S, Doll H, Angus RM, Clarke MJ, Iliffe S, Kalra L, Ricauda NA, Wilson AD. Admission avoidance hospital at home. *Cochrane Database Syst Rev*. 2008 Oct 8;(4):CD007491

<sup>49</sup> Shepperd S, Iliffe S, Doll HA, Clarke MJ, Kalra L, Wilson AD, Gonçalves-Bradley DC. Admission avoidance hospital at home. *Cochrane Database Syst Rev*. 2016 Sep 1;9(9):CD007491

<sup>50</sup> Gonçalves-Bradley DC, Iliffe S, Doll HA, Broad J, Gladman J, Langhorne P, Richards SH, Shepperd S. Early discharge hospital at home. *Cochrane Database Syst Rev*. 2017 Jun 26;6(6):CD000356

<sup>51</sup> Uminski K, Komenda P, Whitlock R, Ferguson T, Nadurak S, Hochheim L, Tangri N, Rigatto C. Effect of post-discharge virtual wards on improving outcomes in heart failure and non-heart failure populations: A systematic review and meta-analysis. *PLoS One*. 2018 Apr 30;13(4):e0196114

<sup>52</sup> Chauhan U, McAlister FA. Comparison of Mortality and Hospital Readmissions Among Patients Receiving Virtual Ward Transitional Care vs Usual Postdischarge Care: A Systematic Review and Meta-analysis. *JAMA Netw Open*. 2022 Jun 1;5(6):e2219113

<sup>53</sup> Norman G, Bennett P, Vardy ERLC. Virtual wards: a rapid evidence synthesis and implications for the care of older people. *Age Ageing*. 2023 Jan 8;52(1):afac319.

<sup>54</sup> Chua CMS, Ko SQ, Lai YF, Lim YW, Shorey S. Perceptions of Hospital-at-Home Among Stakeholders: a Meta-synthesis. *J Gen Intern Med*. 2022 Feb;37(3):637-650

<sup>55</sup> Surya Singh, Alastair Gray, Sasha Shepperd, David J Stott, Graham Ellis, Anthony Hemsley, Pradeep Khanna, Scott Ramsay, Rebekah Schiff, Apostolos Tsiachristas, Angela Wilkinson, John Young, Is comprehensive geriatric assessment hospital at home a cost-effective alternative to hospital admission for older people?, *Age and Ageing*, Volume 51, Issue 1, January 2022, afab220, <https://doi.org/10.1093/ageing/afab220>

Study (n)	Comparison	Outcomes
Shepperd et al 2016, n=1814. Studies included respiratory conditions, stroke and acute medicine	RCTs comparing a VW care model of admission avoidance hospital at home (patients admitted directly from the community or from the emergency room) with acute hospital in-patient care	<p><b>1. Mortality</b> Data for mortality was available in 912 subjects. VW care model showed little or no difference on mortality at 6 months' follow-up (RR 0.77, 95% confidence interval (CI) 0.60 to 0.99; P = 0.04.</p> <p><b>2. Admission</b> Data for transfer to hospital was available in 834 subjects. VW care model showed little or no difference on the likelihood of being transferred (or readmitted) to hospital (RR 0.98, 95% CI 0.77 to 1.23; P = 0.84.</p> <p><b>3. Patient Satisfaction</b> Patients allocated to VW care model had significantly increased satisfaction (27-40% increased satisfaction).</p> <p><b>4. Cost</b> Admission avoidance hospital at home may slightly decrease treatment costs, although this benefit is offset when the costs of informal care are considered.</p>
Gonçalves-Bradley et al 2017, n=4746. Studies included cardiorespiratory conditions, stroke, acute medicine and elective surgery	RCTs comparing early discharge hospital at home with acute hospital inpatient care. Care at home provided by hospital outreach, community services or a combination of both	<p><b>1. Recovery from stroke</b> Mortality at 3 to 6 months, n=1114, no significant difference, (RR 0.92, 95% CI 0.57 to 1.48); Hospital readmission at 3 to 6 months, n=345, no significant difference, (RR 1.09, 95% CI 0.71 to 1.66); Patient satisfaction overall slightly improved, n=795</p> <p><b>2. Older people with a mix of conditions</b> Mortality at 3 to 6 months, n=1247, no significant difference, (RR 1.07, 95% CI 0.76 to 1.49); Hospital readmission at 3 to 6 months, no significant difference, (RR 1.25, 95% CI 0.98 to 1.58 for mix of conditions, n=1276 and RR 0.86, 95% CI 0.66 to 1.13 for COPD, n=496) Patient satisfaction overall slightly improved, n=900</p> <p><b>3. Following elective surgery</b> Mortality, 3 trials, n=856, little or no difference. Hospital readmission, 5 trials, n=1229, little or no difference. Patient satisfaction overall slightly improved, n=1229</p> <p><b>4. Costs</b> The overall effect of early discharge hospital at home on costs was uncertain.</p>
Uminski et al, 2018, n=4820. Studies included heart failure and	RCTs comparing the effect of post-discharge virtual wards (VW), as an alternative to usual community based care	<p><b>1. Heart failure (n=1634)</b> Mortality was reduced by VW care, RR 0.59, 95% CI 0.44 to 0.78. Cause specific readmissions were reduced by VW care, RR 0.61, 95% CI = 0.49–0.76.</p>

<p>non-heart failure populations.</p>		<p>All cause readmissions were no different, composite RR 0.86, 95% CI = 0.67–1.11.</p> <p><b>2. Non-heart failure (n=3186)</b> Mortality was not reduced by VW care, RR 0.98, 95% CI = 0.84–1.15.</p> <p>All cause readmissions were reduced by VW care, RR 0.81, 95% CI = 0.66–0.99.</p>
<p>Chauhan &amp; McAlister 2022, n=20,189. Studies included heart failure, respiratory conditions, patients at high risk of readmission and mixed patient populations</p>	<p>RCTs comparing virtual ward transitional care with usual post discharge care</p>	<p><b>1. Mortality</b> VW care was associated with lower mortality in heart failure patients (RR, 0.86; 95% CI, 0.76-0.97, n=4467) but not in non-heart failure patients (RR, 0.93; 95% CI, 0.83-1.04, n=9535)</p> <p><b>2. Hospital readmission</b> VW care was associated with fewer readmissions in heart failure patients (RR, 0.84; 95% CI, 0.74-0.96, n=4551) but not in non-heart failure patients (RR, 0.97; 95% CI, 0.62-1.51, n=10,654)</p> <p><b>3. Hospital readmission LoS</b> VW care requiring readmission had a reduced readmission LoS (-1.94 days, 95% CI -3.28 to -0.60, n=1912)</p> <p><b>4. ED attendances</b> In trials providing data VW care was associated with significantly fewer subsequent ED attendances (RR, 0.83; 95% CI, 0.70-0.98, n=7146)</p> <p><b>6. Healthcare costs</b> Of the studies comparing healthcare costs the VW intervention was either cost neutral or engendered cost savings.</p>
<p>Norman et al 2023, Evidence synthesis from 28 reviews. Studies included heart failure, frailty and respiratory conditions but specifically excluded COVID-19</p>	<p>Acute hospital inpatient care compared with hospital at home, virtual ward and remote monitoring. Step-up (hospital admission avoidance) and step-down (hospital early supported discharge) models were both included.</p>	<p><b>1. Clinical effectiveness</b> For mortality, admission/readmission and patient satisfaction outcomes VW care was considered to be at least non-inferior to acute hospital admission. There were mixed findings for LoS, with longer LoS for step-up VW models of care and shorter LoS for the step-down models.</p> <p><b>2. Cost effectiveness</b> The cost-saving potential and the cost effectiveness of VW care models was judged to be uncertain despite the large number of available primary studies that attempted to address costs. Cost savings were thought to be over estimated and generally did not assess costs to patients and carers.</p>
<p>Chua et al 2022, Qualitative systematic review that meta-synthesized the perspectives of</p>	<p>Perceptions and perspectives of stakeholders (patients and caregivers) of hospital at home care</p>	<p><b>1. Factors influencing patient selection for VW models of care.</b></p> <ul style="list-style-type: none"> <li>• Strong social support</li> <li>• positive health behaviours</li> <li>• confidence in receiving care at home</li> <li>• conducive home environment.</li> </ul>



HaH stakeholders from 16 studies.	models versus acute hospital inpatient care.	<p><b>2. Advantages of VW models of care</b></p> <ul style="list-style-type: none"> <li>• More comfortable and patient-centred care</li> <li>• perceived better patient clinical outcomes</li> <li>• more family engagement with patients</li> <li>• improved care continuity during and beyond the episode of care</li> <li>• increased hospital bed capacity.</li> </ul> <p>Patients also reported improved sleep, better appetite and speedier recovery.</p> <p><b>3. Challenges of VW models of care</b></p> <ul style="list-style-type: none"> <li>• Lack of round-the-clock patient supervision compared to the hospital</li> <li>• increased caregiver burden</li> <li>• unclear and underdeveloped workflows</li> <li>• difficulty in screening, identifying, and recruiting VW model of care patients</li> <li>• increased staff burden.</li> </ul> <p><b>4. Enablers for VW model of care development</b></p> <ul style="list-style-type: none"> <li>• Clinicians with strong clinical and communication skills</li> <li>• maintaining quality of care while receiving treatment at home</li> <li>• Supportive operational, regulatory and legal frameworks to promote care delivery in the home setting</li> <li>• Integration with post-discharge care.</li> </ul>
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RR, relative risk; CI, confidence intervals; VW, virtual ward; LoS, length of stay

**Table 1. Systematic Reviews, Meta-Analyses and Evidence Syntheses Comparing Virtual Ward Care with Hospital Inpatient Care**

## Virtual Ward Care Models

Virtual Wards are clinically led by a named registered clinical practitioner, i.e., doctor, nurse, AHP or GP with knowledge and capabilities in the relevant specialty or model of care (or access to specialist medical advice). Virtual wards are most effective when delivered by integrated MDTs who work beyond the boundaries of an acute hospital setting across secondary, community, primary, mental health, and social care. Many virtual ward teams are and will be aligned with other services, such as urgent community response (UCR), same day emergency care (SDEC), community-based nursing teams, integrated urgent care or other virtual care services supported by social care and voluntary, community and social enterprise services.

There are varying levels of interventions required within virtual wards, in addition to remote monitoring, dependent on patient need and the pathway to be supported. For example, a virtual ward set up to support people living with frailty may have a higher reliance on in-person care delivery than one focused on COVID-19. The intensity of acute support needed obviously differs by condition. The model that blends in-person care at home with remote oversight and monitoring is often referred to as a Hospital at Home and is a well-established model. As patient needs become more complex, the service model to meet those needs becomes more intensive.

Effective virtual wards therefore require the right mix of staff with the right skills, experience and clinical leadership for effective decision-making and risk management.

## Technology enablement

Services offer a blended approach with aspects of technology enablement including remote monitoring and face-to-face care that best fits the clinical need of the patient groups being cared for. It is important that virtual wards offer personalised care and a digitally inclusive approach that meets an individual's needs, offering the most appropriate level of care. For a ward to be technology enabled, patient care is managed via a digital platform. Patients / carers measure agreed vital signs and enter data into an app or website. In some cases, patients may wear a device that continuously monitors and reports vital signs.

Clinical teams see individual patient measurements for the cohort of patients they are responsible for via a dashboard. The platforms or technology software ensures they are alerted when any patient moves outside of agreed parameters, allowing them to take appropriate action. Patients should be considered for a technology-enabled service where one exists; however, it is important that alternatives are available to avoid digital exclusion and take account of personal choice. Consideration should also be given to other opportunities technology may offer, such as the use of point of care testing or remote diagnostics to support virtual wards.

## Virtual Ward Capacity and Occupancy Compared with General and Acute Beds

Over the last couple of years, national targets have sought to increase virtual ward capacity with a goal to deliver 10,000 virtual ward beds by September 2023, and 40-50 beds per 100,000 registered GP population by December 2023. Improving virtual ward capacity must also be allied to using that capacity effectively. Table 2 shows a comparison of virtual ward capacity with acute hospital general and acute bed capacity and occupancy, and how this varies by region (data for the month of November 2023).

Region	G&A beds available	G&A occupancy rate	VW beds available	VW occupancy	VW capacity/100,000 GP registered population
<b>England</b>	<b>98,844</b>	<b>94.8%</b>	<b>11,231</b>	<b>70.2%</b>	<b>21.9</b>
East of England	10,695	94.6%	1538	87.0%	17.5-40.9
London	13,899	94.9%	1882	61.3%	10.4-25.9
Midlands	18,765	95.8%	2246	79.3%*	13.4-50.5
North East & Yorkshire	17,498	93.3%	1228	49.8%	10.5-19.5
North West	14,258	93.9%	1485	53.1%	17.4-26.6
South East	13,685	95.9%	1781	89.8%*	8.4-33.7
South West	10,044	95.2%	1071	57.3%	17.0-38.5

**Table 2. Comparison of virtual ward capacity with acute hospital general and acute bed capacity and occupancy. \*In 2 ICBs occupancy was >100% (1 in the Midlands and 1 in the South East).**

It can be seen that virtual ward capacity varies across the country and usage is below expected. Levels of provision are increasing but remain some way off the target of 40-50 beds/100,000 GP registered population aged over 16 years countrywide except for 3 ICBs (2 in the Midlands and 1 in the East of England). There is a long-term ambition to ensure capacity across a variety of pathways including frailty, respiratory, heart failure and children and young people.

## Case Study

North Tees and Hartlepool established their hospital at home service in 2016. Patients with exacerbations of COPD are managed entirely in the community, thereby avoiding a hospital admission. The service can also accept step down patients from acute settings and takes referrals directly from North East Ambulance Service as well.

The team deliver a full package of care including antibiotics, steroids, nebulisers, sputum clearance techniques, smoking cessation and a respiratory consultant clinic appointment should that be needed.

This model is effectively a virtual respiratory ward, with acute care delivered into patients' homes, and oversight by a respiratory consultant. Patients managed through this service do not need to attend their GP or the ED. Between April to December 2022 the team received 1,751 referrals, the team completed 5,462 home visits, and only 65 patients (3.7% of all referrals) required admission to an acute hospital bed.

Qualitative data is excellent with a very high level of patient satisfaction and no safety incidents in seven years. The Trust has also seen a reduction in the mean length of stay for patients who are admitted with an exacerbation of COPD from 5.09 days in 2015 to 3.33 days in 2022.

## 3.8 Teaching, development, training and research: key considerations for the health care professions in relation to service reconfiguration

### Introduction

In conjunction with this revision of the Co-Dependencies report we have also produced a separate 'Teaching, Training and Research: Workforce Considerations for Major Service Change' report. This document includes the key issues and considerations of service reconfiguration for allied health professions, healthcare science, medicine, nursing and midwifery and pharmacy and we refer readers to this report for a full description.<sup>20</sup> The significant challenge of the COVID-19 pandemic resulted in innovations in some practice areas whilst in others their fragility was exposed with some service provision shown to be lacking. The NHS 2023/24 priorities and operational planning guidance<sup>12</sup> has a focus on post pandemic recovery, progressing the aspirations of the Long Term Plan (LTP)<sup>13</sup> and transforming the health and care system for the future. This guidance identifies workforce recruitment, retention, and training needs through delivery of the NHS people promise<sup>14</sup> and the recently published NHS Long Term Workforce plan (LTWP).<sup>15</sup>

The LTWP<sup>15</sup> describes the extent of a predicted workforce shortfall in the face of demographic change. The plan aims to build on existing ambitions to increase the workforce, such as increasing medical school places and the number of nurses working in the NHS, improving monitoring of staff morale, ensuring the right skill mix to deliver patient care and supporting return to practice, ensuring a workforce fit to meet the needs of the future.

Workforce planning and the impact of service reconfiguration for current and future workforce generations needs to be a high priority for system leaders, with recognition that workforce training is an additional time pressure, and the health service continues to recover from a training deficit as a legacy of COVID-19 pandemic pressures. The workforce plan sets out a strategic direction for the long term, and includes action to be taken locally, regionally, and nationally in the short to medium term to address current workforce challenges. Those actions fall into three priority areas:

**Train:** significantly increasing education and training, together with increasing apprenticeships and alternative routes into health care professional roles, to meet the changing needs of patients and support the ongoing transformation of care.

**Retain:** ensuring the NHS keeps more of the staff by better supporting people throughout their careers and working to improve the culture and leadership across NHS organisations.

**Reform:** improving productivity by working and training in different ways, building broader teams with flexible skills, changing education and training to deliver more staff in roles and services where they are needed most, and ensuring staff have the right skills to take advantage of new technology that helps provide the care patients need more effectively and efficiently.

In 2022 the Health and Care Act<sup>56</sup> saw Integrated Care Systems (ICSs) placed on a statutory footing, with the setting up of Integrated Care Boards (ICBs) and Integrated Care Partnerships (ICPs) through which ICSs work to meet four key aims:<sup>57</sup>

- Improve outcomes in population health and healthcare.
- Tackle inequalities in outcomes, experience, and access.
- Enhance productivity and value for money.
- Help the NHS support broader social and economic development.

Meeting these aims involves collaboration of services across smaller geographies termed 'places' and 'neighbourhoods'. Critical to success is a skilled and supported workforce.

Additionally, GP practices are working together with community, mental health, social care, pharmacy, hospital, and voluntary services in their local areas in groups of practices known as primary care networks (PCNs).

Care collaboratives are also being developed aiming to 'address common challenges, provide more integrated care pathways, and deliver more sustainable services.'<sup>58,59</sup> Potential benefits of provider collaboratives include reducing unwarranted variation in outcomes and access, maximising economies of scale, and improving recruitment and retention of staff.

Working in this way enables collaboration at scale, which may offer unique transformation opportunities to tackle current and future workforce challenges, by offering a wider scale of development opportunities, to improve staff recruitment and retention. This should include shared training opportunities, leadership development programmes, joint appointments, flexible working options and additional support for staff health and wellbeing.

To facilitate this, due importance and consideration should be given to healthcare professionals teaching, training, and research agendas whenever service change is considered. There are opportunities from greater integration of, and coordination between, providers for all these three areas, which will maximise the skills, recruitment and retention of the workforce, and research activity (and income). But there are also significant risks if pathways become fragmented through poorly planned reconfigurations or expansion in alternative providers.

Delivery of frontline health services relies heavily on human interventions and is therefore very dependent on having sufficient skilled staff. Many of these interventions are conducted face-to-face, so options to work from home that are available to professionals in other industries are more limited. It is vital when services are reconfigured, that staff happiness, wellbeing and job-satisfaction are monitored and supported, to aid retention of this valuable resource.

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<sup>56</sup> [Health and Care Act 2022](#)

<sup>57</sup> [Integrated Care Systems: design framework](#)

<sup>58</sup> [Providers Deliver: Collaborating for better care \(nhsproviders.org\)](#)

<sup>59</sup> [collabs-benefits-report-1e.pdf \(nhsproviders.org\)](#)

- Using southeast geographical workforce considerations as an example, the latest Office for National Statistics (ONS) (January 2023)<sup>60</sup> data estimates the size of the southeast population at 9,278,100, of which the Female to Male gender split is 51.08% / 48.92%, respectively. The latest ONS Labour Force Survey<sup>61</sup> also suggests that in the southeast the employment rate of working age people aged 16 to 64 years is at 77.8%, and the average unemployment rate at 3.5%. The percentage of economically inactive people aged 16 to 64 years is at 19.3%, with the UK average 21.5%.
- In comparison with other regions, the southeast has known factors which can be a challenge in the recruitment of healthcare professionals. Some of these factors include higher than average cost of living considerations, relatively poor transport links and the coastal geography.
- The Kings Fund<sup>62</sup> noted that despite slightly higher than average recruitment compared to other regions, 'success in recruitment has not always translated into a reduction in workforce shortages. For example, the southeast grew its full-time equivalent workforce by 17 per cent, yet its vacancy rate grew by more than 12 per cent.'

It is vital that undergraduate teaching, postgraduate training, and research remain high and explicit on the agendas of all stakeholder organisations (commissioners and providers) involved in planning changes in service delivery configurations, and expert representatives from these three areas should be involved in any service change proposal.

The NHS LTWP states an ambition for 22% of training for clinical staff to be through apprenticeship routes by 2031/32. Although details of apprenticeship training for each profession are yet to be finalised such training will be a predominately more workplace-based pathway, it is therefore reasonable to assume learners on these schemes could be greatly affected by service reconfigurations and support for this part of the workforce will require specific attention by transformation programme teams. Funding for education, training and salary support for apprenticeships will be an important enabler.

Support for the skilled workforce required for supervision and training, will be an important part of any service change. The skilled workforce is already stretched and may be supported by greater use of automated training tools, such as virtual reality and artificial intelligence-based systems. These could replace some of the face-to-face engagement required prior to assessment and verification of training.

Collaborative professional networks are a significant support mechanism for the workforce during service change. They may be used to rapidly disseminate information, as a training, education, and workforce development resource and as a platform for professionals across ICSs to communicate and collaborate.

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<sup>60</sup> [Office for National Statistics data](#)

<sup>61</sup> [Labour market in the regions of the UK - Office for National Statistics](#)

<sup>62</sup> [Is the NHS on track to recruit 50,000 more nurses? | The King's Fund \(kingsfund.org.uk\)](#)

Recognition that training is an additional time pressure is required and workforce planning needs to incorporate this in order to recover from the training deficit as a legacy of pandemic pressures.

The importance of staff wellbeing and workplace culture has been spotlighted by the COVID-19 pandemic. Both are critical for staff retention and kinder care for patients. Any service transformation therefore requires robust leadership support for the current and future workforce.

## 4. The co-dependencies grids

The completed grids are shown on the following pages. It is vital to remember that the services in the columns along the top are for this exercise considered to be supporting services for those in the rows. What is being described therefore is the nature of the dependency of the row service on the column service. The colour key from section 2.5.1 has been re-produced below for convenience. In a few cases the cell in the grid is a shaded mixture of red and amber denoting where services can support each other through alternative arrangements such as networks and patient transfer.<sup>63</sup>

At present neither Perioperative care of Older People undergoing Surgery (POPS) nor Virtual Wards are represented in the columns on the grids. From their narrative descriptions in sections 3.6 and 3.7 it should be apparent that Virtual wards are an integral part of admission avoidance and / or step down from acute hospital inpatient care and that POPS enables greater flexibility in what may be required for on-site support for a number of surgical specialities.

### Grid colour rating scale

The same four-colour grading system, based on Purple, Red, Amber and Green were used as shown in figure 1 below. In a few cases the cell in the grid is a shaded mixture of red and amber denoting where services can support each other through alternative arrangements such as networks and patient transfer. Note that throughout this document, when a colour rating of a dependency is referred to, it is capitalised.

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<sup>63</sup> Given the fine detail on these grids, they are best reviewed through magnification on screen, or by printing off on A3.



<b>RAG RATING DEFINITIONS</b>	
The colour describes the dependency of the service in the row, on the support service in the column. Note that both the Purple and Red dependencies describe column services that should not require the patient to move hospitals	
<b>PURPLE</b>	
Service should be co-located (based) in same hospital	
<b>RED</b>	
Service should come to patient (patient transfer not appropriate), but could be provided by visiting / in-reach from another site (either physically, or via telemedicine links) if not based in the same hospital	
2	Within 2 hours
4	Within 4 hours
12	Within 12 hours
24	Within 24 hours
	Not specified
<b>AMBER</b>	
Ideally on same site but could alternatively be networked via robust emergency and elective referral and transfer protocols	
<b>GREEN</b>	
Does not need to be on same site. Appropriate arrangements are in place to obtain specialist opinion or care	

Figure 1. Grid co-dependencies: colour rating scale.

Grid A shows all four of the colours / dependencies.

Grid B shows just the Purple dependencies from Grid A (with the Red, Amber and Green dependencies subtracted out). This therefore shows only those services (in the columns) which it was considered should be based on the same site as the acute services in the rows.

Grid C shows both the Purple and Red dependencies from Grid A (with the Amber and Green dependencies subtracted out). These two colours combined therefore show which services (in the columns) were considered should be provided on-site to the acute services in the rows, either by being based on the same site, or by providing an in-reach or visiting service to the patient (without transfer).

Grid A

***COLUMN TITLES: Clinical specialties and functions supporting the major acute services in the rows***

ROW TITLES: The 12 major acute services whose dependencies on the specialties and functions in the columns is being described.	ED/Emergency Medicine	Acute and General Medicine	Elderly Medicine (including bronchoscopy & NIV)	Medical Gastroenterology (Upper & Lower)	Diabetes and Endocrinology	Rheumatology	Ophthalmology	Dermatology	Gynaecology (Upper GI and Lower GI)	Trauma	Orthopaedics	Urology	ENT	Maxillo-facial Surgery	Vascular Surgery Arterial Centre	Vascular Surgery Network Hospital	Neurosurgery	Plastic Surgery	Burns	Critical Care (adult)	Critical Care (paediatric)	General Anaesthetics	Acute Cardiology	Thoracic Surgery	Cardiac Surgery	Comprehensive Stroke Centre	Acute Stroke Centre	Nephrology (not including dialysis)	Inpatient Dialysis	Acute Oncology	Palliative Care	Neurology	Acute Paediatrics (non-specialised)	Paediatrics and Neonatology	X-ray and Diagnostic Ultrasound	CT Scan	MRI Scan	Cardiac MRI	Nuclear Medicine	Interventional Radiology (including neuroradiology)	Clinical Microbiology/Infection Service	Laboratory microbiology	Urgent Diagnostic Haematology and Biochemistry	Acute Inpatient Rehabilitation	Occupational Therapy	Physiotherapy	Speech and Language	Dietetics	Liaison Psychiatry			
ED & Emergency Medicine. Acute unselected take (including acute surgical)	X			2								2	2																																							
Acute Medical Take	X			2	24	24	24		4			12																	24		24																					
Acute (Adult) Surgical Take									X			2											4								24																			4		
Adult Critical Care (Intensive Care)									2	2	2	2	2								X										4																					
Respiratory Medicine (including bronchoscopy & NIV)			X		2				4														4					24	24																							
Major Trauma Centre																																																4				
Trauma Unit											2			2																																			4			
Vascular Surgery Arterial Centre														X																																						
Cardiology: Non-interventional																													24																							
Cardiology: Interventional - primary PCI for STEMI																													24																							
Cardiology: Interventional - PCI (non-STEMI) and electrophysiology																													24																							
Cardiology: Interventional - structural heart disease (including TAVI)																							4					24																								
Cardiac Surgery																																																				
Comprehensive Stroke Centre				4																					X			24																								
Acute Stroke Centre				4																					X			24																								
Renal Services inpatient Hub				24	24	24	24	24	2			24																X		24	24	24																		4		
Consultant led Obstetric Services	4		24	24	4				2			2				2							4																										4			
Acute (non-specialised) Paediatrics and Paediatric surgery													4	4																			X																			





## 5. Grid analysis: emerging requirements of acute hospitals

Whilst the dependencies of each of the twelve main services (in the rows) on other specialties (in the columns) were rated independently, there are indirect dependencies that require services to be together, on the basis that if service A requires co-location with service B, and B requires co-location with C, then C should be co-located with A.

By looking at services connected in this way, it is then possible to describe the core services that should be grouped in the same hospital. This is of particular importance in describing the core clinical services of a hospital providing ED services. In this section, the grid has been analysed for hospitals hosting the two main kinds of EDs. Firstly, those where the department has an unselected 'take', including acute adult surgical presenters. Secondly EDs that operate a 'selected' take for adult patients that is not set up to receive surgical patients, and where patients with presumed acute surgical problems are conveyed (by ambulance) or referred (by GPs) to a different hospital that does provide an acute surgical service. In the grid we have also suggested a minimum timeframe of availability for Red rated services shown as a number within the Red box denoting the hours i.e. within 2, 4, 12 or 24 hours. These numbers are intended to be a guide and will vary depending on which acute major services are provided from any given hospital site.

**Hospitals with Emergency Departments (EDs) receiving all acute adult patients (an unselected take) need on-site acute and general medicine, acute surgery, and critical care (ICU). Therefore, such hospitals need to provide the supporting clinical services which are required by all *or any one of* these four core inter-related acute specialties. These amalgamated requirements therefore delineate what for an 'emergency hospital' is recommended should be provided on the same site as a minimum. The top four rows of the grids should be considered in that light, and the lists of these inter-related specialties are shown in 5.1 and 5.2.**

The range of requirements, both direct and indirect, of the more specialist acute services listed in the other grid rows (rows 5-12) is described in further detail in section 6 of this report. Users of this report would need to take account of all the indirect as well as direct dependencies when considering the needs of these other services, and a full analysis of these individual cases is not described in this report but can be analysed from the grid as required.

## 5.1 On-site services recommended for hospitals with emergency departments: unselected take (including adult surgical patients)

### 5.1.1 Services that should be based on-site (Purple-rated dependencies)

- Acute and General Medicine
- Elderly Medicine
- Respiratory Medicine (including bronchoscopy and Non-Invasive Ventilation (NIV))
- Medical Gastroenterology
- Urgent GI endoscopy (Upper and Lower)
- Cardiology (non-invasive)
- General (Adult) Surgery
- Gynaecology
- Trauma
- Orthopaedics
- Urology\*
- ENT\*
- Critical Care (adult): Level 2 and 3
- General Anaesthetics
- X-ray and Diagnostic Ultrasound
- CT Scan
- MRI Scan
- Urgent Diagnostic Haematology and Biochemistry
- Clinical Microbiology/Infection Service
- Occupational Therapy
- Physiotherapy
- Acute Mental Health Services (Liaison Psychiatry)

\*these services could be provided by in-reach (Red) within 2 hours

### 5.1.2 Additional services that should in-reach if not based on-site (Red-rated dependencies)

- Diabetes and Endocrinology
- Rheumatology
- Dermatology
- Urology\*
- ENT\*
- Acute Oncology
- Palliative Care
- Neurology
- Nephrology
- Maxillo-Facial Surgery
- Plastic Surgery
- Burns
- Interventional Radiology
- Speech and Language
- Dietetics

\*these services should be available within 2 hours if required

## 5.2 On-site services recommended for hospitals with emergency departments: selected take (ambulance bypass of acute adult surgical patients) or hospitals with urgent care centres who also provide major acute services.

In a number of hospital trusts with more than one acute site, only one of those sites may be set up to receive acute surgical patients (i.e., where the acute surgical take is based) and certain sites may have front door urgent care centres yet still provide major acute services. These sites therefore do not require the co-location of services which are only required by acute adult surgery, and not by EDs, the acute medical take, or by critical care. For these hospitals the services that are required to be on-site and immediately available (Purple rated) and which can be in-reach (Red rated) will be determined by which major acute services are included in the selected take. This will also determine the timeframe within which Red rated services may be required but can be influenced by new innovations. For example, a hospital with a vascular surgery arterial centre and on-site POPS may not require the same Purple rated medical specialties as one without POPS.

## 6. Service by service commentary

### 6.1 Emergency Departments & Emergency Medicine

Departments of Emergency Medicine (EDs) are the first point of hospital contact for patients attending hospital in an unplanned (emergency) way – via ambulance conveyance or by self-presentation. Demand for ED services have significantly increased in the last 2 decades driven by an ageing increasingly comorbid population and by service users accessing ED services which are not always the most appropriate for their health needs.<sup>64</sup> In the most recent quarter (ending October 2023), attendances at major departments were 16% higher than they were ten years ago (+6,231 per day), while attendances at minor departments were 30% higher (+5,766 per day). Nevertheless, patients and service users want a simple single point of access system, improved continuity of care through integration of services, and reassurance and communication from, and between, health professionals about care pathways and care choices.<sup>65</sup> ED services require multi-skilled, multi-professional clinical teams, available 24 hours a day, with the expertise to provide safe and effective triage, rapid diagnosis and appropriate clinical stabilisation or reassurance for all unscheduled attendances, irrespective of age, diagnosis and severity of illness.

#### Same Day Emergency Care (SDEC)

Same Day Emergency Care (SDEC) over the last decade has become a widely used and accepted model of care for the management of acutely unwell patients creating improved patient flow from referral to arrival, supporting early senior clinical decision-making, and maximising the opportunity to complete patient care within the same day. A patient may need to return to hospital for additional treatment and monitoring and this should be facilitated where it is clinically appropriate. SDEC allows specialists, where possible, to care for patients within the same day of arrival as an alternative to hospital admission, removing delays for patients requiring further investigation and / or treatment.

The SDEC model of care can be adapted for all specialties, however the most established are:

- Acute internal medicine
- Emergency medicine
- Acute surgery
- Geriatric medicine/frailty
- Paediatrics
- Gynaecology incl. early pregnancy

The NHS Long Term Plan mandates that all hospitals with a Type 1 ED<sup>66</sup> (a consultant led 24-hour service with full resuscitation facilities and designated accommodation for the reception of accident and emergency patients) will provide SDEC for medical and surgical services for a minimum of 12 hours a day, 7 days a week and Acute Frailty Services for a minimum of 70 hours per week, with the aim to complete a clinical frailty assessment within 30 minutes of arrival in hospital.

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<sup>64</sup> Baker C. NHS key statistics: England. House of Commons Library 15 November 2023. <https://researchbriefings.files.parliament.uk/documents/CBP-7281/CBP-7281.pdf>

<sup>65</sup> Ablard S, Kuczawski M, Sampson FC, et al. What does the ideal urgent and emergency care system look like? A qualitative study of service user perspective. *Emerg Med J* 2020;**37**:200–205.

<sup>66</sup> [AE-Attendances-Emergency-Definitions-v4.0-final-July-2019.pdf \(england.nhs.uk\)](#)



Building on the progress achieved with establishment of virtual wards (see section 3.7), including the benefits of virtual activity and remote monitoring, extension of these benefits will support wider access to SDEC and enable admission alternatives for patients to be safely discharged earlier than previously planned.

To improve the outcomes, including the prevention of death, of patients attending hospital in an unplanned way, a wide range of on-site or instantly available clinical, diagnostic, and administrative support is required, as well as immediate access to inpatient beds, ambulatory care pathways, social and psychiatric services.

The co-located services required for a safe and sustainable emergency department include:

## Diagnostic services

Pathology, plain radiology, CT, and MRI scanning – each available 24 hours a day, with immediate reporting, to enable rapid diagnosis for conditions such as acute stroke, the acute abdomen, major trauma, and major vessel disease (including pulmonary vascular disease).<sup>67,68,69,70</sup>

## Critical care services

With capacity to treat and prevent poor outcomes (including death) of the small numbers (typically <2%) of ED attendees that are critically ill.<sup>71,72</sup>

## Paediatric expertise

A significant proportion of ED attenders are children, so the ability to appropriately assess the severity of a child's illness (and thereby avoid child death) is essential. This expertise can be provided within the ED team itself, or through consultant-led paediatric teams with access to inpatient beds, either on-site, or (via robust, networked pathway arrangements) at geographically nearby specialist paediatric units (the model of care in a number of large cities).<sup>73,74</sup>

## Acute medicine, including geriatric medicine

To deliver rapid diagnosis, treatment, and improved outcomes for adult patients with an acute medical illness. This requires a consultant led acute medicine team working within an acute medical unit (AMU) +/- a collocated acute frailty assessment unit, 7 days per week, for a minimum of 12 hours per day.<sup>69,70</sup> It is essential that this team has the capability to undertake comprehensive geriatric assessment (CGA).

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<sup>67</sup> Martin I, Mason M, Mason D, Stewart J, Gill K. Emergency Admissions: A Journey in the Right Direction? 2007; [NC\\_Emergency.Admissions.Report.WEB.indd \(ncepod.org.uk\)](#)

<sup>68</sup> Cooke, J. F, J D, E M, A S, P W, et al. Reducing Attendances and Waits in Emergency Departments. A Systematic Review of Present Innovations. 2004; <http://www.ncbi.nlm.nih.gov/pmc/articles/PMC2791723/>

<sup>69</sup> Forero R, McCarthy S, Hillman K. Access Block and Emergency Department Overcrowding. Crit Care. 2011 Jan;15(2):216. [Amanote](#)

<sup>70</sup> Hassan T, Walsh C. The Drive for Quality: How to Achieve Safe, Sustainable Care in our Emergency Departments? London; 2013. [basw\\_25847-8\\_0.pdf](#)

<sup>71</sup> Chalfin DB, Trzeciak S, Likourezos A, Baumann BM, Dellinger RP. Impact of Delayed Transfer of Critically Ill Patients from the Emergency Department to the Intensive Care Unit, Critical care medicine. 2007. p. 1477–83. <http://www.ncbi.nlm.nih.gov/pubmed/17440421>

<sup>72</sup> Parkhe M, Myles PS, Leach DS, Maclean A V. Outcome of Emergency Department Patients with Delayed Admission to an Intensive Care Unit. Emerg Med. Blackwell Science Asia; 2002;14(1):50–7. [Outcome of emergency department patients with delayed admission to an intensive care unit - Parkhe - 2002 - Emergency Medicine - Wiley Online Library](#)

<sup>73</sup> Pearson GA, into Maternal CE. Why Children Die: A Pilot Study 2006 England;(South West, North East and West Midlands), Wales and Northern Ireland. CEMACH; 2008. [CEMACH\\_Why\\_children\\_Die\\_report.indd \(hscni.net\)](#)

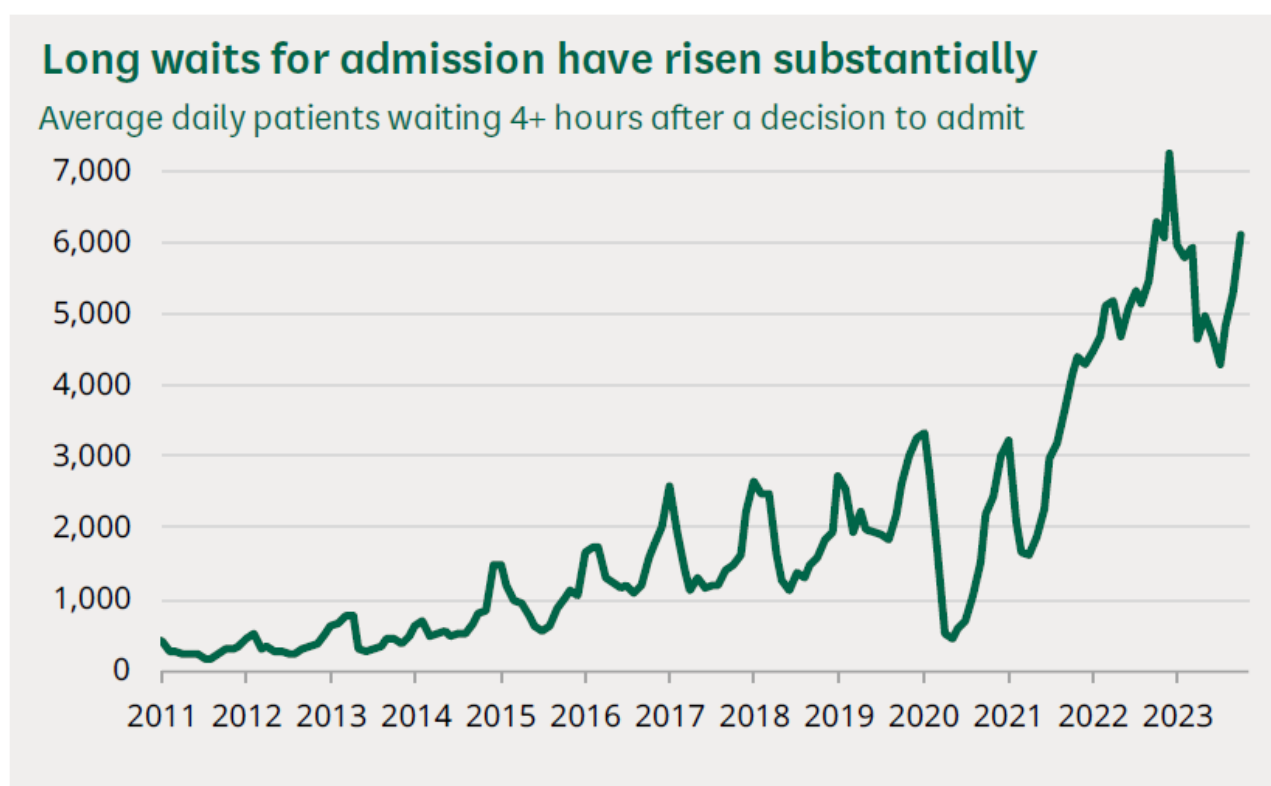
<sup>74</sup> College of Emergency Medicine. Acute and Emergency Care: Prescribing the Remedy. London; 014. [Acute\\_and\\_emergency\\_care\\_-\\_Prescribing\\_the\\_remedy.pdf \(rcpch.ac.uk\)](#)

## Acute surgery and acute orthopaedics (on-site or as part of network-based support)

To deliver rapid diagnosis, treatment, and improved outcomes for adult patients with acute surgical and orthopaedic illness/injury.<sup>70</sup>

## Access to inpatient speciality medicine, general surgical and orthopaedic surgical beds.

Approximately 30% of patients attending ED as type 1 admissions require onward hospital admission for further investigation or specialist treatment. Although emergency admissions are slightly below pre COVID-19 levels, in the quarter ending October 2023 there were 3% fewer emergency admissions via ED than the equivalent period four years ago, nevertheless in October 2023 an average of 13,140 people were admitted to hospital in an emergency via ED each day. There were a further 4,524 emergency admissions per day that did not come via ED.<sup>75</sup> The number of people waiting over 4 hours for emergency admission after a decision to admit has increased substantially in recent years. In October 2023, 190,000 patients waited for longer than 4 hours for admission, compared with 81,000 in October 2019 and 14,000 in October 2013 (see Figure 3).



Source: NHS England, [A&E Attendances and Emergency Admissions](#), Monthly Time Series (Adjusted)

**Figure 3.**

The attendance to admission conversion rate varies greatly according to the age of the patient - being typically up to 50% in the very elderly or those with multiple co-morbidities. In the August 2023 data 45% of attendances resulting in an admission were for patients aged 65 years or older,

<sup>75</sup> A&E Attendances and Emergency Admissions 2023-24 <https://www.england.nhs.uk/statistics/statistical-work-areas/ae-waiting-times-and-activity/ae-attendances-and-emergency-admissions-2023-24/>

with 22% of these being for patients 80 years or older. Attendances resulting in an admission for all other age groups was 55% with the lowest percentage being for those aged 5 to 14 years old (4%).<sup>75</sup>

## Liaison Mental Health Services

Readily accessible (within 2 hours) psychiatric expertise helps reduce both admission and re-admission rates in people with mental health problems.<sup>76</sup>

## Social Workers

ED access to social care crises services is of benefit to staff and to patients (including avoidance of unnecessary main hospital admission for selected patients).

## 6.2 Acute and General Medicine

The Acute medical take (including geriatric medicine) requires an appropriately staffed, multi-professional, acute assessment unit to deliver rapid diagnosis, treatment, and improved outcomes for adult patients with acute medical illness. To improve the outcomes (including the prevention of death) of acute, previously unscheduled medical patients admitted to hospital via primary care or following ED triage, a wide range of immediately accessible clinical, diagnostic, and administrative support is required, as well as access to inpatient beds, virtual wards / hospital at home, ambulatory care pathways, social and psychiatric services. This requires a skilled, consultant led acute medicine team working within an acute medical unit (AMU) (+/- a co-located acute frailty assessment unit), 7 days per week, for a minimum of 12 hours per day.

Key to improved mortality and reduced readmission rates, particularly in older, frailer patients, is always an appropriately staffed AMU with the presence of senior emergency medicine and availability of critical care decision makers. Timely access to specialist opinion such as, but not limited to, cardiology, gastroenterology (with capability to deliver therapeutic upper GI endoscopy for appropriate patients – see below), and respiratory medicine (with the capability to supervise non-invasive ventilation for appropriate patients) remains essential.

## Diagnostic services

Pathology, plain radiology and CT and MRI scanning, available 24 hours a day, with immediate reporting, to enable rapid diagnosis & improved outcomes especially for conditions such as acute stroke and the acute abdomen (which may present with alternative or indistinct symptoms in the elderly or immunosuppressed).<sup>67,77</sup>

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<sup>76</sup> Callaghan P, Eales, Coates T, Bowers L. A Review of Research on the Structure, Process and Outcome of Liaison Mental Health Services. J Psychiatr Ment Health Nurs. Blackwell Science Ltd; 2003;10(2):155–65. [A review of research on the structure, process and outcome of liaison mental health services - PubMed \(nih.gov\)](#)

<sup>77</sup> Freeth H, Martin I, Findlay G, Mason D. Caring to the End? A Review of the Patients who Died in Hospital within Four Days of Admission. NCEPOD; 2009. [NCEPOD - Deaths in Acute Hospitals: Caring to the End? Report \(2009\)](#)

## Critical care services

To safely manage both acutely sick medical admissions and deterioration in existing medical inpatients.<sup>78,79</sup>

## Endoscopy

Early endoscopy after acute upper gastrointestinal bleeding reduces re-bleeding and the need for surgery.<sup>80</sup>

## Acute surgery (on-site or as part of network-based support)

To enable rapid diagnosis and improved outcomes especially for conditions such as the acute abdomen and obstructed urinary tract (which may present with alternative or indistinct symptoms in the elderly or immunosuppressed medical patient).<sup>81</sup>

## Geriatric expertise

To provide adequate, immediate, comprehensive geriatric assessment (CGA) and specialist geriatric support to those over 65 (and at any age with frailty and multiple co-morbidity). There is evidence that multi professional CGA within 24 hours of admission reduces length of stay and improves outcomes in frail elderly patients.<sup>82</sup>

## Seven-day therapy services

To support active rehabilitation and reduce length of stay.<sup>83</sup>

## Seven-day pharmacy services

To reduce drug errors.

## Liaison psychiatry accessible (within 2 hours)

Psychiatric expertise helps reduce both admission and re-admission rates in people with mental health problems,<sup>76</sup> (and see section 3.3).

A range of other clinical specialities are traditionally regarded as required when providing an acute medical take. Currently, in a majority of acute hospitals in England and Wales, these are co-located on the same site as the emergency department and AMU (and might ideally remain so). However, reconfiguration and centralisation of service provision using a networked arrangement and robust in-reach / referral protocols, is currently being reviewed as an option for service provision in a number of acute trusts – for the following medical subspecialties: acute stroke,

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<sup>78</sup> NCEPOD. An Acute Problem? 2005. <http://www.ncepod.org.uk/2005report/summary.pdf>

<sup>79</sup> Royal College of Physicians. The Interface Between Acute General Medicine and Critical Care. 2002.

<https://www.rcplondon.ac.uk/sites/default/files/documents/interface-acute-general-medicine-critical-care.pdf>

<sup>80</sup> Hearnshaw SA, Logan RFA, Lowe D, Travis SPL, Murphy MF, Palmer KR. Use of Endoscopy for Management of Acute Upper Gastrointestinal Bleeding in the UK: Results of a Nationwide Audit. Gut. 2010;59:1022–9.

<http://gut.bmj.com/content/59/8/1022.full.pdf+html>

<sup>81</sup> Royal College of Surgeons. Emergency Surgery: Standards for Unscheduled Surgical Care. 2011. [Emergency Surgery: Standards for unscheduled care — Royal College of Surgeons \(rcseng.ac.uk\)](https://www.rcseng.ac.uk/unscheduled-care)

<sup>82</sup> Kings Fund. Kings Fund Report- The Reconfiguration of Clinical Services - What is the Evidence? 2014.

[http://www.kingsfund.org.uk/sites/files/kf/field/field\\_publication\\_summary/Reconfiguration-of-clinical-services-kings-fund-nov-2014.pdf](http://www.kingsfund.org.uk/sites/files/kf/field/field_publication_summary/Reconfiguration-of-clinical-services-kings-fund-nov-2014.pdf)

<sup>83</sup> NHS. NHS Services, Seven Days a Week Forum. Clinical Standards. 2014;1–9. **Updated September 2017.** [B1230-seven-day-services-clinical-standards-08-feb-2022.pdf \(england.nhs.uk\)](https://www.nhs.uk/clinical-standards/08-feb-2022.pdf)

diabetes and endocrinology, nephrology, rheumatology, dermatology and acute cardiology. For example, cardiology ambulance diverts supplemented by treat and transfer protocols have been shown to be safe. Any such networked arrangements require the provision of a safe, extended, skilled and consistent consultant-led acute medicine service 7 days per week.

## 6.3 Respiratory Medicine

Respiratory medicine is a key requirement for any acute hospital with a type 1 Emergency Department. Admissions for respiratory conditions are increasing at around 13% every year and peak significantly during the winter months. One third of all acute medical admissions to hospital were the result of respiratory problems even before the COVID-19 pandemic but COVID-19 served to bring our reliance and dependency on respiratory medicine sharply into focus.

Respiratory medicine encompasses a wide range of lung conditions all of which may present acutely and many of which have significant overlap with other organ diseases, drawing together elements of oncology, infectious diseases and public health, immunology, cardiology, and kidney medicine and frequently encompassing palliative care and intensive care.

### Respiratory Conditions

- asthma and allergy
- cystic fibrosis
- chronic obstructive lung disease
- HIV-related respiratory conditions
- interstitial lung disease and pulmonary fibrosis
- lung cancer and mesothelioma
- pneumonia
- asbestos-related conditions including asbestosis and mesothelioma
- pleural diseases
- sarcoidosis
- sleep-disordered breathing
- tuberculosis

Delivery of respiratory medicine services requires not just expert respiratory and general medical knowledge and interventional skills but has also become highly innovative with development of diagnostic and interventional techniques and the acceleration of digital technologies. Wearable devices, smart inhalers, and automated continuous positive airways pressure (CPAP) systems have enabled remote monitoring and facilitate admission avoidance and / or earlier stepdown to virtual ward care.

A critical component of modern respiratory medicine in an acute hospital is provision of a dedicated non-invasive ventilation (NIV) service with the right infrastructure to support it.

## Acute Surgical Services (Acute Surgical Take, Trauma and Vascular Surgery): general points

The dependencies given for acute surgical take, trauma and vascular surgery are based on an ideal configuration, which may vary according to local geographical circumstances and hospital availability. They follow College guidance where available but are designed to reflect the future needs for 24/7 acute care and to minimise acute hospital transfers to reduce the burden on the acute ambulance services.

Increasing numbers of elderly patients are undergoing an increasing variety of surgical procedures. The age-related decline in physiological reserve is compounded by illness, cognitive decline, frailty, and polypharmacy. In the last decade there has been growing availability of Perioperative care of Older People undergoing Surgery (POPS) services following on from early reports of improved outcomes following the introduction of such services<sup>40,41,42</sup> (described in greater detail in section 3.6). These services have developed in response to recognition of the need for perioperative medicine services for older surgical patients, but they also provide benefit for younger patients with frailty and enable complex major operating on sites with less co-located acute medical specialty support.

With regard to some of the specific service dependencies, all of these three surgical specialties will need access to specialist acute oncology, as admitted patients who are being treated with chemotherapy for malignancies need advice on the management of this therapy. This could be provided by 24/7 telephone advice from a cancer centre or if needed, an in-reach service. All hospitals should have liaison psychiatry rapidly available when required. Palliative care is less acute and should usually be provided within 24 hours. Both these latter two services will become increasingly important with the increasing age of admitted patients, many of whom will have dementia, and may well be entering a time of their life when palliative care is the most appropriate form of treatment. Decision-making in this area could be aided by better pre-emptive end of life planning in the community (such as through advance care planning), but the patients will still require skilled acute management, supporting the medical and surgical teams where appropriate.

### 6.4 Adult Acute Surgical Take

The co-dependencies of the adult acute surgical take will necessitate an on-site ED to allow appropriate investigations and triage to occur and will also necessitate appropriate medical back up from both acute and general medicine and, as a large proportion of patients are elderly, the elderly medicine department.

In order to cover patients with gastrointestinal bleeding, on-site gastrointestinal advice should be available together with facilities for urgent endoscopy. Respiratory medicine, including bronchoscopy, should be available to in-reach. Immediate diabetes advice could usually be provided via the acute and general medicine route, with specialist advice available on a networked basis and has a lesser co-dependency.

As elderly patients often have cardiovascular co-morbidities and are potentially stressed by their acute surgical conditions, and often require anaesthesia for their management, acute cardiology services should be available for advice.

Diagnostic investigations that are required on-site include routine X-ray and ultrasound, CT, and MRI, with access to nuclear medicine which could be networked. Much surgical intervention is now performed in a less invasive manner using interventional radiology, and this trend is set to increase with time. The service must be available for patients, but although ideally provided on-site to save transfer of patients, the service could again be networked with adequate out-of-hours in-reach, or patient transfer protocols.

Many laboratory investigations can be centralised providing specimens are transported rapidly and there are good IT links to results. However, the acuity of patients requires an on-site hot lab and near patient testing, giving this a Purple rating. Point of care testing (POCT) has potential benefits, including convenience, elimination of specimen transport to the laboratory, simple analysis with minimal sample processing and small volume samples together with immediate availability of results. Quality control, analytical and diagnostic performance, governance arrangements and cost remain obstacles to widespread implementation but there are examples where POCT devices have been carefully evaluated and shown to have acceptable accuracy for the specific clinical situation under consideration. For example, both the National Institute for Health and Care Excellence (NICE)<sup>84</sup> and a Health Technology Assessment study<sup>85</sup> found that certain devices had acceptable accuracy for determining kidney function prior to contrast-enhanced computed tomography (CT) scans. Clinical advice at the bedside is required for a Clinical Microbiology and Infection service, which could be on a visiting basis. Blood products should of course be readily available for transfusion.

Occupational therapy and physiotherapy should be available 7/7 for patients and deliver continuity of care. Acute mental health services should be rapidly available to patients when required, and if based off site, should be able to respond within four hours.<sup>80,86,87</sup>

Adult acute surgery needs to have plastic surgery available, in-reaching if necessary to perform such surgery on-site rather than having to transfer the patient. A small number of patients will have significant abdominal wound breakdown which requires early plastic surgery input (e.g., to skin graft their abdomen) as well as the potential for combined input later. Certain cases of soft tissue infection like necrotising fasciitis are often managed by general surgeons, and it is most appropriate for a plastic surgeon to be involved as soon as possible to help with the surgery knowing that transfer of the patient may not be possible for quite some time.

## 6.5 Trauma

Trauma services in England were reorganised into regional trauma networks in an attempt to save an estimated 450 to 600 lives per year by ensuring rapid treatment. This system went live in April 2012 and is based upon a network with a major trauma centre (MTC) serving a population of 2 to 3 million. A Trauma Network includes all providers of trauma care, particularly: pre-hospital services, other hospitals receiving acute trauma admissions (Trauma Units), and rehabilitation services. The network has appropriate links to the social care and the voluntary / community sector. The MTC provides a comprehensive state of the art service for patients suffering major trauma and is supported by the ambulance service triaging patients who may bypass local hospitals to gain faster

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<sup>84</sup> Point-of-care creatinine devices to assess kidney function before CT imaging with intravenous contrast. 2019; Diagnostics guidance [DG37] <https://www.nice.org.uk/guidance/dg37/>

<sup>85</sup> Corbett M, Duarte A, Llewellyn A, et al. Point-of-care creatinine tests to assess kidney function for outpatients requiring contrast-enhanced CT imaging: systematic reviews and economic evaluation. *Health Technol Assess* 2020;24(39):1-248. doi: 10.3310/hta24390

<sup>86</sup> Ghaferi A a, Birkmeyer JD, Dimick JB. Variation in Hospital Mortality Associated with Inpatient Surgery. *N Engl J Med* [Internet]. 2009 Oct 1;361(14):1368–75. <http://www.ncbi.nlm.nih.gov/pubmed/19797283>

<sup>87</sup> NCEPOD. Are We There Yet ? 2011; [http://www.ncepod.org.uk/2011report1/downloads/SIC\\_fullreport.pdf](http://www.ncepod.org.uk/2011report1/downloads/SIC_fullreport.pdf)

access to specialist skills for instance following a head injury. The MTC is supported by more local trauma units which can offer treatment for the less seriously injured patient and a 'treat and transfer' service following resuscitation and a step-down facility to enable a more local recovery after treatment in the MTC.

## Major trauma centres (MTC)

The specifications for a MTC are described in the 2013 NHS standard contract for major trauma service (all ages) Schedule 2- the services a. service specifications.<sup>88</sup> They have the widest range of co-location requirements to cater for the wide range of injuries, pathologies and complications that can arise. There are three types of MTC – those that treat only adults, those that treat only children and those who can treat both adults and children. The service is designed to deliver high quality specialist care to patients of all ages starting from admission to the relevant MTC, with full assessment and diagnostics in the emergency department. This may be followed by operative treatment and an episode in the critical care unit and ward. Rehabilitation is required for a number for patients, and this rehabilitation will start in the MTC and continue through specialist rehabilitation units or locally through a variety of commissioned providers defined in the network.

A MTC should have immediate access to the vast majority of acute services which would include the surgical specialties and most of the medical specialties relevant to the care of major trauma, i.e., general, emergency medicine, vascular, orthopaedic, plastic, spinal, maxillofacial, cardiothoracic and neurological surgery, specialist early / hyper acute rehabilitation and interventional radiology, along with appropriate supporting services, such as critical care. A full range of investigations should be available on-site. Patients who suffer Major Trauma due to self-harm must have access to acute psychiatric services in Major Trauma Centres with a 24/7 on-call consultant psychiatrist / child psychiatrist & liaison mental health service available on-site to provide timely advice and support.

When treating children, the MTC will additionally follow the standards and criteria outlined in the Specification for Children's Services (Annex 1 of the Major Trauma Service specifications).

## Trauma Units (TU)

The specifications for TUs are less rigorous than for an MTC. The first point of contact with healthcare providers for the majority of seriously injured patients will be through the ambulance service. Each ambulance service has agreed protocols for the recognition and conveyance of candidate major trauma patients to a MTC or a TU dependent upon the network agreed model for each region. Patients who trigger the protocol but need immediate access to time critical interventions at a closer hospital will be taken to the nearest TU before rapid secondary transfer to a MTC for definitive care. Those who do not trigger the protocol for MTC direct transfer will be taken to a TU to receive their treatment.

A TU could be the primary receiver of seriously injured patients and are responsible (for up to 2 days when patients should refer on to an MTC is required) for resuscitating and caring for such patients who require optimisation as they were too unstable and therefore are unable to cope with transfer to MTC. A TU may also receive local trauma patients with less serious injuries, which will include simple fractures of one limb, lacerations, and minor head injuries. In addition, trauma units

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<sup>88</sup> NHS STANDARD CONTRACT FOR MAJOR TRAUMA SERVICE (ALL AGES) SCHEDULE 2- THE SERVICES A. SERVICE SPECIFICATIONS. NHS England D15/S/a Gateway Reference 01365. <https://www.england.nhs.uk/commissioning/wp-content/uploads/sites/12/2014/04/d15-major-trauma-0414.pdf>



need to have the expertise to recognise patients who are beyond their capability to treat, and to be able to transfer them rapidly to the MTC.

As a minimum a TU would have a trauma team on-site (trauma team leader, airway competent doctor, damage control surgeon), emergency care and acute surgery, 24/7 CT scanning, 24/7 emergency (NCEPOD) theatre availability, theatre availability, critical care, or high dependency. Within a TU, vascular surgery input will be required but this could be provided by in-reach services, the current management of open fractures is that these should be treated in a unit where orthopaedic and plastic surgery is immediately available. This will tend to be an MTC. Simple compound fractures which at present are treated in an MTC, could be treated in enhanced TUs providing appropriate plastic surgery services are available.

Care of head injury patients in a TU which do not require neurosurgical intervention are often admitted under general or orthopaedic surgeons. This would include rehabilitation.

Acute paediatrics does need to be co-located with the TU as patients will require joint surgical and paediatric care.

## 6.6 Vascular Surgery

Vascular disease relates to disorders of the arteries, veins, and lymphatics. Conditions requiring specialised vascular surgical care include lower limb ischaemia; abdominal aortic aneurysm (AAA); stroke prevention (carotid artery intervention); vascular access for haemodialysis; suprarenal and thoraco-abdominal aneurysms; thoracic aortic aneurysms; aortic dissections; mesenteric artery disease; renovascular disease; arterial / graft infections; vascular trauma; upper limb vascular occlusions; vascular malformations and carotid body tumours.

In an attempt to provide equal high quality patient access to both elective and emergency vascular services the Vascular Society of Great Britain and Ireland suggested that these services should be available within 1 hours travel time of a recognised vascular centre (Arterial Centres) thus negating the need for emergency vascular care from General surgeons who do not have a specialised elective vascular practice.

Such a service can be centralised or provided by a modern clinical network model with an Arterial Centre and peripheral Network Hospitals (spoke units), the exact model depending on density of population and local factors such as geography and supporting services such as interventional radiology and intensive care facilities.<sup>89</sup> The Network Hospital units can also provide both excellent local outpatient and rehabilitation services and back up diagnostic services. Networks should be designed to treat a population of 800,000 or more to ensure adequate experience for the network teams in the emergency setting. The ideal vascular network is configured to balance the needs of urgent patient access with the provision of safe and effective vascular interventions.

Podiatry is essential to the multidisciplinary foot team and should be incorporated as such supporting vascular services in both the arterial centre and network hospital units. Whilst critical limb threatening ischaemia should have a direct pathway to the arterial centre the majority of acute foot conditions can be triaged, assessed and treated by a podiatrist both in outpatient and inpatient settings. Provision of a multidisciplinary foot care service can reduce hospital length of stay,

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<sup>89</sup> Vascular Society. Provision of Services for People with Vascular Disease 2021.  
<https://www.vascularsociety.org.uk/userfiles/pages/files/Resources/FINAL%20POVS.pdf>

alleviate ED pressures, and increase day surgical treatment obviating need for hospital admission.<sup>90</sup>

## Vascular Surgery Arterial Centre

Arterial centres should ideally co-locate with EDs, but this may not be necessary provided there are agreed pre-admission protocols between appropriately trained ambulance paramedics, emergency medical services and the vascular arterial centres and network hospitals with algorithms on dispatch time, assessment, transport strategies and pre-notification. All immediate investigations to identify the aetiology of vascular surgical emergencies and treat appropriately must be on-site, including interventional radiology, critical care, and acute renal replacement therapy. If not based on the same site, a wide range of medical and surgical services should be able to in-reach (Red ratings) to provide on-site management of patients without requiring transfer. Co-location of a Perioperative care of Older People undergoing Surgery (POPS) service (see section 3.6) enables improved outcomes for both older people undergoing vascular surgery and for younger people with significant frailty, obviating a requirement for on-site acute medicine.

Although the absolute co-dependencies of a vascular surgery arterial centre are primarily related to the availability of critical care and radiological imaging and intervention, with supporting specialised anaesthesia, it is usually appropriate to co-locate an arterial centre at a hospital with acute surgical take and a trauma unit. This would significantly reduce the number of patients that would have to be transferred and would ensure that time critical ischaemic problems could be managed on a streamlined pathway. Interdependent services include rehabilitation and limb fitting services, stroke services, diabetes, cardiology, and nephrology. The national specialist services specifications for vascular surgery provide further recommendations on co-locations and 'inter-dependencies'.<sup>91</sup>

## Vascular Surgery Network Hospitals

Network hospital vascular units, although mostly transferring acutely ill patients to their networked arterial centre and generally caring for patients of lesser acuity, still need co-location with an ICU, general surgery and anaesthetics, and access to on-site interventional radiology, even if not an out of hours service. There is no single model that describes how vascular services should be provided at network hospital units, this will be subject to local factors such as geography and pre-existing service configuration.

The needs of this service would largely depend upon the structure of the arterial centre and the co-dependencies would be much more variable, depending upon both the proximity of the arterial centre and the amount of vascular surgery (assumed to be day case) that is actually done at the network hospital unit. The availability to perform non-urgent angiography and angioplasty and vascular investigations should exist at the network hospital, reducing the need for transfer of patients for investigations and ensuring care is delivered closer to home. It is unlikely that the arterial centre will be able to cope with all the angiographic investigations for the volume of patients covered by the network, but the acuity of the investigations would mean that timing was not critical.

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<sup>90</sup> Ambulatory Acute Foot Service - Royal Free London NHS FT. <https://www.nice.org.uk/sharedlearning/ambulatory-acute-foot-service-royal-free-london-nhs-ft>

<sup>91</sup> NHS England Specialised Vascular Services (Adults) 2017. <https://www.england.nhs.uk/wp-content/uploads/2017/06/specialised-vascular-services-service-specification-adults.pdf>

There would be a need for general surgery or orthopaedics input for patients at the network hospitals both to aid in triage before referral to the arterial centre and to perform, for example, simple foot debridement surgery under the guidance of the vascular surgery team.

One of the key features at the network hospital will be joint working. It is envisaged that a vascular presence will be available between 3 to 5 days per week. This would enable inpatient referrals to be seen within 48 hours. Clinical commitments across the vascular network should be shared between vascular surgeons and vascular nurse specialists, with most having sessions at both the arterial centre and at network hospitals. Access to investigations should include CT, MR angiography and interventional radiology for selected cases. MDT working should encompass diabetic foot services which should include a diabetologist or a physician with a special interest in diabetes and dedicated surgical input by orthopaedic or general surgeons.<sup>92,93</sup> This would be for the emergency treatment of foot sepsis and minor amputations which could be performed at the spoke site rather than transfer to the hub. Vascular surgical input would of course be required.<sup>94,95</sup>

## 6.7 Adult Critical Care

The following summary is designed to be applicable to any adult intensive care unit (ICU) in an acute general hospital. It encompasses all areas that provide Level 2 (high dependency) and / or Level 3 (intensive care) care as defined by the Intensive Care Society,<sup>96</sup> and does not include any recommendations for paediatric patients. What has changed since 2013 has been driven by learning from the response to the COVID-19 pandemic and alignment to emergency preparedness resilience and response (EPRR) processes.<sup>97</sup>

Critical care units are more often reviewed as supporting services for other acute specialties, rather than focussing on and describing a critical care unit's requirements. Most of the grid ratings are therefore based on the expert opinions of the members of the regional Critical Care Operational Delivery Networks and specialist society recommendations.<sup>98</sup>

Most of these patients by definition are extremely ill and may not be able to tolerate any kind of transfer out to another facility. In planning services, great care should be taken to make sure that the specialities these patients need are available on-site wherever possible, without the requirement to transfer patients out.

For on-site dependencies (Purple or Red), there were two key references. The European Society of Intensive Care Medicine (ESICM) recommendations on basic intensive care requirements forms the basis on which the recommendation that acute medical, surgical, diagnostic, anaesthetic and radiology services should be co-located.<sup>99</sup> The Intensive Care Society of the UK core standards<sup>100</sup>

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<sup>92</sup> Diabetes UK. Fast Track for a Foot Attack: Reducing Amputations. 2013. [putting-feet-first-foot-attack-report022013.pdf \(diabetes-resources-production.s3-eu-west-1.amazonaws.com\)](https://www.diabetes.org.uk/resources-production/s3-eu-west-1-amazonaws.com/putting-feet-first-foot-attack-report022013.pdf)

<sup>93</sup> NICE. Diabetic foot problems: Inpatient management of diabetic foot problems. 2011. [Diabetic foot problems: Inpatient management of diabetic foot problems | Guidance | NICE](https://www.nice.org.uk/guidance/CG147/sections/1-3)

<sup>94</sup> All Party Parliamentary Group on Vascular Disease. Tackling Peripheral Arterial Disease More Effectively: Saving Limbs, Saving Lives. 2014. [APPG Vascular Disease 2016 \(squarespace.com\)](https://www.squarespace.com/appg-vascular-disease-2016)

<sup>95</sup> NICE. Lower Limb Peripheral Arterial Disease: Diagnosis and Management. 2012. <http://guidance.nice.org.uk/CG147/Guidance/pdf>

<sup>96</sup> Intensive Care Society, UK. Levels of Critical Care for Adult Patients. Nursing in Critical Care. 2009. [Levels of Care \(ics.ac.uk\)](https://www.ics.ac.uk/levels-of-care)

<sup>97</sup> NHS England Adult critical care surge plan guidance July 2022. <https://www.england.nhs.uk/commissioning/wp-content/uploads/sites/12/2022/07/B1214-Adult-critical-care-surge-plan-guidance-080722-002.pdf>

<sup>98</sup> Intensive Care Society, UK. Core Standards for Intensive Care Units, edition 1. 2014. <https://ics.ac.uk/resource/core-standards-for-icus.htm>

<sup>99</sup> Andreas Valentin Patrick Ferdinande. Recommendations on Basic Requirement's for Intensive Care Units. Intensive Care Med 2011 Oct;37(10)1575-87. 2013; [http://www.esicm.org/upload/Intensive care medicine 2011 Valentin.pdf](http://www.esicm.org/upload/Intensive%20care%20medicine%202011%20Valentin.pdf)

<sup>100</sup> <https://ics.ac.uk/resource/core-standards-for-icus.html>

provides clear guidance regarding the provision of rehabilitation services, speech and language, physiotherapy, pharmacy, and dietetics on-site.

ENT should be able to attend urgently because some of these patients require access to an urgent tracheostomy service where the surgeon will have to travel to the patient. It was considered unrealistic to have an ENT service in each and every hospital with an ICU, and some hospitals (e.g., in Kent) have the ENT service provided on an in-reach basis without any known issues. Gynaecology, interventional radiology, and urology should be configured to at least provide an in-reach service. Some of the patients that may require these services may be suffering severe sepsis. According to the Surviving Sepsis guidelines source control should be achieved within 12 hours, again this may not be realistic in all hospitals.<sup>101</sup>

A significant proportion of ICU patients are elderly and can benefit from the on-site input of the elderly medicine service. Acute cardiology should be available in the same hospital, except for patients requiring urgent PCI who would need to transfer to an appropriate centre if not co-located. It was again considered unrealistic to have a 24/7 PCI on-site facility for every ICU. Consideration must be given to provision for temporary cardiac pacing which should be available at each site. MRI scanning should be available in the same hospital for ICU patients, given the risks and challenges of transferring patients on ventilators and other life-sustaining treatments.

Other services were considered suitable for off site networked arrangements, including hub vascular surgery, plastic surgery, burns, comprehensive stroke unit, inpatient dialysis, cardiac MRI, nuclear medicine, and occupational therapy. For neurosurgery, cardiac and thoracic surgery, although some ICU patients may require these urgent surgical interventions (e.g., for evacuation of a haematoma or drainage of an abscess), these services cannot be realistically provided in each and every hospital.

## 6.8 Acute Cardiac Services: Cardiology (non-interventional and interventional) and Cardiac Surgery

The long-term vision for cardiac services in the southeast region builds on the nationally identified optimum model of care for cardiac services, and on the national COVID-19 emergency preparedness networks. This vision aims to integrate cardiac care and embed collaborative cardiac systems of working, delivering on the ambitions of the NHS Long Term Plan. Currently, acute cardiology services are focused around hospitals rather than care pathways. Getting It Right First Time's (GIRFT) national review of cardiology services recommends a network model of delivery for cardiac services with care organised around pathways rather than hospital sites.<sup>102</sup> Moving to a network model, shaped by local need rather than geography, is aimed at delivering more equitable, accessible high-quality care and improved outcomes.

There is no hard clinical evidence outlining needs for co-location of supporting clinical services with acute cardiac services but the service specifications for primary percutaneous coronary intervention (PPCI)<sup>103</sup> specify that co-located services should include access to cardiac ICU or general ICU for those patients who are unconscious or who require ventilator support. Anaesthetic

<sup>101</sup> Dellinger RP LM. Surviving Sepsis Campaign: International Guidelines for Management of Severe Sepsis and Septic Shock. 2014 Jan;42(1):e88. <https://link.springer.com/content/pdf/10.1007/s00134-012-2769-8.pdf>

<sup>102</sup> Clarke S, Ray S. Cardiology GIRFT Programme National Specialty Report February 2021.

<https://www.gettingitrightfirsttime.co.uk/wp-content/uploads/2021/09/Cardiology-Jul21k-NEW.pdf>

<sup>103</sup> A09/S/d 2013/14 NHS STANDARD CONTRACT FOR CARDIOLOGY: PRIMARY PERCUTANEOUS CORONARY INTERVENTION (PPCI) (ADULT). <https://www.england.nhs.uk/wp-content/uploads/2018/08/Cardiology-primary-percutaneous-cortonary-intervention-adult.pdf>

and intensive care services must therefore be on-site. Interdependent access to cardiac surgery does not necessarily need to be on-site but should be within 4 hours. This will also apply to patients who have a mechanical complication of STEMI (acute ventricular septal defect, acute mitral regurgitation, partial left ventricular rupture). Service specifications for acute cardiac electrophysiology intervention<sup>104</sup> identify cardiac intensive care unit support, anaesthetic support for sedation and general anaesthesia, and echocardiography for accurate ejection fraction and dyssynchrony as being essential co-located services. Again, access to cardiac surgery need not necessarily be on-site but access should be within 4 hours. GIRFT also recommends 24/7 access to emergency echocardiography, access to computerised tomography coronary angiography (CTCA) including CT-fractional flow reserve (CT-FFR), and access to dedicated sessions of cardiovascular magnetic resonance imaging (CMR), including stress CMR.

Co-location of acute cardiology may often be more essential to support other acute medical and surgical specialities than vice versa. Although many speciality services may not be critical to be co-located it would be desirable to have them co-located with interventional cardiology if designing a major emergency centre from scratch. These include vascular surgery, interventional radiology, respiratory medicine, gastroenterology with upper gastrointestinal endoscopy and diabetes services.

For cardiology centres offering interventions for structural heart disease such as Transcatheter Aortic Valve Implantation (TAVI), MitraClip™ and patent foramen ovale (PFO) closure devices, vascular surgery was rated as Purple because of the high risk of vascular complications from these procedures.

Services were rated Green where it was considered most likely that an opinion or treatment could be sought in an elective manner or where that service is so specialised that it would not be appropriate or necessary to co-locate or require a formal network arrangement.

It is noted here that all the ratings are for inpatient adult cardiology and cardiac surgery patients and no discussions were had for outpatient or paediatric patients.

## 6.9 Acute Stroke Services

The NHS Long Term Plan identified stroke as a clinical priority, recognising that stroke was the fourth single leading cause of death in the UK and the single largest cause of complex disability. Subsequently the National Stroke Service Model,<sup>105</sup> the GIRFT Programme Stroke report<sup>106</sup> and the RightCare Stroke Toolkit<sup>107</sup> have provided the foundation for stroke care delivery by defining what is needed to create the most effective stroke services in England. The whole pathway approach, from prevention through to support for those who have had a stroke, is crucial to delivery of the most favourable outcome for patients, including their quality of life and experience of stroke services.

With the provision of thrombolysis, thrombectomy, specialist care in the community through early supported discharge and the major advances in primary and secondary prevention, stroke care has dramatically improved over the last few decades; however, due to the widespread benefit for

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<sup>104</sup> A09/S/a 2013/14 NHS STANDARD CONTRACT FOR CARDIOLOGY: IMPLANTABLE CARDIOVERTER DEFIBRILLATOR (ICD) AND CARDIAC RESYNCHRONISATION THERAPY (CRT) (ADULT). <https://www.england.nhs.uk/wp-content/uploads/2018/08/Cardiology-implantable-cardioverter-defibrillator-and-cardiac-resynchronisation-therapy-adult.pdf>

<sup>105</sup> National Stroke Programme. National Stroke Service Model May 2021

<sup>106</sup> GIRFT Programme National Specialty Report for Stroke, April 2022

<sup>107</sup> NHS RightCare. RightCare Stroke Toolkit, July 2022.

all types of stroke patients, stroke care provided at acute and comprehensive stroke centres is more cost-effective than any other stroke treatment. A number of sources defining the standards have been used to cover the management of stroke from the acute event through to longer term care. These include the recommendations from the GIRFT Programme National Specialty Report for Stroke (April 2022), the 2023 edition of the National Clinical Guidelines for Stroke,<sup>108</sup> the National Optimal Stroke Imaging Pathway, the NICE Guideline for diagnosis and initial management of Stroke and transient ischaemic attack in over 16s (updated April 2022), the NICE Stroke rehabilitation in adults (update),<sup>109</sup> the Sentinel Stroke National Audit Programme (SSNAP)<sup>110</sup> and the British & Irish Stroke Association service standards.<sup>111</sup>

The distinction between hyper acute and acute stroke services evolved to improve the process of care and the availability of specialist services 24/7. The aim was to standardise the process of care and reduce inequity between providers. National standards now dictate that every patient that suffers a stroke should have access to hyper acute stroke care at either a Comprehensive Stroke Centre (CSC) or an Acute Stroke Centre (ASC) within four hours of arrival at hospital. ASCs provide hyper-acute, acute, and inpatient rehabilitation care for acute stroke and should be networked with CSCs who in addition provide thrombectomy and neurosurgery. The 2023 National Clinical Guideline is clear that a stroke rehabilitation unit provides inpatient rehabilitation only. All components of a specialist acute stroke service should be based in a hospital that can investigate and manage people with acute stroke and their medical and neurological complications, but this requirement does not apply to services designed to provide stroke care only in the rehabilitation phase.

## Acute and Comprehensive Stroke Centres (ASC and CSC)

All suspected acute stroke patients must be assessed and treated at an ASC or CSC. Patients with suspected stroke should receive immediate, structured assessment by a consultant-led multidisciplinary team with the appropriate skills to determine diagnosis and suitability for thrombolysis, thrombectomy, intra cerebral haemorrhage intervention, rehabilitation, and ongoing care needs. There must be an agreed pre-admission protocol between appropriately trained emergency medical services and the ASC / CSC with algorithms on dispatch time, assessment, transport strategies and pre-notification.<sup>112</sup> This is to facilitate the rapid diagnosis of stroke, to exclude other pathologies and to ensure appropriate immediate intervention (e.g., thrombolysis). Patients should not be transferred from an ASC to CSC for initial diagnostic imaging and wherever possible the National Optimal Stroke Imaging Pathway should be followed. Time from hospital arrival to treatment should be as soon as possible and within 60 minutes for in-license use<sup>113</sup> of thrombolytic agents.

All immediate investigations to identify the aetiology of the stroke and treatment available to prevent further neurological deterioration and future neurovascular insult should be undertaken whilst in the ASC / CSC. Secondary prevention (including carotid artery intervention) and rehabilitation should be commenced whilst in the ASC / CSC. Patients with a significant carotid artery stenosis should receive urgent intervention (<48hrs from diagnosis) at a vascular surgical hub which need not be co-located.

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<sup>108</sup> [National-Clinical-Guideline-for-Stroke-2023.pdf \(strokeguideline.org\)](#)

<sup>109</sup> <https://www.nice.org.uk/guidance/ng236/documents/accessible-version>

<sup>110</sup> [SSNAP - Home \(strokeaudit.org\)](#)

<sup>111</sup> [New National Clinical Guideline for Stroke \(2023\) now published | RCP London](#)

<sup>112</sup> NICE Guideline NG128. Stroke and transient ischaemic attack in over 16s: diagnosis and initial management. Updated April 2022

<sup>113</sup> British & Irish Association of Stroke Physicians. Stroke Service Clinical Standards. January 2019. <https://biasp.org/clinical-guidelines-standards/>

Multidisciplinary assessments should be started by at least one of the therapists of the stroke multidisciplinary therapy team within 24 hours of admission.<sup>114</sup> Nursing levels require a minimum of fully qualified and stroke-experienced nursing staff to manage the acute stroke patient with appropriate staffing levels recommended in national guidance.

Support from vascular surgeons, interventional neuroradiologists (capable of intervening upon the intra- and extra-cerebral vessels) and neurosurgeons needs to be coordinated to enable focused assessment and treatment in a timely and responsive manner, including transfer between the ASC and CSC for vascular intervention (carotid endarterectomy), thrombectomy and neurosurgery. Protocols and pathways for neurosurgical intervention in acute stroke need to be in place through agreement with local and / or regional providers of neurosurgical services, not least to avoid ambiguity and inconsistencies in the management of individual emergency cases. However, they do not need to be based in the same hospital as the ASC. Regular and timely review of individual cases should occur to ensure these pathways are functioning appropriately, especially for services not accessible 24/7.

Examples of where neurosurgical intervention may be required in acute stroke are:

- Selective patients should be considered for surgical intervention following primary intracerebral haemorrhage if hydrocephalus is present or rapid deterioration occurs.
- Patients with malignant middle cerebral artery territory infarction should be considered for decompressive hemicraniectomy within 48 hours of onset if they satisfy the NICE Stroke Guidelines criteria.

The target is for more than 90% of patients with stroke to be admitted directly from home or the Emergency Department to an ASC or CSC within 4 hours, and to spend at least 90% of their length of stay in a specialist stroke bed. The Stroke Unit MDT (to include stroke physicians, specialist nurses, occupational therapist, physiotherapist, speech and language therapist, dietitian, social worker, psychology services, etc.) holds at least weekly structured meetings to discuss progress and plan goals for acute stroke patients as well as timely and appropriate transfers of care.

People with disability after stroke should have access to inpatient rehabilitation in a dedicated stroke inpatient unit or Stroke Early Supported Discharge rehabilitation in their own home at the same intensity and frequency as would be delivered in the stroke inpatient unit. Where patients are not eligible for early supported discharge because they have rehabilitation needs beyond early supported discharge or are being transferred for residential / nursing home care they should be referred to community stroke rehabilitation when transferred from hospital. High quality rehabilitation therapy should be offered seven days a week to all patients and by all required core disciplines, at an appropriate intensity to meet each individual's rehabilitation goals. Psychological and neuropsychological rehabilitation and post-discharge therapy in accordance with the National service model for an integrated community stroke service<sup>115</sup> should be readily accessible but need not be on-site.

Telerehabilitation saw significant advances during the COVID-19 pandemic. This new and developing method should be considered for remotely delivered rehabilitation to augment conventional in-person rehabilitation.<sup>106</sup>

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<sup>114</sup> [Stroke guidelines 2016 | RCP London](#)

<sup>115</sup> National Stroke Programme. National service model for an integrated community stroke service. February 2022. <https://www.england.nhs.uk/wp-content/uploads/2022/02/stroke-integrated-community-service-february-2022.pdf>

On-site clinical co-dependencies for acute stroke have previously included accident and emergency, acute general medicine, respiratory medicine, elderly care medicine, access to endoscopy, intensive care, anaesthetics, acute cardiology, radiology diagnostics including CT and MRI, occupational therapy, physiotherapy, and acute mental health services.<sup>116</sup>

The pressures on emergency medical services in recent years are well known and well publicised including longer waiting times in A&E, longer ambulance turnaround times, increased emergency admissions, increased bed occupancy and delayed discharge. Associated delays in patient pathways for emergencies such as acute stroke has a significant impact on patient outcomes. The Ninth Annual SSNAP report details the deterioration in time from onset of stroke to hospital arrival from a median of 3 hours 29 minutes in April-June 2021 to 3 hours 53 minutes January-March 2022. The SSNAP Annual Report 2023 details that 40.2% patients were directly admitted to a stroke unit within 4 hours in 2022/23 compared to 44.4% in 2021/22, and 72.9% patients spent at least 90% of their stay on a stroke unit in 2022/23 compared to 76.5% in 2021/22. These figures compare to 54.9% and 83.2% respectively for 2019/20.<sup>117</sup> Whether or not the deterioration in performance against key standards can all be explained by the COVID-19 pandemic remains to be established. However, to achieve good outcomes for acute stroke rapid and accurate diagnosis followed by timely appropriate specialist intervention and care are key to both survival and avoidance of disability. To that end reperfusion treatment rates have improved: the proportion of all patients receiving thrombolysis increased from 10.4% in 2021/22 to 10.7% in 2022/23, and 3.1% of all patients received thrombectomy in 2022/23 compared to 2.5% in 2021/22. Research and innovation have focussed on both reducing delays in the pre-hospital emergency response, including pre-hospital screening tools and video triage,<sup>118</sup> and in the in-hospital acute stroke pathway following conveyance to hospital.

The guidelines for hyper-acute stroke co-dependencies from 2014 are still relevant but should not be considered absolute. Local circumstances, progress in technology, digital communications and workforce may provide opportunities to develop different service models. Although the established infrastructure model for ASC / CSCs includes on-site emergency departments and acute medicine there are now models where ASC / CSCs have been established on hospital sites without Type 1 ED services and acute medicine, with significant improvements in key outcomes. The first of these was established pre-COVID-19 at Buckinghamshire Healthcare NHS Trust's Wycombe Hospital, other examples include University College London Hospital's CSC at the National Hospital for Neurology and Neurosurgery in Queen Square, East Kent Hospitals University NHS Foundation Trust's ASC at the Kent & Canterbury Hospital and Gloucestershire Hospitals NHS Foundation Trust's ASC at Cheltenham General Hospital. The latter 2 examples were both temporary moves in response to the unprecedented challenges of the COVID-19 pandemic which have since been extended pending further evaluation of significantly improved outcomes.<sup>119,120</sup>

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<sup>116</sup> The Clinical Co-dependencies of Acute Hospital Services, 2014 [The-Clinical-Co-dependencies-of-Acute-Hospital-Services.pdf \(secsenate.nhs.uk\)](https://www.secsenate.nhs.uk)

<sup>117</sup> SSNAP Annual Report 2023. SSNAP. Sentinel Stroke National Audit Programme. 2023 Healthcare Quality Improvement Partnership

<sup>118</sup> Pre-hospital specialist triage of potential stroke patients using digital technology: a rapid service evaluation to capture learning and impact of innovations prompted by the COVID19 pandemic. First Look Summary December 2021. [Pre-hospital specialist triage of potential stroke patients using digital technology: a rapid service evaluation to capture learning and impact of innovations prompted by the COVID19 pandemic - NIHR Funding and Awards](#)

<sup>119</sup> 9<sup>th</sup> Annual SSNAP report.

<sup>120</sup> Hargroves D., Ward L., Farr M. SYSTEM OPTIMISATION IN TIMES OF CRISIS. Eur. Stroke J. 2022;7(1 SUPPL):17-18.



The infrastructure required to support ASC / CSCs in hospitals without on-site EDs and acute medicine includes:

- Clear pre-hospital processes in place to reduce the ‘acutely medically sick’ stroke mimic rate.
- 24/7 on-site access to the acute stroke multidisciplinary team including a receiving assessment area for rapid ambulance turnaround.
- 24/7 imaging on-site enabling gold standard compliance with the National Optimal Stroke Imaging Pathway.
- Rapid access to other non-traumatic acute neurology assessment
- On-site intensive care support.
- Clear urgent referral / advice processes and management pathways for general medical conditions and co-morbidities.

The new stroke physician training curriculum implemented in August 2022 ensures that trainees from a wide number of clinical backgrounds develop the full range of capabilities across all of Stroke Medicine. The curriculum aims to maximise the number of doctors capable of managing complex stroke patients. Additionally, all three stroke capabilities in practice will be incorporated in to a 5-year neurology training programme, encouraging future innovative changes to delivery of acute stroke care.<sup>121</sup>

## Integrated Stroke Delivery Networks

Irrespective of the model of acute stroke care integrated stroke delivery networks are the key vehicle for transforming stroke care across the country with an overarching aim of improving the quality of stroke care for better clinical outcomes, patient experience and patient safety.<sup>122</sup> The objectives, governance and structure of integrated stroke delivery networks encompassing the stroke pathway from onset of symptoms through to rehabilitation and life after stroke are fully described by the National Stroke Service Model together with the access to and interdependence with other services / providers.

## 6.10 Renal Services

### Renal grid row: Renal Services Inpatient Hubs

There is no hard evidence outlining needs for co-location of services to support renal centres, but common-sense and consensus has led to the ratings as laid out. The biggest areas of discussion were in Red vs Amber ratings (in-reach of supporting services vs. transfer of the patient from the renal centre to another hospital). For renal dialysis patients, where a supporting service is not co-located, e.g., trauma, acute stroke service, plastic surgery, it may sometimes be necessary for the renal replacement therapy to be delivered on an ICU rather than by an inpatient dialysis unit but where numbers are relatively low it was not felt that co-locating these services ‘just in case’ could be justified.

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<sup>121</sup> Stroke Medicine Sub-specialty. <https://www.jrcptb.org.uk/specialties/stroke-medicine-sub-specialty>

<sup>122</sup> National Stroke Service Model: Integrated Stroke Delivery Networks. May 2021. <https://www.england.nhs.uk/wp-content/uploads/2021/05/stroke-service-model-may-2021.pdf>

Renal units should have critical care units on the same site, and should co-locate with interventional radiology, and with vascular surgery arterial centres (and therefore its associated requirements: see grid and 6.6).

Renal and urology inpatient services are closely linked clinically, and it would be usual for a renal hub to have significant on-site urology support. Whilst it was not considered essential that both services were based on the same site, there are risks that access to the urology service becomes less well coordinated and intervention less timely in patients who need urgent intervention. Renal unit requirements include the ability to provide bladder catheterisation where specialist urology skills are required, and acute urological surgery, e.g., for retrograde stenting. Without co-location, there are significant risks to timely access to emergency operating lists.

Services were rated Green where it was considered most likely that an opinion or treatment could be sought in an elective manner or where that service is so specialised that it would not be appropriate or necessary to co-locate or require a formal network arrangement, e.g., neurosurgery and cardiothoracic surgery.

### Renal grid column: Nephrology

This is defined as the ability for an inpatient to be reviewed by a nephrologist. For the majority of the defined main acute services (the rows) this is something that should be provided on-site. On-site direct review in person has significant advantages, including more accurate and detailed assessment than is possible by phone or video link. This can both result in more prompt transfers if needed to a specialist renal service, better management of acute kidney injury (AKI) on-site, and the avoidance of patient transfer, if a detailed specialist assessment obviates the need. For this reason, many of the grid ratings for this column are Red. The ideal response time is not clear, but a 48 hour time window may be appropriate where there is ready access to telephone advice in the interim. There is some evidence that recovery from AKI is improved with more intense input from a nephrology service although this can only be supposition when comparing hospitals with on-site vs. off site nephrology review. The availability of telephone consultation would render this as an Amber rated service.

### Renal grid column: Inpatient Dialysis

This is renal dialysis delivered by a renal team, as opposed to renal replacement therapy delivered on an ICU. As nearly all the defined main acute services will have ICUs on-site, emergency renal replacement therapy (using continuous renal replacement therapy such as haemofiltration or haemodiafiltration) can take place in the patient's hospital, even in the absence of a dedicated dialysis service. Patients with single organ (kidney) failure needing dialysis can usually be transferred to a renal centre through a networked (Amber) arrangement, ideally following inpatient review by a nephrologist, as above.

## 6.11 Consultant-led Obstetric Services

Since the 2014 report the quality and safety of maternity care has been highlighted in a number of reviews into maternity service failures.<sup>123,124,125</sup> High quality, safe maternity care needs to be the focus of those designing and delivery maternity services. The Kings Fund pointed to safety being a key driver for maternity reconfiguration.<sup>82</sup> To minimise risk of complications and poor outcomes for high-risk women maternity services require 24/7 consultant presence on labour wards, dedicated anaesthetic support and the ability to transfer women to critical care if required.

The Better Births<sup>126</sup> report of the National Maternity Review resulted in the collaboration of those involved in delivering maternity care to implement its vision for safer and more personalised care as part of the Maternity Transformation Plan (MTP). The NHS LTP<sup>13</sup> committed to halving the number of stillbirths, neonatal deaths and maternal deaths and brain injuries by 2030 (subsequently revised to 2025) and by 2019 for every trust in England with maternity and neonatal services to be part of the National Maternity and Neonatal Health Safety Collaborative now known as the Maternity and Neonatal Safety Improvement Programme.<sup>127</sup> Although significant progress has been made with meeting the National Maternity Safety Ambition and mortality rates for the population as a whole are reducing there remains stark health inequalities. Maternal mortality is four times higher for Black women and almost two times higher for Asian women.<sup>128</sup> Fifty-six percent of women admitted to hospital with COVID-19 were from Black and minority ethnic groups.<sup>129</sup> The importance of co-design with women and pregnant people and the identification of the specific needs of Black and Asian populations has been emphasised.<sup>130,131</sup>

For the majority of women and pregnant people pregnancy and birth is an uncomplicated experience however risk in pregnancy, birth and the puerperium is dynamic<sup>132</sup> not static and services need to be able to respond to those requiring medical care with appropriate and timely referral for specialist advice as necessary.

The maternal medicine network service specification<sup>133</sup> was published in 2021 and covers the provision of maternal medicine networks (MMNs). MMNs include pre-pregnancy, antenatal and postnatal care for women and pregnant people with significant medical problems that pre-date or arise during pregnancy or the postnatal period. The presence of an on-site obstetric physician would mean that co-location of some services for example general medicine could be modified. Where obstetric physicians are not present the model of care needs to ensure investigation and management is carried out by an experienced MDT that includes an obstetrician with sub-speciality training in maternal fetal medicine or equivalent. Timely access / escalation to services as part of the MMN in line with the service specification is critical. Effective models of maternal medicine should integrate with local, regional, and national models of care to minimise

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<sup>123</sup> [The Report of the Morecambe Bay Investigation \(publishing.service.gov.uk\)](https://publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/100000/the-report-of-the-morecambe-bay-investigation.pdf)

<sup>124</sup> [Findings, conclusions and essential actions from the independent review of maternity services at the Shrewsbury and Telford Hospital NHS Trust - final Ockenden report \(publishing.service.gov.uk\)](https://publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/100000/findings-conclusions-and-essential-actions-from-the-independent-review-of-maternity-services-at-the-shrewsbury-and-telford-hospital-nhs-trust-final-ockenden-report.pdf)

<sup>125</sup> [Reading the signals: maternity and neonatal services in East Kent, the report of the independent investigation \(print ready\) \(publishing.service.gov.uk\)](https://publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/100000/reading-the-signals-maternity-and-neonatal-services-in-east-kent-the-report-of-the-independent-investigation-print-ready.pdf)

<sup>126</sup> [national-maternity-review-report.pdf \(england.nhs.uk\)](https://www.england.nhs.uk/maternity-reviews/national-maternity-review-report/)

<sup>127</sup> [NHS England » Maternity and Neonatal Safety Improvement Programme](https://www.england.nhs.uk/maternity-reviews/national-maternity-review-report/)

<sup>128</sup> <https://www.england.nhs.uk/wp-content/uploads/2021/03/agenda-item-9.4-safer-maternity-care-progress-report-2021-amended.pdf>

<sup>129</sup> [Characteristics and outcomes of pregnant women admitted to hospital with confirmed SARS-CoV-2 infection in UK: national population based cohort study | The BMJ](https://www.bmj.com/content/381/n10997/e009000)

<sup>130</sup> [Better for women: Full report \(rcog.org.uk\)](https://www.rcog.org.uk/~/media/rcog/media_library/better-for-women/better-for-women-full-report.pdf)

<sup>131</sup> [MBRRACE-UK Perinatal Surveillance Report 2020.pdf \(ox.ac.uk\)](https://www.ox.ac.uk/~/media/oxford/mbrrace-uk-perinatal-surveillance-report-2020.pdf)

<sup>132</sup> [MBRRACE-UK Maternal Report 2021 - FINAL - WEB VERSION.pdf \(ox.ac.uk\)](https://www.ox.ac.uk/~/media/oxford/mbrrace-uk-maternal-report-2021-final-web-version.pdf)

<sup>133</sup> [NHS England » Maternal medicine networks: service specification](https://www.england.nhs.uk/maternal-medicine-networks-service-specification/)

inappropriate referrals into the specialist centre and support local units to provide the right care at the right time, in the right place.

It has been suggested ED services should be a Purple rating. Pregnant women will present to EDs with non-obstetric conditions and may need urgent obstetric review. Equally it is not uncommon that postpartum women with heavy bleeding attend via EDs and may require resuscitation. In practice many will be co-located, and this will be an appropriate front door for some. However, if booked in a unit without an ED, women will present to the maternity unit and following obstetric triage be supported on the presenting obstetric unit or transferred.

Similarly, with regards to cardiology services. With maternal heart disease being one of the leading causes of maternal death,<sup>130</sup> where medical need is high women should be booked and cared for in an obstetric service that has cardiology services available. If, however there was 24 hour obstetric physician cover, then some of the need for acute cardiology would be reduced.

Since our last report national strategies<sup>134</sup> have highlighted the need for improved access to services for women and pregnant people requiring treatment for perinatal mental health. These people will require different services from those provided by general mental health services. Perinatal mental health problems can occur concurrently with obstetric problems particularly peripartum and therefore transfer out is not always an option. An in-reach service should therefore be available. There is a clear benefit in having rapid access to advice, and assessment. The Royal Colleges and Department of Health recommend effective joint working arrangements and services which can respond across primary and secondary care with clear pathways for accessing specialist beds in mother and baby units where required.<sup>135</sup>

When reviewing surgical support urology would ideally be on the same site as obstetrics - bladder injury is one of the more common complications at caesarean, however within 2 hours is a reasonable alternative to on-site. For general surgery 2 hours is reasonable but would ideally be co-located as in emergencies where obstetricians are unable to gain entry to the uterus or have a bowel injury it should be repaired as soon as possible.

Vascular surgery has been changed from a Red 2 rating to an Amber rating. Generally obstetric bleeding complications are not from vascular injury but from uterine bleeding. Major bleeding complications may need recourse to interventional radiology (IR). Much of the use of IR in obstetrics is elective allowing transfer, but an emergency in-reach service is desirable although rarely required. This would include transfer due to Abnormal Invasive Placenta (AIP) not diagnosed antenatally to an AIP centre with access to IR.<sup>136</sup>

Neurosurgery is now Amber rather than Green. Women with a neurosurgical emergency such as an intracranial bleed would have imaging locally then be transferred to a tertiary centre.

It would be rare to need a specific respiratory or gastroenterology opinion within 4 hours. These have been changed to the Red 24 category. For respiratory, general respiratory complications can mostly be managed by general medical consultants or critical care or would be transferred to a tertiary centre following telephone advice.

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<sup>134</sup> LTP<sup>13</sup> and Better Births<sup>126</sup>

<sup>135</sup> [nccmh-perinatal-specialist-community-mental-health-team-service-spec-template-may2018.pdf](https://www.nccmh-perinatal-specialist-community-mental-health-team-service-spec-template-may2018.pdf) (rcpsych.ac.uk)

<sup>136</sup> <https://www.england.nhs.uk/wp-content/uploads/2020/02/1652-aip-service-specification.pdf>

Gynaecology has been removed as a co-dependency. From an obstetric point of view, they would rarely be required unless the expectation is that they would perform hysterectomies in the case of massive postpartum haemorrhage in which case they become co-dependent.

## Access to Neonatal Intensive Care

The recommendations of the neonatal critical care transformation review clearly support the NHS Long Term Plan's commitment to expand neonatal critical care services to further enhance safety, effectiveness, and the experience of families, to improve neonatal capacity and triage within expert maternity and neonatal centres.<sup>137</sup> Neonatal Intensive Care Units (NICU) provide care for the whole range of neonatal care. The NHS England Neonatal Critical Care service specification [E08/S/a] indicates that all women and their babies who are born <27 weeks of gestation or birthweight <800g, and multiple pregnancies <28 weeks of gestation, should receive perinatal and early neonatal care in a maternity service with a NICU facility. Local Neonatal Units (LNU) provide care for all babies born at their hospital at 27 weeks of gestation or more, >800g birthweight or multiple pregnancies >28 weeks (which includes short-term intensive care where necessary) and they may receive babies 27-31 weeks who require high dependency care. Special Care Units (SCU) provide local care for babies born at 32 weeks or more and >1000g birthweight who require only special care or short-term high dependency care. All pregnant women who fall outside these categories or babies who unexpectedly need intensive care are transferred to an appropriate unit in the local care pathway.

## 6.12 Acute Paediatrics and Paediatric Surgery

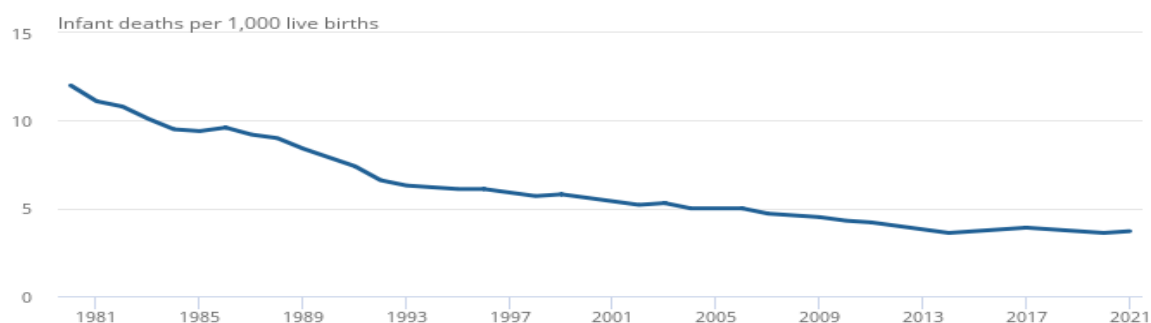
### Evidence base and background

In 2021, there were 852 child deaths (aged 1 to 15 years) and 2,323 infant deaths (aged under one year) in England and Wales. This equates to a child mortality rate of 8 deaths per 100,000 population of the same age, and an infant mortality rate of 3.7 deaths per 1,000 live births.<sup>138</sup> Although the child and infant mortality rates are higher than in 2020, both have followed an overall declining trend since records began in the 1980s.

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<sup>137</sup> Implementing the Recommendations of the Neonatal Critical Care Transformation Review. <https://www.england.nhs.uk/wp-content/uploads/2019/12/Implementing-the-Recommendations-of-the-Neonatal-Critical-Care-Transformation-Review-FINAL.pdf>

<sup>138</sup> Office for National Statistics (ONS), released 1 March 2023, ONS website, statistical bulletin [Child and infant mortality in England and Wales - Office for National Statistics \(ons.gov.uk\)](https://www.ons.gov.uk/peoplepopulationandcommunity/healthandlife/bulletins/2023-03-01/childandinfantmortalityinenglandandwales)



Source: Office for National Statistics – Child and infant mortality in England and Wales: 2021

**Figure 4** There has been an overall decline in infant mortality rate since 1980

Across England, 8-10% of children admitted to hospital require high dependency care and around 2% are admitted to paediatric intensive care (PICU), with demand on paediatric critical care (PCC) services increasing year on year by around 5%. Regional prevalence of PICU admission varies from less than 100 to greater than 400 per 100,000 population, and seasonal variation results in a winter surge in PCC demand due to winter respiratory illness. PCC pathways were therefore a key focus of the Paediatric Critical Care GIRFT Report<sup>139</sup> recognising that general and specialist paediatricians are vital partners in delivering good outcomes for critically ill and injured children. Specialist paediatric intensive care services provide a care pathway for the very sick child from recognition and stabilisation, through retrieval (if necessary), to delivery of care in an appropriate paediatric intensive care facility in a Paediatric Intensive Care Unit (PICU) or in a Paediatric High Dependency Unit (PHDU).<sup>140</sup> PICU and PHDU are not present in every acute hospital hence the Amber rating on the grid, where they are not present on-site adult critical care is essential (Purple rating).

The Royal College of Paediatrics and Child Health (RCPCH) have published a suite of standards to provide a safe and sustainable, high-quality service that meets the health needs of every child and young person<sup>141</sup> including standards for acute general paediatric services (revised 2015) and standards for children in emergency care settings (June 2018). It is beyond the scope of this document to reiterate these standards but key for the future of urgent and emergency care for children are whole system networks linking urgent care and community settings, recognising that the RCPCH standards cannot be met with the current workforce and the current number of inpatient units. Progress in development of children’s services has been hindered by the way that paediatric services have historically evolved. The introduction of ICSs affords a greater opportunity for collaborative commissioning to create networked pathways of care which transcend individual organisational barriers, supported by critical care and acute transport services. Clearly defined pathways to access sub-specialist services such as surgery, cardiology, and others, together with

<sup>139</sup> Morris K, Fortune P-M. Paediatric Critical Care GIRFT Programme National Specialty Report April 2022.

<https://future.nhs.uk/connect/ti/GIRFTNational/view?objectId=130559333>

<sup>140</sup> NHS England. Service Specifications for Level 2 Paediatric Critical Care. <https://www.england.nhs.uk/wp-content/uploads/2018/08/Paediatric-high-dependency-care.pdf>

<sup>141</sup> Facing the Future - standards for paediatric care. Royal College of Paediatrics and Child Health. [Facing the Future standards for paediatric care | RCPCH](https://www.rcpch.ac.uk/resources/facing-the-future-standards-for-paediatric-care)

greater integration between acute, community and tertiary services, is required to ensure sustainability in urgent and emergency care provision.

## Services that should be co-located (based) in same hospital (Purple dependencies)

Where there is an inpatient paediatric service, there must be emergency services for children and young people and anaesthetics on the same site. General paediatric surgery units should have adult general and specialised surgery (including orthopaedics) on the same site. Therefore indirectly, hospitals with inpatient paediatric services will need to be on sites that meet the dependency requirements for adult acute surgical take as described in section 5.

Emergency services for children and young people can be delivered on a site without inpatient paediatric services. Examples include A&E departments that receive children, or short stay paediatric assessment units.

A neonatal service must be co-located with an obstetrics service. The neonatal service will normally form part of the acute paediatrics service in hospitals where acute paediatrics and an obstetric service are co-located. It is possible for a neonatal service not to be co-located with a paediatric service in the following two settings:

- An Advanced Neonatal Nurse Practitioner model, in which case it must be networked with an inpatient paediatric service or neonatal service.
- A regional neonatal intensive care unit service.

Essential supporting services on-site must include X-ray and diagnostic ultrasound, CT, MRI, urgent haematology and biochemistry, and blood bank and transfusion.

There is significant focus on the provision of mental health services to children and young people. On-site adult mental health liaison services are commonplace but those for children and young people are not. The incidence of emergency presentation of children and young people with mental health problems is rising; amongst them deliberate self-harm and attempted suicide. We need our services to be able to respond swiftly to those presenting with mental health disturbance and to support those for whom mental health plays a part in their presentation which may not be immediately obvious. It should be considered essential to have on-site mental health liaison services for children and young people.

## Services that should come to patient (patient transfer not appropriate), but could be provided by visiting / in-reach from another site (Red dependencies)

These services should ideally be provided on the same site but could be provided elsewhere as long as they can deliver a service to children and young people within 4 hours without them having to be moved.

Gynaecology will usually be provided with an obstetric service on the same site as the paediatric and neonatal service. Where this is not the case, a gynaecology service should be available within 4h to support the paediatric emergency and surgery service.

ENT and urology services should be available to attend a child within four hours.

Palliative care services for children and young people are often provided by community, third sector or voluntary organisations. Arrangements should be in place to support palliative care in the hospital setting where this is necessary or chosen by children, young people and their families on the same day as requested and within four hours.

Laboratory services are increasingly being centralised. It is appropriate for non-urgent laboratory work to take place on a different site. However, access to clinical microbiology and infection support is important and there is no substitute for on-site clinical assessment and multidisciplinary team working to aid decision making and effective treatment for children and young people with infectious diseases.

Many children benefit from the support of allied healthcare professionals, especially for those with long term conditions. Multidisciplinary teamwork is vital to effective decision making, treatment planning and treatment delivery. Whilst the physiotherapy, occupational therapy, speech and language therapy and dietetic services may be based off site, there should be regular and prompt on-site availability.

### Services ideally on the same site but could alternatively be networked via robust emergency and elective referral and transfer protocols (Amber dependencies)

These services could be provided on the same site but may be provided elsewhere within a networked arrangement that would ensure prompt referral and transfer of the child or young person when necessary. There are many services that fall into this category.

Specialised adult services commonly receive young people making the transition from paediatric to adult services. This may take place between the ages of 13 and 24. There should be effective arrangements for transition that should be described in a pathway (e.g., diabetes and endocrinology, rheumatology).

Some of these services may be able to provide a local service to children and young people over the age of 16 but who remain under the care of a paediatrician (e.g., urgent endoscopy).

There should be networked arrangements with specialised paediatric services hosted on other sites or providers. This may include the provision of regular on-site outpatient clinics for local access but should also include the ability to refer and transfer children and young people safely and promptly when appropriate (e.g., plastic surgery, burns, neurology, and cardiology).

Comprehensive and acute stroke centre services may be able to provide time critical treatment to children and young people presenting with acute stroke.

Critical care services for children commonly will not receive those 16 years or older. There needs to be access to adult intensive care units for young people 16 years or older who may present to paediatric services or who remain under the care of a paediatrician.

Nuclear medicine and Positron Emission Tomography (PET) are not considered necessary to be on the same site. There should however be networked arrangements providing prompt access, when necessary, with appropriate transfer and referral mechanisms in place.



## Services that do not need to be on same site, and appropriate arrangements should be in place to obtain specialist opinion or care (Green dependencies)

There are a small number of services which do not require a relationship with acute paediatrics and paediatric surgery. These include adult acute and general medicine (non-specialty), Elderly medicine, vascular surgery services, cardiac surgery, thoracic surgery, and cardiac MRI. Trauma need not be considered an essential co-location for paediatrics other than the basic trauma services which any emergency department would provide, although co-location with a trauma unit would always provide greater support.

## 7. Discussion and conclusions

We have described the complex inter-dependencies of a wide range of clinical services involved with acute inpatient care, and a range of factors that need to be considered in any reconfiguration of acute clinical services. We have continued to address different clinical specialties in separate sections but recognise that this describes a very traditional model of service delivery. In the last decade there has been a move towards better integration of services, for example within same day emergency care which is described under section 6.1 Emergency Departments & Emergency Medicine. We accept improving care and integrating services may in turn enable an integrated workforce through single assessment and combined service assessment units enabling economies of scale and efficient use of resource. However, integration of services does not obviate the need for access to specialist skills and competencies and it is this access that the document is intended to describe.

For acute hospitals with emergency departments, we have demonstrated the key relationships between the ED, acute medical services and surgical services, and critical care. On-site support specialties required by *any one* of these four services defines the clinically recommended minimum range of services required for any 'emergency centre' (as referred to in the Urgent and Emergency Care Review).<sup>32</sup> These findings are mirrored (though on a less detailed scale) by the previous London Health Programmes work.<sup>142</sup> The more specialist additional services whose dependencies we reviewed may have additional service requirements beyond those defined by the four core services, and these are described within the report. These need to be fully considered when planning changes to services, as of course individual hospitals have finite physical capacity (at least in the short term) and there will be physical limits to the range of services they can provide when taking account of their on-site supporting requirements. We have also touched on newer services such as POPS and virtual ward care, both of which should be part of any redesign of acute hospital services for the future.

Although our report aims to provide a generic review and analysis that could be of relevance across England, the less urban nature of the South East Clinical Senate's region and the participants' perspectives, may mean that we have not taken full account of the opportunities and issues particular to large cities. In addition, for any region reviewing effective relationships between services, local factors such as geography, demographics, actual travel times and current infrastructure are essential to overlay.

### The evidence base

As others have found however, we identified a paucity of scientific evidence or trial data to guide many of the clinical service co-location recommendations. A range of guidelines are available from medical colleges and societies, as are national service specifications for many of the specialist services, but these are often themselves based on expert consensus and clinical judgement. In addition, assumptions can be based on historical service relationships and personal experience, rather than absolute, objective need. This can lead to inconsistencies when supporting service requirements are viewed through the lens of different specialties. It is also of course quite possible (even likely) that the outcomes of clinical consensus groups will reach different conclusions in the absence of rigorous evidence. However, our approach sought to minimise this risk though wide

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<sup>142</sup> Transforming London's Health and Care Together. March 2015. [Transforming-Londons-Health-and-Care-Together-Prospectus-March-2015.pdf](https://www.healthyrbandevelopment.nhs.uk/Transforming-Londons-Health-and-Care-Together-Prospectus-March-2015.pdf) ([healthyrbandevelopment.nhs.uk](https://www.healthyrbandevelopment.nhs.uk))

regional stakeholder engagement and validation, and with a review of the available published evidence.

## Networks

This report has identified services that we considered should be based in the same hospitals as each other (the Purple dependencies on the grid), those that could be provided by in-reach from another hospital (Red) and those that could be provided by transferring the patient to another centre (Amber). Red rated services in some cases are additionally defined by a minimum required availability ranging from 2, 4, 12 and 24 hours depending on clinical urgency. Both Red and Amber dependencies require clinical and organisational networks to agree and deliver appropriate care for such patients. In certain instances, they may merge also with each other depending on network arrangements and patient transfer. The appropriateness of patient transfer for ongoing care will vary in different geographical regions as this will depend at least in part on the distances involved between hospitals. In 2014 Monitor found that, whilst the average distance between hospitals with A&Es was 21-26.8 km (relating to hospital turnover), 45 sites were more than 30km from each other, and five more than 60 km.<sup>143</sup> The Darzi Healthcare for London Review emphasised the goal for clinical services of 'localise where possible, centralise where necessary'.<sup>144</sup> Network arrangements (with in-reach to or outreach from specialist centres) help to deliver this goal, and to mitigate the risk from centralising services of 'distance decay' (the increasing lack of access to such care the further from the centre the patient is). This is likely to be much more of an issue in rural counties and regions, especially coastal regions, than in major conurbations. They enable the best use of scarce specialist expertise, standardise care, and improve access, whilst minimising the need for travel, delays, and hazardous handovers between providers.<sup>145,146</sup>

The Five Year Forward View<sup>147</sup> and the Dalton Review<sup>148</sup> described in detail how provider organisations can work together differently in the future, such as in 'urgent and emergency care networks', which can help hospitals support each other, along with community providers, in delivering the full pathway of care for patients by better coordination, pooling of resources, or even integration by a variety of models. With the advent of integrated care systems NHS England established 42 statutory integrated care boards (ICBs) on 1 July 2022 in line with its duty in the Health and Care Act 2022. Integrated care boards are charged with producing their own five-year plan (updated annually) for how NHS services will be delivered to meet local needs, taking into account the joint health and wellbeing strategies published by the health and wellbeing boards in their area. They must also outline how they will ensure public involvement and consultation. It is vital in such planning however, that clinical pathways and the inter-dependencies of individual clinical services within hospitals is fully understood, and this clinical senate report can be used as a resource to aid such sense-checking at a local and regional level.

An important component of this report is the range of general issues and themes that need to be fully considered in any plans to reconfigure hospital-based services. These are fully described within the report, but the key points are summarized below.

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<sup>143</sup> Monitor. Facing the Future: Smaller Acute Providers. 2014.

[https://www.gov.uk/government/uploads/system/uploads/attachment\\_data/file/320075/smalleracuteproviders-report.pdf](https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/320075/smalleracuteproviders-report.pdf)

<sup>144</sup> Holland WW. Healthcare for London: a framework for action. Clin Med (Lond). 2008 Apr;8(2):152-4. doi: 10.7861/clinmedicine.8-2-152. PMID: 18478857; PMCID: PMC4952998.

<sup>145</sup> Edwards N. Clinical Networks. BMJ. 2002;324 (7329):63. <http://www.ncbi.nlm.nih.gov/pmc/articles/PMC1122027/>

<sup>146</sup> Edwards N. A more encouraging future for hospitals? BMJ. 2014; 349:g:6780. <http://www.bmj.com/content/349/bmj.g6780>

<sup>147</sup> NHS England. Five Year Forward View. 2014. <http://www.england.nhs.uk/wp-content/uploads/2014/10/5yfv-web.pdf>

<sup>148</sup> Department of Health. The Dalton Review: Examining New Options and Opportunities for Providers of NHS Care. 2014. [https://www.gov.uk/government/uploads/system/uploads/attachment\\_data/file/384126/Dalton\\_Review.pdf](https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/384126/Dalton_Review.pdf)

## Public health perspective

Whilst generic recommendations on service co-locations have been described in this report, the impact on populations could vary significantly from one region to another, and an assessment of that impact should be undertaken whenever there is a proposed re-location of a service, taking account of local factors such as patient flows, geography, and travel times. Such an assessment should also reflect the number of patients treated by the service and any current unmet need, and the risk of reducing access for the defined population, or sub-groups within it. There is also a need to balance the designing of services to cater for every eventuality on a given hospital site, against the 'greater good' or best use of finite resources.

## Public and patient considerations

Patient and public representatives provided a vital 'user' perspective and balance to the clinical discussions in the original report, and these remain highly relevant to this update. A number of key points were made. Patients and the public (and staff) need to be involved early in service change discussions and not wait to be brought in at the formal consultation stage. They should have the clinical case for change, and how it would improve patient outcomes and experience, explained from the start. This would help refine proposals to ensure they are patient-focussed and increase the likelihood of subsequent community support for sound proposals. Of relevance here in the Future Hospital Commission's report is the core principle that 'patient experience is valued as much as clinical effectiveness',<sup>11</sup> the NICE Clinical Guideline: Patient experience in adult NHS services: improving the experience of care for people using adult NHS services<sup>149</sup> and the Working in Partnership with people and communities: Statutory guidance 2022.<sup>150</sup>

Local network arrangements should be maximised, and patients repatriated to more local facilities as soon as the specialist work is done. Seamless and good communication is key between the various professionals and patients and carers, throughout the patient journey.

The view was expressed that not all individuals, particularly older frail patients, may want a centralised service if it is provided a long way from their home and family (and that may only deliver minor improvements in outcomes), and they may prefer more local, generalist care. Individual patients and carers should be involved in such discussions and choices.

## Paramedics and ambulance transport

Development of paramedic practice, with telemedicine support where required, can deliver enhanced assessment of patients, and avoid transfer to hospital, but if hospital assessment is required, may enable bypass of emergency departments and instead direct transfer to ambulatory emergency care facilities, inpatient wards, or centralised specialist facilities (such as already happens for major trauma, primary PCI, and acute stroke).

The ambulance service is a finite resource, and increasing the scope of clinical networks across hospital sites will have a significant impact on its availability for urgent and emergency calls in the community as well as returning patients from acute hospitals to the community, resulting from longer journeys direct to specialist hospitals, or transfers from local hospitals to specialist hospitals.

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<sup>149</sup> National Institute for Health and Care Excellence (NICE). Patient experience in adult NHS services: improving the experience of care for people using adult NHS services. 2023. Available from: <https://www.nice.org.uk/guidance/cg138>

<sup>150</sup> NHS England » [Working in partnership with people and communities: Statutory guidance](#)

The capacity of the ambulance service must therefore be considered for any planned relocation of services.

## Workforce

There are significant workforce challenges right across health and social care, which will impact on the provision of hospital-based services, and how they are configured. These include the increasing need to deliver 7 day and 24/7 hospital (as well as community) services and rotas, the need for a consultant-delivered service as the norm for inpatient care, and predicted workforce shortages, especially in the community (such as GPs, practice, and district nurses).

For example, the Royal College of Physicians' Future Hospitals Commission emphasises the need for an appropriate balance of specialist care and that of hospital generalists (even if specialists are taking a generalist role), acting as holistic and coordinating clinicians for patients under their care, aiming to minimise the transfer of patients to different wards (and by implication different hospitals) wherever possible.<sup>11</sup>

It is essential that the skills of the future health and care workforce are clearly articulated, and professional barriers are broken down wherever appropriate, to ensure flexibility and adaptability of the workforce is aligned with the needs of patients, an ever-increasing number of whom have long term, chronic conditions, and mental health needs. Clarity is required as to where the future workforce needs to be expanded (in the community, in hospitals, or both), to appropriately address the needs of patients, the skills required, and what the range of professions that could provide these using innovative models are. Workforce planning and training then needs to be rapidly aligned with these identified needs and ambitions of the NHS Long Term Workforce Plan.

## Teaching, training, and research

There are both opportunities and risks from service reconfiguration for health care professional teaching, training, and research.

For undergraduate degree courses, the curriculum and experience that can be offered to students must remain comprehensive, accessible, and coordinated if across a network of provider organisations. For postgraduate training, the centralisation of specialist services will increasingly require collaboration across training scheme boundaries to ensure exposure and experience is gained. Postgraduate courses and continuous professional development should be offered to aid in recruiting and retaining a high-quality clinical workforce. Support during service reconfiguration for apprenticeship learners who will be on a more workplace-based pathway than tradition entry routes will require specific consideration during service reconfiguration to ensure retention and quality of training provided.

The delivery of high-quality clinical research is in the interests of patients, providers and the health economy and must be nurtured. This requires strong leadership from the region's specialist centres and coordination with all key provider organisations,

Overall, it is vital that undergraduate and postgraduate teaching, postgraduate training, and research and development remain high and explicit on the agendas of all stakeholder organisations (ICSs, ICBs, commissioners and providers) involved in planning changes in service

delivery, and expert representatives from these three areas should be involved in any service change proposal.

## Liaison psychiatry

Liaison psychiatry is a critical service for acute hospitals, in view of the high proportion of inpatients and ED attenders with mental health needs. Addressing the needs of these patients with an effective on-site service will provide for high quality integrated mental and physical health care, will improve flow, and reduce inpatient costs, is recommended by various Royal Colleges, and is a key component of the government's 'Parity of Esteem' drive. Whether the service should be physically based in an acute hospital (Purple on the grid) or accessible on-site with a rapid response time (Red), was debated. This may be a semantic distinction, and trusts would need to decide how to provide the necessary service in the response time required.

## Imaging

General X-ray facilities, ultrasound and CT scanning were all considered essential to be based on-site for all the major acute services considered in this report. For most acute services MRI was considered an essential on-site diagnostic tool now. However, at present there are significant challenges in delivering 24/7 scanning services where required, relating particularly to workforce and cost. The reporting of scans, particularly out of hours, can be provided on a networked basis using technologies currently in place and is best provided through a local NHS arrangement to address clinical governance issues. Interventional radiology (IR) is increasingly becoming an alternative to surgical interventions. It is an essential on-site service for trauma, vascular surgery hubs, renal centres, and cardiac surgery. For other services, IR could either come to the patient (rated Red), or patients needing urgent IR could be transferred to an IR-equipped hospital (rated Amber). Clinicians, commissioners, and providers need to agree clinically appropriate and safe arrangements.

## Technology supporting acute care networks

Technology has the potential to leverage specialist skills and support for acutely ill patients across geographically distant hospitals. There is significant scope for trialling not just the use of telemedicine in acute care and spreading its use where shown to be of benefit, but also wearable technology and point of care testing. A prime and well-known example of telemedicine is the remote assessment of acute stroke patients for thrombolysis, with other examples in critical care, emergency and trauma surgery, and specialist paediatrics. Effective use of video links for inpatient reviews, and remote clinical data monitoring, would potentially reduce the requirement for the on-site attendance of a supporting specialty, and may reduce the need for transfer to a specialist centre. Use of point of care testing and wearable technology linked to clinical teams via technology hubs is increasingly used to good effect in the virtual ward setting. Such developments could help move some dependencies rated Purple in our grid to Red or even Amber, and those rated Red to Amber. Clinical teams, providers and the urgent and emergency care networks described in the UECR and the Five Year Forward View are strongly encouraged to explore, develop and evaluate such initiatives.

In addition, vital for safe and effective clinical care taking place across teams and providers is the sharing of clinical information to ensure seamless transfers of care and real time access to the

results of investigations. Health informatics links between providers and their clinical patient data is essential infrastructure to enable effective networked clinical care.

## The clinical case for change

Before embarking on any centralisation of specific acute clinical services, we concluded that a clear clinical case for change must be made (on the presumption that there is one). There is a current lack of clinical evidence in many areas of less specialist acute care for such centralisation, as discussed in the Kings Fund report.<sup>82</sup>

Since the previous Clinical Senate report there has been a trend to centralisation in the reconfiguration of acute hospital services but evidence for this from nationwide reconfigurations of emergency healthcare systems is limited. The Danish study<sup>10</sup> suggested benefit only for certain acute conditions from centralisation of services (myocardial infarction, stroke, aortic aneurysm, major trauma). A further study from Ireland, although reporting a decrease in case fatality ratios for serious emergency conditions during a period of centralisation of emergency care, could not link that decrease to centralisation.<sup>151</sup> Conversely, the evidence from a single NHS area in Northumberland suggested that centralisation of emergency care was associated with improvements in both mortality and length of stay.<sup>9</sup> Evaluating reconfiguration is complex. Some mechanisms, such as improved healthcare staffing and presence of senior decision-makers 24/7, may improve the outcome, whereas delay in care from longer travel is more likely to negatively affect outcome. Interactions between rurality and deprivation also contribute to the complexity of understanding any variation in total mortality and other outcomes. Reconfigurations also cannot be relied on alone to deliver an improvement in the quality of care, and continual bottom-up quality and service improvement work to reduce variation, raise standards and improve safety can have a major cumulative impact, potentially avoiding the need for major organisational change altogether.

To conclude, it is hoped that the currently unique remit of clinical senates in England, to provide clinically led, impartial strategic advice (not mandate) to their commissioners and health systems, has enabled a report of this nature, and that it will provide a helpful overview for both commissioners and providers of the clinical inter-dependencies of acute hospital services, as they consider the shape of their acute hospitals in the years ahead. This report therefore should be seen as a reference point and springboard for detailed local discussions with providers and professions, taking account of all relevant factors.

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<sup>151</sup> Lynch, B., Fitzgerald, A.P., Corcoran, P. *et al.* Case fatality ratios for serious emergency conditions in the Republic of Ireland: a longitudinal investigation of trends over the period 2002–2014 using joinpoint analysis. *BMC Health Serv Res* **18**, 474 (2018). <https://doi.org/10.1186/s12913-018-3260-1>

## Appendix A Contributors

### Contributors in 2014 and 2023

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## Appendix B Definitions of the services listed in the grid rows and columns

### Definition of the main clinical services in the grid rows

ROW TITLES	DEFINITIONS
ED & Emergency Medicine. Acute unselected take (including acute surgical patients)	<b>This was defined as so called 'Type 1' Emergency Departments. These are defined (DH) as 'A consultant led 24 hour service with full resuscitation facilities and designated accommodation for the reception of accident and emergency patients'. Whilst the grid dependencies were modelled on EDs that took unselected patients (i.e., included the receipt of acute surgical patients), the report also reviews the dependencies of type 1 EDs that did not receive surgical patients (see section 6 of the report).</b>
Acute Medical Take	<b>The consultant physician-led hospital service that provides review and management of patients presenting with undifferentiated emergency or urgent medical conditions, and their inpatient management.</b>
Acute (non-specialised) paediatrics and paediatric surgery	<b>Acute paediatrics and paediatric surgery includes the functions of an inpatient service and excludes a standalone short stay paediatric assessment unit and community paediatrics. It also assumes service providing excluding specialised services currently commissioned by NHS England.</b>
Acute Stroke Centre (ASC)	<b>ASCs provide hyper-acute, acute, and inpatient rehabilitation care for acute stroke and should be networked with CSCs.</b>
Adult Acute Surgical Take	<b>Unit offering consultant surgeon -led adult surgery acute diagnostic, treatment, and triage services for suspected acute surgical conditions.</b>
Adult Critical Care (Intensive Care)	<b>Adult Critical Care: An Intensive Care Unit (ICU) is a specially staffed and equipped, separate and self-contained area of a hospital dedicated to the management and monitoring of patients with life threatening conditions. It provides special expertise and the facilities for the support of vital functions. It encompasses all areas that provide Level 2 (high dependency) and/or Level 3 (intensive care) care as defined by the Intensive Care Society document Levels of Critical Care for Adult Patients (2009).</b>
Cardiac Surgery	<b>Adult cardiac surgery only.</b>

ROW TITLES	DEFINITIONS
Cardiology: Interventional - PCI (non-STEMI) and devices	<b>Units offering percutaneous coronary intervention for Acute Coronary Syndromes and elective work. These centres are not commissioned to accept patients with ST elevation myocardial infarction via ambulance but often provide primary percutaneous coronary intervention to self-presenters. May offer cardiac device service (which includes implantation of implantable defibrillators (ICD) and cardiac resynchronisation therapy (CRTP and CRTD)).</b>
Cardiology: Interventional - primary PCI for STEMI	<b>Acute heart attack units commissioned for patients with ST elevation myocardial infarction operating 24/7. These units will also offer coronary intervention for all acute coronary syndrome patients and elective coronary intervention. May offer cardiac device service (which includes implantation of implantable defibrillators (ICD) and cardiac resynchronisation therapy (CRTP and CRTD)).</b>
Cardiology: Interventional - structural heart disease (including TAVI, mitraClips™)	<b>Units offering percutaneous coronary intervention for Acute Coronary Syndromes and elective work. These centres are not commissioned to accept patients with ST elevation myocardial infarction via ambulance but often provide primary percutaneous coronary intervention to self-presenters. May offer cardiac device service (which includes implantation of implantable defibrillators (ICD) and cardiac resynchronisation therapy (CRTP and CRTD)).</b>
Cardiology: non-interventional	<b>Management of general cardiology in-patients by cardiologists. No percutaneous coronary intervention on-site. May offer diagnostic coronary angiography, pacemaker, and device implantation (which includes implantation of implantable defibrillators (ICD) and cardiac resynchronisation therapy (CRTP and CRTD)).</b>
Comprehensive Stroke Centre (CSC)	<b>A Comprehensive Stroke Centre (CSC) provides hyper-acute, acute, and inpatient rehabilitation care for acute stroke, thrombectomy and neurosurgery.</b>
Consultant led Obstetric Services	<b>A service providing antenatal, intra-partum and postnatal obstetric care as opposed to midwife only care which might be provided at home or in a midwife led unit. The co-dependencies are for units capable of managing all but the most complex cases which should be referred to specialised centres with the appropriate additional co-capabilities.</b>
Renal Services inpatient Hub	<b>A renal unit providing all aspects of in-patient renal care with support of a specialist renal Multidisciplinary team. This does not include acute transplantation</b>

ROW TITLES	DEFINITIONS
Respiratory Medicine (including bronchoscopy & NIV)	<b>Respiratory medicine covers the diagnosis, investigation, and management of diseases of the upper and lower airways, the alveoli, pulmonary blood vessels, chest cavity, pleura and chest wall. Non-invasive ventilation services are now a key component of respiratory medicine services in an acute hospital.</b>
Trauma	<p><b>Networked service of Major Trauma Centre (MTC) and Trauma units (TU). A MTC is a specialist hospital providing 24 hours per day consultant-led multidisciplinary care for seriously injured patients. The specialist teams have immediate access to state-of-the-art diagnostic and treatment facilities. It is at the centre of a trauma network supporting trauma units within the network. They have the widest range of co-location requirements to cater for the wide range of injuries, pathologies and complications that can arise.</b></p> <p><b>A TU is responsible for the management of trauma patients who are not classified as having major trauma. These units may receive major trauma patients due to under triage or because they require immediate lifesaving interventions before continued care at a major trauma centre. These act as part of the network.</b></p>
Vascular Surgery Arterial Centre	<b>Unit with a dedicated multidisciplinary vascular team, including interventional radiology, available 24 hours a day for diagnostic and treatment interventions for vascular patients and to support other services to control vascular bleeding and manage vascular complications. It provides a centre to support vascular network hospitals without such services and to work jointly with diabetic and podiatrist services to minimise tissue loss and amputation. This will typically serve a population of 800,000 or above. It needs to provide audited outcomes</b>
Vascular Surgery Network Hospital	<b>Several models exist but are based upon the specifications set out by the vascular arterial centre. Whilst the majority of arterial surgery will not be performed at the network hospital, some day case surgery and interventional diagnostic procedures may be depending on the network hospital model.</b>

## Definition of the supporting clinical services in the grid columns

<b>COLUMN TITLES:</b>	<b>DEFINITIONS</b>
<b>ED/Emergency Medicine</b>	Emergency department & Emergency Medicine
<b>Acute and general medicine</b>	Acute medical take
<b>Acute Cardiology</b>	Consultant-led inpatient service (general inpatient cardiology - not intervention)
<b>Acute inpatient Rehabilitation</b>	Designated inpatient beds and consultant-led rehabilitation service
<b>Acute oncology</b>	Consultant-led inpatient service
<b>Acute Paediatrics (non-specialised paediatrics and paediatric surgery)</b>	Full general service and beds
<b>Acute Stroke Centre</b>	Hyper acute care and /or ongoing care of stroke inpatients following care in a CSU.
<b>Burns</b>	Consultant-led inpatient service (including surgery)
<b>CT Scan</b>	Diagnostic equipment and acquisition done on-site
<b>Cardiac MRI</b>	Diagnostic equipment and acquisition done on-site
<b>Cardiac surgery</b>	Consultant-led inpatient service (including surgery)
<b>Clinical microbiology/ infection service</b>	Consultant-led provision of clinical advice on infections, antibiotics, and infection control
<b>Comprehensive Stroke Centre</b>	Includes thrombolysis, neuroimaging, beds and support services (not just ability to give thrombolysis)
<b>Critical care (adult): ICU/HDU</b>	ICU/HDU beds and consultant-led care
<b>Critical care (paediatric)</b>	ICU/HDU beds and consultant-led care
<b>Dermatology</b>	Consultant-led inpatient service
<b>Diabetes and endocrinology</b>	Consultant-led inpatient service
<b>Dietetics</b>	Fully trained service provision
<b>ENT</b>	Consultant-led inpatient service (including surgery)
<b>Elderly Medicine</b>	Consultant-led inpatient service

<b>COLUMN TITLES:</b>	<b>DEFINITIONS</b>
<b>General Anaesthetics</b>	Consultant-led inpatient service
<b>General (Adult) Surgery (upper GI and lower GI)</b>	Consultant-led inpatient service
<b>Gynaecology</b>	Consultant-led inpatient service
<b>Inpatient dialysis</b>	Provision of renal unit / renal ward haemodialysis (does NOT include haemofiltration on ICUs)
<b>Interventional radiology (including neuro-IR)</b>	Diagnostic equipment and intervention done on-site. Includes non-vascular interventions
<b>Laboratory microbiology</b>	Laboratory-based diagnostics
<b>Liaison Psychiatry</b>	Consultant-led inpatient service
<b>Maxillo-facial surgery</b>	Consultant-led inpatient service (including surgery)
<b>Medical Gastroenterology</b>	Consultant-led inpatient service
<b>MRI Scan</b>	Diagnostic equipment and acquisition done on-site
<b>Neonatology</b>	Full general service and beds
<b>Nephrology (not including dialysis)</b>	Consultant-led inpatient service
<b>Neurology</b>	Consultant-led inpatient service
<b>Neurosurgery</b>	Consultant-led inpatient service (including surgery)
<b>Nuclear Medicine</b>	Diagnostic equipment and acquisition done on-site
<b>Occupational Therapy</b>	Fully trained service provision
<b>Ophthalmology</b>	Consultant-led inpatient service
<b>Orthopaedics</b>	Consultant-led inpatient service (including surgery)
<b>Palliative care</b>	Consultant-led inpatient service
<b>Physiotherapy</b>	Fully trained service provision
<b>Plastic surgery</b>	Consultant-led inpatient service (including surgery)



<b>COLUMN TITLES:</b>	<b>DEFINITIONS</b>
<b>Respiratory Medicine (including bronchoscopy &amp; NIV)</b>	Consultant-led inpatient service, with inpatient bronchoscopy service
<b>Rheumatology</b>	Consultant-led inpatient service
<b>Speech and language</b>	Fully trained service provision
<b>Vascular surgery arterial centre</b>	Full centralised service
<b>Vascular surgery network hospital</b>	Designated service (nature may vary from trust to trust within networks)
<b>Trauma</b>	Consultant-led inpatient service (including surgery)
<b>Thoracic surgery</b>	Consultant-led inpatient service (including surgery)
<b>Urgent diagnostic Haematology and Biochemistry</b>	Laboratory-based haematology and biochemistry diagnostics for the most commonly required urgent tests (including near patient testing)
<b>Urgent GI endoscopy (Upper &amp; Lower)</b>	Inpatient service
<b>Urology</b>	Consultant-led inpatient service (including surgery)
<b>Xray and diagnostic ultrasound</b>	Diagnostic equipment on-site

# Appendix C Clinical senates and the South East

## Clinical Senate

Clinical Senates provide high quality, independent, and wherever possible, evidence-based strategic clinical advice, and guidance to any requesting party within the local health and care system, assisting them to make optimal decisions to improve health outcomes for their population.

### Background

Clinical Senates were originally formed to provide strategic clinical advice to clinical commissioning groups created by the Health and Social Care Act 2013. Following the formalisation of Integrated Care Systems (ICSs) as legal entities by the Health and Care Act 2022, Clinical Senates remain available to afford strategic and operational clinical advice as part of service reviews. This can be used to support ICS/ICB led service change in multiple ways including working with Provider Collaboratives, transformation programmes that work across health and care settings, or individual providers working on service reconfiguration.

Clinical Senates operate as impartial, advisory arms-length bodies aligned to the NHS England Regional Medical Directors and hosted by NHS England at regional level. ICBs are accountable for the commissioning of services (and decision making on the outcome of service reconfigurations) and providers remain accountable for service delivery.

### Function and Role

The Senates support decision making concerning major service re-design to achieve optimal use of resources for the health of their populations by providing early patient-focussed 'critical friend' advice to inform developing plans, and final clinical assurance to ICSs and NHS England (and by extension patients and the public) on completed proposals.

This may include reviewing temporary changes that ICBs may be considering making permanent following system wide major service disruption, such as that due to the COVID-19 pandemic.

A [National Operating Framework](#) sets out the key Clinical Senate functions which aim to:

- Support commissioners/Integrated Care Boards and Integrated Care Systems (ICSs) to make the best decisions about health care for their populations.
- Bring together patients and carers as partners with a range of health and social care professionals, to take an external and independent overview of health and healthcare for local populations.
- Provide a source of strategic, independent clinical advice and leadership on how services should be designed to provide the best overall care and outcomes for patients.
- Provide clinical advice to inform the statutory NHS England reconfiguration assurance process.

Each Clinical Senate discharges these functions through its Council (a multi-professional steering group which includes patient and public representatives) and its Assembly (a wider professional resource comprising health and care professionals, and patient and public representatives).

## Impartiality

To ensure their advice remains independent Clinical Senates maintain their impartiality through diligent management of any potential conflicts of interest and/or by working collaboratively with other Senates where necessary or when particular circumstances dictate.

While there are other sources of independent clinical advice (Clinical Networks or Royal Colleges for example), Clinical Senates stand out as the established advisory bodies that can bring together independent multi-disciplinary expertise and experience, and at no additional cost to NHS commissioners, Trusts, or systems. Consequently, they offer excellent value for money.

## Adding value

Building on years of experience and organisational memory, the value of Clinical Senates is extremely apparent with the increasing complexity and/or level of contention associated with some service change proposals. As local health systems seek approval from overview and scrutiny committees and other such governance bodies, their decisions may be referred to the Secretary of State or for Judicial Review. The quality and impartiality of Clinical Senates' advice and guidance has been noted in such reviews, confirming that the multi-professional resource of Clinical Senates is invaluable, influential, and held in high regard.

For more information about the South East Clinical Senate please visit our website <https://secsenate.nhs.uk/>

To view the reports and advice of all clinical senates nationally please follow this [link](#).

## South East Clinical Senate Council Members

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<b>Toby Holder</b>	Associate Director of All Age Continuing Care	Hampshire and Isel of Wight ICB
<b>Lalitha Iyer</b>	Chief Medical Officer	Frimley ICB
<b>Anita Jayadev</b>	Consultant Chest Physician	Frimley Health NHS Trust
<b>Lisa Jeffery</b>	Senior Quality and Safety Manager	Sussex Local Maternity and Neonatal System
<b>Mark Knight</b>	Chief Healthcare Scientist	NHS Kent and Medway ICB

<b>NAME</b>	<b>JOB TITLE</b>	<b>PLACE OF WORK</b>
<b>Sunil Lobo</b>	Consultant Physician and Clinical Lead, Acute and Ambulatory Care	East Kent Hospitals University NHS Foundation Trust
<b>Gill Manning</b>	Patient and Public Partner	
<b>Sarah Markham</b>	Patient and Public Partner	
<b>Katie Mashingaidze</b>	Lead Nurse for the Fundamentals of Care in Older Adults	Hampshire Hospitals NHS Foundation Trust
<b>Andrew McLaren</b>	Director for Clinical Partnerships	Buckinghamshire Healthcare NHS Trust
<b>Jackie McGlynn</b>	General Practitioner, Clinical Lead for Urgent Care, Pain, Stroke and Gynaecology	GP Principle, Kings Corner Surgery, Frimley ICB
<b>Rachel Oaten</b>	Medical Director, Emergency Medicine Physician	South East Coast Ambulance Service
<b>Patience Okorie</b>	Clinical Director Children's and Maternity Services/ Population Health	NHS Sussex
<b>Claire Parr</b>	Maternity Clinical Governance Lead	St Richards and Worthing Hospitals
<b>Aparna Pal</b>	Consultant Endocrinologist	Oxford University Hospitals
<b>Sian Rees</b>	Director, Community, Involvement and Workforce Innovation	Health Innovation Oxford and Thames Valley
<b>Alex Rickett</b>	Nurse Consultant in Liaison Psychiatry	Kent and Medway NHS and Social Care Partnership Trust
<b>Paul Sadler</b>	Postgraduate Dean - Wessex and Thames Valley	NHS England South East
<b>Aneetha Skinner</b>	Clinical Lead for Sussex Rehabilitation Centre.	Sussex Community NHS Trust
<b>Sally Smith</b>	Registered Nurse, NHSE Clinical Reviewer	NHSE
<b>Jo Szram</b>	Postgraduate Dean - Kent Surrey Sussex	NHS England South East
<b>Alison Taylor</b>	Medical Director for System Improvement and Medical Standards	NHS England, South East
<b>Janet Waters</b>	Patient and Public Partner	