

Towards safe, stable and sustainable resumption of planned surgical and other procedural disciplines dependent on Anaesthesia and Critical Care services

This document highlights factors to consider when planning resumption of surgical and other procedural disciplines dependent on anaesthesia and/or critical care services. It describes principles rather than detail and is intended for local, regional or national level consideration.

Fundamental principles

Underpinning the document is a recognition that many patients, currently more than 4 million, are now waiting for planned surgical procedures, the vast majority of whom will require care from anaesthetists and/or critical care specialists. The number waiting is likely to be considerably higher when non-surgical procedural specialties, e.g. cardiology, gastroenterology and radiology, are included and will increase further as a result of delayed referrals from 2020 and patients with delayed presentations of disease. There is a pressing practical and moral imperative to address these waiting lists. Resumption will initially be partial, but will over time need to escalate to normal or even supranormal activity levels.

Equally importantly it is recognised that addressing the needs of patients awaiting planned care who require anaesthesia and/or critical care will require planning and new ways of working. The service that responds to this new crisis of capacity and capability must be safe, stable and sustainable.

Surgical services will need to resume in a staged manner. The [FSSA surgical prioritisation tool](#) is being used by many to prioritise by urgency of surgery.

Although this document is focused on anaesthetists and intensivists and the impact on resuming surgical services, the principles apply to all those with whom they work, including operating department practitioners and nursing staff. These staff are also fatigued and many have experienced significant emotional trauma and moral injury during COVID.

In this document we use the term surgical services but this refers to all procedural specialties undertaking elective work requiring the involvement of anaesthesia and/or critical care services.

The need to pause the majority of planned surgery for almost a full year is unique in the history of the NHS. Resuming planned surgery also presents unique challenges. To make this resumption safe, stable and sustainable will require planning, patience, understanding and novel ways of working.

Organisational structure- space, staff, systems and stuff

A document was published on the ICM-anaesthesia-COVID19 [website](#) in May 2020 entitled "[Restarting planned surgery in the context of the COVID-19 pandemic](#)" and the principles therein still apply. The RAG rating document of minimum requirements before restarting planned surgery is included as an appendix.

Planned surgery may restart only when the necessary minimum four Ss (space, staff, systems and stuff (equipment)) are in place to support this in a safe, stable and sustainable manner.

Post-pandemic or new endemic?

When planned surgical services resume, the second surge of the pandemic will be waning but not over. Critical care and anaesthesia services will still be in a surge state. Changes in practice, designed to minimise SARS-CoV-2 transmission within hospitals, will still be in place. This will reduce hospital bed capacity, theatre capacity and theatre efficiency. Surgical activity will resume in an environment of endemic COVID-19 that will last for a minimum of several years.

Surgical activity will resume in a setting in which COVID-19 is an endemic disease requiring additional precautions compared to pre-pandemic care. This will impact capacity and capability. Flexibility will also be needed to enable re-expansion of critical care services and reduced planned activity if future pandemic surges occur, particularly in winter 2021.

Perioperative capacity

In October and December 2020 the [Anaesthesia and critical care covid-19 tracking](#) (ACCC Track) survey serially monitored how hospitals, perioperative and critical care have been affected by COVID-19. The [ACCC Track survey round 2](#) showed that, in more than two thirds of hospitals, perioperative care was significantly disrupted by COVID-19 pressures, and in a quarter the service disruption was severe. One in five operating theatres, when compared to the corresponding period in 2019, were closed and in those that were open, activity levels were well below normal activity (most commonly at around 75% of normal activity). Almost two thirds of hospitals were undertaking surgery at external sites, including in the independent sector. There was a 30% decrease in surgical activity overall: an estimated 5,500 fewer operations each day across the UK, equivalent to more than a million operations lost in a year. Among surgical specialties the decreases in surgical activity (compared to the corresponding months in 2019) were 36% in planned non-cancer surgery, 35% in planned paediatric surgery, 25% in planned cancer surgery and 10% in emergency surgery.

As these two surveys took place before the November lockdown and before increased pandemic surge in December, respectively, they are unlikely to represent peak levels of disruption. It is anticipated that similar degrees of disruption may still be in place when surgical services resume.

Planned surgery will return to a setting of reduced capacity and capability, and will need to resume in a staged manner using clinical prioritisation such as that described by the FSSA

Critical care capacity

During January 2021, the [Intensive Care Society reported](#) an increase in ICU beds of 2251 compared to January 2020: equivalent of increasing the number of ICUs in the UK by appropriately 140 units or

70%. The expansion has taken place without any increase in substantive staffing numbers and is reliant upon increased hours worked, redeployment of staff and decreased patient-to-staff ratios, thereby increasing work intensity. It has been learned from many major incidents that these have a 'long tail' in terms of ongoing workload, meaning that capacity is often available considerably later than expected.

In the case of COVID-19 it is highly likely that [critical care services will not return to normality for many weeks](#), and possibly months after other services recover from pandemic pressures. Vaccination will have a notably earlier impact on deaths and hospital admissions, with critical care occupancy lagging considerably behind. This is because patients admitted to critical care with COVID-19 are notably younger (median age 61 years) than those in the other groups (deaths 83 years; hospital admissions 73 years), and the benefits of vaccination of this cohort will not occur until considerably later in 2021), and because patients admitted to ICU with COVID-19 [typically stay for several weeks](#).

Capacity for perioperative critical care of levels 1.5-2 may be improved by implementation of the [Faculty of Intensive Care's recommendations](#) on creating Enhanced Care areas.

Planned surgery can resume only when the physical space occupied by temporary ICUs has been returned to its original use and bed occupancy in established ICUs has returned to a pre-pandemic level. Use of Enhanced Care areas is one practical solution to accelerating resumption of planned procedural care.

Staff availability

The [ACCC Track survey](#) indicated that in December 2020 more than 1 in 6 anaesthetists were not available for work in their normal roles due to redeployment, self-isolation, illness or shielding. The vast majority of unavailable anaesthetists were redeployed to critical care. This redeployment increased ICU staffing by up to 60%, and the number of staff deployed in this manner increased by 50% between October and December 2020.

Planned surgery will be able to resume only when staff redeployed from perioperative services to elsewhere have returned to their usual roles.

Physical exhaustion and untaken leave

It is readily acknowledged that anaesthetists and intensivists (many of whom are the same people in the majority of hospitals) have worked at levels of excessive intensity and duration in the response to the pandemic surges. All these staff are consequently physically tired, and some are exhausted. A period of post-surge rest and recuperation is necessary before normal levels of perioperative activity can resume. This is necessary both for staff wellbeing and patient safety.

For many, annual and study leave were deferred through much of 2020 and have necessarily been carried over into 2021. Leave that has not been taken will need to be taken in the next year or in 2022. This will further diminish the anaesthetic and critical care workforce in the next two years and should be taken into account in workforce planning.

Psychological exhaustion, illness and moral injury

The psychological impact of the pandemic both in its intensity and duration has been profound for those working in patient-facing roles. Those working in critical care are unlikely to be unique in this

regard, but the measured levels of psychological harm in this group are a matter of significant concern. A [survey of the mental health of staff working in critical care](#) during the first COVID-19 surge reported that 45% met the threshold for significant psychological harm including severe depression (6%), post-traumatic shock disorder (40%), severe anxiety (11%) or probable alcohol misuse (7%), and 13% reported recent frequent thoughts of being better off dead or of hurting themselves. These levels of psychological harm are comparable or exceed those reported by troops returning from active military deployment and cannot be ignored. A follow-up survey extending and expanding the investigation suggests even higher levels of psychological harm during the second surge. The impact appears greater for nurses than doctors and in those units exposed to the highest levels of expansion of critical care capacity relative to normal.

The [greatest drivers of post-traumatic ill health are those active after the event is over](#). For this reason, the period after the second pandemic surge wanes is particularly important for the psychological health of many healthcare workers. Taking actions to ameliorate the psychological harms caused to staff caring for patients during the pandemic must be a priority for ethical reasons. On a practical level a safe, stable and sustainable service is unlikely unless staff psychological wellbeing is actively monitored and addressed. The Intensive Care Society has produced [guidance on maintaining workforce wellbeing](#) – organisational themes including preventative strategies, leadership and resources are highlighted in this guidance.

Doctors are often reluctant to seek help for mental health problems and this may be related in part to stigma. Anaesthetists and intensivists in particular are at increased risk of suicide. Provision should be in place to support those seeking or needing help and [confidential, specialist services](#) should be available. The recommendations from the [Guidelines on suicide amongst anaesthetists 2019](#) remain especially important in the recovery phase from COVID-19.

In order to provide a safe, stable and sustainable perioperative service, the psychological wellbeing of anaesthesia and critical care staff will need to be supported for a prolonged period in the aftermath of the pandemic.

Staff planning to reduce workload or leave employment

To sustain the resumption of surgery over the coming years will require a stable or increased workforce. Staff retention is a concern in the aftermath of the surge response to the pandemic. A Royal College of Anaesthetists snapshot [survey](#) reported that 39% of anaesthetists wish to reduce their working hours and 18% were considering stopping work altogether.

Sustaining the perioperative and critical care workforce and capacity will require workforce planning on a local, regional and national basis.

Trainees and training

All specialties' trainees have experienced interruption to training in the last year. Trainees in anaesthesia and critical care have been particularly affected by decreased clinical training, interrupted examinations, cancelled rotations and redeployment to critical care. Although the physical and psychological burdens on these trainees have been substantial, they have made a huge contribution to the NHS's response to the pandemic.

There is a moral necessity to address the deficits in training that have applied to these doctors. There is also a practical need to ensure the training programmes return to normality both to ensure a supply of fully trained specialists and recruitment to training schemes. Both are essential to the stability and sustainability of surgical services.

Resumption of planned surgery will need to accommodate the training needs of doctors in training of all specialties.

Supplies

During the pandemic there have been intermittent but significant disruptions to supplies, for example of personal protective equipment (PPE) and anaesthetic drugs, particularly those used both in critical care and anaesthesia. The changes that need to be made to anaesthetic choice or techniques in times of equipment or drug shortage may affect patient experience, safety or outcome. During times of crisis such as pandemic surges, making these changes can be justified. Outside of these crises, continuing with planned surgery in the face of equipment or drug shortages needs careful consideration and patient communication.

Planned surgery requires reliable and consistent supply chains of equipment and drugs.

Reassessing previously listed surgical patients

Many patients awaiting surgery will now have waited up to, or even more than, a year. This may have significantly altered their circumstances and that of the planned surgery:

- The underlying condition may have worsened or improved;
- The patient's personal views about undertaking surgery may have changed;
- The patient may have developed new or worsened comorbidities;
- The patient may be less fit due to [deconditioning during lockdown or shielding](#). This applies particularly to higher risk patients and those in their [70s and older](#);
- The patient's health may have been impacted by [COVID-19 infection](#);
- The risk of harm from becoming infected with SARS-CoV-2 in the perioperative period alters risk/benefit evaluation.

Each of these may alter the risks, benefits and desirability of proceeding with surgery. For many patients, there will need to be a re-evaluation of the desirability of surgery. This may involve further surgical, anaesthetic or multidisciplinary assessment and shared decision-making. This topic is will be addressed in greater detail in a multispecialty document on preoperative assessment which is in preparation.

It may be wise to plan a phase of multiprofessional reassessment and coordination before the full resumption of planned surgical work, enabling a holistic physiological and surgical assessment, prioritisation and coordination of surgical workload. This brief pause in the resumption of planned surgery, perhaps of 2-3 weeks' duration, would also facilitate a period of rest and recuperation for anaesthetic and critical care staff, while maintaining emergency perioperative services throughout.



Changes in surgical condition or preoperative health and fitness will necessitate further work-up, consent or shared decision-making for many patients. The period in which this takes place could provide an opportunity for planned rest and recuperation for critical care and perioperative care staff.

The challenges of 'full steam ahead' and the need for novel ways of working.

Anaesthetists and critical care staff have been instrumental delivering the national response to the COVID-19 pandemic. They are now faced, along with surgical colleagues, with a new challenge in dealing with the backlog of surgical workload. This task should not be underestimated: the volume of work is considerable and will likely take many years to complete. As such, the response must be coordinated carefully and the resultant service must be safe, stable and sustainable for the benefit of both patients and staff.

The pandemic has already changed the face of healthcare delivery and has led to adaptation and innovation in NHS perioperative care. The resumption of planned care provides an opportunity to continue the best of this and to continue to adapt and innovate further. There has always been a need to deliver high-volume, low-risk surgery whilst minimising hospital bed occupancy and maintaining good outcomes, but this requirement is now more important than ever.

It is likely that adaptations to established pathways will be required. Simply modelling recovery on asking staff to work longer or harder using existing models is unlikely to be achievable, let alone sustainable. Despite the enormous challenges, the pandemic has also brought about many positive changes across healthcare, such as enhanced collaboration between disciplines and rapid adoption of new technology. Novel ways of working including remote and virtual care, and [initiatives that optimise delivery of high-volume, low-risk surgery](#) in settings that avoid hospital admission are likely to be embraced.

The resumption of planned healthcare in 2021 is both a necessity and an opportunity, but it will require coordinated planning and [acknowledgement of the physical and psychological needs](#) of those who have worked throughout the pandemic in order to deliver the safe, stable and sustainable service that will be required in the years to come.

APPENDIX *Minimum requirements for restarting elective surgery and procedures*

In the following RAG-ratings, these terms are used:

Baseline capacity: maximum critical care bed capacity before the pandemic.

Expanded capacity: maximum critical care bed capacity achieved in order to manage the increased workload associated with the pandemic.

RED

- Critical care occupancy close to expanded capacity.
- Patients in temporary ICUs in operating theatres scheduled for elective use or in other locations to be used in the surgical pathway, eg PACU or surgical ward.
- No planning for creating COVID-19-positive and COVID-19-negative patient separation in critical care facilities to accommodate planned and unexpected admissions after elective surgery.

AMBER

- Critical care occupancy reduced from expanded capacity and approaching baseline capacity.
- Other hospitals in the regional ICU network still using temporary ICU facilities, including the use of paediatric ICUs for adult patients.
- Plans for COVID-19-positive and COVID-19-negative critical care beds and pathways in development but not complete.

GREEN

- Critical care occupancy close to 85% of baseline capacity.
- COVID-19-positive and COVID-19-negative critical care bed and pathway separation enacted and effective.

Staff

During the recent peak of critical care activity for COVID-19 patients, large numbers of anaesthetic, theatre, perioperative care and ward staff have worked in ICUs. Not only must sufficient numbers of all these staff groups be free to return to their routine work activities to enable a return of planned surgical activity, but there must be an acceptance and remediation of:

- The potential for fatigue and stress resulting from shift working patterns, long hours and dealing with death.
- Accumulated time owed for Bank Holidays and annual leave.
- Sickness resulting from coronavirus or other illnesses.
- Inadequate access to educational activities compliant with normal revalidation requirements.
- Unremunerated clinical time owed for flexible working patterns under surge conditions.

Other members of staff will have been away from work being 'shielded' from the coronavirus. At present it is likely these individuals will need to remain shielded. How and when this requirement is lifted is uncertain and will likely apply on a case by case basis.

Both the above factors will impact on staff capacity for some time to come. Substantial expansion of critical care staffing may be needed to address the pandemic cross-cover requirements, release theatre and perioperative care staff and provide future resilience.

RED

- Theatre staff, perioperative care staff and anaesthetists still significantly committed to critical care duties.
- Critical care staffing ratios significantly higher than prepandemic levels and reliant on non-ICU staff.



- Out-of-hours resident on call duties being performed by consultant and SAS anaesthetists.
- Shielded and higher-risk anaesthetists not performing patient-facing activities.

AMBER

- Working patterns of anaesthetic, theatre and perioperative care staff of all professions still significantly impacted by pandemic surge conditions and recovery from these.
- Critical care staffing ratios above prepandemic levels or reliant on non-ICU staff.
- Trainee on call rotas restored but less than normal number of trainees available for work.
- Plans in place for sufficient numbers of consultant and SAS anaesthetists to be available to provide cover for planned surgical activity, but not yet fully in place.
- Planning for adequate staff numbers to restart non-theatre anaesthetic activities such as preoperative assessment, acute pain rounds and perioperative medicine activity but adequate numbers not yet available.
- Planning for returning higher-risk anaesthetists to patient-facing activities after appropriate risk assessments but not yet implemented.

GREEN

- Elective surgical pathways fully staffed by intact theatre and perioperative care staff rotas.
- Critical care staffing ratios at or near prepandemic levels.
- Trainee on call rotas restored with normal numbers of trainees.
- Sufficient numbers of consultant and SAS anaesthetists available to provide normal staffing levels for the planned surgical activity to be delivered.
- Non-theatre activities ready to be restarted.
- Higher-risk anaesthetists returned to patient-facing activities where appropriate.

Stuff (Equipment)

The pandemic has necessitated widespread redeployment of equipment used in surgical care pathways to support a critical care surge response. After any appropriate decontamination, repair and servicing, this will need to be returned to its normal location and usage before elective activity can restart.

COVID-19 infection will remain in the community for months if not years, and the personal protective equipment (PPE) needed for current and possibly increased ward and critical care management of such patients must be available before any planned surgery is recommenced. Drugs used in critical care and anaesthesia are in short supply, and adequate stock levels for expected and potential critical care activity, and emergency anaesthetic activity, must be secured before any return to planned surgical activity.

Secure ongoing supply of disposables, PPE and drugs should be assured before increasing surgical activity.

Critical care facilities may remain significantly impacted both in general and for specific organ failures, and should be assessed on a speciality by speciality basis. For example, if local or regional renal replacement therapy (RRT) facilities remain saturated even after general ICU capability is restored, this will impact on the ability to restore planned cardiac, major vascular and high-risk general surgical work.

RED

- Equipment used in surgical pathways still in extensive use for critical care patients, eg anaesthetic machines and infusion pumps.
- Shortages of PPE and other equipment necessary for effective infection control.

- Non-availability or low stock levels of key drugs used in critical care and anaesthesia such as first-line choice of neuromuscular blocking drugs, opioid analgesics, hypnotics, sedatives, inhalational anaesthetics, inotropes and vasopressors.
- Non-availability of postoperative critical care equipment either in general ICU capacity or for specific forms of support such as RRT or non-invasive ventilation.

AMBER

- Adequate numbers of anaesthetic machines and infusion pumps available but insufficient in reserve in case of damage or machine malfunction.
- Stocks of PPE and other equipment necessary for effective infection control adequate for potential increases in critical care activity and increasing surgical activity but supply chain not assured.
- Stocks of key drugs used in critical care and anaesthesia adequate but uncertain resupply through normal supply chain routes.
- Postoperative critical care capacity limited and in competition with ongoing COVID-19 requirements.

GREEN

- Minimal equipment usually used in the surgical patient pathway in use in critical care, with adequate equipment in reserve in case of damage or machine malfunction.
- Adequate stocks of PPE and other equipment necessary for effective infection control for potential critical care and planned surgical activity with assured supply chain.
- Adequate supplies of key drugs used in critical care and anaesthesia with secure supply chain identified.
- Good availability of critical care capacity and all relevant organ support modalities.

Systems

Infection control and prevention processes aimed at minimising the impact of COVID-19 will be in place for some time. These will require additional time and resources, and will mean that a return to pre-COVID-19 levels of activity will prove very difficult without additional investment in resources, facilities and staff.

Firstly, there is a need to prevent patients having major surgery while they have coronavirus except for life, limb or sight-saving procedures, as their outcomes are likely to be poor. Risks and benefits will need to be assessed on a case by case basis. Secondly, there is a need to prevent patients for surgery of any kind infecting staff when attending hospital, and to prevent staff infecting surgical patients. Thirdly, specialist surgery may need to be organised and cohorted on a regional basis in order to maximise availability of equipment, postoperative care and other resources. There may be significant public concern about attending acute hospitals, especially in hotspot areas and in the close aftermath of pandemic, and there is therefore potential merit in a 'clean hospital' approach of cohorting by site. All these factors need careful planning and may impact on timing of surgery and both anaesthetic and surgical staff deployment.

Maximising surgical activity in the presence of these processes will require streaming patient flows using patient shielding before admission and testing such that COVID-19-positive and COVID-19-negative pathways are created and used appropriately. All Standard Operating Procedures

for surgical services, operating theatres and critical care will need careful review and adjustment as necessary.

Consideration might also be given to streaming members of the surgical, anaesthetic and theatre

teams such that those teams doing elective work are separate to those doing emergency and on call work.

Standards of safety for patients and staff must not be compromised by a determination to increase productivity.

RED

- COVID-19-positive and COVID-19-negative pathways for surgical care not developed or implemented.
- COVID-19 testing not sufficiently available for patients and staff.
- Anaesthetic services key to supporting theatre activity not active, eg preoperative assessment, acute pain service and perioperative medicine activity.

AMBER

- COVID-19-positive and COVID-19-negative pathways for surgical care planned but not yet implemented.
- COVID-19 testing available for patients and staff, with clear policies in development for how testing can protect staff, protect patients and facilitate efficient surgical services.
- Staffing and facilities for anaesthetic services key to supporting theatre activity available.
- Policies in development for the rational prioritisation of surgical patients as theatre capacity becomes available but does not yet fully match demand.
- Policies in development for the rational prioritisation of surgical patients as critical care capacity becomes available but does not yet fully match demand.

GREEN

- COVID-19-positive and COVID-19-negative pathways for surgical care fully implemented.
- Anaesthetic services key to supporting theatre activity functioning well.
- COVID-19 testing available for patients and staff, with clear policies in place for how testing will protect staff, protect patients and facilitate efficient surgical services.
- Policies for the rational prioritisation of surgical patients as theatre capacity becomes available are fully implemented.
- Policies implemented for the rational prioritisation of surgical patients as critical care capacity becomes available.

Implementation

If any of Space, Staff, Stuff or Systems are RAG-rated '**Red**', then planned surgery should not restart. When all four are RAG-rated '**Green**', it is likely that planned surgery can proceed and move towards normal activity.

When any of the four are RAG-rated '**Amber**', it will not be possible to undertake normal levels of planned surgical activity and it may not be safe to undertake any.

There will be a need to have clear prioritisation of surgical procedures from multiple subspecialties as planned surgery resumes in a phased – and most likely non-linear – manner. Prioritisation will need considerable planning such that it is equitable for patients, irrespective of surgical specialty, and does not cause delay or division. Ideally, national guidance on phased surgical prioritisation should be provided.

Some hospitals may remain in **Red** or **Amber** states longer than others. For reasons of equity, plans should be made between hospitals, which may need to form surgical networks, to work innovatively and cooperatively such that the greatest good can be delivered to the greatest number of patients through timely surgery.



Managers and clinical managers of surgical, critical care, anaesthesia and perioperative care services will need to work closely together to ensure that planned surgical activity begins when appropriate and expands at a rate that is compatible with the safe provision of care. Planning will need to incorporate the potential need to de-escalate surgical activity if critical care demand rises once again.

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