



Guidance on Establishing and Delivering Enhanced Perioperative Care Services

October 2020

Endorsing organisations

We would like to thank the following bodies for their rapid response to and engagement with this initiative under tight deadlines during a time of extreme demand on healthcare services.

Academy of Medical Royal Colleges Trainee Doctors Group
Association of Surgeons of Great Britain & Ireland
British Dietetic Association
Chartered Society of Physiotherapy
Faculty of Public Health (CPOC Board member)
Intensive Care Society
National Outreach Forum
NHS England Adult Critical Care Clinical Reference Group
Royal College of Anaesthetists (CPOC Board member)
Royal College of Nursing (CPOC Board member)
Royal College of Occupational Therapists
Royal College of Physicians (CPOC Board member)
Royal College of Speech & Language Therapists
Royal College of Surgeons of England (CPOC Board member)
UK Clinical Pharmacy Association

A full list of contributors to this guidance and their organisational affiliations can be found on page 22.

Update log

This is **version 1.0** of this guidance document, published in October 2020. Any updates made to the guidance will be reflected in the table below and included in subsequent versions.

Version	Change	Date
1.0	First publication.	23 Oct 2020

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Foreword

Major surgery is a potentially life-changing event. People go into hospital hoping for cure, prolongation of life or improved quality of life. For the majority of patients in the United Kingdom, this is achieved through the high quality multidisciplinary perioperative care which is available in the National Health Service (NHS). However, around 15% of people undergoing major inpatient surgery develop complications which can impact on both short and long-term survival, and quality of life. The good news is that most of the individuals at risk of poor outcomes are identifiable before they go into the operating theatre. For these patients, there is consensus that being treated in a specialised environment for the immediate postoperative period is likely to provide clinical benefit. Mechanisms for this include the timely detection of, and action on, clinical deterioration; and optimisation of the processes which support patient recovery. Such an environment would offer a richer nursing staffing mix than ward areas in terms of both skills and numbers, close and continuous monitoring, and high quality protocolised and evidenced based care, individualised to the patient's specific needs.

In most hospitals, the only environment in which this type of care is available is the critical care unit. However, the majority of postoperative patients, including those at increased risk of adverse outcomes, do not require specific critical care interventions such as invasive ventilation or complex cardiovascular support. Critical Care units are always under pressure from emergency admissions, and now in the COVID-19 era, this pressure is magnified. This presents a challenge in terms of protecting the interests of these surgical patients: they may either face the prospect of last-minute cancellation, or they may be treated on normal wards, which are less well set-up to meet their immediate postoperative needs.

Enhanced Perioperative Care supports the delivery of holistic, high quality care to surgical patients at increased risk of adverse outcomes. Enhanced care services should provide benefit to patients (reduced likelihood of cancellation and postoperative complications) and to systems (more efficient care, reduced length of hospital stay and reduced pressure on critical care services). Today, in the midst of the COVID-19 pandemic, there are obvious benefits of creating Enhanced Perioperative Care services, to deliver the best quality care, even as Critical Care units are at or above their baseline capacity. However, these services will remain a positive legacy once we have passed through this global crisis – a clinical innovation which will provide enduring benefit to patients and the NHS for years to come.

This guidance provides the framework for establishing Enhanced Perioperative Care services to be safe, efficient and provide the best possible quality care to this patient group. The recommendations will support equitable implementation across the NHS. A large number of people contributed time and energy to delivering this guidance; we owe them a debt of thanks. In anticipation, I also offer thanks to the clinicians and managers who will consider this guidance and implement these services, to support the best possible perioperative and critical care for patients today, tomorrow and long into the future.

Professor Ramani Moonesinghe

National Clinical Director for Critical and Perioperative Care, NHS England and NHS Improvement

1. Introduction

- Enhanced Perioperative Care (EPC) is a model of care for surgical patients who cannot be optimally cared for in a general ward environment.
- Enhanced Perioperative Care provides the best pathway for patients with monitoring, treatment or care needs which are greater than those provided on normal postoperative wards, but who are not expected to require Level 2 or 3 (Critical Care) interventions or staffing to meet their care needs.
- The aim of establishing an EPC service is to improve quality of care and safety for this group of surgical patients.
- EPC facilities will also release Critical Care capacity previously used to support initial postoperative care for such patients; this will lead to a reduction in 'last minute' cancellation of inpatient surgery, for which one of the biggest risk factors is requirement for postoperative Critical Care. An EPC service can protect surgical capacity during times of increased Critical Care activity, such as during emergency surges or winter pressures.
- EPC is not for patients at immediate risk of deterioration and is not a substitute for or step down from Critical Care. Instead, it bridges the gap between existing ward and Critical Care facilities, allowing patients to be managed safely in an appropriate environment dependent on their needs.
- This document provides a framework to support and facilitate the development and delivery of an EPC service.

2. Patient expectations

Patients who require Enhanced Perioperative Care should expect:

- To have a preoperative shared decision-making consultation to discuss their individual chance of benefit or harm from the proposed surgery, alternative treatments or no treatment. The extent of discussion may need to be modified according to urgency of surgery and should include a discussion on where postoperative care will be delivered and why; the surgical ward, EPC facility or Critical Care.
- To be provided with full, clear and accurate information that they can understand, outlining the reason for proposed admission to an EPC facility and the likely interventions to be delivered by the service.
- To be informed of their lead clinician(s) and about the different roles of healthcare professionals involved in their care during admission to an EPC facility.
- To receive information on their role in the perioperative pathway including, where indicated, the need for preoperative lifestyle modification, adherence to treatment for long term conditions, and participation in prehabilitation, postoperative rehabilitation and discharge planning.
- To receive information to support their continuing recovery in hospital and in the community.
- A COVID-19 compliant pathway.
- Equity of access and availability determined by evidenced clinical benefit.

3. Purpose and structure of an EPC Facility

3.1 The EPC Facility will provide

- Additional monitoring and therapy that is not available on typical postoperative wards.
- Timely interventions and escalation of treatment if required, as a result of enhanced monitoring and optimal staffing with predetermined access to competent decision makers.
- Expanded use of medicines and other therapies, across a greater range of indications than available on normal postoperative wards.

3.2 An EPC service should be considered as

- A targeted approach to reduce perioperative morbidity and mortality and improve patient reported outcomes.
- An approach complementing existing best practice pathways of care such as Enhanced Recovery Programmes (ERP).
- A time limited intervention, with the expectation that the majority of patients will be discharged from an EPC facility within 12-24 hours, with a small number staying for a maximum of 48-72 hours.
- An integral component of the continuum of care between care on surgical wards and Critical Care.
- An EPC service should not be considered as a staging post to Critical Care nor should it be planned as routine step down from Critical Care or a 'recovery from anaesthesia' unit.

Adhering to these principles will improve the efficiency of the service, as length of stay on an EPC facility will be largely predictable. However, it is acknowledged that length of stay (and hence patient flow) will also depend on the staffing and competencies of the receiving discharge ward.

3.3 Patient Cohort

It is anticipated that initially, an EPC service will be established to support COVID-compliant elective surgical pathways; however, there is potential to expand to include other surgical pathways dependent on estates and infection prevention considerations.

The patient population most likely to benefit from EPC can be considered in terms of:

- Having a predicted risk of mortality within 30 days of surgery of more than 1%, using a validated risk assessment tool based on a minimum of age, complexity and urgency of the surgical procedure and patient factors such as comorbidities, fitness and frailty.
- Undergoing specific surgical interventions; for example, free flap surgery requiring enhanced levels of monitoring, and therapy input to support early mobilisation.
- Requiring enhanced monitoring; for example, short term invasive monitoring to facilitate perioperative haemodynamic management or management of epidural related hypotension.
- Requiring additional medical support; for example, correction of an acute arrhythmia, or treatment of difficult to manage pain.
- Requiring safe management of existing comorbidities; for example, obstructive sleep apnoea on CPAP.

Patients who are unlikely to benefit from EPC and should be treated in other settings include those:

- For palliative management (likely best supported on surgical wards).

- With predicted 30-day perioperative mortality risk of $\geq 5\%$ (likely best managed in Level 2 or 3 Critical Care facilities)¹².
- Whose pathway is associated with predictable or anticipated deterioration leading to multi-organ complications.
- Where there is a likely high burden of medical or procedure related interventions or multiple levels of enhanced organ supports.

Further information is provided in Appendix 1.

3.4 Workforce structures

- Staffing should be planned to safely meet anticipated patient care needs. A staffing establishment based on the acuity, dependency and care needs of patients is likely to result in a richer mix in terms of both skills and numbers than in a normal postoperative ward.¹
- Transdisciplinary working (using broader training) improves job satisfaction as well as patient care and should be a long-term goal in setting up an EPC service.²
- A core team of staff working in the EPC service is needed in order to ensure strong leadership, build expertise and to aid staff recruitment and retention. This will support staff morale and welfare.
- Provision of pharmacist and Allied Health Professional (AHP) support is frequently preventative and focused on avoiding patient harm e.g. detecting and modifying prescribing errors, prevention of chest infection by speech and language therapy and physiotherapy intervention. EPC staffing plans must factor these elements into service delivery.
- A high turnover of staff contributing to the EPC service is undesirable for building expertise and patient care. EPC should be promoted as an attractive working environment with enthusiastic staff supported to contribute to and develop the service.³
- Experience from working in rotation or through other areas may maintain skills and experience that can be of benefit in times of additional Critical Care pressures e.g. pandemic surge.

4. Governance structures to inform local guidelines

The following should be considered when developing local guidelines for an EPC service, taking the local context and local surgical population into account:

4.1 Leadership & management

- EPC is envisaged to be a 24 hour 7-day service with the ability to access Level 2 or 3 care and advice if needed. The service should therefore be planned with input from the Critical Care service.
- The EPC service should have designated medical, nursing, pharmacy and AHP leads, with a clear reporting path within a directorate or divisional management structure. Appropriate business unit support must be included.
- It should be locally determined whether the EPC service is clinically governed, and financially and organisationally managed by a specific parent speciality. There should be appropriate resourcing and line management arrangements and clarity on local reporting structures.
- A nurse lead or facility manager should take operational and leadership responsibility for the supervision of patients and staff, to manage the facility and maintain oversight of the strategic development or maintenance of the EPC service.⁴
- There should be local decisions made on which of the varied admission and operational models the EPC service utilises, but a clearly identified gatekeeper along with clearly described lines of escalation and communication with Critical Care services is required.
- The parent team should retain responsibility for provision of continuity of individual patient care with advice and support from others as required, e.g. assisting with decisions regarding admission and discharge.
- A policy, agreed with other specialist teams including Critical Care, should be established detailing the processes and procedures for providing clinical input for patients in the EPC service.
- Depending on the patient group, pathways of care involving relevant specialties should be developed e.g. with geriatric medicine if the majority of patients on the unit are older or frail; or procedure specific pathways developed between surgeons, anaesthetists, Critical Care and other relevant specialties if the EPC service is likely to form part of the overall inpatient care pathway.
- There must be defined relationships of communication and escalation with other relevant services, including outreach services.
- There should be dedicated time for multidisciplinary team (MDT) meetings, quality improvement, training and education.

4.2 Daily Structure

- There should be twice daily senior decision-making patient review rounds in accordance with recognised best practice.
- There should be locally determined, clearly defined, pathways for staff to obtain timely clinical and multidisciplinary advice.
- Protocols for both in-hours and out of hours medical support should be developed.
- Protocols should be developed for specialised team reviews, for example pain team, geriatric medicine team.

4.3 Admission/Treatment/Discharge

EPC will provide a predominantly guideline and protocol driven service with appropriate medical input and support in direct delivery of care from other professional groups. Therefore, staff working within the service require defined mechanisms and identified personnel for advice and support. This should include a clearly outlined escalation pathway for the deteriorating patient, advice on analgesia, fluid management and enhanced recovery protocols.

4.3.1 Each EPC service should develop and agree

- Admission criteria and protocols for the facility.
- Which interventions can be delivered by the service with defined treatment parameters and protocols
- Discharge protocols.
- Local protocols for the management of specific patient groups (for example, Enhanced Recovery pathways for specific procedures or collaborative pathways for older patients with geriatric medicine) and for the management of specific medical complications (for example atrial fibrillation).

The admission protocol should include detail on a clear, agreed booking system to book a bed in an EPC facility both in advance of planned surgery and at short notice if the clinical situation changes.

Admission criteria should be based on risk assessment using a validated system (e.g. Surgical Outcome Risk Tool, [SORT](#)⁵ or [Clinical Frailty Scale](#),¹⁶ or evaluation of functional capacity,⁶ or the specific type of surgery, and should take into account:

- The immediate postoperative need for EPC and the possibility of developing that need in the first 24 hours after surgery.
- A further review at the end of the surgery in the operating theatre or recovery ward, to ensure care in the EPC facility is appropriate for the patient.

When combined with clinical judgement, objective risk assessment tools can provide a highly accurate estimate of patient risk.⁷

Interventions and treatment parameters – each service should develop protocols for Nurse/AHP led interventions as appropriate, which may include:

- Intravenous fluid; vasopressors; analgesia; drinking, eating & mobilisation.
- Drug infusions and the management of lines (e.g. central & arterial lines) aligned to locally agreed governance processes.

Scope of practice – each service should set pre-arranged limits to the work of the EPC by:

- Determining interventions which are in the scope of the EPC service (including detail on non-invasive and invasive monitoring, medical treatments, and multidisciplinary interventions) (see Appendix 1 for examples).
- Determining which interventions are outside of scope for the EPC service.

Discharge protocols – should be locally developed and take the following into account:

- Requirement for escalation to Critical Care.

- Safety for de-escalation to ward care including detail on discharge criteria based on physiological stability and no ongoing requirement for the defined EPC intervention.
- All patients should have a discharge document, including reasons for providing EPC, treatments given and a plan for pain, surgical, medical and rehabilitation management.
- Criterion-based discharge processes for routine discharges to normal postoperative wards, should improve patient flow. There should be identified routes for input from surgical or other medical decision makers if required.

4.4 The Deteriorating Patient

4.4.1 Overview

- Multi-professional, interdisciplinary working is desirable to ensure provision of safe, high-quality care.²
- Local policy in terms of frequency of observations, NEWS2 scores and response to the deteriorating patient and escalation should be compliant with NICE CG50⁸, Royal College of Physicians NEWS2 guidance⁹ and the unique needs of surgical patients.¹²
- The deteriorating surgical patient on an EPC facility requires timely access to a senior surgical decision maker to decide on the need for additional operative intervention or imaging.
- Surgical patients may also develop medical morbidities in the perioperative period e.g. atrial fibrillation, pneumonia. Clear pathways for the EPC clinical team to obtain advice and support from medicine and Critical Care services need to be developed.
- Input from Critical Care outreach (CCO) services will facilitate timely escalation of patient care to Level 2 or Level 3, if required.
- The degree of input from CCO services will be dependent on case-mix and staffing and should be considered as part of the design of the EPC service.

4.4.2 Critical Care Outreach (CCO)

- The role of CCO is to ensure a reliable, 24/7, multidisciplinary organisational approach to safe, equitable, quality care for all acutely unwell, critically ill and recovering patients irrespective of location or pathway.
- Effective CCO teams will have the appropriate skills and resources to be able to respond to deteriorating patients, guide initial management, appropriate escalation, communication to relevant teams, and safe transfer to a Critical Care area when required.
- The outreach team can also follow-up high-risk cases after step down/discharge from EPC, ensuring continuity of care and patient safety in less well-resourced areas. This role will be particularly relevant for those EPC areas in locations outside an acute hospital (e.g. "elective/cold" hospitals).
- The outreach service should also be part of the continuous education and clinical governance of an EPC service e.g. contributing to mortality and morbidity meetings.
- It is recommended that any hospital developing an EPC service also develops a CCO team compliant with the national quality and operational standards for CCO.¹⁰

5. Workforce considerations

5.1 Determining Staffing Requirements

- Staffing and associated training requirements for EPC need to be planned at the start of the service development and a ‘triangulated approach’ to deciding staffing requirements is recommended, as described in the National Quality Board’s guidance.¹¹ This combines evidence- based tools, professional judgement and outcomes to ensure the right staff with the right skills are in the right place at the right time.
- Professional judgement regarding staffing should involve a patient-centred approach:
 - Providers will need to describe their intended patient groups in order to identify the necessary workforce and skillset needed to deliver the service.
 - Many of the required skills will be able to be provided by multiple staff groups in an organisation.
 - Consider workforce available and their training/educational needs
 - Consider a permanent EPC core team with rotational development posts to maintain and expand skills including up-skilling of ward staff.
- Ideally, staff who have expressed an interest in working in EPC should be deployed to the area. Many staff took the opportunity to upskill during the 2020 pandemic arrangements and have already expressed a desire to maintain their enhanced skills
- Specialist patient needs will require input from different multi professional teams, and this should be determined on an individual patient basis; e.g. colorectal patients may need dietician and/or stoma therapist input, a large cohort of older patients will need input from a geriatrician.
- Provision of advice, support and training from CCO and Acute Pain services should be embedded in workforce design and resourcing.

5.2 Frameworks for supporting transdisciplinary EPC teams

The EPC service will be staffed by multidisciplinary teams, often working in transdisciplinary roles. Individuals from different professional backgrounds will be able to deliver overlapping aspects of clinical care (table 1). To do so, existing frameworks should be used to support the development of the team (table 2).

Table 1: Transdisciplinary approaches to delivering aspects of care in EPC units

Nursing skills	Competent Medical Decision-Making Skills	Allied Health Professional Skills	Medicine Management Skills
Registered nurse	Foundation doctor, Core surgical/anaesthetic/ACCS doctor	Physiotherapist	Pharmacist
Critical Care Outreach Practitioner		Occupational therapist	Medicines management technician (with support from a registered pharmacist)
Nursing Associates	Advanced Clinical Practitioner-nursing, AHP	Speech and Language Therapist	
Healthcare Assistant (HCA) or Healthcare Support Worker (HCSW)	Advanced Critical Care Practitioner Physician Associate	Dietician Assistant practitioner or Therapy support worker	Pharmacy Assistants

Table 2: Frameworks to support development of staff working in EPC units

	Nursing*	Medical §	Allied Health Related	Pharmacist
Suggested Relevant Frameworks	National Competency Framework for Registered Practitioners: Level 1 Patients and Enhanced Care Areas Multi-professional Framework for Advanced Clinical Practice	Foundation Achievement of Competency or equivalent to include recognition of the deteriorating patient Multi-professional Framework for Advanced Clinical Practice	Allied Health Professionals: Critical Care Professional Development Framework Multi-professional Framework for Advanced Clinical Practice	Knowledge and Capability Guide COVID-19 Critical Care Training Resource Multi-professional Framework for Advanced Clinical Practice

* FICM Enhanced Care Guidance suggests a trained registered nurse should aim to possess 'National Competency Framework for Registered Practitioners: Level 1 Patients and Enhanced Care Area'.

§ A 'Medical' decision maker is defined as a competent clinician able to provide the skills of diagnosis, examination, prescribing, radiology ordering and interpretation at the defined level across the range of patients admitted to the Enhanced Perioperative Care service. These skills may be provided by a single individual or a number of individuals across the team.

5.3 Safe Staffing

Safe staffing should incorporate the breadth of professions needed to deliver EPC as well as the necessary skills required in sufficient numbers.

Staffing establishment and deployment should be organised to meet the acuity and dependency needs of patients (including risk of deterioration and patient flow), the service and the organisation. Once safe staffing has been determined it should not normally be changed unless there has been an alteration in the type of patient admitted or the complexity of patient monitoring/intervention required⁴.

5.4 Nursing Considerations

- Nurse staffing should align to national policy for safe sustainable and productive staffing as set out by the National Quality Board (2016), NICE Safer Staffing Guidelines (2014) and Developing Workforce Safeguards (2018).
- Flexible, dynamic staffing may be needed to reflect periods of predicted high acuity, greater dependency and higher workload / patient-flow. The more variability in patient needs, the more dynamic staff rostering will need to be e.g. if there are unplanned admissions. Complex wound management, mobility or repositioning difficulties requiring the assistance of two people, or supervision of acutely confused patients will need additional workforce (mostly support staff). More complex monitoring or titration of complex / high-risk drug regimens will need more skilled registered nurses.

- On-going review of staffing should occur after implementation and as the EPC service develops and be modified as required to reflect acuity, dependency and workload/patient-flow using a NICE endorsed evidence-based decision support tool e.g. Safer Nursing Care Tool (SNCT).
- The requirement for additional support e.g. healthcare assistants, a supernumerary nurse in charge for each shift etc. will depend on the location and size of the EPC facility and is best determined at a local level.
- Providing cover for breaks and checking of drugs should be considered. EPC facilities of 8 or more beds will enable more efficient ways of working by allowing for economies of scale.
- Rotational posts should be considered and balanced against the need to maintain a core stable workforce. Opportunities for staff to be seconded to work in other areas e.g. wards, Critical Care units, as part of professional development should be considered. This allows providers to retain staff skills developed during the COVID response and increase clinical experience within the EPC service.
- At least one nurse on each shift should hold or be working towards a postgraduate qualification relevant to EPC (National Competency Framework for Registered Practitioners: Level 1 Patients and Enhanced Care) or have significant experience in Critical Care or Acute Care⁴.
- Whilst nursing staff based on surgical wards, theatre recovery units, or other acute care areas, will have transferable skills which may accelerate their transition into enhanced care roles, opportunities to work in EPC with support should be open to anyone with an interest in the service.
- Other groups of specialist nurses e.g. pain nurse specialists, stoma nurses, enhanced recovery nurses should have input into post-operative care planning on the EPC unit. These nurses often have pre-existing relationships with patients and positively impact on the timeliness of discharge.
- There should be access to a clinical nurse educator (with appropriate competencies) on site.

5.5 Medical Considerations

- High turnover EPC facilities must have an individual with a medical skillset readily available e.g. Foundation doctor, ACCP, Advanced Nurse Practitioner etc.
- A consultant in overall charge of the patient's care should conduct a daily review of the patient whilst in the EPC service, in addition to provision of advice and input from other appropriate services as required.
- Appropriate senior clinical decision makers must also be clearly identified for each patient receiving EPC to provide oversight of the patient's care over a 24-hour period and to provide support to the MDT on the EPC facility as required e.g. in case of patient deterioration. The grade of senior clinical decision makers should be reflective of an individual organisation's policy but as a minimum should be ST3 or above or equivalent¹².
- Escalation policies need to be agreed to provide additional relevant senior medical support e.g. medical or Critical Care (see sections on the deteriorating patient and Critical Care outreach).
- Medical staffing standards and operational policies should ensure all of the following:
 - Response times for patient review are consistent with national standards.^{9,12}
 - A minimum of twice daily MDT ward rounds of patients are conducted.
 - Daily involvement of specialist medical input e.g. geriatrician review of all older patients to advise on medication management, management of delirium etc.

5.6 Allied Health Professional (AHP) Considerations

- AHPs bring expertise in supporting and caring for critically ill patients and their families/carers and positively impacting on outcome.

- AHPs are usually centrally deployed, working peripatetically, allowing flexibility in care delivery. Patients are referred to AHPs on a needs basis and dependent on the outcome of their individual assessment. This allows for efficient and effective deployment and redeployment of the workforce.
- AHP input to patient care could be augmented by rotational working through the EPC service and following the patient pathway. This will allow for the presence of staff for an appropriate period of time in the working day in smaller units that may not be able to fund a whole-time equivalent staff member
- It is essential therefore to work with the lead AHP/therapy manager to ensure the capacity and capability of the AHP workforce for EPC is available and prioritised appropriately dependent on need.
- It is also essential to ensure appropriate leadership, supervision, education and training is in place, and appropriate consideration is given to staff health and wellbeing
- The AHP workforce is diverse. Each profession has their own skill set, and within each profession, each member of staff will have their own specialism and their own level of expertise. In EPC the crucial contribution of AHPs are:
 - Dietitians responsible for the expert provision and management of specialist nutrition support. The roles and responsibilities include undertaking nutrition assessment, developing enteral or oral nutrition feeding plans, managing nutrition related issues such as enteral feeding intolerances and monitoring the plans put in place. Dietitians may also have completed supplementary prescribing, and therefore have certain prescribing rights that may well be useful for EPC.
 - Physiotherapists assess and treat, helping to optimise breathing and secretion clearance and ensure rehabilitation needs are met at the earliest possible opportunity. They assist in early rehabilitation to help maintain muscle function and improve recovery and on that basis may provide a more effective service working as a direct member of the EPC team.
 - Speech and Language Therapists assess and treat communication problems which may happen as a result of a condition or the treatment to help that condition, such as needing a tracheostomy. They also provide specialist and detailed assessment and management of eating, drinking and swallowing problems and work as part of a team to problem-solve complex communication or swallowing difficulties, especially for those with a tracheostomy.
 - Occupational therapists help people to live, not exist, focusing on rehabilitation to maximise functional outcomes and regain ability to carry out daily activities following surgery: physical, psychological, social and environmental factors are assessed and treated to support safe discharge.
 - Psychologists can assess and reduce distress for patients, aiding rehabilitation and improving patient outcomes and supporting staff.

5.7 Pharmacist Considerations

- EPC areas require approximately a 0.6 whole time equivalent (WTE) pharmacist for a 5-day service or 0.8 WTE pharmacist for a 7-day service for an 8 bedded facility to provide direct patient care.¹³
- Medicine Management Technicians (MMTs) can provide support to release pharmacists to utilise the more skilled functions within their role e.g. medicines optimisation. MMTs can perform medicines reconciliation and some medicines management functions (e.g. ordering medicines, stock control) but are not permitted to prescribe.
- Pharmacy assistants will provide a medicines top up and distribution service that can free up time of pharmacists and MMTs for other roles.

- The EPC service pharmacist could be a ward-based pharmacist equipped with extra experience/skills (e.g. Knowledge and Capability Guide COVID-19 Critical Care Training Resource) or they could be members of an expanded Critical Care pharmacy team.
- The EPC pharmacist should be encouraged to be an independent prescriber to aid the efficiency of individual medication reviews.
- Close liaison is required with the Critical Care pharmacy team and would be beneficial for training.
- The final configuration of the pharmacy team within any particular organisation will depend on how these aspects combine to create manageable 1.0 WTE jobs, as well as maintaining adequate cover arrangements. If any calculation comes out with a part post, the preferred option would be to round up, not down, because of the disproportionate effect on small teams.

5.8 Administrative Considerations

Provision of administrative support is essential to maximise nursing time with patients. Administrative support needs to meet the needs of the service including reception duties, admission and discharge activities and facilitation of data collection.

6. Training and education

6.1 Training Considerations

- For a safe and efficient service, the educational needs of staff should be addressed as part of the development of the EPC service. Business plans will need to include the educational resources required.⁴
- There is a requirement to support staff training to benefit the organisation by developing and retaining skills needed for provision of the service.
- Setting up a new EPC service will require nurse educators with dedicated time for staff training and support.
- Evidence indicates that 40% of staff are likely to need additional training or qualifications in order to deliver the EPC service.⁴
- Cascade training e.g. with educational support from outreach nurses, would allow short term upskilling of staff to facilitate initial establishment of the service.
- A clinical workforce contribution may be provided by people returning to the NHS and willing to offer support on a sessional basis if appropriately trained/supported.

Existing medical competency training resources can be identified from:

- ICM/anaesthetic/surgical curricula training.
- Existing online training packages e.g. eLearning for Health.
- Where training is identified in the relevant medical curriculum this should be supported by providers e.g. providing time for core surgical trainees to complete the RCS Care of the Critically Ill Surgical Patient (CCrISP) course or similar.¹⁴

To promote cooperation and cross boundary education, all specialties and clinical leads interfacing with the EPC service, including Critical Care, should meet on a regular basis.

6.2 Competencies

- It is recommended that the core team working on an EPC facility should possess “National Competency Framework for Registered Practitioners: Level 1 Patients and Enhanced Care Areas” (or be working towards achieving it).¹⁵
- Providers should identify the existing skills resources available and then focus on the additional resource needed for longer term development of the EPC service.
- Focusing on identifying current competency and training opportunities will allow identification of the gaps needing development as well as mapping across to future professional development.
- Use of a Skills Passport will enable competencies to be mapped across the EPC team – see section 6.4. A specific EPC skills passport has been developed to support this guidance.

6.3 Education and Training Opportunities

- Rotational posts with analysis of skills gaps, using the EPC skills passport to identify educational needs may be useful and attractive to staff.
- Rotational educational opportunities should be built into delivery of training and maintenance of competencies i.e. encouraging staff to have experience of the patient journey from ward ↔ Enhanced Care Unit ↔ Critical Care.

- Depending on local circumstances, Critical Care operational delivery networks may provide support for training between centres for some professional groups e.g. pharmacists, AHPs.

A UNIQUE LEARNING ENVIRONMENT – Royal Infirmary of Edinburgh

“Nurses from the ward establishment support the delivery of care. Some have experience of working in Critical Care, but the majority do not. We developed an educational programme and competency assessments are undertaken on the ward, aiming to equip all ward nurses with the knowledge and skills required to work in the Enhanced Care area. The nurses have found this training and experience invaluable when faced with an unwell or deteriorating patient in other areas of the ward.

In addition, educational attachments to HDU have been undertaken by nurses from the ward and have been useful in providing experience of specific monitoring and therapies such as invasive cardiovascular monitoring, vasoactive infusions e.g. phenylephrine, and the diagnosis and management of arrhythmias such as atrial fibrillation.

Staffing levels on the ward have made it difficult for these attachments to be as long or frequent as we would like. On reflection including educational time when we calculated the number of extra nursing staff required to open the Enhanced Care area would have been beneficial.”

Source: <https://www.ficm.ac.uk/critical-futures-initiative/enhanced-care>.

6.4 Competency Skills Passport

- Patients will require different treatment plans according to their clinical condition and the clinical and operational configuration of the EPC. Monitoring, therapeutic interventions and the skills required to deliver EPC safely will therefore vary depending on individual providers and the identified patient population.
- The Enhanced Care Competency Skills Passport has been developed to support identification of training needs and available competencies. It is intended for all areas of Enhanced Care, including those relating to Enhanced Perioperative Care.
- The Passport is a suite of multi-professional competencies designed to support safe, compassionate and effective care and treatment for EPC patients.

6.4.1 Intended uses of the Skills Passport

- To allow individuals to identify their existing skills and additional learning needs within an evidence-based framework.
- To allow employers to identify and map the relevant competences across the different staff groups working within EPC to ensure appropriate skill mix and competencies when planning staffing.
- It is anticipated that existing educational programmes and training packages within a provider or HEI will be used to support additional skills acquisition required to set up an EPC service.

6.4.2 Skills Passport Implementation Strategy

The Skills Passport should be introduced using a structured approach to fully engage all stakeholders and make best use of available resources.

To support implementation the following elements will be required:

- Corporate staffing lead: an individual to take overarching responsibility for the launch, implementation and evaluation of the staffing skill mix and competencies when setting up the EPC unit.
- Corporate practice educator: to provide an outline of the support available and how assessors, mentors and learners across all professional groups can access this.
- An Enhanced Care competency database: to provide a record of identified ward areas, professional groups, start dates and dates of completion of training. This database will need to have the capability to run compliance reports to inform the wider corporate education and training strategy.

7. Monitoring performance and quality improvement

- All EPC services should collect data to according to a nationally defined national dataset.
- Local data should be reviewed at least monthly by the multidisciplinary, multispecialty team to inform local quality improvement initiatives.
- Key metrics might include:
 - unplanned admissions to EPC
 - transfers from EPC to critical care
 - readmissions to EPC facilities from the surgical wards
 - interventions delivered in enhanced care
 - postoperative morbidity and mortality
 - Percentage of patients having a full medicines reconciliation within 24 hours of admission to the EPC facility¹⁸
 - Measures of patient related experience or outcomes
 - Measures of staff related experience and outcomes.

Further detail will be supplied through an adjacent national data programme.

- Regular multidisciplinary meetings should take place, which will review quality of care, including incidents and significant events, morbidity and mortality, as well as the operational aspects of the service, including appropriate staffing and levels of care.

8. Estates considerations

To establish a new standalone EPC facility, it is envisaged that to optimise staffing and operational efficiencies this will be based on a minimum 8 bedded model. Trusts and hospitals may need to determine alternative models in conjunction with existing higher care facilities if this size of facility is impractical.

In the absence of current specific EPC Health Building Notes (HBNs) and Health Technical Memoranda (HTMs) it is recommended that for new builds existing HBN/ HTMs are utilised – see list below.

In the absence of a new build, careful local consideration about bed space requirements, piped gas services and electrical supply and resilience systems requires careful attention and consideration of the potential for surge capacity utilisation.

- Health Building Note 04-01: Adult inpatient facilities: <https://www.gov.uk/government/publications/adult-in-patient-facilities>
- Health Building Note 04-01: Supplement 1 – Isolation facilities for infectious patients in acute settings: <https://hberm.com/wp-content/uploads/2015/10/HBN-04-01-Supplement-1-Isolation-facilities-for-infectious-patients-in-acute-settings-20131.pdf>
- Health Building Note 04-02 Critical care units: <https://www.gov.uk/government/publications/guidance-for-the-planning-and-design-of-critical-care-units>
- Health Technical Memorandum 03-01: Specialised ventilation for healthcare premises: <https://www.gov.uk/government/publications/guidance-on-specialised-ventilation-for-healthcare-premises-parts-a-and-b>

9. Funding considerations

To establish these services, it is envisaged that future funding will form part of a planned blended payment approach linked to adult Critical Care services.

Blended payment is not a single payment approach; rather, it is a flexible framework that can reflect local requirements. It provides a framework within which the local health system can best direct funding to local patient priorities and is designed to ensure that payments conduce toward:

- Maintenance of adequate dedicated appropriate staffing and bed-base and consumables (to be covered by a fixed payment element);
- Handling of risk and uncertainty (risk sharing element);
- Improving outcomes (outcomes element).

Enhanced Perioperative Care services should be considered as part of the wider Critical Care blended payment approach.

Glossary & Abbreviations

AHPs	Allied Health Professions
CCO	Critical Care Outreach
CFS	Clinical Frailty Scale
Competent clinical decision maker	Clinicians who are capable of making an initial assessment of a patient. This follows a period of specific training in the use of tools for assessment and use/interpretation of investigations. These skills will be assessed by more senior member of the team who have already acquired these competences.
CPAP	Continuous Positive Airway Pressure
CCrISP	Care of the Critically Ill Surgical Patient
Critical Care	Area providing a mixture of levels of care e.g. Levels 2 and 3
Enhanced Care	Care previously described as Level 1+, Level 1½, advanced care etc.
EPC	Enhanced Perioperative Care
ERAS	Enhanced Recovery After Surgery
GTN	Glyceryl trinitrate
HBN	Health Building Note
HDU	High Dependency Unit – area providing Level 2 care
HEI	Higher Education Institute
HTM	Health Technical Memorandum
MDT	Multidisciplinary team
MMT	Medicine Management Technicians
PACU	Post Anaesthesia Care Unit
SORT	Surgical Outcome Risk Tool

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Appendix 1: Examples of admission criteria

Admission based on pre-operative 30-day mortality prediction

There are a number of risk prediction models that estimate 30-day post-operative mortality. Some are procedure specific (Nottingham Hip Fracture Score, National Emergency Laparotomy Audit Risk Calculator) and some are for a broad range of surgical procedures (Surgical Outcomes Research Tool,⁵ John Carlisle Calculator). They all use age, co-morbidities and surgical procedure. Newer tools are incorporating measures of frailty (Clinical Frailty Scale (CFS)¹⁶, frailty index).¹⁷

Prediction models should not be used on their own to decide admission. They are decision aids not decision algorithms. When combined with clinical judgement, objective risk assessment tools can provide a highly accurate estimate of patient risk.⁷

Admissions based on surgical procedure

Groups of procedures for admission to EPC may include:

- Intracranial surgery (e.g. meningioma)
- Major vascular surgery (e.g. carotid endarterectomy, EVAR, bypass surgery)
- Major colorectal, oesophagogastric, hepatobiliary surgery (e.g. anterior resection, gastrectomy, hepatectomy)
- Major urological or retroperitoneal surgery (e.g. cystectomy, nephrectomy, resection of sarcoma)
- Major orthopaedic surgery (e.g. revision of hip or knee replacement, periprosthetic hip or knee fracture, major spinal surgery, fractured neck of femur)
- Major gynaecological surgery (e.g. TAH/BSO/PLND)

Admissions based on requirement for additional monitoring

- Continuous monitoring (ECG, NIBP, SpO₂)
- Arterial line (regular arterial blood gases and arterial lactate measurements)
- Regular electrolyte measurements (severe low or high potassium and sodium)
- 1 hourly or more neuro observations or free flap observations
- Conditions such as obstructive sleep apnoea or heart failure

Admissions based on the requirement for additional treatments/interventions

Some of these may already be delivered in existing Perioperative Units but may not be recognised as EPC. Some combinations of treatments/interventions may require admission to Critical Care dependent on the skill mix in the EPC service:

- Vasopressor infusion
- Hypotensive infusion (labetalol, GTN)
- Intravenous antiarrhythmic drugs (amiodarone, magnesium sulphate, beta blockers)
- Intravenous infusions for complex pain problems (e.g. ketamine)
- Infusions of concentrated solutions of sodium chloride, potassium and magnesium that cannot safely be given on the normal ward
- Chest drains

- Total parenteral nutrition
- Thrombolysis

DESCRIBING AN EXISTING PATIENT COHORT FOR EPC – Freeman Hospital, Newcastle

“PACU (Post Anaesthesia Care Unit) is an adult service only.

All patients booked into PACU must be considered highly likely to be fit for ward discharge by 8am the following morning.

Invasive monitoring and basic inotrope / vasoactive infusions can be managed but will need to be weanable well before the 8am discharge requirement.

Significantly unstable patients or those requiring very frequent medical intervention should be referred for a Critical Care bed and not admitted to PACU. In cases of doubt this is discussed with Critical Care or the on-call Anaesthetic Consultant”

Dr DM Cressey: Consultant in Critical Care and Perioperative Medicine. Newcastle-upon-Tyne NHS Hospitals Trust

Dr C P Snowden: Consultant in Anaesthesia and Perioperative Care: Newcastle-upon-Tyne NHS Hospitals Trust

Source: <https://www.ficm.ac.uk/enhanced-care/admission-discharge-criteria>.

Appendix 2: Examples of Allied Health Professionals' Contribution to EPC

Source (and further examples): <https://www.ficm.ac.uk/critical-futures-initiative/enhanced-care>.

PHYSIOTHERAPY PROVISION – Royal Papworth Hospital NHS Foundation Trust

"The Enhanced Recovery After Surgery (ERAS) programme for thoracic surgery at Papworth Hospital includes pre and postoperative physiotherapy input for those determined as high risk. Patients receive a detailed preoperative booklet and an exercise DVD prior to surgery.

Following surgery, patients receive two physiotherapy sessions per day over a 7-day working week. This model resulted in patients walking further after surgery than previously, and a reduction in duration of physiotherapy input from 3.85 to 2.02 days."

DIETETIC PROVISION – Imperial College Healthcare NHS Trust

"Dietitians play a fundamental role in enhancing the recovery of patients following major head and neck and gastrointestinal surgery.

One specific example is the PREPARE programme for oesophago-gastric cancer surgery. The combines physical and respiratory fitness, eating well and optimising psychological wellbeing before surgery and an enhanced recovery package. Patients receive a feeding jejunostomy tube during surgery and are seen early following surgery by the specialist dietitian to ensure nutritional care is provided throughout the recovery phase.

Since the programme was introduced, the rate of postoperative pneumonia has fallen from 60% at the start of 2015 to 18% by the middle of 2018, with a fall in the median length of stay from 14 days to 8 days over the same time period."

Appendix 3: Examples of EPC services in Great Britain

The following are examples of Enhanced Perioperative Care that have developed in different services in the UK in recent years. They are not intended to be exhaustive of the approaches that could be taken.

Source (and further examples): <https://www.ficm.ac.uk/critical-futures-initiative/enhanced-care>.

IMPACT OF INTRODUCING ENHANCED CARE – York Hospital

Driver for change: “Limited HDU access/high Critical Care occupancy rates/on day cancellations;
Delayed discharges and long length of stay;
Potential harm to patients with excessive fluid therapy in the perioperative period;
Junior staff managing patients at their most vulnerable point in the surgical journey and subsequent variation in postoperative management;
Failure to rescue deteriorating patients;
Postoperative functional decline/increased dependency.”

Intervention: “The Perioperative Medicine Service (POMS) established in 2015, introduced pathways and treatment algorithms for the immediate postoperative management of patients undergoing major, elective colorectal surgery on a pre-existing Enhanced Care Unit- the ‘Nurse Enhanced Unit’. Our management plans and pathways were designed to move patients out of Critical Care and onto the 1:4 nursed Enhanced Care Unit whilst still providing them with optimal postoperative care with regards haemodynamic and medical management.”

Outcome: Data from 106 patients managed by POMS was compared with data from 202 control patients undergoing similar surgery prior to introduction of the service. There has been a steady reduction in hospital length of stay, Critical Care utilisation and complication rates.

Length of hospital stay (mean): Control 12.2 days vs POMS 7.3 days

Length of hospital stay (median): Control 8 days (6-12) vs POMS 5 (5-9)

Reduced variation in length of stay. Interquartile ranges for length of stay were:

Control Group 6 -12 days

Year 1 5 - 8 days

Year 2 5 - 8.5 days

Year 3 4 - 8 days

Major Complications: Control 22% vs POMS 16.2%

Dr David Yates, Consultant in Anaesthesia and Critical Care Medicine at York Teaching Hospital NHS Foundation Trust

Driver for change: “In the first 6 months of 2018, 287 elective surgical procedures were cancelled due to lack of Critical Care capacity. Exploring Critical Care capacity in Wales, and the impact of the Post Anaesthetic Care Unit (PACU) in Cardiff, Newport and Wrexham, the delivery of Enhanced Care in a PACU environment was an opportunity to provide care to high-risk surgical patients that do not require the high level of care provided in a Critical Care setting but could not be safely delivered on a ward in the first 24 - 48hrs postoperatively.”

Intervention: “Enhanced Care should not be seen as an opportunity to provide postoperative care for patients who need Critical Care. Nor should it provide care for low risk patients who can safely be managed in a ward environment. By preventing suboptimal care on overstretched surgical wards, an EPC Unit is very likely to lead to a reduction in length of hospital stay, patient rescue with admission to Critical Care and patient morbidity and mortality. EPC Units will also address cancellations and delayed starting times due to lack of Critical Care capacity, with loss of theatre resource and harm to patients.

Virtual Enhanced Care beds were felt to be the way forward to ensure timely discharge. In this model there are no beds in EPC Unit, only spaces to accommodate patients on the beds allocated to them on the ward. As a consequence, there are no physical beds in the ward that can be occupied and delay patient discharge from EPC Unit. As this would be a relatively new endeavour in Wales, it was recommended that priority should be given to comparable EPC Unit data collection across Wales via ICNARC, as clear governance of the proposed changes is essential and will influence further evolution.

With careful consideration and monitoring it was felt that the nurse to patient ratio should be 1:3. It was also felt that with clear SOPs and agreement this group of patients could be under the care of the perioperative team with intensivists only contacted when their expertise is required, freeing intensivists up to care for critically ill patients.”

Outcome: This is a recent development and therefore too early to have any impact data.

Dr Abrie Theron, Clinical Director Perioperative Care, Cardiff & Vale University Health Board



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