

Joint Faculty of Intensive Care Medicine of Ireland

National Standards for Adult Critical Care Services



**Joint Faculty of
Intensive Care Medicine of Ireland**

College of Anaesthetists of Ireland • Intensive Care Society of Ireland
Royal College of Physicians of Ireland • Royal College of Surgeons in Ireland



Intensive Care Society of Ireland

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National Standards for Adult Critical Care Services 2019

**Joint Faculty of Intensive Care Medicine of Ireland (JFICMI)
in association with
The Intensive Care Society of Ireland (ICSI)**

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1. Introduction

Critical Care Units provide life sustaining treatment for critically ill patients with acute organ dysfunction due to potentially reversible disease. It is the purpose of the Unit to support the patient's failing organs and diagnose and treat the underlying cause. Patients at risk of organ dysfunction due to chronic disease processes may also benefit from critical care in the peri-operative period or other temporary reversible circumstance e.g. after trauma.

A Critical Care Service comprises appropriately trained and accredited medical, nursing and allied health professionals based in a Critical Care Unit (see below), working within a quality and governance structure consistent with delivery of the best critical care while adhering to national and international best practice guidelines.

A Critical Care Service is appropriate for the care of patients requiring Level 2, 3, and 3(s) critical care (vide infra) generally delivered within a High Dependency (HDU) or Intensive Care Unit (ICU). For the purpose of this document, the term Critical Care Unit refers to HDU and ICU.

The governance and operational standards foster the ability to deliver high quality, safe patient care in a working environment conducive to best practice, including the right of patients to timely access to Intensive Care Medicine services as appropriate to their clinical need. Timely access requires an appropriate configuration of critical care services and appropriate number of critical care beds operating at approximately 85% capacity [1,2] in keeping with recent analyses for adult and paediatric critical care services in Ireland [3].

The recommendations herein represent the minimum recommended standards required in Ireland for a Critical Care Unit. These standards are not all-encompassing and it is accepted that these standards will evolve with the ever-changing dynamics of health care. It is recognized that many of the existing Critical Care Units do not fulfill these minimum requirements in terms of size, facilities or staffing but it is recommended that processes be put in place to achieve these standards over a fixed period of time and that new builds fulfill these standards.

Intensive Care Units approved for training by the JFICMI will be expected to meet the standards outlined in the [JFICMI Periodic Visitation Record](#) [4]

These standards pertain to care of critically ill adults. Standards of care for Paediatric Intensive Care services and the care of critically ill children in non-paediatric ICU's are outlined in the National Standards for Paediatric Critical Care Services 2018, JFICMI

2. Levels of Critical Care

Critical Care provides curative and life support treatment for the critically ill patient. The level of critical care is best defined by the patient's clinical condition and his/her level of need for critical care.

Levels of care as determined by clinical need have been usefully defined by the Intensive Care Society (UK) 2009 [5] and the Welsh Assembly [6]. The College of Intensive Care Medicine of Australia and New Zealand (CICM) include aspects of staffing and resourcing in the definition of Intensive Care [1,7], as does the European Society of Intensive Care Medicine (ESICM) [8]. The Society of Critical Care Medicine (SCCM) also includes aspects of staffing, interventions and facility and recommends "that all hospitals determine the level of critical care services offered in keeping with their mission and goals as well as regional needs for this service" [9,10]. All these reports and standards documents articulate the need for critical care to manage the right patients in the most suitable facility by an appropriately trained team of professionals.

In terms of the categorization of Critical Care Units, the JFICMI and ICSI recommend that the level of Critical Care is defined by the level of clinical care provided by the Critical Care Unit.

Acute Care	Level 0	Hospital ward clinical management
	Level 1	Higher level of observation eg. PACU
Critical Care	Level 2	Active management by critical care team to treat and support critically ill patients with primarily single organ failure
	Level 3	Active management by critical care team to treat and support critically ill patients with two or more organ failures
	Level 3 s	Level 3 with regional / national service

Critical Care encompasses both Intensive Care and High Dependency care. In practice, Level 2 is High Dependency (HDU) and Level 3 (including 3s) is Intensive Care (ICU) level of critical care. Regarding the operation of these levels of critical care facilities, the JFICMI and ICSI recommend:

1. Hospitals should have a Critical Care service resourced to treat a number of co-existing organ failures (invasive mechanical ventilation, vasoactive infusions, continuous renal replacement therapy and invasive cardiovascular monitoring) if that hospital service admits acutely ill medical and surgical patients or provides specialist surgical, or other specialist services to patients at "high risk" of clinical deterioration.
2. All critically ill patients should be managed by a critical care service under one governance structure, appropriately resourced to provide that service. Guidelines towards the governance, resourcing, staffing and physical

- facilities are addressed elsewhere in this document.
3. Level 2 and Level 3 care may co-exist within one critical care facility. Local case-mix and strategic goals determine best configuration.
 4. The size of a Critical Care Service cannot be ideally defined in terms of Unit bed numbers alone. This is better described in terms of the requirements of care for a given patient dependency.
 5. For maintenance of skills and professional competencies, a Critical Care Service should be treating at least 200 Level 3 patients per annum and therefore will entail Critical Care Units of 6 beds or more [1, 2, 11]. “Hub” hospitals, as defined in the Critical Care program Model of Care [12] will require larger units of > 8 beds and will expect to be treating > 400 level 3 patients per year.
 6. An appropriately resourced and staffed critical care service should be able to provide comprehensive critical care. Transfer to a Level 3(S) critical care service may be required for specific Intensive Care Medicine or other regional or national specialty services.
 7. Critical Care retrieval (critical care patient transport service) is an integral part of a comprehensive Critical Care service.

3. Guidelines for Admission to Critical Care

These guidelines cannot be exhaustive nor be able to address all potential clinical circumstances. They are provided as a guide to assist in the interpretation of levels of critical care. Clinical expertise and judgment is required in all circumstances to ensure the best care is provided in the most appropriate facility.

3.1 Level 0 and Level 1 Criteria

Patients described by the above levels of acuity of illness do not require management in a Critical Care Unit. Where concern arises related to acute clinical deterioration, the advice of the critical care team is sought.

Where the only requirement is Non Invasive Ventilation (NIV), a suitable facility may include a designated resourced NIV ward within, for example, a respiratory service, Coronary Care Unit, or other Acute Care Unit, as determined by the clinical context and expert clinical judgment. Where such therapies can be delivered via tracheostomy, local training and guidelines are required to support such therapies in a Level 1 environment.

3.2 Level 2 Criteria

Appropriate clinical judgment will determine the best environment for the care of a patient meeting Level 2 criteria. Where the only requirement as defined for Level 2 is one of increased frequency of monitoring, this may be provided in the same environment as for Level 1 patients. Such facility may include a suitably resourced observation ward or PACU.

Complex NIV may require Level 2 care - for example as part of a process of weaning to Level 1 care, or where higher levels of NIV are required and progression to invasive mechanical ventilation a clinical concern.

Haemodynamically unstable patients requiring invasive cardiovascular monitoring, frequent fluid challenge therapy, management of hypovolaemia, vasoactive drug infusion therapy, antiarrhythmic infusions etc are likely to require therapy in a Critical Care Unit as determined by the clinical context and clinical judgment. Where instability is related to primary cardiac disease (e.g. AMI etc), such management within a Coronary Care Unit may be more appropriate.

Intermittent renal replacement therapy is normally managed in a dialysis facility but may require critical care in the context of other organ failures particularly shock.

Neurological therapy requiring protection of the airway, invasive neurological monitoring, continuous ongoing infusion for seizure management or targeted temperature management requires management in a Critical Care Unit. Clinical assessment will determine whether this is required at Level 2 or Level 3.

Dermatological injury involving major skin loss, major soft tissue injury, or extensive burns requires management in a Critical Care Unit. A dedicated appropriately resourced Burns Units may be suitable.

Hepatic Support: Where concern arises related to acute clinical deterioration, the advice of the critical care team is urgently sought and admission to a critical care unit is often required as acute hepatic failure or acute on chronic hepatic failure often progresses to multiorgan failure rapidly.

3.3 Level 3 Criteria

Management of two organ failures or greater.
Invasive mechanical ventilatory treatment is a Level 3 treatment.

3.4 Level 3S Criteria

Level 3 criteria within a defined national or regional specialty service (e.g. Extra Corporeal Life Support (ECMO / ECLS), Neuro Critical Care, Cardiothoracic, Solid Organ Transplantation, Stem Cell transplantation etc).

4. Clinical Governance

- 4.1 Critical Care Units should have a Medical Director (Director of Critical Care Medicine), with clearly defined administrative time to perform that function, which allows both time to manage the Unit and time to engage with the hospital clinical and administrative leadership to ensure optimal use of critical care resource.[1,8,9]
- 4.2 The Director of Critical Care Medicine leads the hospital's multidisciplinary Critical Care Committee, which reports directly to the Clinical Director of the designated hospital Directorate e.g. Perioperative Directorate.
- 4.3. The Medical Director will lead critical care services across the hospital, including steering critical care policy, strategy and operational activities and audit.
- 4.4. The Medical Director will provide overall management and leadership; ensuring that the Unit is compliant with national and international best practice.
- 4.5. The role of the Medical Director of Critical Care Medicine should be recognized by the hospital Clinical Director and be clearly identified within the hospital directorate or equivalent structure.
- 4.6. The reporting relationship of the Medical Director of Critical Care shall be determined by local hospital governance structures but shall include the Clinical Director, Chief Executive or equivalent.
- 4.7. The Medical Director of the Critical Care Unit should either be a Fellow of the Joint Faculty of Intensive Care Medicine of Ireland or hold an equivalent qualification (cf. Articles of Association JFICMI Section 6). The Medical Director of a large unit (>8 beds and >400 level 3 admissions per year) should be on the Intensive Care Medicine Section of the Specialist division of the register of the Irish Medical Council.
- 4.8. The Unit shall have agreed admission and discharge policies.
- 4.9. Patients referred for critical care management will be assessed by the critical care clinical team and the decision to admit, retrieve, transfer or to leave management with the referring team, will be decided by the critical care team in conjunction with the referring team.
- 4.10. Quality of patient care and outcomes require support from a clinical audit and benchmarking process. . All ICU's should be included in the Irish National ICU Audit (INICUA) to ensure quality of care. It is the

- responsibility of the hospital and the healthcare region which the Critical Care Unit serves to invest in the appropriate hardware, software, and staffing to support this.
- 4.11. The Units need to have clinical incident reporting, identified key performance indicators and a mechanism for analysis, feedback and operational change.
 - 4.12. The Medical Director of the Unit(s) shall work in close collaboration with an appointed senior Clinical Nurse Manager, Assistant Director of Nursing, or equivalent dedicated to the Unit(s).
 - 4.13. The Medical Director of Critical Care or designate shall engage with relevant hospital committees with specific relevance to the operations of an Intensive Care Unit – e.g. Infection Control committee, Haemovigilance committee, Drugs and Therapeutics committee and/or others as identified within the context of that Intensive Care clinical practice.
 - 4.14. The Unit shall adhere to National Standards for Infection Control, Quality Assurance and other defined standards and guidelines which may impact on best care for the critically ill.
 - 4.15 Each unit should have a identified clinical lead for organ donation who with a nursing lead (ODNM) can lead and support organ donation within the Hospital.
 - 4.16. A continuing education program is required to ensure staff competencies with rapidly evolving critical care therapies. It should be compliant with the requirements for training, accreditation and maintenance of professional skills of all critical care professionals. A Supervisor of Education & Training may be appointed / nominated to oversee this program.
 - 4.17. Nursing management should consist of a Clinical Nurse Manager who runs the Unit for each shift and does not have direct individual patient clinical responsibilities during that shift; reporting to a Clinical Nurse Lead with overall responsibility for nursing in the Unit. The Clinical Nurse lead will, in turn report to the Divisional Nurse Manager or otherwise as relevant to local hospital structures. The Clinical Nurse lead has a defined management role and function, leads the nursing team in the Unit, supervises their education and training and in conjunction with the Medical Director and the multidisciplinary team, shapes the clinical direction of the Unit.

5. The Intensive Care Unit – Minimum Requirements

The design of an Intensive Care Unit for any hospital must address:-

- Infrastructure and building standards
- Floor plan
- Accessibility – the right number of beds for case-mix and referral base
- Patient focus
- Ergonomic working environment
- Infection Control standards
- Patient Dignity
- Family and next-of-kin
- Hub accessibility within the hospital to and from all inter-dependent services: operating room, emergency department, radiology department, cardiology catheterisation laboratory, interventional radiology suite etc.
- Integration within hospital systems – e.g. Information Technology etc
- Adequate storage space for necessary equipment with proximity to the clinical area
- Accommodation close to the unit for the on-call doctor(s).

Such design is open to change as new concepts and processes evolve. Infection Control standards need to be adhered to, with particular reference to the numbers of single rooms, neutral pressure rooms and airborne isolation rooms. The specialty case mix will help determine the numbers of airborne isolation rooms.

Design and building standards and infection control standards as referenced below are subject to revision and up-dating. The HBN 04-02 [13] and SARI guidelines [14] are appropriate for 2019 and the most recent versions should be considered the standard of the day.

The design and building of critical care units must include all stakeholders (including senior hospital management, senior intensive care medical, nursing, allied health and support staff) involved in the day-to-day workings of the unit from its inception through to its completion. The views of these groups should be incorporated into the overall design from location within the hospital, its size and how it integrates within the hospital.

6. Staffing

6.1 Medical Staffing

Every Critical Care Unit should have 24 hour availability of a dedicated Consultant in Critical Care Medicine. During daytime hours, the consultant intensivist should have an exclusive sessional commitment to Intensive Care Medicine (ICM) and no conflicting clinical commitment. [15] For out of hours cover, larger units (>8 bed and/or > 400 level 3 admissions per year), should have a dedicated ICM consultant with no conflicting on-call duties. International recommendations suggest that this also applies to smaller units (6-8 beds and/or 200-400 level 3 admissions per year) [1] but the JFICMI recognizes the considerable manpower deficit for these units and recommends that hospitals work toward this standard over a 5 year cycle. In the interim, smaller units must have an appropriately trained specialist who is immediately available to attend critically ill patients. If they have conflicting on-call commitments, a second consultant must be available to release the ICU consultant to attend to critically ill patients at any time consistent with the 2+2 model of care.

It is desirable that consultant sessions be provided by a specialist who is a Fellow of the Joint Faculty of Intensive Care Medicine of Ireland.. New appointments should fulfill the accreditation criteria of “Consultant with an Interest in Intensive Care Medicine” or “Consultant in Intensive Care Medicine” applicable to all base specialities as per the Higher Professional Training scheme endorsement of the Irish Medical Council.

At least one such specialist should be rostered to the Critical Care Unit at all times, predominantly present in the Unit during normal working hours, available by phone at all times and at all times available to the Unit in a timely manner.

The Critical Care medical team comprises the Intensive Care specialist(s) supported by appropriately trained (or in training) non-consultant hospital doctors.

Although rotas may vary depending on Unit size, number of consultants, number and seniority of junior staff, length of shifts etc, the rotas of lead consultants should be organised so as to maximise continuity of patient care. It is desirable to provide for blocks of Critical Care Unit time for each consultant of at least 3-4 days at a time rather than changing on a daily basis. There should be twice daily ward rounds in all ICU's conducted by the rostered intensive care specialist and NCHD's.

The duties of the Intensive Care specialist include:

- Providing Critical Care for the ICU patients.

- Assuming overall responsibility, in conjunction with the admitting clinician, for the patients in the Critical Care Unit.
- Being available to medical colleagues for consultation and liaison regarding patient care including potential patients who may be referred from within the hospital or from a related health-care facility.
- Maintenance of continuing professional development in accordance with the criteria specified by the JFICMI.
- Liaison with and regular communication with patients, their families and next of kin.
- Supervision of transport of the critically ill patient.
- Supervision and training of trainee medical staff and students in the Critical Care Unit.
- Supporting education and research within the Unit.
- Optimizing allocation of Critical Care resource based on hospital / Intensive Care prioritization of access guidelines.
- Unit management
- Achieving Quality initiative and key performance indicator goals.
- Dealing with management issues e.g. relating to patient safety issues in conjunction with hospital administration.
- Advice to hospital management and other bodies outside the hospital (e.g. professional and regulatory bodies) on clinical and other matters relating to Critical Care and on planning priorities.

Staff rostering and responsibilities

There should be one non-consultant hospital doctor (NCHD) for each six to eight critical care patients, depending on local case-mix. Out of hours staffing of the Critical Care Unit should be provided, at a minimum, by an experienced non-consultant hospital doctor appointed to the Critical Care team. The ratio of NCHD to patients out of hours will be determined by local case mix and activity, but should not exceed one NCHD to every twelve patients. Critical Care registrar(s) should not have any concurrent responsibilities and on-call accommodation should be provided in, or appropriately close to the Unit.

The consultant to patient ratio should be a minimum one consultant to twelve critical care patients during routine hours. A minimum of one consultant to thirty critical care patients must be provided out-of-hours, depending on case mix and where supported by appropriate trainee and NCHD staffing.

A separate layer of medical staffing will be required where significant periods of time required outside of critical care (e.g. Outreach commitment, MICAS service) such as assessing acute referrals and inter and intra-hospital transport.

Multi-disciplinary access and input to critical care is essential, with particular need for Consultants in Microbiology / Infectious Disease, Interventional Radiology, most Acute Medicine and Acute Surgical Specialties other than those identified and resourced as national or regional specialties.

6.2 Nursing Staffing

Nursing Standards for Adult Critical Care

The World Federation of critical care nurses (WFCCN, 2016 [16]) describes critical care nursing as: *'specialised nursing care of critically ill patients who have manifest or potential disturbances of vital organ functions. Critical care nursing means assisting, supporting and restoring the patient towards health, or easing the patient's pain and preparing them for a dignified death'*. Critical care nurses are well-educated, skilled health care professionals who function at a high level within a very stressful and technical environment on a daily basis.

In 2014, critical care quality requirements for nursing were developed to ensure delivery of effective care by senior critical care nursing representatives through the Office of Nursing & Midwifery Services Director and the National Clinical Programme for Critical Care. These can be accessed in full through the Model of Care for Adult Critical Care, Right Care, Right Now, 2014 [12].

These requirements should be applied to each Level 2, 3 and 3(s) units.

A summary of the critical care nursing requirements are:

1. A minimum of 70% of staff should hold a specialist qualification in intensive care nursing, with skills and competencies pertaining to the clinical speciality of the unit.
2. Level 2 patients (clinically determined) require a minimum of one nurse to two patients.
3. Level 3 and Level 3(s) patients (clinically determined) require a minimum of one nurse to one patient.
4. A designated nurse manager with a specialist qualification in intensive care nursing, as well as relevant skills and competencies pertaining to the clinical speciality of the area, is required on site to manage the unit. This person is formally recognised as the overall unit nurse manager.
5. ACCESS nurses are in addition to bedside critical care nurses, unit managers, team leaders, clinical facilitators and non-nursing support staff. An ACCESS nurse provides 'on the floor' provides **A**ssistance, **C**o-ordination, **C**ontingency, **E**ducation, **S**upervision and **S**upport.
 - a. Ratio based on qualifications of current staff:
 - < 50% WTE qualified staff = 1 ACCESS nurse per 4 beds
 - 50-75% WTE qualified staff = 1 ACCESS nurse per 6 beds
 - > 75% WTE qualified staff = 1 ACCESS nurse per 8 beds
 - b. For single room Level 3 units a ratio of 1 ACCESS nurse for every 4 side rooms is recommended
6. Each unit should have a dedicated clinical facilitator/nurse educator. The recommended ratio is 1 WTE: 50 staff in Level 3 or Level 3(s) units. Additional educators/co-ordinators are required to run and manage tertiary based critical care nursing courses.

7. All staff should have access to competency-based education and training programmes – from foundation through to postgraduate and masters level in intensive care nursing. The content of these courses should be reviewed on a regular basis to ensure they meet clinical practicum requirements.

The following factors should be taken into account when assessing appropriate staffing levels for each unit:

- patient throughput, case mix and dependency
- geographical layout of the unit
- nursing staff skill mix, competence and experience
- specialty services provided
- education and training requirements

National Critical Care Nurse Workforce Planning through the National Clinical Programme in Critical Care is continuously taking place. A critical care nurse career pathway has been developed and endorsed by the Minister for Health in 2017. To fully enable accessibility onto this career pathway, the above requirements should be adhered to in order to establish an appropriate number of qualified critical care nurses within each unit and to allow further development of advanced practice roles within critical care nursing.

6.3 Health Care Assistants

Further review of nursing practices will serve additionally to facilitate development of Health Care Assistants with specific skill-mix pertinent to Critical Care.

Minimal standards relating to Health Care Assistants in Critical Care include:

- A training program for Health Care Assistants delivered to FETAC Level 5 Health Care Support Certification, must include a specific module for Critical Care.
 - Target numbers for Health Care Assistants who will complete the FETAC module should be determined and reviewed regularly.
- Resources should be allocated to support time and costs associated with maintenance of professional competencies, continuous professional development and quality assurance activities.

6.4 Support Staff

- Sufficient non-clinical support staff must be provided to carry out non-clinical support duties. These would include general administration, secretarial support (1:12 secretarial to patient ratio), research, domestic duties, housekeeping, portering.
- Support staff are required to ensure robust data collection and audit as specified by the INICUA.
- Appropriate critical care specific training for non-clinical support staff is required.

6.5 Allied Health Professionals

Critically ill patients and a critical care service requires the attendance of specific Allied Health Professionals:

Physiotherapy

Specialist physiotherapy is required for the majority of critically ill patients. The exact ratio of physiotherapists to patients will depend on local case mix, but a ratio of one physiotherapist to every twelve Intensive Care patients would be considered a guideline. Physiotherapy staffing should be sufficient to provide both respiratory management and the rehabilitation components of care.

Clinical Nutrition

A Clinical Nutrition service should be available during routine working hours and there should be a guideline for initiating nutritional support out of hours There should be at least 0.05 dietician WTE per critical care bed.

Pharmacy

The complexity of prescribing, administration and associated cost requires that a specialist pharmacist with a specific interest and training in critical care be appointed to support a seven day per week pharmacy service. International standards support 0.1 pharmacist per level 3 and 0.05 pharmacist per level 2 bed, all of senior pharmacist grade or higher.

Speech and Language Therapy

A Speech and Language Therapy service should be available during routine working hours.

Occupational Therapy

An Occupational Therapy service should be available during routine working hours.

Social work

A Social Work service should be available during routine working hours.

Pastoral Care

A Pastoral Care service should be available 24 hours per day consistent with the needs of the multi-cultural nature of our society.

The majority of critical care admissions should progress to survival and hospital discharge. Where survival is not possible despite optimal care, it is equally important to ensure best care of the dying patient with a focus on dignity, respect, and comfort. All Critical Care Units should aim to provide for the next-of-kin requirements also in these circumstances, with provision of as much privacy as is possible within a busy critical care environment and making available private interview and family rooms.

Clinical Engineering

Every Critical Care Unit requires the support of the hospital Clinical Engineering Department. There should be a dedicated critical care clinical engineering

service, 24hrs per day, 7 days per week, with the specific knowledge and skills to support the complexity of such critical care services. Such specialist personnel need to be immediately available during working hours and available on-call out-of-hours.

Resources should be allocated to support time and costs associated with maintenance of professional competencies, continuous professional development and quality assurance activities.

7. Outcome / Conclusion

Critical Care is an expensive and finite resource for the care of critically ill patients with an underlying reversible component to acute or chronic disease.

Ensuring best outcomes includes appropriate benchmarking and all units should be included in the INICU Audit process which provides for an internal audit and national and international case-mix adjusted bench-marking system.

These guidelines act to advise regarding best current international practice and have been informed by similar Standards guidelines as referenced below.

8. References

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