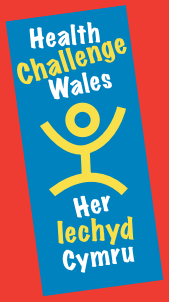
Llywodraeth Cynulliad Cymru
Welsh Assembly Government

Designed for Life:

Quality Requirements for Adult Critical Care in Wales

March 2006



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Foreword by Dr Brian Gibbons AM, Minister for Health and Social Services

I am pleased to be able to introduce the Quality Requirements for Adult Critical Care in Wales. These Quality Requirements will bring continuity to services across Wales and ensure patients receive services and facilities appropriate to their needs.

In 2000, the Emergency Pressures Taskforce produced a report that established that there was a deficit in adult intensive care beds in Wales. The former Minister for Health and Social Care, Jane Hutt AM, recommended a review of adult critical care provision across Wales and the development of services at a strategic level.

The All Wales Critical Care Development Group was established in 2001 and the development of these Quality Requirements would not have been possible without the hard work and enthusiasm of the Chair, Dr Andrew Webb and members of the All Wales Critical Care Development Group.

In line with *Designed for Life*, this publication aims to ensure that the right services are provided in the right place and at the right time. The provision of services by multi-disciplinary teams will also become a key feature of managing critical care service delivery.

Quality Requirements are fundamental to the quality agenda. They promote a framework for care based on shared values that can be adopted universally, ensuring that quality services are provided equitably, robustly, and ethically across the full range of services provided by or for the NHS in Wales, no matter what the setting and establish a basis for continuous improvement.

These Quality Requirements provide an opportunity for integrated clinical care on a regional basis, through the use of a multi-disciplinary approach with a holistic view of patient care.

All healthcare organisations will be expected to assure themselves and the communities they serve that they are achieving or working towards these Quality Requirements. Using these Quality Requirements, commissioners and providers,

working through the networks that will be established, will deliver the important changes needed to develop services appropriately to help improve the health, well being and quality of life of adults requiring critical care in Wales.

Dr. Brian Gibbons AM
Minister for Health and Social Services

Introduction

The Emergency Pressures Taskforce Group produced a report in October 2000 which established a deficit in intensive therapy unit beds in Wales. As a result, the Minister for Health and Social Services, Jane Hutt AM, recognised the need to review the provision of adult critical care and consider the development of services on a strategic level. To take this work forward, the All Wales Critical Care Development Group was formed late 2001 and includes representatives from all those specialities involved in the provision of critical care services. The Group is chaired by Dr Andrew Webb, Medical Director for Clinical Services at the University College London Hospitals NHS Foundation Trust.

The prime objective of the Group is to develop a service framework and implementation plan to ensure that the commissioning and future development of adult critical care services is delivered on an equitable and accessible level providing critically ill patients with services and facilities appropriate to their needs. The implementation of the standards that follow will ensure continuity of services and will promote a reliable baseline for future development.

Background

A population based survey of critical care need within Iechyd Morgannwg during 1998 revealed a huge imbalance of need and provision of critical care facilities.[1] During the study, which covered 5 hospitals, some 4058 patients were identified as suitable for critical care, 56.4% of them in general wards. For those patients treated on general wards but thought appropriate for admission to critical care, outcomes were significantly worse than for similar patients appropriately treated in higher dependency areas.

When patients with burns or those treated in cardiac surgical, thoracic surgical and neurosurgical units are excluded, the results show that for a population of 500,000 people, 23 general intensive care unit beds were needed to meet demand on 95% of occasions. Comparable figures for general high dependency beds were 52 per 500,000 head of population or 34 if coronary care is excluded. These figures were however shown to be an underestimate if critical care beds are divided in several small units.

[1] Lancet 355:595-598

When these data were used to calculate the number of non-specialist critical care beds required for Wales it became clear that the gap between supply and demand was substantial. Assuming a stable population within Wales of 3.0 million, 138 Level 3 general intensive care beds would be required together with 204 Level 2 high dependency beds (the care such levels provide is described later in these standards).

The Capacity Sub Group of the Emergency Pressures Task Force identified an "immediate" need for an additional 30 adult intensive care beds in the winter of 2000 - these beds have not been provided.

Age Groups and Specialties

These standards are for adult critical care. Separate standards for paediatric intensive care have been developed. It is realised that there will be occasions when it is either appropriate or necessary for children to be admitted to adult ITU beds. When this occurs it is important that account is taken of the separate paediatric intensive care standards.

Levels of Care

The Audit Commission document "Critical to Success"[2] recognises only four levels of critical care but Level 3, the highest intensity level of care, could usefully be subdivided. It is proposed that there be five recognised levels of adult general critical care in Wales. The five levels are briefly outlined below:

Level 0

Patients needing care at Level 0 are appropriately cared for in ordinary hospital wards such as are available in all acute hospitals and all general departments of surgery and medicine. Patients' basic psychological and physical needs must be provided for and staff in such areas must safely be able to administer medication, patient controlled analgesia, intravenous maintenance fluids, blood transfusion to correct chronic anaemia and other simple treatments. Observations would usually be required less frequently than every 4 hours.

[2] Critical to Success. Audit Commission 1999

Level 1

This Level is suitable for patients at risk of their condition deteriorating and those recently relocated from higher levels of care whose needs can be met on an acute ward with additional advice and support from the multidisciplinary critical care team.

Staff in this area must be able, safely, to administer intravenous fluids at rates in excess of 3 litres per day, give blood transfusions to resuscitate actively bleeding patients and provide regular but infrequent tracheal suction via a tracheostomy if necessary. Observations would be required at least every 4 hours. Patients without significant co-morbidities could safely be treated with continuous epidural analgesia on such a ward.

Level 2

Patients requiring single organ support such as inotropic support for the cardiovascular system, renal replacement treatment or non-invasive ventilatory support may be treated at this level but invasive ventilatory support would not be appropriate.

Patients classified as American Society of Anesthesiologists[3] 3 or 4 following minor or major surgery may be managed at Level 2 provided there is no requirement for invasive ventilatory support. Patients may also be admitted to such units for pre-operative optimisation.

Management of patients requiring frequent tracheal suction via a tracheostomy tube must be within the scope of this general unit. Patients requiring rapid blood transfusion perhaps up to 6 units in 24 hours may be treated in a general Level 2 unit, but Level 2 would not be suitable for a patient requiring massive (>6 units) blood transfusion.

Specialist coronary care, dialysis, neurosurgical and burns Level 2 units will have the same basic staffing requirements as general units but their abilities to provide single organ support will vary. The intra-aortic balloon counter-pulsation device is frequently used in advanced coronary care units while a haemodialysis machine is obviously used in the renal unit; both such units would be operating at Level 2.

[3] www.asahq.org/clinical/physicalstatus.htm

Level 3

Patients at all levels of severity might be appropriately treated at this Level. Organ support and monitoring, as described in Level 2, must be available for most body systems but these facilities might be available for only a small number of patients simultaneously because of staffing or equipment constraints. The duration of treatment for multiple organ failure for a given patient may also be limited, for the same reasons.

All hospitals with an A&E department must be supported by full services[4] and hospitals accepting major trauma or emergency surgical patients must be able to treat Level 3 patients. Hospitals with a vascular surgical department must have Level 3 critical care on site.

Units treating patients at Level 3 must have a minimum throughput of 200 Level 3 cases per annum.

Level 3T (Tertiary)

Patients at all levels of severity would be appropriately treated at this Level. Organ support and monitoring for most body systems should be available at Level 3T and these facilities would normally be available to multiple patients simultaneously.

This unit should act as a tertiary referral unit for patients with multiple organ failure and when transfer is appropriate, patients would normally be retrieved by staff from this unit. This unit must have a significant teaching and training role and would normally admit more than 800 patients per annum. To enable such activities, numbers of medical, nursing and other health professional staff in this unit would of necessity be higher than normally available in other units.

A Level 3T unit should be available for every million of population and must have capacity to accommodate all tertiary referrals within this population.

"Critical to Success" also proposes a supplementary classification to identify patients requiring specialist investigation and treatment such as is usually provided in specialist units. These standards are minimum standards that will apply to all adult critical care (general and specialist). However, specialist critical care may have additional requirements.

[4] The Way Ahead.1998. British Association for Accident and Emergency Medicine. 1998

Classification of Specialist Care

Where a patient is in need of specialist care, one or two additional letters (reflecting the most significant disorder) must be added to the level of acuity as follows:

N	patients requiring neurosurgical care
C	patients requiring cardiac surgical care
T	patients requiring thoracic surgical care
B	patients requiring burns or plastic surgical care
S	patients requiring spinal care
R	patients requiring renal care
L	patients requiring liver care
A	patients requiring other specialist care
I	patients requiring isolation facilities

Although designed to categorise patients, such a system may also be used to describe the complexity of present service arrangements. All too often outside observers have made the mistake of assuming that all intensive care units provide the same service and that in times of bed shortage patients should simply be transferred to the unit with the nearest available empty bed.

The "Designed for Life" document has identified the needs of patients in a different way which should not be confused with the classification used for critical care. The document uses "levels" to describe the institutions in which patients with differing needs can be treated. The levels provide a hierarchal structure for streamlined and integrated care in the health economy.

Quality Requirements for Transfer of Patients

The Welsh Intensive Care Society agreed "Standards for Transfer of Critically Ill Patients" in 1994 (amended in 2002)[5]. These standards were based on the important principle that a patient should only be transferred if the proposed transfer was considered to be of benefit to the individual patient. Several things follow logically from this statement:

- Patients would ordinarily be moved to another unit **only** if the receiving unit offered a safer environment or superior treatment.
- The perceived benefits outweigh the risks of transfer.
- Patients should not be moved simply to make way for another.
- Where a patient in need of intensive care cannot be accommodated safely in the first choice unit (an 'overflow' patient) it is permissible to transfer the patient to another unit, provided the receiving unit has the facilities to provide appropriate care and that the transfer can be accomplished in safety.
- In the case of the 'overflow' patient refused admission to a high level unit because of bed shortages, it is permissible for the patient to be admitted to a lower level unit since the alternative may be non-admission.

These principles could equally well be applied within a particular hospital in relation to transfers between critical care units at different levels.

[5] Standards for Transfer of Critically Ill Patients. Welsh Intensive Care Society 2002

Core quality requirements

Quality Requirement	Level 0	Level 1	Level 2	Level 3	Level 3T
Monitoring					
Access to non-invasive blood pressure monitors, cardiopulmonary resuscitation equipment, pulse oximeters and patient controlled analgesia devices	✓	✓			
At every bed there must be monitors displaying continuous ECG, respiratory rate, pulse oximetry, invasive venous pressure, invasive arterial pressure			✓	✓	✓
Facilities for advanced cardiovascular system monitoring				✓	✓
Availability of capnography				✓	✓
Respiratory support					
Access to non-invasive blood pressure monitors cardiopulmonary resuscitation equipment, pulse oximeters and patient controlled analgesia devices	✓	✓			
At every bed there must be monitors displaying, continuous ECG, respiratory rate, pulse oximetry, invasive venous pressure, invasive arterial pressure			✓	✓	✓
Facilities for advanced cardiovascular system monitoring				✓	✓
Availability of capnography				✓	✓
Access to oxygen and suction equipment	✓	✓			
Availability of humidification for the upper airway		✓	✓	✓	✓
At every bed there must be humidification equipment available, 2 oxygen outlets, 2 air outlets, 2 suction outlets, multiple power sockets			✓	✓	✓
Access to non invasive continuous positive airway pressure			✓	✓	✓
Facilities for difficult intubation			✓	✓	✓
Facilities for invasive respiratory support, which minimises lung damage whilst providing optimum support				✓	✓

Quality Requirement	Level 0	Level 1	Level 2	Level 3	Level 3T
Other organ support					
Access to non-invasive blood pressure monitors, cardiopulmonary resuscitation equipment, pulse oximeters and patient controlled analgesia devices	✓	✓			
At every bed there must be monitors displaying continuous ECG, respiratory rate, pulse oximetry, invasive venous pressure, invasive arterial pressure			✓	✓	✓
Facilities for advanced cardiovascular system monitoring				✓	✓
Availability of capnography				✓	✓
Access to oxygen and suction equipment	✓	✓			
Availability of humidification for the upper airway		✓	✓	✓	✓
At every bed there must be humidification equipment available, 2 oxygen outlets, 2 air outlets, 2 suction outlets, multiple power sockets			✓	✓	✓
Access to non invasive continuous positive airway pressure			✓	✓	✓
Facilities for difficult intubation			✓	✓	✓
Facilities for invasive respiratory support, minimising lung damage while providing optimum support				✓	✓
Access to additional organ support, diagnostic and monitoring equipment appropriate to the unit's case mix			✓		
Facilities for active rewarming of hypothermic patients			✓	✓	✓
Access to appropriate communication aids			✓	✓	✓
At every bed there must be drug infusion devices and volumetric (large volume) infusion pumps			✓	✓	✓
Access to a chair or specialist bed to facilitate early rehabilitation			✓	✓	✓
Access to specific organ support equipment for individual patients				✓	
Specialist beds allowing easy positioning of patients				✓	✓
Specialist beds allowing prevention of pressure sores without turning				✓	✓
Specialist manual handling equipment				✓	✓
Organ support equipment must be available for multiple patients simultaneously					✓

Quality Requirement	Level 0	Level 1	Level 2	Level 3	Level 3T
Access to diagnostics					
Access to plain film radiology, ultrasonography and computerised tomography	✓	✓			
Rapid access to plain film radiology, ultrasonography and computerised tomography		✓	✓	✓	✓
Access to blood transfusion services 24 hours per day everyday	✓	✓			
Access to biochemistry, haematology, microbiology laboratory services 24 hours every day	✓	✓			
Rapid access to blood gas analysis			✓		
Immediate access to blood gas analysis				✓	✓
24 hour immediate access to blood transfusion services				✓	✓
24 hour immediate access to biochemistry, haematology, microbiology and toxicology				✓	✓
Patient transport					
Access to equipment for safe transfer suitable to patients treated at this Level			✓		
Availability of a fully equipped transfer trolley for safe movement of patients within the hospital				✓	✓
There must be equipment for safe retrieval of patients with multi-organ failure					✓
Medical staff					
All medical staff must be familiar with protocols for communicating information about sick patients to senior staff and critical care outreach teams	✓	✓	✓	✓	✓
Patients must be cared for by medical teams from admitting specialties, usually working shifts	✓				
Medical staff should be supported by the multidisciplinary critical care team		✓	✓	✓	✓
There must be twice daily patient reviews by a consultant			✓	✓	✓
There must be a designated lead consultant with critical care training and a sessional commitment			✓	✓	

Quality Requirement	Level 0	Level 1	Level 2	Level 3	Level 3T
Medical staff (continued)					
The lead consultant must be the Director of Critical Care Services with no other clinical commitments					✓
On the hospital site there must be 24 hour availability of medical staff from the referring speciality			✓	✓	
On the hospital site there must be 24 hour availability of anaesthetic cover			✓	✓	
A minimum of 14 daytime consultant sessions must provide for 7 day working and an extra allocation to allow for on-call				✓	
There must be 21 daytime consultant sessions to provide 365 day service and continuity of care					✓
There must be 24 hour availability of a consultant with recognised training in ICM and no other commitments					✓
Basic trainees should include SHO residents from surgery, medicine, A&E medicine and/or anaesthesia					✓
Higher trainees should include SpR resident trainees undertaking Intermediate or Step 1 training					✓
Nursing staff					
Skill mix must be based on Audit Commission data or benchmarking within the network	✓	✓	✓	✓	✓
Appropriate numbers of registered practitioners dependent upon nurse - patient dependency ratio. This effectively means an appropriately qualified nurse is within earshot and/or line of sight at all times		✓			
A staffing ratio of 3.5 WTE nurses per bed			✓		
A staffing ratio of one nurse per patient should be achieved				✓	
Flexible strategies should be employed to allow for fluctuating dependency of the patients				✓	✓
Staffing levels must be at least 7.0 WTE per bed with at least 70% having specialist qualification in critical care nursing					✓

Quality Requirement	Level 0	Level 1	Level 2	Level 3	Level 3T
Nursing staff (continued)					
Senior Registered Practitioners with a minimum of 4 years experience in the specialist field who hold senior positions including sister/charge nurse, practice educators and practice development facilitators within a nursing care framework	✓	✓			
Senior Registered Practitioners with a minimum of 4 years experience in the specialist field who hold senior positions including sister/charge nurse, practice educators and practice development facilitators within a critical care nursing care framework			✓	✓	✓
A registered nurse with specialist education in critical care must be available each shift			✓	✓	✓
A Senior Registered Practitioner with considerable specialist experience, expertise and professional competence that is recognised as a 'higher level of competence' (Nursing and Midwifery Council)				✓	✓
A designated clinical manager				✓	✓
Provision for education and training to ensure that competencies are maintained and that the skills to identify at risk patients are in place allowing early management and referral to outreach/critical care	✓				
A registered practitioner on each shift with training in acute care competencies		✓	✓	✓	✓
Access to a competency based training programme from induction through to access of specialist training in critical care			✓	✓	✓
There must be access to an ongoing education programme, to ensure the appropriate level of knowledge and skills in critical care management				✓	✓
Units providing care for Level 3T patients serve a specialist nurse training function					✓
All patients to be nutritionally screened on admission using locally agreed tools/ protocols[WRPMS 23]	✓	✓	✓	✓	✓

Quality Requirement	Level 0	Level 1	Level 2	Level 3	Level 3T
Other Health Professionals					
Access to dietetics service Monday to Friday	✓	✓	✓	✓	✓
Provision of highly specialised dietetic service by Specialist Dietitians with advanced postgraduate knowledge, skills and experience within critical care setting				✓	✓
Access to occupational therapy service Monday to Friday	✓	✓	✓	✓	✓
Access to Occupational Therapist with the specialist skills and knowledge required for thermoplastic splinting and posture management	✓	✓	✓	✓	✓
Access to speech and language therapy service which has appropriately skilled staff to provide input to all levels Monday to Friday	✓	✓	✓	✓	✓
Ward visited by pharmacist Monday to Friday	✓	✓	✓	✓	✓
Access to on-call pharmacy services overnight and weekends	✓	✓	✓	✓	✓
Pharmacy service provided by pharmacist with support from senior colleagues	✓	✓	✓	✓	✓
Access to physiotherapy service Monday to Friday	✓	✓	✓	✓	✓
Access to 24/7 on-call emergency respiratory care physiotherapy service	✓	✓	✓	✓	✓
Training programme to support the development and maintenance of specialist respiratory skills for all staff involved in the provision of on-call	✓	✓	✓	✓	✓
Provision of specialist respiratory service by highly specialised Physiotherapists with specialist skills and knowledge in respiratory critical care			✓	✓	✓
Provision of highly specialised respiratory service by Specialist Physiotherapists with advanced postgraduate knowledge, skills and experience within critical care setting				✓	✓
Chartered Society of Physiotherapy standards and local protocols of care must be followed	✓	✓	✓	✓	✓
All staff must know how to recognise cardio-respiratory arrest and know how to summon the cardiac arrest team	✓	✓	✓	✓	✓
All staff must receive training in the use of bedside equipment with which they are expected to work and this must be recorded	✓	✓	✓	✓	✓

Quality Requirement	Level 0	Level 1	Level 2	Level 3	Level 3T
Policies and Governance					
All equipment must be maintained and in working order	✓	✓	✓	✓	✓
Every Trust must form a multi-disciplinary (including patient representation) "Critical Care Delivery Group" with a clear reporting mechanism to the Trust Board	✓	✓	✓	✓	✓
An audit of all these quality requirements must be reported to the Trust Clinical Governance Committee every six months and to the Trust Board on an annual basis	✓	✓	✓	✓	✓
Exception reporting to the Trust Board must occur when patient safety is compromised	✓	✓	✓	✓	✓
A system must be in place for reporting, investigating and learning from adverse incidents and near misses[WRPMS 3]	✓	✓	✓	✓	✓
A system must be in place for monitoring patient/relative satisfaction	✓	✓	✓	✓	✓
There must be regular multidisciplinary meetings			✓	✓	✓
There must be regular reviews of patient outcomes			✓	✓	✓
There must be a designated individual who is responsible for co-ordinating audit activities			✓	✓	✓
There must be access to online information resources such as Medline and toxicology databases				✓	✓
There must be clearly defined links to a unit treating Level 3 patients			✓		
Every unit must provide staffing to advise and assist with the care of critically ill patients outside the intensive care unit at all times				✓	✓
Well developed links with the hospital's units providing care for level 2 patients				✓	✓
There must be clearly defined links to other units providing Level 3 care in a clinical network				✓	✓

Quality Requirement	Level 0	Level 1	Level 2	Level 3	Level 3T
Policies and governance (Continued)					
A protocol must be in place for identification of critically ill patients on general wards	✓	✓	✓	✓	✓
Written protocols must give details of how to contact the service	✓	✓	✓	✓	✓
Protocols must be in place for admission and discharge	✓	✓	✓	✓	✓
Protocols must be in place to allow the patient to be moved between dependency levels with minimal disruption and no delay	✓	✓	✓	✓	✓
Protocols must be in place for administration of intravenous drugs, inhaled drugs, and drugs administered by any other route	✓	✓	✓	✓	✓
Protocols must be in place for assessment of dysphagic patients	✓	✓	✓	✓	✓
Protocols must be in place for assessment and management of patients with tracheostomy	✓	✓	✓	✓	✓
Protocols must be in place for assessment and management of communication problems	✓	✓	✓	✓	✓
Protocols must be in place for communication with a critical care consultant	✓	✓	✓	✓	✓
A system must be in place to ensure appropriate information is available to patients/relatives	✓	✓			
Information on the functioning of the unit must be available for patients and relatives and new staff and referring clinicians			✓	✓	✓
Protocols must be in place for use of invasive monitoring			✓	✓	✓
Protocols must be in place for all invasive procedures			✓	✓	✓
There must be protocols for transfer of patients in and out as necessary				✓	✓
There must be a range of clinical guidelines agreed by the clinical network when operational				✓	✓
There must be clear, agreed protocols for management of patients with organ failure in all units within a network, including protocols for transfer					✓

Priority developmental quality requirements

Quality Requirement	Level 0	Level 1	Level 2	Level 3	Level 3T
Respiratory support					
Availability of intermittent positive pressure breathing apparatus		✓	✓	✓	✓
Medical staff					
On call consultant cover must be by individuals with recognised training in ICM who also have daytime sessions in the unit and no other commitments while on-call				✓	✓
Full time resident medical cover must exist with no other duties except for resuscitation duties within the hospital. This should not be at pre-registration house-officer level				✓	✓
Higher trainees should include SpR resident trainees undertaking Advanced or Step 2 training					✓
Transfers into the unit for clinical reasons must be conducted by the unit's own staff (retrievals)					✓
Medical staffing must be sufficient to enable such retrievals					✓
Nursing staff					
Health Care Assistants must provide support for registered nurses	✓	✓	✓	✓	✓
A facility must exist to provide multi-professional training to meet learning needs	✓	✓	✓	✓	✓
Availability of in house competency based training and NVQ training for all Health Care Assistants with clearly defined boundaries for their expanded roles in support of the clinical team		✓	✓	✓	✓
70% of staff must hold a higher qualification in critical care nursing			✓	✓	✓
A minimum of one senior registered practitioner per shift should be in a co-ordinating role				✓	✓
Staffing ratio should be 7.0 WTE per bed				✓	
There must be a provision of practitioners suitably skilled in transfer and retrieval of the critically ill patient				✓	✓
Unit staffing levels must reflect flexibility for provision of retrieval team					✓

Quality Requirement	Level 0	Level 1	Level 2	Level 3	Level 3T
Other Health Professionals					
Health Care Assistants must provide support for registered other Health Professionals and have access to NVQ training	✓	✓	✓	✓	✓
On-call dietetics service at weekends and public holidays	✓	✓	✓	✓	✓
All dietetic referrals to be seen within 2 working days	✓	✓	✓	✓	✓
Dietetic staffing levels must be appropriate to ward speciality and Casemix - 1.0 WTE per 80 general inpatient beds minimum	✓	✓	✓		
Dietetic service provided by highly specialist Dietitians or above			✓	✓	✓
There should be 0.05-0.1 WTE dietitians per bed				✓	✓
Dietetics service delivered by an experienced Dietitian with appropriate specialist knowledge, skills and training in the provision of enteral and parenteral nutrition				✓	✓
Dietetic service delivered by a Specialist Dietitian with highly developed and advanced knowledge and training and extensive postgraduate experience in service policy development and implementation in nutritional support practices within the critical care setting				✓	✓
Speech and language therapy service delivered by a specialist SLT with highly developed specialist knowledge, training and experience in the management of tracheostomy and utilisation of alternative forms of communication		✓	✓		
SLT service delivered by a Specialist SLT with highly developed and advanced knowledge and training and extensive postgraduate experience in service policy development and implementation in the management of tracheostomy and ventilated patients with complex conditions within critical care				✓	✓
Speech and language therapist to be an integral member of tracheostomy team				✓	✓
Pharmacy service provided 7 days a week by a specialist/advanced pharmacist with a minimum of 2 years hospital experience with ICU training or experience or under the supervision of an ICU trained pharmacist			✓	✓	✓

Quality Requirement	Level 0	Level 1	Level 2	Level 3	Level 3T
Other Health Professionals (Continued)					
There should be 0.05-0.1 WTE specialist/ advanced pharmacist per bed				✓	✓
Physiotherapy staffing levels should be appropriate to ward speciality and casemix. Minimum 1.0 WTE: 30 general beds	✓	✓	✓		
Clinical review of patients as required by specialist respiratory physiotherapist at senior level	✓	✓	✓	✓	✓
Physiotherapy staff/patient ratio 1:5			✓	✓	✓
Physiotherapy service delivered by Specialist Physiotherapist with highly developed and advanced knowledge and training and extensive post graduate experience in service policy development and implementation in respiratory and physical support practices within critical care				✓	✓
Physiotherapy skill mix to include additional senior respiratory clinicians				✓	✓
Access to social work service every day	✓	✓	✓	✓	✓
Discharge co-ordinator available every day	✓	✓	✓	✓	✓
There must be access to a bereavement counselling service	✓	✓	✓	✓	✓
Policies and governance					
There must be access to overnight accommodation for relatives			✓	✓	✓
A recognised audit /data clerk who must be appropriately trained for Intensive Care National Audit and Research Centre (ICNARC) and other unit data collection must be on duty every day				✓	✓
A ward receptionist must be on duty every day				✓	✓
Resources must be sufficient to meet the information needs of the multidisciplinary team providing level 3 care; this will vary with unit size and complexity but must be sufficient to monitor compliance with standards				✓	✓
The unit must participate in the Intensive Care National Audit and Research Centre programme				✓	✓

Other developmental quality requirements

Quality Requirement	Level 0	Level 1	Level 2	Level 3	Level 3T
Organ support					
Bedside services must be as per HBN 57				√	√
Specialist beds must be available allowing kinetic therapy				√	√
Access to diagnostics					
There must be on site 24hr emergency access to magnetic resonance imaging				√	√
Medical staff					
There should be one resident SHO or SpR for around 25 patients during "office hours" and one such doctor for 50 patients at night	√	√			
A 24 hour postoperative epidural analgesia service should be supported by an acute pain team		√			
Medical staff should have completed 3 months of intensive care medicine training		√	√	√	√
Units providing care for Level 3T patients might require the services of more than one "medical team". Each "medical team" might reasonably be expected to care for 8-10 critically ill patients					√
Other Health Professionals					
Occupational therapy service delivered by Senior Occupational Therapist - 0.5 WTE per ward	√	√	√	√	√
Access to an Occupational Therapist with the advanced specialist skills and knowledge required for thermoplastic splinting and posture management within critical care				√	√
All speech and language therapy referrals to be seen within two working days Monday to Friday	√	√	√	√	√
Speech and language therapy staffing levels to be adequate to ensure that the speech and language therapist sees no more than 3 patients per session dependent on casemix	√	√	√	√	√
Access to psychology service within 24 hours				√	√
0.05 WTE psychologist per level 3 bed				√	√
Policies and governance					
Patients requiring Level 1 care should be notified to the critical care service		√			
Units providing care for Level 3T patients would be expected to provide support for other units in the network					√

Appendix 1

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Appendix 2

Role and function of critical care outreach

Outreach is aimed at augmenting the effectiveness of critical care units by enabling critical care expertise to be utilised at all stages in the evolution of a patient's critical illness, both within and outside the critical care unit.

Outreach is a collaboration and partnership between the critical care department and every ward. A multi-disciplinary outreach team should be utilised following the identification of deteriorating health to provide advice, support education and a link to the critical care facility.

The outreach team should support and facilitate the ability of ward staff to:

- Identify patients who are at risk of developing life threatening acute illness using simple risk assessment tools based on vital sign observation.
- Initiate immediate resuscitative action.
- Make appropriate referral, documentation and communication.
- Provide psychological and physiological surveillance to patients post critical care discharge.
- Provide outpatient clinics to provide psychological and physiological surveillance following discharge from hospital.
- Educate and train ward staff in the identification of deteriorating physiological signs, the use of appropriate early warning scoring systems[6,7] and institution of appropriate treatments.

[6] Clin Intensive Care 1997;8:100

[7] Br J Anaethesia 2000;84:663

Equipment and services	• Access monitoring equipment and equipment for vital organ system support pending availability of a critical care bed. • All staff must receive training in the use of bedside equipment with which they are expected to work and this must be recorded. • All equipment must be maintained and in working order.	Core Core Core
Medical staff	• Medical staff with critical care training must be available to support the outreach team.	Core
Nursing staff	• *An advanced specialist nurse practitioner should lead the outreach nursing team.* • A range of Senior Registered Practitioners with a minimum of 4 years experience in critical care nursing should deliver the outreach nursing service on a continuous basis. • In addition to the competencies of a critical care nurse outreach nurses must be competent to prescribe in emergency situations in accordance with local policies and procedures. • A provision for education and training to ensure that competencies are maintained and that the skills to identify at risk patients are in place allowing early management and referral to outreach/advice from critical care. • A facility to provide multi-professional training to meet these specific learning needs.	*Developmental* Core Core Core Core
Other Health Professionals	• The patient should have access to the multidisciplinary team including the followings: **Dietetics** • Availability on request within working hours Monday to Friday. **Physiotherapy** • Availability on request • Chartered Society of Physiotherapy standards and local protocols of care must be followed. **Speech and language therapists** • Availability on request within working hours Monday to Friday. **Psychologist** • Within hours availability on request.	Core

Communications	• All staff must know how to recognise cardio-respiratory arrest and know how to summon the cardiac arrest team. • There must be access to a bereavement counselling service. • A system must be in place to ensure appropriate information is available to patients/relatives	Core
Governance	• An audit of compliance with performance standards must be fed back to Trust Boards and networks. • Performance standards must include timeliness of referral, response times, cardiac arrest call rates, critical care re-admissions rates, mortality and morbidity (immediate and delayed). • Exception reporting to the Trust Board must occur when patient safety is compromised. • A system must be in place for reporting, investigating and learning from adverse incidents • A system must be in place for monitoring patient/relative satisfaction.	Core Core Core Core Core

Appendix 3

Role of the Dietitian in Critical Care

- To identify those at risk of malnutrition, and plan patient specific nutritional interventions to maximise outcome.
- To provide a consistent and qualitative approach to assessing nutritional requirements and providing adequate nutrition without overfeeding/ underfeeding.
- To advise on the most suitable enteral or parenteral feeding routes and optimal feed composition, thereby reducing feed related complications.
- To formulate advice for patients and relatives in relation to the clinical situation e.g. address issues relating to early satiety, taste changes, muscle wasting, support and follow-up at home.
- To manage the changing nutritional needs of patients between critical care, the ward and home.
- To develop, implement and revise evidence based nutrition protocols, in association with the multidisciplinary team, to ensure all patients receive timely, appropriate and cost-effective nutritional support, including guidelines for initiating feeds out-of-hours.
- To lead nutrition related audit and research to widen the evidence base.
- To evaluate nutrition-related research and implement evidence-based practice.
- To provide education, training and clinical supervision to other dietitians.
- To provide on-going education and training for clinicians, nurses and AHP and act as a resource for other healthcare professionals through a network structure.

Appendix 4

Role of the Occupational Therapist in Critical Care

- To provide a comprehensive assessment of the functional ability of patients with a view to management of short term needs and investment in long term care to maximise the rehabilitation process.
- To assess for the provision of thermoplastic splints to prevent secondary joint deformity, support and protect and maintain alignment in affected joints.
- To construct and fix appropriate and effective splint and to assess value of serial splinting to increase range of movement and prevent contracture.
- To monitor and evaluate therapeutic application of splint to maintain health.
- To educate patient and/or members of the multi-disciplinary team and/or relatives on care and maintenance of splint application.
- To provide appropriate equipment designed to maximise independence and contribute to timely rehabilitation.
- To share information/knowledge with other health care professionals and offer advice where appropriate.
- To provide education, training and clinical supervision to other occupational therapists.
- To maintain high quality of service delivery via framework of Clinical Governance.

Appendix 5

Role of the Pharmacist in Critical Care

- To provide an efficient drug supply service.
- To be responsible for reporting adverse drug reactions, medication error reports and devising medication error reduction policies.
- To provide advice on the following aspects of drug therapy:
  - (a) Altered drug handling due to age, renal function & hepatic function;
  - (b) Compatibilities of intravenous drug therapy and administration of drugs in restricted fluid volumes;
  - (c) Appropriate dosage forms and routes of administration e.g. drug via enteral tubes, gastrostomies & jejunostomies;
  - (d) Drug interactions, including drug/disease interactions, and the measurement of and interpretation of therapeutic drug levels.
- To lead and participate in the development of evidence based protocols and guidelines.
- To provide advice on the cost effective use of resources.
- To initiate, participate and collaborate with the multidisciplinary team in all aspects of research & development, audit and clinical governance.
- Liase with other specialist pharmacy services such as aseptic services and medicines information for the benefit of the patient.
- To provide advice on TPN regimens.
- To participate in the education & training of the multidisciplinary team.
- To liaise with and provide advice to the outreach team as required.
- To monitor and evaluate prescriptions for clinical appropriateness and effectiveness, legality and legibility.

(Extracted from New Ways of Working - Adult Critical Care Specialist Pharmacy Practice)

Appendix 6

Role of the Physiotherapist in Critical Care

- To deliver appropriate respiratory care maximising the patients respiratory potential.
- To facilitate weaning/extubation from artificial ventilation.
- To prevent reintubation/intubation.
- To advise on the positioning of patients with neurological/musculo-skeletal complications optimising long term rehabilitation potential.
- To provide full musculoskeletal assessment for patients and where appropriate deliver early rehabilitation to minimise neurological/ musculoskeletal complications.
- To be an integral member of the multidisciplinary team participating in ward rounds, case conferences and clinical governance meetings.
- Develop, implement and review evidence based protocols of care.
- To implement audit and research to develop evidence based physiotherapy practice.
- To provide education, training and clinical supervision to other physiotherapists.
- To provide education and training of other members of the multidisciplinary team.

Appendix 7

Role of the Speech & Language Therapist in Critical Care

- To provide specialist assessment, diagnosis and intervention:-
  - for patients with acquired communication and/or swallowing problems due to a range of conditions.
  - for tracheostomy/ventilated patients.
  - for those requiring alternative and augmentative communication taking into consideration the specific needs of the critical care setting.
- To give support and advice to patients and relatives within the sphere of responsibility.
- To ensure seamless follow through of patients through the different levels of critical care.
- To provide specialist advice as an integral member of the multidisciplinary/outreach tracheostomy team.
- To develop protocols for communication, dysphagia and working with tracheostomies in association with the multidisciplinary team.
- To participate in audit and research activities to develop evidence based practice.
- To provide ongoing education and training for clinicians, nurses and AHP and to act as a resource for other professionals.
- To provide education, training and clinical supervision to other speech & language therapists.

Appendix 8

Role of the Psychologist in Critical Care

- To identify those at risk of psychological morbidity, and plan patient specific interventions on this basis to maximise outcome.
- To provide a consistent and qualitative approach to assessing psychological recovery.
- To formulate advice for patients and relatives in relation to the clinical situation e.g. address issues such as panic, agoraphobia, sleeplessness, nightmares and flashbacks.
- To ensure all patients receive timely, appropriate and cost-effective psychological support by the development, implementation and revision of protocols in association with the multi-professional team,
- To evaluate psychological-related research and implement evidence-based practice.
- To lead research to widen the evidence base.
- To provide ongoing education and training for clinicians, nurses and other health professionals and act as a resource for other professionals.