Guidance for nurse staffing in critical care

Royal College of Nursing

Acknowledgements

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Nurse staffing in critical care: **executive summary**

Every patient, nurse and care facility is different. So providing the right nursing care for critically ill patients is not simply a matter of applying standard nurse-to-patient ratios. The skill of the nurse, the complexity of the patient's needs and the physical environment of care will all influence nursing requirements.

Unit and ward managers need to recognise all the variables before they decide on appropriate staffing. The best people to decide on nursing staffing levels are senior critical care nurses themselves, who have the skills and experience in assessing patient need. As well as measuring individual patient dependency, other aspects of nursing care must be taken into account in determining nursing requirements - for example, the skill mix of nurses and other staff, the needs of patients' relatives and friends, the number of patient transfers taking nurses away from the ward, risk management and patient safety.

Managers of clinical areas should work closely with the providers of pre- and post-registration education. This will ensure the current and future workforce is educated in response to the needs of the critical care service. Education provision should include appropriate support and assessment in clinical areas, and link lecturers and practice educators to facilitate better support for nursing students. For new staff in critical care, we recommend network-wide induction packages that incorporate core competencies. Health care providers should support their staff in developing personally and professionally, ensuring nurses are actively involved in continuing education, regular appraisal, clinical supervision and have personal development plans.

Health care assistants are now widely involved in the critical care workforce. New roles for any health care worker should only be developed where they can truly meet the needs of the patient - and not where the main purpose is to reduce the level of skilled care available to save costs. Registered nurses remain responsible for the assessment, planning and evaluation of patient care.

The effective use of experienced critical care nurses can greatly improve patient care, and reduce the incidence of complications for patients. Their observational skills can reduce the impact of sudden patient decline, for example, and their holistic approach to care can change the experience of care for both patients and their families.

Introduction

In its 2000 review of adult critical care services, *Comprehensive Critical Care*, the Department of Health for England (DH) recommended that strict use of defined nurse-to-patient ratios should be replaced by a more flexible system. This was echoed in *The Nursing Contribution to the provision of Comprehensive Critical Care for Adults: A Strategic Programme of Action* (DH, 2001) and by the Scottish Executive Health Department's publication *Better Critical Care* (2000).

These documents aim for a level of staffing and skill mix that is determined by patient need and level of dependency to ensure that patients' needs are met. Therefore, effective workforce planning is essential.

Critically ill patients are nursed in a variety of locations. Comprehensive Critical Care defined levels of care (levels 0, 1, 2, 3) that a patient requires rather than defining the facility in which the patient's needs are met. Where the patient's needs are best met, encompasses a variety of locations such as wards, high dependency units and intensive care units (see Appendix 1). These levels of patient need are defined in terms of the severity and complexity of their critical illness. Levels are similarly defined in Scotland.

In this guidance, we define a critical care nurse as a registered nurse who has the right knowledge, skills, and competencies to meet the needs of a critically ill patient without direct supervision. The knowledge, skills and competencies they require to nurse critically ill patients should reflect the level of patient need, rather than being determined by the patient care environment (for example, a high dependency or intensive care unit). This definition recognises that nurses working in other areas, such as medical and surgical wards, who have regular responsibility for Level 1 patients will need the appropriate knowledge, skills and competencies to care for those patients.

Each critical care location is unique in its functions, structure and organisation - and each staff member has different skills and levels of experience.

When assessing staffing requirements for a critical care area, or for an individual patient, the following factors should be taken into account:

◆ workload and skill required to meet patient needs (including patient dependency)

◆ the role of critical care nurses

◆ staffing levels and skill mix of the multi-professional team

◆ contribution of health care assistants

◆ presence of a supervisory shift leader

◆ nursing work other than direct patient care

◆ the critical care facilities and physical environment

◆ flexible working patterns.

For longer-term workforce planning:

◆ professional development for nurses

◆ pre-registration education for nurses

◆ developing a strategic plan for the critical care workforce.

This guidance looks at the considerations for employers, senior nurses and others planning staffing needs at ward, unit and organisational level.

1

Measuring patient dependency

A universal tool for measuring patient dependency in critical care has not yet been validated - although in Northern Ireland, the 1998 Review of Adult Intensive Care Services recommended that a patient dependency scoring system should be used in all units to determine the level of nursing resources required for each patient. Whatever methods each unit or ward uses to measure it, simple patient dependency is only one factor in determining staffing requirements.

Also important are:

❖ patient safety (both for sedated patients and those who are agitated or confused and at risk of harming themselves)

❖ patient need for frequent observation, intervention and rehabilitation

❖ the ease with which vulnerable patients can be observed

❖ the level of activity in making intra- and inter-hospital transfers

❖ the knowledge and experience of the nurse caring for the patient (as highlighted by Ball and McElligott, 2002).

Even with a valid and reliable dependency tool, a senior critical care nurse can most accurately identify the nursing resource required by a critically ill patient. The following issues should be considered.

❖ Aspects of care which require the full attention of a critical care nurse even if the patient's dependency needs are minimal. For example, a nurse will need to spend considerable time with the family of a patient who is brain stem dead but awaiting an organ donation procedure. Similarly, nursing support for families is needed during the withdrawal of treatment or following the death of a patient.

❖ Occasions when more than one nurse is required to provide care - for example, when admitting unstable patients, transferring a patient for investigations, moving a patient into a side room for infection control, repositioning patients with complex needs, and responding to emergency situations. Adequate numbers of skilled nursing staff should be available

in critical care areas to respond to this shared, and sometimes unpredictable, workload.

❖ Integrating risk management with dependency. For instance, patients dependent on inotropic drugs or on haemofiltration are at risk, and need a critical care nurse to detect and prevent possible life-threatening complications. Patients dependent on mechanical ventilation should be observed at all times by personnel competent to anticipate, detect, and respond immediately to failure of adequate ventilation (Langslow, 1996). Research has shown that the ability of technology to replace direct observation by a trained professional is flawed - in studies (Buckley *et al* 1997, Beckman *et al* 1996), professionals using direct observation had a far higher success rate in detecting incidents than machines did.

Level 1 patients

The major focus in providing critical care to date has been in Level 2 and Level 3 facilities. To support the care of Level 1 patients in acute wards, the organisation of staffing will need to be examined. Outreach services supported by critical care nurses must be provided ensuring patients receive appropriate and timely treatment in a suitable area.

2

The role of critical care nurses

Skilled nursing management of a critically ill patient operates on many levels. Although further research is needed to determine the exact nature of the contribution that skilled nurses make to a patient's experience and outcome, it's clear that their skill will not be captured in a mere list of tasks. Critical care nurses' skill level is dependent upon their knowledge, experience of, and exposure to, critically ill patients.

Improving patient outcomes

Wards and units can benefit greatly from using the full potential of their critical care nurses. Nurses can improve patient recovery by using patient-centred care, pro-active management and vigilance, coping with unpredictable events, and providing emotional support (Ball and McElligot, 2002). Patients are helped by skilled and timely reduction of sedation, weaning from ventilation, physical rehabilitation, and psychological support. Effective nursing care also includes pro-active prediction and prevention of complications, and prompt and skilled intervention in the event of sudden deterioration.

A 1997 RCN survey by Endacott and Dawson into the work of critical care nurses showed that these nurses frequently review and alter planned interventions in response to the patient's condition. Therefore, skilled critical care nursing will reduce the risk of complications, the number of critical care bed days and improve patient outcomes (Thorens *et al* 1995).

Observation

An important function of critical care nurses is to provide continuous observation of critically ill patients. Observation will reduce a patient's risk of precipitous deterioration, monitor their total dependence on support equipment and prevent their agitation or confusion leading to harm.

Observation involves assimilation, interpretation and evaluation of information, including the patient's physical and psychological response to interventions, changes in condition, the significance of monitored physiological parameters and the safe functioning of equipment. Only appropriately trained and experienced nurses can provide this comprehensive level of observation.

Communication

Nurses' role in patient care is a holistic one. It is often a nurse who is the key provider of information to patients, relatives and other members of the interdisciplinary team.

3

Staffing levels and skill mix

Current Department of Health for England guidance recommends the flexible use of beds for Level 2 and 3 patients in critical care areas (DH, 2000) - therefore the nursing and medical dependency of patients will vary. The number of nurses required to staff the area should be based on the expected mix of Level 2 and 3 patients (Audit Commission, 1999). Staffing levels and skill mix within Level 2 facilities should reflect the dependency of the patients.

Flexibility

The dependency of individual patients and the number of patients in a critical care unit can change rapidly, even from shift to shift. Dependency and numbers can be predicted for elective patients, however, emergency admissions and sudden patient deterioration are not predictable. The number of nurses per shift should therefore allow for flexibility to respond to changes in demand. There remains a need to examine trends in elective patient admissions, in order to inform capacity planning and the appropriate provision of nurse staffing.

Absence for patient transfer/investigations

Nursing staff levels should also allow for the fact that nurses will leave the critical area to transfer patients for investigations or treatment elsewhere in the hospital or outside it. Ball and McElligott (2002) found that a nurse on an intra-hospital patient transfer might be absent for as long as a whole 7.5 hour shift. Staffing must ensure that care and risk management must not be compromised by such absences, nor should supervision of junior or untrained staff be reduced. There must also be adequate nursing cover to allow nurses to take required statutory break periods.

Continuous nursing presence for a patient

If a patient requires the presence of a nurse at all times, the number of whole time equivalents (WTE) must be calculated to meet this need. This calculation will vary in each critical care area depending on local context, for example, shift patterns and standard allowance for sickness and study leave.

Example of WTE provision

(Based on three shifts in 24 hours)

To provide one nurse for one patient 24 hours a day, seven days a week would require 168 hours of nursing time

Whole time equivalent for one nurse is 37.5 hours a week

The following factors and allowances will reduce the number of direct patient care hours available for each whole time equivalent per week.

Sickness	4%	1.5 hours
Annual leave	13.3%	5 hours
Shift overlap (Varies with shift pattern)	13.3%	5 hours
Training and education, practice development and supervised practice	5.3%	2 hours
TOTAL		13.5 hours

37.5 minus 13.5 = 24 hours

168 hours divided by 24 = 7 WTEs (required to provide nurse at the bedside 24 hours a day)

7 WTEs should then be added to the overall establishment for the supervisory nurse in charge

Therefore for a six bedded unit the calculation would be 6 x 7 = 42 + 7 = 49 WTEs

This figure still does not account for maternity leave or the time required for nursing work other than direct patient care. Other essential posts, for example, consultant nurse, a practice educator or practice development nurse, would be added to this figure. With reduced skill mix in many critical care areas there is increased demand for induction courses, critical care courses and supervised practice for junior nurses. The allowance for education and training in nurse staffing calculations given by trusts is often below that required.

Reducing complications

A reduction in nurse-to-patient ratios in intensive care can lead to an increase in hospital acquired infection (Vicca, 1999. Archibald, 1997). There is also a significant increase in the duration of mechanical ventilation when nurse-to-patient ratios are reduced (Thorens et al, 1995). The presence of fewer critical care nurses is independently associated with increased risk for respiratory related complications after abdominal aortic surgery (Pronovost et al, 2001). With the increased risk of these complications, cost benefit analysis may demonstrate that reducing the nurse-to-patient ratio in vulnerable groups of patients is a false economy.

Skill mix in the inter-disciplinary team

Nurse staffing levels should also be influenced by the availability of medical staff or allied health professionals (AHPs). Where these colleagues are few or inexperienced it will impact on the role of the nurse, increasing their responsibility and workload.

Health care assistants

When determining staffing levels, the use of health care assistants should not reduce the skill mix of nurses to an inappropriate level for the delivery of critical care. Needleman et al (2002) found that providing a higher proportion of registered nursing hours was associated with better care for hospitalised patients - and this care must not be compromised. Health care assistants should be employed only where their role provides direct benefits to patient care. (See also section 10.)

Decision-making

Judgements about the numbers of nurses and the skill level required are complex. To care safely and effectively for critically ill patients, decisions about nurse staffing should be made by senior critical care nurses - putting the patient's needs at the centre.

4

Supervisory shift leaders

The need for supervisory shift leaders

The number of critical care beds has increased recently. A bed census completed in July 2002 by the Department of Health (KH03a) showed a total of 3,070 beds in England, 30% more than in January 2000.

There are more beds, but recruitment of skilled critical care nurses has been increasingly difficult. Many Level 2 and 3 facilities now have a greater proportion of less skilled and non-critical care trained nurses, as well as increasing numbers of bank or agency nurses on each shift. With fewer experienced critical care nurses on duty, it is important that a supervisory shift leader can provide nursing staff with appropriate support.

An increase in size of units to more than eight beds will mean extra staffing will also be required (DH, 2000). Depending on the skill mix in such larger units, it may be necessary for more than one member of staff to be supernumerary in order to provide support to the shift leader.

The shift leader role

In this role a nurse can provide supervision, training, and advice to other nurses at the bedside, give them support in decision-making and help them prioritise care for individual patients. This role should be allowed for in setting staffing levels in critical care areas (Endacott, 1999).

The shift leader of a mixed Level 2 and 3 facility should be an experienced nurse of senior grade (the current grade F or above) with specialist training in critical care, and the leadership and organisational skills to co-ordinate the activity of the critical care area. The shift leader should be in a supervisory role rather than providing direct patient care.

In designated Level 2 facilities, the shift leader should be a nurse with the necessary clinical, managerial and organisational skills appropriate to the patient case mix. It is suggested that this nurse should be at least at the current E grade level.

5

Critical care facilities and physical environment

Decisions about nurse staffing and skill mix will be affected by the layout of a unit.

For example, the use of side rooms and geographically distant sections of a critical care area limit supervision, observation and communication (Ball and McElligott, 2002). The need to provide privacy for patients and relatives (by closing doors or pulling curtains) also reduces the ability of nurses to observe other patients. This is particularly important in ward areas where a specific area is not identified for the observation of Level 1 patients.

If there is a complex layout of a unit, and a lower visibility for observation of patients, more qualified nursing staff will be required.

6

Nursing work other than direct patient care

Many nurses' job descriptions include roles and responsibilities besides direct patient care. This aspect of the nursing workload is seldom recognised in staffing provision. For example, identified nursing time is needed for:

- operational management
- management duties, such as interviewing, appraisals and strategic meetings
- professional development - nurse registration requires that nurses continue to develop their professional competence. This requires ongoing education, training and assessment for nursing staff at all levels
- mandatory and medical equipment training
- supervision and teaching of nurses - nurses at the bedside might also be supervising, for example, specialist intensive care education, practice of new overseas nurses, student nurses, newly qualified nurses and novices to critical care areas. This work also includes formal completion of comprehensive training documentation
- practice development and research.

The roles undertaken by nurses in each individual unit should be examined.

Nurses roles should not include making up for a shortfall in administrative, clerical, technical and cleaning staff (DH, 2000).

7 Flexible working

Introducing flexible shift systems in critical care units benefits nursing and helps nurses provide a better service.

It is increasingly important for employers to provide employee-friendly working conditions, and flexible contracts and part time working form an important part of this. Reduced absence, better morale among staff and better patient care often follow the introduction of such working conditions. Flexible contracts and on-call systems may also be of direct benefit in areas where there are fluctuations in workload.

Example 1: Variable hours contract Southampton General Hospital

Nurses are contracted to work agreed hours over a designated period - for example, 180 hours over eight weeks. The hours must be booked over the eight weeks, but may vary from week to week. This can be done in a manner that suits both the nurse and the unit.

Example 2: On-call system, West Suffolk Hospital Intensive Care Unit

If patient dependency allows, nurses can request an on-call shift. The nurse must be contactable at home or by mobile phone.

A nominal on-call fee of approximately £5 - £8 is paid. If the nurse is called in, then hours worked are paid. If they are not called in, or hours are not worked, the nurse pays back the time in various ways:

❖ extra shift on next rota

❖ cover shift requirements at short notice

❖ retrospective annual leave.

Some nurses work above contracted hours when required, and take time back as on-call shifts.

Example 3: Term time contracts at Salford Royal Hospitals Trust

Nurses are contracted for the school term time only, so it is guaranteed that the nurse can spend the school holidays with their family. This is calculated using annualised hours and dividing the additional holidays and contractual holidays accordingly on a pro rata basis.

The use of variable shift patterns, self-rostering, and flexible use of annual leave, all provide further options for workforce flexibility.

8 Professional development

Qualification levels for critical care nurses

Decisions regarding the appropriate skill level of nursing staff employed in a critical care unit or ward will depend on the unit and the dependency of patients. Nursing staff appointed should have attained the following levels of experience and qualifications.

❖ Staff at the current G grade level must have several years experience of critical care, an appropriate level of post registration qualification in critical care and an appropriate degree.

❖ Staff at current F and E grades must be able to demonstrate their competence through provision of a personal portfolio and hold a formal post registration qualification related to critical care, aiming for degree level education.

❖ All nursing staff should demonstrate personal and professional development by continuous updating of professional and clinical knowledge.

Professional development programmes

In order to ensure the right number of appropriately qualified staff, the employer should support a full programme of professional development. They should be aware that as well as improving patient care, the provision of high quality training and development is linked with the improved retention of staff. Schemes that facilitate role development, such as rotational posts between varying levels of critical care dependency, offer staff the variety and challenge of working in new areas. They also improve staff confidence and the ability to work in the varied settings in which critically ill patients are located.

To develop a learning culture, managers and employers need to identify support and resources to help staff succeed in their professional development. Support mechanisms include the provision of mentors, formal study time, supervised practice and alternative practice

placements. The support needed to establish and staff an effective critical care service must be clearly articulated by critical care delivery groups or their equivalent in each NHS trust[1].

Appointing a practice educator and/or practice development nurse with appropriate nursing and education expertise can help facilitate a learning culture in which evidence-based practice can be developed to meet the needs of the patients. These roles should be allowed for in workforce planning.

Training and education

The following are key areas of professional development which the employer should support.

❖ Post-registration training and education in the care of critically ill patients for all nursing staff, so they can respond competently to the needs of this patient group. A key English Department of Health (2000) recommendation is that 100% of staff with Level 1 and/or Level 2 patients should have undertaken high dependency skills courses by 2004.

❖ The development of leadership skills for nursing staff - this kind of development is widely recognised as improving patient care, and was, for example, recommended by the English Department of Health in its document *Nursing Contribution to the Provision of Critical Care for Adults* (2002).

❖ The provision of managerial training and education - this will support nurses' integral role in commissioning, provision and evaluation of critical care services, from daily operational management to strategic planning.

❖ Educational provision for outreach nurses. Provision should be negotiated with the workforce development confederation or the consortia which provide education for the trust (Intensive Care Society, 2002 b).

❖ Mandatory training and updating must be readily accessible for all staff - for example, fire training, manual handling and basic life support.

Individual or group support for all staff to develop personally and professionally should be provided by

employers and managers through such mechanisms as annual (or more frequent) appraisals linked to the staff development programme, clinical supervision and team building programmes. For all professional development, the associated competencies or practice outcomes need to reflect agreed national outcomes where these are available.

Orientation for new staff

New staff joining a critical care area –irrespective of their grade - should be given an orientation programme and a period of supernumerary status. This should be tailored to their previous experience in critical care, knowledge of the employing organisation and of the critical care facility. The Northern Ireland review of adult intensive care recommended that nurses should remain supernumerary for at least one month (DHSSPS, 2000)

Induction programmes should be formalised within critical care areas - and preferably across the critical care network. Employers should provide new staff with opportunities to achieve the competencies required for their grade and role. Mentors or facilitators should be identified for new staff within critical care, ensuring their continued development beyond the induction/ orientation period is supported.

1   A critical care delivery group is a trust-wide group established to deliver integrated and flexible services across the whole trust. It should include the key professions and specialties which use and deliver the critical care service, and a designated executive director with lead responsibility for the services on behalf of the trust board.

9 Pre-registration nurse education

protected from making complex decisions regarding patient care. It may be appropriate to identify pre-registration students clearly as distinct from other staff (for example by wearing a different uniform and a clear name badge stating their position).

Links with higher education

To help develop its future workforce, employers should establish formal links with a higher educational institute. A lecturer practitioner or link lecturer, able to contribute to unit activities, should be identified. The link lecturer will provide support for staff assessing students, for students on courses, and provide advice on educational developments and programmes.

Clinical staff and students themselves should have a role in programme evaluation and development.

Clinical staff should also have clear channels of communication with their workforce development confederation or local equivalent. Workforce plans for educational provision should be agreed across the employing organisation and the critical care network.

Audit of provision for students

Critical care wards and units providing placements for student nurses should be audited for their ability to provide an appropriate learning environment. They should be able to show that they provide:

- ❖ clearly identified learning opportunities
- ❖ appropriately qualified mentors
- ❖ a link lecturer
- ❖ adequate educational resources.

The student's progress should be discussed at appropriate intervals and assessed as required.

Status and supervision of students

Pre-registration students must have supernumerary status whilst in critical care areas. Their level of involvement in patient care should be closely supervised and linked with their practice outcomes. They should be

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Health care assistants

Health care assistants can make an important contribution to supporting the work of registered nurses. The British Association of Critical Care Nurses suggests, however, that new roles for any health care assistants should only be developed where they benefit patient care (British Association of Critical Care Nurses, 2002). Health care assistants should not be used where the main purpose is to reduce the level of skilled care available to save costs. Where health care assistants are employed in direct patient care, employers must provide appropriate training, assessment and supervision.

Employers must appoint a designated co-ordinator to be responsible for health care assistants' role development and training. Where health care assistants are employed in direct patient care, they should undertake Scottish/National Vocational Qualifications at Level 2 to 3, which are devised to meet the needs of patients in critical care.

Critical care nursing staff must assess health care assistants' ability to provide care to patients, and delegate tasks appropriately. Health care assistants should only provide direct patient care under the supervision of a registered nurse - the latter must remain responsible for the assessment, planning and evaluation of patient care.

11

Conclusion

With so much change in the health service, a strategic approach to workforce design is required to address future staffing in critical care. Alternative models of workforce organisation will need to be explored and the role of the registered nurse with specialist training optimised. A simplistic equation of patient dependency to number of nurses is no longer a suitable measure when defining nurse staffing levels - a more sophisticated and realistic approach must be adopted if patient care is not to be compromised.

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Appendix 1

Levels of care as defined by the Department of Health for England in *Comprehensive critical care (2000)*

Level 0: Patients whose needs can be met through normal ward care in an acute hospital

Level 1: Patients at risk of their condition deteriorating, or those recently relocated from higher levels of care, whose needs can be met on an acute ward with additional advice and support from the critical care team

Level 2: Patients requiring more detailed observation or intervention, including support for a single failing organ system or post-operative care and those 'stepping down' from higher levels of care

Level 3: Patients requiring advanced respiratory support alone or basic respiratory support, together with support of at least two organ systems. This level includes all complex patients requiring support for multi-organ failure.