Assessing patient category/dependence systems for determining the nurse/patient ratio in ICU and HDU: a review of approaches

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Introduction

The National Health Service (NHS) spends more than £1000 every second [Department of Health (DoH) 1997] so anything that can be done to ensure this resource is used more efficiently holds out the prospect of improving the service delivered to the patient. Indeed, one of the six main principles of The New NHS Modern Dependable (DoH 1997), was to increase efficiency by improving the way in which the NHS uses its resources.

Background

A huge range of patient classification systems/tools are used in critical care units to inform workforce planning, however, they are not always applied appropriately. Many of these systems/tools were not originally developed for the purposes of workforce planning and so their use in determining the nurse:patient ratio required in critical care settings raises a number of issues for the organisation and management of these services.

Aim

The aim of this paper is to review the three main assessment systems that are commonly used in critical care settings in the UK and evaluate their effectiveness in accurately determining nurse : patient ratios. If the application of these systems/tools is to enhance care, a thorough understanding of their origins and purpose is necessary. If this is lacking, then decisions relating to workload planning, particularly when calculating nurse : patient ratios, may be flawed.

Conclusions

Patient dependency/classification systems and patient dependency scoring systems for severity of illness are robust measures for predicting morbidity and mortality. However, they are not accurate if used to calculate nurse : patient ratios because they are not designed to measure nursing input. Nursing intensity measures provide a useful framework for calculating the cost of providing a nursing service in critical care and can serve as a measure of nursing input, albeit a fairly basic one. However, many components of the nursing role are not ‘accounted’ for in these measures.

Implications

The implications of these findings for the organization and management of critical care services are discussed. Careful consideration of these areas is vital if a cost efficient and cost-effective critical care service is to be delivered.

Keywords: high dependency unit, intensive care unit, nurse : patient ratio, patient classification systems, patient dependency, workload management

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to secure value for money. The mechanisms for achieving this are set out in more detail in the NHS Plan (DoH 2000a) where the modernization agency and the system of earned autonomy are presented as key elements in the government reform programme. If it is then considered that provision of critical care services within the UK NHS Trusts costs around £700 million each year, it becomes clear that the appropriate use of the nursing resource is an issue, which has significant local and national management and policy implications (Audit Commission 1999). In an assessment of the current global nursing shortage Buchan (2002) suggests that developed countries are facing a demographic ‘double whammy’. An ageing nursing workforce is caring for increasing numbers of elderly people. One element in dealing with this situation is the way health systems function to enable nurses to use their skills effectively (Buchan 2002). Another central feature of government policy is evidence-based practice (EBP), (DoH 2000a) and the requirement to base clinical decisions on firm evidence of the efficacy of the intervention. Although the main emphasis in EBP has been on clinical interventions, the principle of basing health care management decisions on a recognized evidence base is becoming accepted as a necessary prerequisite for efficient and effective management (Stewart 2002). It is timely therefore to examine the evidence that is available to managers, which may assist them in workforce planning in critical care areas.

Outline

Currently a range of systems and tools are used to estimate the number of nurses needed to deliver care in intensive care units (ICU) and high dependency units (HDU). However, the rationale for their application is often far from clear. The purpose of this paper is to examine the systems and tools commonly used to estimate staffing requirements in critical care areas so as to evaluate their suitability and effectiveness. This is necessary because in a recent report the DoH (2000b) recommended that the existing division into high dependency and intensive care beds be replaced by a classification that focuses on the level of care that individual patients need. Staff numbers, skills and expertise should depend on the workload and complexity generated by the condition of individual patients (DoH 2000b). If this is to be achieved it is important to examine the strengths and weaknesses of the range of systems and tools available to managers working in this area. In order to do this three main areas are explored. First, some background information is provided to establish the context in which the patient category/classification systems are reviewed. It is argued that a particular set of circumstances combined to create an impetus for the development of the range of systems/tools, currently in use, to fulfil a number of perceived needs. Second, the three main groups of systems that emerged in response to these needs are considered and their particular strengths and weaknesses evaluated. Patient dependency classification, classification and severity of illness, and nursing intensity measures have been the systems of choice in critical care areas in the UK and their usefulness in informing management decision making in critical care is assessed.

Third, the implications of this evaluation will be discussed and some observations made concerning the use of the systems/tools. It is suggested that the application of these tools can only be a part of the workforce planning process in critical care. They can provide useful information and serve, as a basis for informed decision making, however, there is also a need to draw on professional judgement and ‘local knowledge’. Finally conclusions will be drawn indicating that the principles of evidence-based decision making can be applied to workforce planning for critical care provision. If this is achieved, it can be demonstrated that management decisions are transparent and based on the best available information in order to maximize the nursing resource.

Background

The agreed nurse : patient ratio

The intensive care society in England (ICS 1997) and the DoH (1996) set a minimum standard of a nurse : patient ratio of 1 : 1, for patients in need of care in an ICU (Figure 1). This calculation was based on the assumption that another nurse would be available to manage the unit. It was recognized that this ‘standard’ must be applied within the context of each unit (ICS 1997). For example, there may be situations when a

1. Patient dependency classification systems
2. Patient dependency classification and severity of illness systems
3. Nursing intensity measuring systems

Figure 1
Nurse : patient ratio systems for intensive care unit/high dependency units.
Patient is so seriously ill that one nurse would be unable to care for the patient on his/her own, and would require the assistance of one or more nurses for a period of time. Conversely, there may be occasions when a patient in ICU does not require the individual attention of one nurse.

For many years patient census, based on this agreed nurse : patient ratio, was the most commonly used method of calculating nursing workload in ICUs (Stilwell & Hawley 1993). Essentially this meant that the number of patients indicated the number of nurses required to care for them. However, nursing workload on a particular unit is also determined by the severity of each patient’s illness, the complexity of care required, general physical condition, and his/her social-psychological status.

When a Staffing system is census driven there is a lack of flexibility, which is necessary if the ‘peaks’ and ‘troughs’ in staffing needs, arising from patient care requirements, are to be effectively managed (Stilwell 1992, Stilwell & Hawley 1993). The census approach entails counting patients and staff without taking full account of the changing needs of the patients or the level of experience of the staff. For example, unplanned emergency admissions and/or the unexpected deterioration of a patient’s condition can result in a situation where staffing levels do not comply with the ‘standard’ ratio because the census driven system is too rigid to accommodate such changes. Conversely patients can improve rapidly following treatment and fewer staff may be required. Consequently, although the ‘standard’ ratio is clear, widely recognized, and accepted, it lacks flexibility and can lead to under or over staffing of ICUs. ‘One-dimensional’ staffing models are not a sound basis for managing cost-effective resource allocation in the clinical environment (Anderson 1997).

In an effort to address the deficits in census-based systems other approaches have been developed to assist in workforce planning in critical care areas. These systems fall into three broad groups, which are designed to categorize patients according to their nursing needs.

**Patient dependency classification in ICU/HDU**

A patient dependency classification system is a strategy for categorizing patients according to the amount and complexity of their nursing care requirements. The classification of patients according to their needs was developed out of a desire to accurately determine the optimal staffing levels to meet these needs (Fagerström & Bergbom Engberg 1998, Fagerström et al. 2000). For example, one of the earliest types of patient classification systems was based on the patient’s diagnosis (Giovannetti 1979, Giovannetti & Moore Johnson 1990). Many such systems were later developed and used (O’Brien-Pallas et al. 1992, Strickland & Neely 1995, Hlusko & Nichols 1996).

In most classification systems, patients are grouped according to the amount of nursing work required. The purpose of a classification system is to assess patients, categorize them and then allocate them to groups with similar nursing needs. The patients in each group are then given a numerical ‘score’ to indicate the amount of nursing care they need.

There are a number of ways of categorizing patients, each one based on a different set of premises and assumptions. In 1990, the ICS in England (ICS 1990) recognized it was important to have a system to categorize patients according to their needs. As a result, most NHS Trusts in England began using first European intensive care unit (EURICUS-1) and developed the EURICUS-1 system (Miranda 1996). The EURICUS-1 category system was claimed to predict the nurse : patient ratios required and this was confirmed for general use (DoH 1996). The system was designed to combine nursing intensity measures and physiological indicators as a basis for determining nurse : patient ratios. Patients are placed in one of the four categories of need described below.

**Category 1:** In this category patients are those who require close observation, but not necessarily the continuous presence of a nurse at the bedside. The patient is considered to be in need of HDU care. The expectation is that one nurse can care for two patients.

**Category 2:** Patients are those who require a nurse at the bedside continuously for 24 hours/day. It is generally accepted that patients in this group will form the majority of patients in an ICU, and be categorized as ICU. They will be very ill but will not require frequent interventions, which constitute a major addition to workload.

**Category 3:** These patients are seriously ill and will require a minimum of 1.5 nurses for a large proportion of the shift. It is generally assumed that for a majority of a span of duty two nurses will be required to care for the patient.

**Category 4:** Patients in this category are the most seriously ill and require the attention of two nurses for the majority of the shift. This category is rarely used as patients generally become stabilized and re-categorized into category 2 or 3, or deteriorate and die during the shift.
Limitations

This category scoring system has been criticized for not accurately reflecting the actual nursing time spent with patients in each category, and that nursing workload is not a direct result of patient dependency rather it categorizes patient need (DeGroot 1989a,b). However, although such definitions have been implemented it is still felt that patient dependency classification systems can be used as a reliable tool to determine staffing levels for nurses (Durand 1989, DeGroot 1994a, Goossen et al. 2000). This was confirmed in a survey carried out by the Royal College of Nursing (Royal College of Nursing (RCN) 1995), which found that of 176 ICUs in England 55% used patient dependency scoring systems for estimating workload and therefore the number of staff required. However, because of the flaws outlined earlier, the system may not give an accurate assessment of the skill-mix required or reflect a realistic estimate of nursing workload undertaken. Moreover, the level of nursing experience can distort the classification, thereby adding to the system’s unreliability.

One other factor not accounted for by such scoring systems is the time during the shift that additional workload occurs and this may be significant. For example, a new admission to ICU may require two nurses for a short while and only one nurse after the patient is ‘settled’. If admissions are distributed evenly during the shift then one nurse may be sufficient. If several patients are admitted at the same time then one additional nurse may not be enough. This also applies to other categories of additional work. The only way to detect an uneven distribution of workload is to measure workload more frequently than every shift, e.g. hourly. This is generally not feasible and consequently such scoring systems are a ‘trade off’ between accuracy and utility.

The accuracy of such scoring systems is further impaired by scorer subjectivity. Yet objectivity demands the identification of every possible action and intervention. This may be an ‘academic’ ideal, however, it is not practical if the system is to be used in the complex reality of clinical practice.

Although patient dependency scores are sometimes used to determine nurse : patient ratio requirements, they do not necessarily reflect the amount of time a nurse spends looking after a patient. For example, patients who are extremely ill may be unconscious, immobile, and have all their physiological needs met by supporting technology, requiring minimal nursing time. On the contrary, a patient who is recovering may require a greater amount of nursing activity because he/she is able to communicate pain and discomfort. Also, patients who are conscious in an ICU may be frightened, anxious or distressed, requiring a greater nursing input for reassurance.

The categorization of patients and their nursing needs by ICU nurses is not a simple process. Although the patient categorized as HDU may require less medical treatment than patients categorized as ICU, there is an assumption that HDU patients will also require less nursing care (DoH 1996, ICS 1997). This is not necessarily the case as there may be situations when patients deemed to be in need of HDU care require the presence of one or more nurses for long periods of time. For example, this situation may occur with patients who are confused, in pain, experiencing hallucinations from drug abuse, or undergoing lengthy ICU admission (Dyer 1995, Adomat 2001). Patients may be categorized as requiring HDU care but on occasions the patient’s distress, anger and potential to self-harm or harm other patients or nursing staff, would result in these patients requiring a higher category of nursing need than HDU. In summary, patient dependency/classification systems can only provide a guide for estimates of nursing need. They cannot be used with accuracy to determine the nurse : patient ratio required.

There has been little change over the years in the categorization of patients in ICU and the calculation of nursing staff required. It seems whichever methods each unit or ward uses to measure it, simple patient dependency is only one factor in determining staffing requirements (RCN 2003, p. 4).

Patient dependency classification and severity of illness in ICU/HDU

Patients admitted to ICU/HDU can also be classified according to the severity of their illness and this information is frequently used as a basis for prognostic and nursing workforce planning. In an attempt to identify a patient’s prognosis and overall ICU/HDU outcomes, a variety of scoring systems have been developed based on basic homeostatic values, focusing on severity of illness. Severity of sickness and morbidity scoring systems are used for predicting patient outcome and costing patient care. Nurse managers have also used some of the severity of sickness scoring systems to calculate nursing dependency and overall nurse workload (Carr-Hill & Jenkins-Clarke 1995). These scoring systems are based on either physiological or therapeutic measures. Points are assigned to these measures on a scale of increasing order of divergence from normal values (in the case of physiological variables), or an increase in complexity (in the case of therapeutic measures). The points are
calculated to give a severity-of-illness score for each patient. These indices accurately quantify the severity of illness and predict the overall mortality for a group of patients. The scores can allow meaningful comparisons to be made between the severity of illness/therapeutic interventions and outcomes in different ICUs. This is in turn used as a basis to estimate the number of nurses required for specific patients and to ‘cost’ patient episodes. Three of the most frequently used systems are discussed below.

The acute physiological and chronic health evaluation

The acute physiological and chronic health evaluation (APACHE) severity of disease classification was developed by Knaus et al. (1981), in an attempt to classify prognosis groups of critically ill patients, by determining the success of different forms of treatment. APACHE II was later developed as a simplified, classification system using 12 acute physiological variables, which are weighted for degrees of abnormality by assigning ratings of 0 (normal), 1, 2, 3 or 4 (very abnormal). A score of 0 for one of the physiological parameters is in the normal range, whereas a score of 4 is abnormal. The initial score employs the worst values in the first 24 hours of intensive care, and then adds points for age and chronic health problems. The total is the APACHE II score. Following treatment the acute physiological component score should decrease. For example, if a patient is admitted in a diabetic coma he or she will score 4 for blood sugar, conscious level and other physiological measures. However, following treatment the scores may quickly return to 0. In the APACHE system the score of 4 (the worst score) would apply for the following 24 hours and staffing would be based on this. APACHE II has been validated through its use with over 17 000 patients as a prognostic system for groups of patients. Although useful for retrospective audit, its accuracy is affected by treatment and the application of American criteria to the UK (Rowan et al. 1993). Some treatments, for example, high frequency oscillatory ventilation (HFOV) or high frequency jet ventilation (FJV) are not commonly used in general ICUs within the UK, but are used in some States in America. Also, patients admitted to ICUs in the USA are usually less sick than those admitted to ICUs in the UK (Rowan et al. 1993, Chellel et al. 1995). Moving scores by two or three points can alter mortality predictions by up to a quarter (Goldhill & Withington 1996, Rhodes et al. 1997). An improved version of this scoring system is currently being used, APACHE III (Knaus et al. 1991). The improvements to the system have focused on providing a computerized version but as it continues to use American criteria it is still possible to assess patients inappropriately (Goldhill & Withington 1996).

The intensive care national audit and research centre (ICNARC) is collecting national APACHE III data (Knaus et al. 1991), which it is hoped will identify the types of patient who are most likely to benefit from ICU and HDU care. These systems are popular for their prognostic value but are sometimes used inappropriately for the purpose of calculating the number of nursing staff required (Chellel et al. 1995, Cho & Wong 1997). APACHE III does not necessarily provide reliable information about nursing dependency classification and nursing workload, because prognostic and sickness scoring systems measure only the physiological stability of patients not their nursing needs.

Simplified acute physiology score

The simplified acute physiology score (SAPS II) (Le Gall et al. 1993), is a system which converts the ‘illness’ score to a probability of hospital mortality. Fifteen significant variables were used to derive a total score. Multiple logistic regression analysis is used to calculate the overall prognostic score.

A benefit of this system is that the method of data collection is very simple and quick to use. Le Gall et al. (1993) estimate that data can be collected for each patient in <5 minutes, because routine recordings of clinical observations are used, e.g. blood and urine samples from the patient. Whereas some systems require that a single diagnosis be specified in order to estimate the probability of mortality, with SAPS II the probability of mortality is calculated directly from the score using a logistical regression equation. The 15 physiological variables are based on previously tested APACHE II criteria but have been reduced in number to focus on the elements critical to prognosis (Le Gall et al. 1993). An updated version (SAPS III) is to be launched in 2003/2004 and it is envisaged that this system will take into account changes in critical care practices as well as changes in software developments over the last 10 years (SAPS III outcome research group).

Limitations

The multifactorial aetiology of disease in ICU/HDU patients makes the SAPS II system more practical to use than APACHE II or III. It is also clear that SAPS II has been useful in accurately predicting hospital mortality within the UK (ICNARC 1997). However, because of
its design it is not suitable for calculating patient dependency in terms of nursing requirements or nursing workload measures. Yet some hospital Trusts have used this diagnostic related system to predict the number of nurses required for forthcoming shifts (usually the next 24 hours) (Stilwell & Hawley 1993, DeGroot 1994a,b). The main problem with this is that patients could score very highly on the 15 physiological variables (indicating that they are very sick), and yet require minimal routine nursing input. Stilwell and Hawley (1993) recognize that SAPS II can provide useful case-mix information, which can inform workforce planning systems, but on its own merely provides physiological status data. Using SAPS II or other physiological scoring systems to classify dependency or nursing workload may result in simplifying assessments of nursing need. Calculations based on physiological scoring systems can result in a ‘false’ demand for nurses. Conversely, it can lead to underestimates of the number of nurses required when patient demand is high (Fetter 1991, Stilwell & Hawley 1993). For example, if a patient is admitted with a severe head injury resulting in brain stem death, the patient will score highly in terms of severity of illness but may only require minimal nursing care.

Diagnostic related groups

Other systems of measuring patient sickness levels include variations of diagnostic related groups (DRGs, Green et al. 1988). The DRGs are based on 475 mutually exclusive medical and surgical diagnostic categories. The DRG is determined by the ‘Principal Diagnosis’, or the main reason that the patient was admitted to hospital. Factors such as comorbidities, age and length of stay, are given scores that enable outcomes to be costed. The DRGs were originally designed to inform the costing of care in the USA, and they have also been used in both private and public health care sectors in the UK as a basis for calculating costs (Stilwell & Hawley 1993, DeGroot 1994a,b), as well as providing a framework for considering the cost of nursing care. The overall calculated DRG represents the cost for patient treatment and includes an assessment of workload. However, the 475 medical and surgical diagnostic categories were never tested against the nursing activity they generated. The reliability of estimating the workload generated from each diagnostic group is questionable. For example, an analysis by Fetter (1991) of 29 509 days of care demonstrated that for 12 842 patients medical diagnosis alone was not predictive of nursing workload, even for patients with ‘routine’, accepted diagnoses and treatments.

Nursing intensity measures

Given that patient dependency classification systems and patient severity of sickness scores do not accurately reflect the amount and category of nursing effort required to deliver optimal care, nurses have looked to their own activity as a source of information for the measurement of workload (Soeken & Prescott 1991, Bulechek & McCloskey 1992). Thus, attempts to classify patients as a basis for costing nursing care has led to the development of a variety of nursing intensity measures. Nursing intensity is a measure of the amount and complexity of nursing care needed by a patient. Examples of commonly used nursing intensity measures are discussed below.

Nursing interventions classification

The nursing interventions classification (NIC) was developed at the Iowa College of Nursing, in the USA (Bulechek & McCloskey 1992), with the intention of identifying common nursing interventions required for groups of patients. Seven main groups of nursing activities were identified:

- Nursing diagnosis.
- Gathering information for a physician to make a medical diagnosis.
- Nursing initiated treatments.
- Physician initiated treatments.
- Daily essential function activities initiated by the patient/client/relative.
- Evaluation of nursing/medical treatments.
- Administrative and indirect care activities.

Each of these seven groups of activities was also made up of subcategories of interventions. Fourteen surveys were undertaken, which validated a total of 336 interventions confirmed by 483 nurse experts and consensus professional focus groups, as part of the Delphi methodology (Bulechek & McCloskey 1992). The standardized list of 336 direct care nursing interventions was developed by randomly selecting 250 that were distributed to each of the 483 nurses in the study. Each member independently categorized an intervention label and rated each activity for how characteristic it was of the intervention (McCloskey & Bulechek 2000).

Limitations

The intervention labels apply to nurses in all specialities and all care settings, regardless of expertise. However, different nursing skill levels in ICU mean that varying
amounts of time will be needed to undertake each task, thereby rendering the system unreliable. Nonetheless, the method generated a nursing taxonomy of interventions (NIC), which has been updated using the same method (Bulechek & McCloskey 1999). A ‘common’ language for nursing intervention, which involves the ‘average’ time taken to undertake various tasks/interventions, as basis for calculating nurse : patient ratios is inappropriate.

Therapeutic intervention scoring system

The therapeutic intervention scoring system (TISS) was developed in 1974 at the Massachusetts General Hospital (USA) and was updated in 1983 for use in ICUs. The TISS has been used to determine severity of illness, to establish nurse/patient ratios, and to assess current bed utilization and need (Keene & Cullen 1983). The TISS developed out of the anecdotal ‘tube sign’ in use in ICUs in the USA in 1960s. The higher the number of ‘tubes’ inserted into the patient, the lower the likelihood of patient survival. This was based on the premise that TISS measures the intensity of nursing care required during a 24 hour period. A score is assigned to the procedures performed on ICU patients, with the assumption that the greater the number of procedures/interventions performed the higher the score, thus reflecting the severity of the illness. Patients are then classified in the system based on points (class I ≤ 10 points to class IV ≥ 40 or more points).

The TISS system was quickly adopted up by nurse managers in the UK in the early 1980s because it appeared to reflect the nursing input required for different groups of patients and not merely their severity of illness score. In the UK, it was suggested that class IV patients required a 1:1 nurse/patient ratio and that a grade E nurse who has a English National Board for Nursing Midwifery and Health Visiting (ENB) 100 certificate in critical care was capable of managing 40–50 patient TISS points (British Association of Critical Care Nurses (BACCN) 1995, Bennett 1995, ICS 1997.) Research following the introduction of TISS indicated that it is a valuable means of assessing care needs in an ICU and was often also used for predictive purposes as a prognostic indicator (Birdsall 1991, Reis-Miranda 1997).

Limitations

However, in addition to determining severity of illness, TISS scores are used to determine the nurse : patient ratios and assess current bed utilization and need. This may not be appropriate as TISS measures the ‘worst’ scenario during 24 hours.

The benefit of TISS is the use of interventions that are easily recognized at the patient’s bedside by the nurses. However, in general it serves to quantify the physician’s perception of the illness, which is then translated into requirements for nursing care. It is important to recognize that TISS points are physician-dependent, and as medical practices are different within each unit, so are the potential therapeutic interventions employed. However, its acceptance is not universal, largely because it measures medical interventions rather than nursing ones, for example, the frequency of tracheal suction to clear copious secretions. Nurses need to be involved in the translation of the TISS points/class by identifying nursing requirements if this system is to accurately gauge nursing intensity.

Another problem with using TISS is that some of the items can be interpreted differently. For example, multiple infusion lines that run into one vein may be interpreted as multiple line because of the additional time required to provide infusates and drugs for each of the lines and cannot be recorded as one infusion line, yet the care for the infusion site itself will only take up the time needed to care for one infusion cannulae.

Nine equivalents of nursing manpower use score

In 1994, the foundation for research on intensive care in Europe (FRICE) began a large prospective survey of ICUs in Europe, subsidized by the European Commission. A multidisciplinary team called EURICUS-1 undertook the study and the measurement of the daily nursing workload was one of the variables investigated. A simplified version of TISS was used as a baseline, because of its applicability across Europe. As a consequence, the nine equivalents of nursing manpower use score (NEMS) was developed. The original TISS-28 items were conflated into nine main categories, which were then tested by 3000 nurses in 89 ICUs in 12 European countries (Reis-Miranda et al. 1997). As a result NEMS is claimed to be a suitable therapeutic index to measure nursing workload in ICU, as well as being a means of comparing nursing workload between different ICU, and to predict and plan nursing staff allocation at the individual patient level.

Limitations

However, there remain issues related to objectivity and reliability that need to be taken into account (Reis-Miranda et al. 1997). These include:
• Interpretation of nursing interventions may compromise interrater reliability.
• The rater’s experience affects item scoring (McKeon 1996, Scholes & Moore 1997).
• It is time consuming to use.
• Scoring is often conducted retrospectively.
• It allocates patients to each of the 9-items, without taking into account the nursing workload required.

The main limitation then lies not with NEMS itself, rather it is with the way it is used. Although it employs a system similar to that used in TISS-28 it is linked to the patient’s severity of illness, treatments and interventions and consequently is not suitable for measuring the nursing input. When used inappropriately NEMS will understandably have a poor discriminative power in informing estimates of workload at the individual patient level.

Conclusion

Existing patient category/dependence systems are not entirely effective in accurately gauging the necessary nurse : patient ratios in ICUs. The inclusion of direct and non-direct nursing care linked to individual patients may provide a more accurate assessment of nursing requirements (Adomat 2001). Currently nurses in ICU use systems to categorize patients that are imprecise, and which do not accurately gauge the level of nursing input to patient care. There is a need to recognize the level and intensity of nursing input required, regardless of the original category assigned to the patient. If the needs of patients in ICU are to be met a more reliable way of determining the number and skill level of nurses will have to be developed.

Severity of illness scores can only inform clinicians of the potential prognosis of patients and cannot be relied upon as a basis for calculating nurse staffing levels in ICU/HDU. They can, however, be used to assess the likely benefit of ICU/HDU care for patients in relation to overall prognosis.

Nursing intensity measures are helpful in some areas of care but systems such as NIC (Bulechek & McCloskey 1999) do not necessarily translate across continents in terms of scope of clinical practice; can be time consuming to use; and fail to recognize the emotional labour and hidden workload that cannot be labelled as a task.

Clinical managers need to ensure that decisions related to patients admitted and discharged from ICU/HDUs are appropriate. They are also under pressure to ensure that appropriate nurse : patient ratio standards are being met. For example, the DoH (2001) concludes effective organization and delivery of a trust-wide service means that the right number of nurses with the knowledge and skills appropriate to the level of service is provided. Effective workforce planning, recruitment and retention and education and training are crucial to ensuring that the nursing resource matches demand. It is understandable therefore that managers may turn to a variety of dependency or categorization systems to assist them in the management of patient through-put and the nursing workforce. However, if the original purpose of the system chosen is to determine patient prognosis or estimate intervention costs they will be of little value for calculating the number of nursing staff needed. A knowledge of the purpose and function of the systems is necessary if evidence-based management decision making is to follow. The need for this is likely to increase as demands for evidence-based management grow (Axelsson 1998, Kovner et al. 2000, Neuhauer 2001, Walshe & Rundall 2001, Stewart 2002). An essential feature of evidence-based management is the ability to combine different types of evidence with professional knowledge and experience. In relation to ICU/HDU care an understanding of patient category/dependence systems is one such area of knowledge.

References


