

research reports

# Setting safe nurse staffing levels

*An exploration of the issues*

**Cherill Scott**

Research Fellow

RCN Institute

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Cherill Scott

RCNI

London

# Executive summary

## Introduction

The paper was written in response to the concern expressed by RCN members about the lack of an objective and rational 'universal formula' for staffing, which could guarantee the delivery of safe and high-quality nursing care. Although the main focus is on the nursing workforce in hospitals, many of the issues discussed are equally relevant to nurses in community and primary care services.

1. Recent events have focused national attention upon the nursing workforce. Nurse shortages are a UK-wide concern. Shortages affect the workload of existing staff and pose a potential threat to the continuity and safety of patients; successive 'winter emergencies' in the NHS have confirmed the precarious state of nurse staffing levels. The amount of spending on temporary nurses in the NHS has risen steadily over the past decade. At the same time, the government is encouraging nurses to take on new roles and responsibilities, to help meet targets in the reduction of waiting lists for consultations and treatment.
2. Apart from a period in the 1970s, when the government encouraged the use of planning norms for setting staffing levels, planning was done on a local basis, in comparative isolation, and often on the basis of 'custom and practice'. When planning was approached more systematically, there was little consistency in the 'nurse demand' methods used in strategic and operational planning. In the 1980s, as part of its Resource Management initiative (aimed at reducing costs and increasing productivity), the Department encouraged hospitals to introduce nursing information management systems - such as GRASP, TEAMWORK and NISCM - to support local decision making. For a variety of reasons, these systems proved unpopular with nurses.
3. Patient safety has always been a primary concern of nurses, particularly in hospitals and other institutions where they have to provide 24-hour cover. The profession has consistently published extensive guidance on the matter of patient safety. Clinical risk management is now an important dimension of the clinical governance agenda. This means that decisions about staffing levels and skill mix must be integrated with a systematic approach to safety and continuous quality improvement.
4. '*Top-down*' planning: in the 1970s and '80s, planning for the recruitment and deployment of nurses in hospitals was determined on a 'top-down' basis, either by using formulae based on historic staffing ratios or by using aggregate statistical information on bed occupancy and throughput. These methods were superseded by formulae which took account of patient dependency and local variations in workload, such as the Trent and Aberdeen formulae. An alternative approach is to use expert opinion and research findings (where available) to develop a 'universal' nurse : patient ratio for staffing a particular service. In the UK, there is existing guidance on nurse staffing for some specialist areas, but it does not have legislative backing. Internationally, some legislatures (notably the state governments of California, USA and Victoria, Australia) are starting to intervene in nurse staffing. Setting universal staffing norms can be problematic: there has to be general acceptance of the methods used to arrive at the norms; they assume standardisation of nursing titles, roles and activities; they may fail to keep pace with widespread changes in health technology and professional practice; and locally, they may not be sufficiently sensitive to rapid changes in local workload or individual patient needs.
5. '*Bottom-up*' planning: several methods have been developed to calculate staffing levels by using local clinical information. Although some of them involve complex measurements and calculations, and claim to be more reliable and objective than professional judgement alone, all of the systems incorporate some element of professional judgement. All of these methods have been criticised, often on methodological grounds. They may be divided into four broad categories: (i) 'consultative' approaches, which explicitly use the professional judgements of nurse managers at ward level and above; (ii) activity-based regression methods; (iii) workload assessments; and (iv) benchmarking, which compares staffing levels and budgets within specialties across different hospitals.

6. There is no such thing as an 'optimum' skill mix . It is good management practice to undertake periodic reviews of staffing and skill mix. Decisions should be informed by detailed knowledge about a particular ward or department and, once made, should be monitored for their impact on patient and staff outcomes.
7. Three key themes emerged from the literature and interviews: the advantages and limitations of using workload measurement tools in nursing; the advantages and dangers of relying on the unsystematic use of professional judgement about staffing and quality; and some confusion about accountability for staffing decisions in the management hierarchy.

## Conclusions

The capacity of the nursing workforce to provide good-quality care does not depend solely on numbers of staff in post. The following considerations are of fundamental importance:

- ◆ Systems of professional education, practice and accountability must respond to public expectations of safe, good-quality nursing care.
- ◆ The nursing needs of patients/clients and their carers must be assessed systematically by nurses themselves.
- ◆ Organisational culture should promote whole-systems approaches to patient and staff safety.
- ◆ Local decisions about nursing skill mix should be based upon agreement within the profession, and between the profession and employers, about different nursing roles and levels of practice.
- ◆ Clinical leaders must acquire the skills to plan and manage the nursing workforce effectively in the interests of good-quality care and high staff morale.

# Introduction

## Scope of report

One of the resolutions at the RCN's 2000 Congress expressed concern at 'the lack of a universal mechanism to determine safe staffing levels'. This reflected widespread concern within the profession about the potential increase in risks to patient safety posed by increased levels of activity, and inadequate levels of nurse staffing, in the NHS. Over the years, there have been many attempts to develop a universally acceptable and reliable formula which will be able to predict the precise nurse staffing levels needed to ensure patient safety. Even if this is not a realistic goal – and the literature on workforce planning suggests that it is not – the Congress resolution provided a timely opportunity to reconsider the important professional and managerial issues associated with setting safe staffing levels.

This paper aims both to inform the wider debate and also to underpin in-house decisions about the RCN's future activities in this field. It is based upon information collected using three main approaches: (i) exploratory interviews with senior nurse managers identified through the RCN's membership networks; (ii) information provided by RCN members in response to an article in *Bulletin*; and (iii) a wide-ranging review of the relevant policy and research literatures (see Appendix 4). The sponsors of the Congress item were concerned mainly with recent adverse events in the acute hospital sector and, even more specifically, with safety on adult medical and surgical wards. Almost all the published literature on workload measurement and workforce planning deals with nursing in the acute hospital sector. Most – although not quite all – of our informants also work in this sector. Although the paper's main focus is on hospital staffing, many of the general issues it considers are applicable to other areas of nursing.

The paper makes reference to, but does not attempt a systematic appraisal of, the sizeable methodological literature on the measurement of nursing workload and patient dependency. This is partly because it is a highly

specialised, expert literature, but mainly because it might detract from the paper's main focus on the processes of planning, educating and managing the nursing workforce.

## Plan of report

The first section contains background information about recent policy initiatives affecting the UK's nursing workforce, and considers some recent statistics which illustrate increases in NHS activity and in nurses' workloads. Section 2 provides an overview of the process of nurse workforce planning and describes some past attempts to introduce more systematic and standardised approaches into the NHS. It discusses the impact of the Resource Management initiative and the movement to persuade nurse managers to use scientific management tools and information technology to inform their decision making. Section 3 discusses the issue of patient safety and describes recent professional and political initiatives in this area. Section 4 describes 'top-down' planning methods – in particular, the use of norms (or nurse : patient ratios) as the basis for establishment-setting. Some international examples of this are considered.

Section 5 deals with 'bottom-up' approaches to establishment-setting, including: consultative approaches (which are based on professional judgement), activity-based regression methods, different methods for measuring workload at ward or unit level, and benchmarking (a new departure). It refers briefly to some off-the-shelf packages (with the proviso that information on these is not easily accessible to non-experts and that the published literature is not very up-to-date). Section 6 discusses nursing skill mix and some important trends which are affecting decision making in this area: for example, the changing scope of professional practice, new nursing roles and the developing role of health care assistants. Section 7 identifies and discusses the main themes that emerged from the data. Section 8 contains some recommendations for further action. Appendices 1 and 2 contain examples of existing planning norms from the UK and Victoria, Australia. Appendix 3 contains a list of selected guidance and other resources relevant to nurse staffing, which may be useful to nurses with responsibilities in this area.

# 1. Background

## 1.1 New HR strategy for the NHS

This is a particularly timely moment for the RCN to be considering the question of nurse workforce planning. From a professional perspective, the government's new strategy for nursing, *Making a Difference*<sup>1</sup> and *The NHS Plan*<sup>2</sup> both contain plans to modernise future roles and career pathways (see section 6.2). There has also been a range of major government initiatives aimed at modernising the NHS pay system and its human resources (HR) strategy, including new structures to deal with workforce planning and development – see below.<sup>3,4,5</sup> The government's aim of improving the recruitment and retention of nurses and other professional staff is reflected in its *Improving Working Lives* initiative; and the forthcoming *Return Journeys* document will contain further guidance about nursing recruitment and retention, using examples of good practice.

The NHS Plan brings together and builds on all these different initiatives in a comprehensive statement of the government's health policy goals for the next decade. One of its specific targets is to employ 20,000 more nurses in the service. The implementation programme for the NHS Plan (as contained in the Department's *Priorities Guidance for Implementation, 2001/2002*) emphasises the need for significant progress over a wide range of workforce issues including recruitment and retention, and training and development. NHS employers must ensure that they

plan, develop and implement new and innovative roles to help reshape and improve services, including more nurse, midwife and health visitor consultant posts, the introduction of therapist consultants and full implementation of the Chief Nursing Officer's ten key roles for nurses.... It is the responsibility of health communities to ensure that they take full advantage of the new flexibilities in the workforce.<sup>6</sup>

(#3.20)

The Department has set up a taskforce to oversee the implementation of its strategy in this area – the Changing Workforce Programme.<sup>6</sup>

*A Health Service of All the Talents* (DoH 2000) describes the new structures for England: at the top, the National Workforce Development Board, supported by Care Group Boards; and 24 Workforce Development Confederations at regional level, co-ordinating the 'bottom-up' planning of health authorities and local employers. The Workforce Numbers Advisory Board takes over the function of a range of profession-specific advisory groups; it will include a sub-group focusing on nursing, midwifery and health visiting. The government hopes that these new structures will help to achieve an integrated approach to developing the health workforce, covering all sectors and all staff groups. The emphasis is on team working, the exploration of new generic roles and the abandonment of traditional professional barriers, leading to new approaches to skill mix. Workforce planning and service planning will be better integrated and based on local health needs, as in the development of Health Improvement Plans and National Service Frameworks.

The Scottish Integrated Workforce Planning Group takes a similar approach, stating that it wants workforce planning to be recognised as a 'professional, evidence-based activity, making a vital contribution to a modernised NHS'.<sup>7</sup>

## 1.2 Trends in NHS activity and the nursing workforce

Between 1992/93 and 1998/99, total acute episodes increased by about 25% (or about 3% a year). The growth in acute admissions has been just over 3% and is mostly accounted for by medical specialties; they have increased by 8% a year and account for 60% of the growth in acute hospital admissions. Surgical admissions have remained relatively stable, although the workload has grown due to the number of day cases. All emergency admissions went up by 27% (or about 3.5% a year), with those of people over 65 increasing by 37% (or 4.6% per year). The average length of stay in hospital (excluding maternity) fell from 10 days to 6.8 days (a rate of reduction of about 3% a year). Average bed occupancy in general and acute services was 81.5%.

The 'core' nursing and midwifery workforce (excluding learners and students) increased more slowly than some other professional groups – by 2.7% (or 0.9% per annum). The group with the fastest increase was practice nurses. The support workforce (nursing auxiliaries and health care assistants) increased at five times the rate of qualified staff; as a result, there was a small shift in skill mix, with the proportion of qualified staff reducing from 72% in 1995 to 70% in 1998. The number of learners and students increased by 6.7% over the three years and by 4.8% in 1997/98. The ratio of students (including learners) to qualified staff increased from 1 : 6.6 to 1 : 6.2 in 1998.<sup>8</sup>

### 1.3 Expenditure on ward staffing

The Audit Commission has recently collected information on the levels and costs of ward staffing in England and Wales.<sup>9</sup> This compares staff numbers (including qualified nurses, health care assistants and nursing auxiliaries) and average costs per bed across comparable wards and departments in similar types of hospital. The figures show significant variation: looked at by NHS region, for example, the South West spends more than average on staff and the North West, Wales and Northern Yorkshire spend less than average. Trusts with teaching hospitals, particularly in London, have high staffing costs. An analysis of relative costs per staff member showed that high-spending trusts employed more staff per bed, rather than more expensive (and presumably more highly qualified) nurses. Within trusts, the allocation of resources to wards within the same specialism was variable. A most important finding, on an issue which is discussed later in this paper, is that the Audit Commission could not demonstrate that staffing inputs made any measurable difference to patient outcomes, including the reported incidence of pressure ulcers, patient accidents and patient complaints. In other words, it was not possible to draw any conclusions about the links between nurse staffing and quality of care, or (to put it in rather more crude terms) about nursing's 'value for money'.

### 1.4 Nursing shortages

One very significant trend, and one that has implications for the continuity (and the safety) of care, is in the amount of spending on temporary nurses in

the NHS. In 1992/93, NHS trusts in England spent £102.4 million on agency nurses. By 1999/2000, the amount was £272.2 million – 4.7% of the total expenditure on nursing staff. This spending is concentrated in London, which accounts for 8.5% of the staffing costs in England. The UK average is 3.4%, falling to 1% in Wales and Northern Ireland; and the overall cost for NHS trusts is an estimated £450 million. The market analysts Laing & Buisson attribute this increase in 'flexible staffing' to chronic staff shortages, an underlying shift towards flexible working patterns and tight labour market conditions in the economy.<sup>10</sup>

The overall picture is one where the supply of registered nurses is not meeting the increased demand from the NHS, and where staff are having to cope with significantly increased workloads across all sectors of the NHS. There is little or no slack in the system, and many NHS trusts are having to recruit qualified nurses directly from abroad. Professional concern about this situation has been intensified by the recent spate of highly-publicised 'winter emergencies' in NHS hospitals. Investigations last year into adverse events at Eastbourne and North Lakeland NHS Trusts all identified inadequate nurse staffing levels as a contributory factor to poor, or dangerous, standards of care. Against this background, it is understandable that nurses and nurse managers should feel frustrated by the lack of a 'one-off' solution to the complex problem of predicting – and meeting – the demand for safe and effective nursing care.

## 2. Nurse workforce planning

### 2.1 A three-dimensional model

The process of developing the nurse workforce has been described as having three main dimensions, all of which are interdependent: planning, production and management.<sup>11</sup> The planning dimension is concerned with designing patterns of staff mixes and utilisation in line with strategic policy goals. The production dimension is concerned with all aspects relating to basic and post-basic education and training – in other words, with the supply of nurses. The final dimension, management, covers all matters relating to the employment, use and motivation of nursing staff and largely determines the productivity and coverage of different nursing services and their capacity to retain staff. The management dimension aims to optimise the use of available workforce resources, a process which involves considerations of equity, effectiveness and efficiency.

In the wider arena of service planning, the size and cost of the nursing workforce have made it a regular target for efficiency savings. The current shortage of medical, nursing and therapy staff in the NHS has focused attention on the current, appropriate and potential roles of health workers, and the possibilities for role expansion and substitution. Buchan *et al.* (1998) argue that the history of nurse workforce planning in the NHS has been patchy: it has been a largely isolationist, locally based activity, poorly supported by NHS information systems. Periodically, governments have intervened with emergency measures in reaction to national nursing shortages.<sup>12</sup>

### 2.2 Early planning systems

The impression is sometimes given that, before the 1980s, approaches to nurse staffing were entirely unsystematic. In fact, the search for improved methods of setting nurse staffing levels had started much earlier:

Illsley and Goldstone traced the beginning of interest in nurse workforce planning to the Salmon report, 1967, which gave nurses direct responsibility for their own budget.<sup>13</sup> The problem was that many of these methods were developed locally, and in an uncoordinated way, within different Regional Health Authorities. In 1978, Wilson-Barnett published a review of patient-nurse dependency studies which identified well over 50 different systems.<sup>14</sup> In 1983, the Operational Research Service (ORS) of the DHSS identified and classified a wide range of nurse manpower methods and studies. The ORS found overlaps of methods and models in some areas and gaps in others. Two particular areas of weakness were identified: projecting long-term estimates of demand and supply and matching them at local level, and estimating supply and demand by groups of specialties.<sup>15</sup>

Also in 1983, the NHS Management Inquiry commissioned an evaluation of current methods of estimating staffing levels – these included the Telford, Northern, Cheltenham, Leicestershire, Oxford and Rhys-Hearn methods.<sup>16</sup> The report concluded that none of these methods was entirely satisfactory to all stakeholders. ‘Consultative methods’ such as the Telford and Cheltenham approaches – which relied on the professional judgement of senior nurses at ward manager level and above – were considered valuable because they provided a relatively quick and easy way of estimating staffing requirements. The 1983 evaluation showed a close correspondence between estimates made using consultative methods and those produced by patient-dependency measurement systems. The report stated that more research results showing this sort of correspondence between the estimates of different methods would lead to ‘wider acceptance of the results outside the nursing profession’ (# 85).

### 2.3 Encouraging systematic approaches

The NHS Management Inquiry was critical of the fact that many places were not using any systematic methods to set nurse staffing levels. The National Audit Office made the same criticism in its report, *NHS: Control of Nursing Manpower* (1985). In 1986, the Committee on Public Accounts reported that unsystematic approaches were leading to wide variations in nurse staffing levels and costs in apparently similar units. Responding to these

criticisms, the Chairman of the NHS Management Board directed the NHS regions to promote the use of standardised workforce planning systems in their districts. He circulated a review of nurse demand methods, written by an operational research analyst in the DHSS (Malin 1986).<sup>17</sup>

Malin's report was supportive of methods which explicitly used nurses' professional judgement.<sup>18</sup> It singled out the methods developed by Telford, by the Cheltenham Health Authority (which had been incorporated into the Financial Information Project or FIP) and by Brighton Health Authority, which had extended Telford's consultative approach and made it a much more disciplined exercise. The report endorsed Telford's opinion that many of the more complicated methods of estimating demand claimed a spurious objectivity, which did not reflect accurately the way in which professional judgements are always exercised at some stage of any assessment.

Malin concluded that, even if the precise numbers generated by different approaches varied a little, the value of systematic approaches was that they promoted the efficient and effective use of nursing resources by providing an opportunity regularly to review and, if necessary, to challenge, nursing practice. The criteria for selecting a method should be: that it had a problem-centred approach that was readily understood and acceptable to all those involved, that it produced relevant information as quickly and cheaply as possible, that it recognised the unavoidability of professional judgements being included and that it informed and questioned and allowed for open-ended inquiry. Planners should start with a simple approach, refine it as necessary to cover any apparent shortcomings, and ensure that there were built-in evaluation and cross-checking elements to allow judgemental inputs to be scrutinised.

In 1988, the NHS Management Board commissioned another survey of workforce planning systems at regional and district levels, the results of which were issued with *Executive Letter (88) MB/60, DHSS*. Once again, the findings indicated a mixed picture. A range of local models was in use, with some organisations using 'off the shelf' systems and others using no systems at all. At regional level, there was some use of supply models, the most commonly used being the Naylor Horn model; monitoring of posts and vacancies was done using monthly returns from districts. Some districts were using systematic

approaches at the strategic and operational levels of planning; 15 different approaches were reported, the most widely used being the Telford and Aberdeen formulae. Other districts used no system, while a few based their forecasts on 'historical practice'. Some of the methods used were considered to be rather dated and the methods of vacancy control used by districts were found to be varied and of doubtful efficacy.

## 2.4 Ward nursing information-management systems

The NHS Resource Management (RM) initiative, launched in 1986, aimed to persuade nurses to use ward nursing information-management systems (WNIMS). These systems offered the possibility of prospectively calculating workload. A 1990 survey of progress in the six chosen RM pilot sites revealed significant problems of implementation.<sup>19</sup> 'Off the shelf' systems (such as FIP) had required local modification whilst the implementation of new systems was placing great demands upon nurses' time. 'Computer anxiety' amongst nurses was almost universal (# 5.5); ward nursing staff were uneasy about the claimed validity of the ideas and concepts being employed in generating workload assessments and care planning documents (#5.9). Non-nursing managers were becoming more aware of the complexity of the area facing nursing staff who were trying to implement the Resource Management initiative. Some nurses became disillusioned when the systems identified the need for more staff but this was not acted upon by management.

The Audit Commission produced a handbook for managers of nursing and project managers - *Caring Systems* (1992) – which set out the benefits that WNIM systems (either manual or computerised) could have for activities such as workload assessment and rostering. There was an explosion in the development of WNIM systems, some of them building upon the early systems developed in the 1980s. By April 1992, there was a total of 23 nursing informatics systems on the market in the UK.<sup>20</sup> In 1994, a survey of hospitals with over 100 beds found that only 12% had fully operational WNIM systems with workload-calculation capabilities; a further 38% were in the implementation stage. Approximately 40% of responding hospitals had no computer-assisted system for calculating nurse staffing requirements and many more used manual systems.<sup>21</sup>

The declining popularity of computerised WNIM systems was attributable to the fact that they were becoming too complicated as other functions were added to the systems – for example, care-planning and rostering. Many of the systems required nurses to spend a lot of time at the keyboard, entering data – which is not what they had entered nursing to do. Consequently, many trusts preferred to install more flexible workload-measurement systems that could be integrated with existing hospital information management systems and made fewer demands on nurses' time.<sup>22</sup>

## 2.5 Benefits of workload-management systems

It would be wrong to give the impression that nurses' experiences of using information-management systems for workload calculation have been entirely negative. There are articles in the professional literature that describe the advantages of using particular systems: Anderson describes how GRASP systems workload methodology prepared the ground for the introduction of generic ward assistants;<sup>23</sup> Evison reports on the benefits of the Anso Nurse Management System, which provides rostering, manpower planning and workload analysis for nurse managers.<sup>24</sup> In 1995, the NHS Executive published a collection of case studies by nurses, entitled *Benefits Realisation Monograph on Nursing Information Systems*. To take one example: the Nursing Information System for Change Management system (NISCM) was used in a ward at Great Ormond Street Hospital to undertake a detailed workload study; subsequently, the system was used to monitor the quality of care on a shift-by-shift basis and to highlight trends in workload over a six-month period as a guide to strategic workforce planning.<sup>25</sup>

# 3. Patient safety

## 3.1 What does 'safety' mean?

Concern for the well-being and safety of patients is at the heart of professional nursing practice. In hospitals and other residential settings, nurses are responsible for providing 24-hour cover. It is arguable that this leads nurses to develop an attitude to patient safety that is much more positive than merely the avoidance of adverse events. Rather, safety is perceived as one dimension of good professional practice, the aims of which are to meet patients' needs through individualised, effective and appropriate care (both physical and psychological); to co-ordinate care; and to manage any transfers between care settings in as seamless and safe a manner as possible. In terms of measurable indicators of safe practice, key outcomes for the quality and safety of nursing care include: rates of medication errors, patient falls, the incidence of pressure sores, complaints about nursing care from patients and their families, the incidence of hospital-acquired infections, and any deaths attributable to professional negligence or malpractice.

There are three general ways in which nurses and their managers can help to improve patient safety. First, by following the professional code of conduct and other relevant guidance from the UKCC. Second, by participating fully in the development of local systems of clinical governance and clinical risk management, and in any other initiatives to streamline and improve patient care. Third, managers at ward level and above are responsible for decisions about staffing levels and skill mix which have direct implications for the quality and safety of care. These different approaches to maximising patient safety are discussed in more detail below.

## 3.2 Professional conduct\*

The first clause of the UKCC's *Code of Professional Conduct* (1992) states that the registered nurse must 'act always in such a manner as to promote the well-being and safety of patients or clients'. A nurse must

\* Since this report was written, the Nursing and Midwifery Council (NMC) has issued a new *Code of Professional Conduct*. Sections 8.2 and 8.3 of this give guidance to nurses and managers on minimising risk to patients.

decline any duties or responsibilities which (s)he cannot perform in a safe and skilled manner (clause 2). Clauses 11,12 and 13 make it a duty to report to an appropriate person or authority any aspects of the environment of care, or other circumstances, that jeopardise the safety of patients and/or the health and safety of colleagues. It is sometimes argued that the current Code is less explicit than the 1985 version, which stated that a nurse should have regard to 'the adequacy of resources' as a possible factor jeopardising safe standards of practice (clause 10). However, the current Code makes it very clear that nurses are responsible for voicing their concerns about patient safety.

This message is reinforced in the Council's *Guidelines for Professional Practice* (UKCC 1996: clause 38). Clause 40 states that nurses must not be deterred from reporting their concerns, even if they believe that no resources are unavailable or that no action will be taken. Reports should be made verbally and/or in writing and, where available, follow local procedures. The nurse's manager should assess the report and communicate it to more senior managers where appropriate. (The *Guidelines* point out that there are wider disciplinary implications involved: it is difficult for a nurse who is accused of professional misconduct to plead in mitigation that inadequate resources affected the situation if (s)he has made no previous complaint about this. Similarly, a manager who has ignored reports from nurses about inadequate resources would have to justify their actions if this was seen to affect the situation.)

Clause 41 lists the duties of a registered practitioner in relation to providing safe and appropriate care. These include:

- ◆ telling senior colleagues about unacceptable standards;
- ◆ reporting circumstances in the environment which could jeopardise standards of practice;
- ◆ being aware of new codes, charters and registration body guidelines;
- ◆ making sure that local procedures are in place, challenged and/or changed;
- ◆ keeping accurate records; and
- ◆ when necessary, getting guidance on how to present information to management.

In practice, nurses often find it difficult to 'blow the whistle' in their workplace, for fear of reprisal from

management. The promotion of a new, more open climate in the NHS in relation to safety may make it easier for this to happen in the future.

The Council's *Position Statement on Clinical Supervision for Nursing and Health Visiting* (UKCC 1996) states that systems of clinical supervision – defined as an activity which brings together practitioners and skilled supervisors to reflect on practice – should help to achieve high-quality, safe care for patients and clients. The Council has also recently updated its guidelines for records and record keeping (in 1998) and the administration of medicines (in 2000).

### 3.3 Policy initiatives related to safety

#### 3.3.1 Measures to minimise risk

The Department of Health has published guidance on measures to minimise risk to patients and staff: *Risk Management in the NHS* (1994) and *An Organisation with a Memory* (2000). The guidance on risk management contains recommendations that are very much in line with contemporary ideas in nursing about the importance of systems of professional accountability, training, supervision and support. It singles out the dangers of expecting underqualified nurses to be in charge of a ward at night, or of allowing practice nurses to work with minimal professional supervision or support (p.29). It highlights the dangers of diluting skill mix by using unqualified staff, particularly in community-based premises where staff are expected to be multi-skilled. It advises that local managers must check the qualifications and registration of locum and agency staff (p.30).

With regard to 'care outside of specialty', the report highlights the dangers of concentrating patients into one ward (for example, so that some wards can be closed at weekends). This means that staff may be faced with caring for patients in a specialty in which they do not normally practice, or with highly dependent patients when they are not used to doing so, or with children in an adult-orientated intensive care unit. Nursing staff should receive specific instructions or training regarding any specialist care that might be required; it is desirable for additional written instructions to accompany patients being nursed on wards outside those designated for the specialty (p.30). The report stresses the

importance of good communication between staff, and between staff and patients.

*An Organisation with a Memory* advocates a whole-systems approach to patient safety rather than laying the entire blame for adverse events on individuals. The report states that incident-reporting systems are particularly poor in primary care and that systematic reporting of 'near misses' – an important early warning of serious problems – is almost non-existent across the NHS (#15). It recommends the development of a more open culture in the NHS, in which errors or service failures can be reported and discussed, and of unified mechanisms for reporting and analysis when things go wrong (#20). The report states that the new emphasis on quality in the NHS – to be achieved through systems of clinical governance – should provide organisations with a powerful imperative to tackle adverse health care events. In April 2001, the Department of Health announced the establishment of the National Patient Safety Agency which will be responsible for setting up a new mandatory reporting system for failures, mistakes, errors and near misses, and for introducing a streamlined approach to dealing with them.

There are several implications here for nurses. Nurse managers should be given the opportunity to shape risk-management policies in their organisations. They can help to ensure that staff understand local incident-reporting procedures, and are confident about using them. Programmes of in-service training will obviously be valuable for this. The RCN's recent position paper, *Systems, Safety and Risk Management, Quality and Information* – submitted to the Bristol Infirmary inquiry – contains a useful guide to accident theory and to different approaches to the assessment and management of risk in industry and the NHS.<sup>26</sup> It discusses theories of quality and describes how these can be applied in practice through clinical audit and other initiatives such as clinical guidelines.

There is also scope for more formal educational programmes on clinical risk. In a recent research publication, the ENB identified the need for new educational initiatives to develop nurses' competence in assessing and managing risk.<sup>27</sup>

### 3.3.2 Avoiding winter pressures

In 1996, the NHS Executive established the Emergency Services Action Team (ESAT) to deal with the growing problem of 'winter pressures' on the NHS. A series of

annual reports from ESAT suggested that influenza epidemics were a minor cause of the problem and that the recurrent crises were caused by some fundamental systems failures in the NHS. Problems included inadequate advance planning of emergency services by trusts; shortcomings of primary care services in some localities; poor bed management systems in trusts; a national shortage of hospital beds, particularly of designated critical care beds; and a persistent shortage of professional staff of all kinds, particularly registered nurses. The Department has issued guidance on how these different problems might be tackled, and has provided the service with extra funding to do so. In response to the reported failings of critical care services, the government appointed an expert group to review the provision of adult critical care services in the NHS; the Group included members of the RCN Critical Care Forum. Members of the Forum also worked on a detailed review of adult critical care nursing which fed into the final report: *Comprehensive Critical Care* (DH 2000) (Appendix 1 has more details).

In response to members' concerns about the potential threats to the well-being of staff and patients during the winter emergencies, the RCN ran its 'Turning Talk into Action' campaign. The action pack, *Local Needs, Local Solution* (RCN 2000) provides information and guidance to help nurses across all sectors to lobby for genuine – rather than cosmetic – improvements in patient services and in their own working conditions.

## 3.4 Management of ward staffing

The process of estimating and meeting patients' needs for nursing care is complex. Key factors in any calculations are:

- ◆ the direct care workload in a ward or unit;
- ◆ indirect care and ward overheads;
- ◆ the appropriate skill mix to meet patients' needs;
- ◆ and the available budget for nurse staffing.

The quality of these management decisions can (should?) be judged in terms of:

- ◆ outcomes for patients, both clinical and in terms of satisfaction with nursing care;
- ◆ staff outcomes in terms of job satisfaction and satisfaction with standards of care; and

♦ 'value for money'.

The UKCC is clear about the responsibilities of employers and managers for ensuring that workforce planning meets the needs of patients and clients in all practice settings at all times (*Issues arising from Professional Conduct Complaints*. UKCC 1996: 3). Where employers and managers are also registered nurses, they are obliged to put the interests of patients and clients first, albeit within financial constraints. Employers must have contingency plans to cover emergency staff shortages; and should maintain the competence of the workforce by such measures as periods of preceptorship for newly qualified staff and access to clinical supervision for all staff (p.4). Delegation of responsibility (such as administration of medicines) to unqualified staff can only take place after the latter have been assessed by qualified staff and have completed any preparation needed to achieve the relevant competence (p.4).

The *Review of Nursing at Eastbourne Hospitals NHS Trust* (NHS Executive 1999) demonstrates the problems caused by the absence of robust, regularly audited systems for setting nurse staffing levels. Although this was only one factor amongst many leading to an unsafe environment for clinical care, the report is highly critical of nursing management. It cites the low numbers of qualified nurses on the wards (often below the minimum staffing levels agreed by the trust); heavy reliance on bank and agency nurses; the diminution of the role of ward sister/charge nurse; the lack of differentiation between the roles and clinical responsibilities of registered nurses, nursing auxiliaries and health care assistants; the lack of clinical supervision; and the unsuitability of understaffed wards as learning environments for student nurses. It states that insufficient consideration was given to such factors as ward design, which meant, for example, that nurses could not see critically ill patients from the nursing station. The report recommends that nurse staffing issues should be tackled before the quality of patient care could improve. A key recommendation was that the trust should review nurse staffing and skill mix, using an agreed workload measurement tool, in collaboration with the Health Authority and Primary Care Group.

## 4. 'Top-down' approaches

'Top-down' planning of the nursing workforce may take various forms. It may be done on the basis of the calculated health needs of a population, or on the basis of historic workforce : population ratios which seem to provide satisfactory levels of service needs, or by modelling health demands on the basis of service utilisation rates (met demand) plus some estimate of unmet demand. Recent government initiatives (such as the NHS Plan and National Service Frameworks) involve setting service targets – that is, setting certain goals that are intended to produce personnel in specified numbers (or ratios), changing the current supply by a certain percentage within a certain period of time. This is a return to a more centralised approach, which reflects the strength of bureaucratic control over the NHS workforce and the delivery of services. This section is concerned primarily with the use of norms – or recommended standards – to plan nurse staffing.

### 4.1 Norms and formulae

'Top-down' formulae have been used by government or by regional health authorities to set standards – and global budgets – for nurse staffing in the NHS. In the early days, these calculations were made on the basis of such statistical information as bed use and lengths of stay, and took no account of local differences in workload or of variations in local practices which might affect workload. Examples included the Revenue Consequences of Capital Schemes (RCCS) which was developed in the 1960s and used by the Ministry of Health to set nurse : patient ratios for different hospital specialties; and the Nurse Ratio Three (NR3) formula used by South East Thames RHA. In the 1970s, the DHSS recommended minimum nurse : patient ratios for community services, psychiatric hospitals and services for the elderly.

The late 1980s saw the development of methods that attempted to take account of measures of patient dependency and nursing workload. Early systems

included the Trent (Senior-Gratton); some applications of the Aberdeen formula; and the Auld formula for midwifery. Other ‘bottom-up’ systems soon appeared on the market, some of them off-the-shelf systems imported from the US (GRASP), others developed within Regional Health Authorities: for example, the Cheltenham Method, the South East Nursing System (SENS) and *Criteria for Care*.<sup>28</sup> This last method was used in Northern Ireland from the mid-1980s to set staffing norms for the Province. In 1992, because of significant changes in nursing practice and education in the Province, the Health and Personal Social Services Management Executive published its revised and updated recommendations for staffing levels and skill mix. Using local results, the report determined that hospitals in the Province were over staffed by 31 WTEs or 0.5% of the workforce. Grade mix was ‘unbalanced’ – there were too many B and C grades, and too few D and E grades.<sup>29</sup>

### 4.1.1 Using expert opinion

There is evidence of a renewed interest in this approach. Within some specialties, professional associations provide guidance about nurse staffing levels. (Appendix 1 sets out some current UK recommendations in the fields of paediatric and adult intensive care, and psychiatric care for adults and adolescents.) These guidelines have been developed using the expertise of different professional disciplines, empirical research evidence and the experience of other countries. They recommend the use of systematic approaches to set establishments, which take account of patient dependency, nursing activity and skill mix. The authors stress that their recommended ratios are not set in stone; they indicate the minimum levels necessary for patient safety and staff welfare, but recommend that they should be treated more as a starting-point for negotiations between employers, clinicians, managers and patient groups.

## 4.2 International approaches

### 4.2.1 Belgium

Belgium has a centralised approach to setting nurse : patient ratios. Legislation in 1987 fixed basic staffing levels for hospital wards: 12 nurses per 30 beds in a 24-

hour period. Hospitals are given money according to this formula, but may spend it as they want. The trend is to employ fewer qualified staff – partly because of nursing shortages, not management ideology. The government introduced a tool to calculate nursing workload: the Nursing Minimum Data Collection (NMDC), which gathers information about what nurses actually do for patients. Nurses’ work is broken down into 23 representative tasks. There is a four-times-a-year data collection exercise by ward nurses in every hospital, to record how often they carry out one of these 23 tasks for their patients. Inter-ward and inter-hospital comparisons are possible, and may be used to argue for more resources. A version of NMDC may be used by hospitals to calculate daily workload levels, so that a bank nurse may be called to help with a higher than normal workload.<sup>30</sup>

### 4.2.2 Victoria, Australia

Here nurse : patient ratios became mandatory after Dec 2000. This legislation was supported by the Victoria Branch of the Australian Nurses Federation, which had resorted to industrial action over wages, conditions and workload. The issue of nurse staffing and workload came to a head during the 1990s, as the result of budget cuts in the public health system and amidst allegations that managers were relying on computerised patient dependency systems to calculate workload and staffing levels instead of paying attention to nurses’ professional judgement. The Victoria branch of the ANF decided that ‘strict and regulated nurse patient ratios were the only way to go’. These ratios were not developed using a magic formula, but after consulting widely amongst ANF members. They are based on ‘current best practice’ (see Appendix 2 for details of the ratios).

### 4.2.3 USA

Some states are starting to pass legislation on ‘safe’ staffing ratios for registered nurses. In 2001, California passed similar legislation; specialist nursing associations have been invited to help set minimum nurse staffing ratios. This will also place constraints on skill mix changes and the use of unlicensed care assistants. Some disagreement is reported between nurses and nurse managers as to the choice of an appropriate workload-measurement tool.<sup>31</sup>

The American Nurses Association (ANA) gives qualified support to this trend for ‘top-down’ legislation. Its preferred option – and a major aim of its current Safety and Quality Initiative – is to put pressure on employers by federal legislation which would require all hospitals to collect and publish data on ‘nursing-sensitive quality outcomes’ for acute care settings. The ANA’s suggested indicators include: the mix of registered nurses and other nursing staff, total number of nursing care hours provided per patient day, pressure ulcers, patient falls, hospital-acquired infections and measures of patient and nurse staff satisfaction.<sup>32</sup>

research evidence, they should help to avoid the danger of cost-cutting exercises by employers. They can provide a baseline figure for negotiations between employers, nurse managers and general managers.

### 4.3 Advantages and disadvantages of planning norms

There are some general objections to the use of ‘top-down’ staffing norms. For example, they assume a ‘steady state’ health care environment; they may not be sufficiently flexible to take account of changing treatments and technologies or the changing priorities of consumers. There is an assumption that boundaries within professions and between professions will not change over time. The use of standardised nurse : patient ratios might give employers and managers a false sense of security, leading them to believe that this will guarantee standards of care and reduce the necessity of regular critical reviews of nurse staffing and its outcomes. They could undermine the importance of the professional judgement and localised knowledge of staff at operational level. And they would be difficult to ‘police’, except in a highly centralised and bureaucratic system.

If the formulae used to set nurse : patient ratios do not include some measurement of patient need, they may lead to unsafe levels of staffing. To take one example: the ratio suggested by the British Geriatric Society (BGS) in 1982 for ‘minimum’ levels of care – which reflected the prevailing approach to care of the elderly – compared badly with staffing estimates based on patient dependency using ‘consultative’ approaches. Using the BGS approach, staffing levels were related directly to patient numbers and not to their individual needs, so heavily dependent patients in small wards could be exposed to inadequate levels of staffing.<sup>33</sup>

Where staffing norms are developed judiciously, using a combination of expert professional judgement and

## 5. ‘Bottom-up’ approaches

This section considers three broad approaches to setting nurse establishments: consultative approaches; activity-based regression methods and various bottom-up workload assessment systems. This section is based on two main sources: *Caring Systems* (Audit Commission 1992) and *Nurse Workforce Planning* (Hurst 1993). Hurst’s is the more comprehensive guide to the many different systems, and the book also contains worked examples of the formulae used in the different methods to calculate staffing requirements.<sup>34</sup>

### 5.1 Consultative approaches (professional judgement method)

The Telford consultative approach, first developed in 1979, started from the premise that ratio approaches were too crude, and that ‘supposedly more sophisticated measurement methods’ were also flawed.<sup>35</sup> Telford proposed a three-stage process. First, ward staff should set safe and acceptable levels of staff for each shift on each day – these estimates had to be accompanied by written support, to add ‘an element of professional discipline to the situation’. These submissions should then be discussed with senior nurse managers. In the second stage, the numerical assessments are transposed into grades of staff and whole-time equivalents. Third, the actual numbers and grades of staff are summarised and appropriate allowances for trained and permanent staff are built in by senior nurse managers. The Telford method quickly became well known – it was the chosen approach in Northern Ireland until it was superseded by *Criteria for Care* in the mid-1980s. It was computerised by Altim Medical Systems Ltd, and other adaptations were made – one of the early criticisms concerned the lack of any system of quality assurance, and this was remedied by introducing a ward audit form for completion by staff.

The consultative approach was extended for use by Brighton Health Authority.<sup>36 37</sup> (Unlike the Audit

Commission, Hurst prefers to classify it as an activity-based regression method – see below.) The Brighton method relies on the judgement of ward sisters to determine staffing levels; it also uses statistical regression of requested ward establishments against workload information to identify ‘average’ judgement and ‘outliers’ for further discussion by nurse managers (i.e. it guards against serious inconsistencies in professional judgement). The workload information included 24-hour records of bedstate, average dependency level for a ward, and patients’ ages. In addition, 24-hour totals were collected on day cases/outpatients; planned admissions; emergency admissions; deaths, discharges and transfers; theatre sessions; and doctors’ rounds. The researchers found that measurement of dependency added very little in statistical terms to the explanatory power provided by bed occupancy.

The Brighton method was highly commended by Malin<sup>38</sup> as one which satisfied his key criteria. It was problem-centred, understandable and acceptable to all involved, it produced relevant information quickly and cheaply and it recognised the inevitability of including professional judgements in the process. The Audit Commission (1992) was a little more critical, pointing out that consultative approaches were dependent on local expectations of care standards, which themselves reflected historic staffing levels. Consequently, ideal staffing was shown typically to be ‘just one more’.<sup>39</sup>

### 5.2 Activity-based regression methods

The Teamwork methodology was originally developed in the North Western Regional Health Authority in the late 1980s, after both the *Criteria for Care* and the Brighton methods had been judged unsatisfactory by a team of health service managers, nurses and operational research analysts.<sup>40</sup> Teamwork is based to a certain extent on ward activity and patient needs, but does not use complex dependency measurement systems. It does not attempt to assess the direct care elements of the nursing workload separately; it is considered as a whole rather than as an aggregate of a number of tasks or of the care needed by individual patients. Regression is used to identify statistically significant determinants of workload for each type of ward and staffing levels in relation to each of these, at

times when care was judged to be 'good'. The Audit Commission (1992) reported that 'Teamwork was 'quick and cheap', used only verifiable data and produced consistent results wherever it was used. It could support decisions about grade mix, and regular professional quality assessments could be used to check continued formula validity. However, it was criticised for the assumption that quality could be determined by 'pairs of hands' relative to workload and that all work was time-critical; and the correlation between quality and staffing on individual shifts appeared poor. There was a danger that assessed care quality might be based on standards reflecting historic staffing.<sup>41</sup>

### 5.3 'Bottom-up' workload assessment

There are several different methods in this broad category. Anecdotal evidence from RCN members mentions experience with such off-the-shelf systems as GRASP, Teamwork and NISCM. In some cases the systems had been abandoned by NHS trusts, in one case due to the departure of the nurse manager in charge of the project. Some trusts have extended their in-house management information systems to cope with workload measurement and other nursing personnel functions. The Audit Commission (1992) warned trusts against investing in systems which did not include estimates of minimum levels of cover needed to keep the ward running and maintain patient safety, or which did not flag up occasions when the staffing required to meet assessed workload would not provide safety cover. The Commission also recognised that some of these systems were expensive in staff time; if they were only used to set establishments, and not to support day-to-day decision-making, nurses might become disillusioned with the delay and data quality would deteriorate.<sup>42</sup>

#### 5.3.1 Nursing hours per patient/nurses per occupied bed

Calculating the desired number of nurses from the actual number of nurses per patient is one way of setting nurse : patient ratios, particularly in long-stay units, community nursing and midwifery settings – settings where there is little reliable data on the activity of nurses. The use of occupied beds as a measure of workload is regarded with disfavour by some nurses, because it ignores the severity of the condition of individual

patients. However, it does provide an opportunity for nurse managers to monitor the assignment of nursing staff, and enables comparisons to be made within hospitals, trusts and health authorities.<sup>43</sup> Hurst comments that the strong element of professional judgement in this method makes some literature difficult to distinguish from consultative approaches.<sup>44</sup>

#### 5.3.2 Timed nursing interventions (timed-task method)

This method is based on the belief that the frequency of nursing interventions required by patients is a good predictor of staffing requirements, because it takes account of all the patient variables that impinge on nursing time. Each patient's direct nursing care needs for the day are recorded on a locally developed checklist of nursing interventions; and each intervention is paired with a locally agreed time required for its completion. An allowance for related indirect care and rest time is added. Off-the-shelf systems using this method include: Exelcare, GRASP, and PRN 80.

#### 5.3.3 Dependency-activity based methods

These methods are designed to balance the available nursing hours in the ward with the required nursing hours. The purpose is to match nurse staffing to the peaks and troughs in ward activity – in other words, to deploy staff when patients' needs are greatest, such as theatre days or on-take periods. Earlier versions of this approach were mainly used to evaluate and deploy nursing teams rather than to set establishments. For example, dependency-activity data could be used to govern the admission policy in units.<sup>45</sup> This strategy helps to balance the number and mix of patients, thereby creating equitable workloads. Later work (for example, in the development of the *Criteria for Care* system) shifted the emphasis from evaluating nursing establishments to reconfiguring them. Off-the-shelf systems in this category include: *Criteria for Care*, Financial Information Project (FIP), McGratty and NISCM.

Two sets of measurement are involved:

- ◆ *Patient dependency*: patients are grouped together in some way according to certain criteria.

This is open to criticism on the grounds of the variability of nurses' judgements about classification; that group assignment may mask individual differences between patients; and that classification may not respond quickly enough to rapidly changing patient conditions. Classifications focus on the physical rather than the psychological needs of patients.

- ◆ *Nursing activity*: dependency ratings have to be paired with nursing times for a patient in a dependency group, in order to work out the total amount of nursing time required to meet the demands of all patients in a ward. Activity sampling is undertaken to find how nursing time is split between patient care and other ward work. This can also be a valuable exercise for spotlighting inappropriate nursing activity or for identifying where systems might be improved – for example, by rescheduling shift times and handover times.

### 5.3.4 Using care plans

Workload may be assessed directly from individual care plans. According to Bell *et al.* these systems rose in popularity very quickly in the UK in the early 1990s, but their popularity declined when it was discovered that there was a considerable amount of work associated with setting them up and little published research about the accuracy of workload calculated in this manner. The same authors suggest the possibility that computerised systems for multi-disciplinary care pathways/care plans may in future be designed to calculate workload by grade of nurse.<sup>46</sup>

## 5.4 A new approach: benchmarking

On the basis of their experience as consultants in UK workforce planning, Bell and Priestley report a renewed interest in the use of benchmarking to estimate nurse staffing requirements. This is made possible by the availability of benchmarking databases that enable comparison between the budgeted staffing establishments and levels of staff employed in similar hospitals. Many senior nurses now see this as a quick and inexpensive way to estimate nurse staffing requirements.<sup>47</sup>

## 6. Skill mix

Skill mix has been defined as:

The balance between trained and untrained, qualified and unqualified and supervisory and operative staff within a service area as well as between staff groups . . . optimum skill mix is achieved when the desired standard of service is provided, at the minimum cost, which is consistent with the efficient deployment of trained, qualified and supervisory personnel and the maximisation of contributions from all staff members. It will ensure the best possible use of scarce professional skills to maximise the service to clients.<sup>48</sup>

In a literature review undertaken for the DHSS, MacGuire commented that skill mix represented a traditional battle line between nurses (who are strongly committed to the view that all aspects of nursing should be carried out by qualified staff) and employers (who have to consider the need to provide a cost-effective service).<sup>49</sup> Whilst considerations of cost-effectiveness and efficiency still dominate management thinking, current developments in clinical governance require employers and managers to balance these considerations against those of the safety and quality of patient care.

### 6.1 Deciding on, and reviewing, skill mix

There are three broad approaches to decision-making about nursing skill mix using a standard or ratio that has proved successful in similar units; using ratios that have been determined by clinical experts based on patient dependency studies; or using ratios based on time studies, task analysis or activity analysis. It has never been policy in the UK to lay down norms for skill mix at ward level. *Mix and Match* (DHSS 1986), firmly avoided making prescriptive recommendations about staffing levels or staffing mix. Instead, it advised that these should be determined 'systematically' in relation to the dependency of patients and the objectives or wards or units in each specialty – in other words, a 'bottom-up' approach.

It is considered good practice to undertake periodic reviews of staffing levels and skill mix, even when a

system appears to be working well. A critical review of current practice might – for example – reveal areas where registered nurses' skills are no longer being used appropriately and where the use of support staff might be a better option. The NHS Management Executive has published guidance on choosing an approach to reprofiling and skill mix which covers both the general principles involved and some practical examples.<sup>50</sup> More recently, the RCN has published *Skill-mix and Staffing in Children's Wards and Departments* (RCN 1999).

All of this guidance is well summarised by the International Council of Nurses: 'There is no optimum skill mix, and attempts to reach the best possible standard must be an on-going and creative process'.<sup>51</sup>

## 6.2 New roles and expanded practice

The past decade has seen significant expansion in the scope of practice of registered nurses. Many nurses were appointed to 'advanced' nursing roles, such as clinical nurses specialists or nurse practitioners. These workplace developments reflected the increasingly differentiated scope of registered nursing practice. To accommodate this, the UKCC has been working to develop a regulatory framework which will accommodate advanced, or 'higher' levels of professional practice. Two of the RCN's current projects are also in this area: the Faculty project, being piloted by the A&E forum; and the Expertise in Nursing project, led by Kim Manley.

The most recent government strategy for nursing – *Making a Difference* – takes account of these important shifts in professional practice. It contains a plan to end the existing clinical grading system, which is widely perceived as being out of touch with the practical realities of changing nursing roles and responsibilities. The suggested new career framework has four broad competency levels: Level 1 (HCAs and other support workers); Level 2 (registered practitioners); Level 3 (senior registered practitioners – to include ward sisters/charge nurses, community nurses, clinical nurses specialists); and Level 4 ('experienced and expert practitioners', holding nurse and midwifery consultant posts). NHS employers will become more involved in developing competency frameworks for career and pay progression.

In the NHS Plan, the government develops its ideas on the nursing workforce in some detail. As well as promising 20,000 new nurses, it states that there will be 1,000 nurse consultants by 2004 (#9.22). There are to be 'modern matrons' – senior sisters and charge nurses who are easily identifiable to patients and who will be accountable for a group of wards and who will have the resources 'to sort out the fundamentals of care' (#9.21). The Chief Nursing Officer sets out ten 'key roles for nurses', stating that employers must empower 'suitably qualified nurses' to undertake a wider range of clinical tasks, including the right to receive and make referrals, admit and discharge patients, order investigations and diagnostic tests, run clinics and prescribe drugs (#9.5).

## 6.3 Supervision and mentoring

Recent trends in professional education are having a major impact on nursing workloads. During their undergraduate studies, student nurses require supervision and mentoring during their clinical placements. The growth in demand for post-registration education, along with regulatory requirements for continuing professional development, are major factors in decisions about workforce management.

## 6.4 Health care assistants

One of the most significant developments in the past decade has been the removal of student and pupil nurses from the NHS workforce. Before the introduction of the Project 2000 system of pre-registration education, learners provided almost 30% of the total NHS nursing workforce, and made a very substantial contribution to direct patient care by undertaking almost 75% of 'hands on' nursing. In theory, reducing reliance upon this transient workforce should have provided the opportunity to match patient needs more closely with the availability of permanent staff. The employment of health care assistants (HCAs), who would undertake programmes of vocational education, meant that the transient contingent of learners could be replaced by a more stable group of permanent staff working alongside registered nurses.

So far, the implementation of this strategy has met with variable success, due in some degree to resistance from registered nurses. During the 1990s, acute trusts looked to increase activity and to reduce staffing costs. There

were understandable fears that employers might choose to replace registered nurses with HCAs in an effort to reduce staffing costs. There were concerns, too, about the threat to safety and quality of care if employers allowed the nursing skill mix to become too diluted. (Interestingly, one of the findings of the recent Eastbourne inquiry was that the nursing skill mix had become too dilute, particularly in the large general wards.) Against this must be balanced the findings of Warr *et al.*<sup>52</sup> that staff with Level 3 NVQ qualifications demonstrated a higher quality of care than the junior nurse D and E grades. They also undertook as much direct care as grade E staff, but were not as effective at delivering in full the care that had been planned.

The recent decision of the RCN to admit HCAs with Level 3 qualifications to College membership suggests the possibility of a more constructive attitude to the future deployment of HCAs within nursing teams. Research in this area has identified the importance of positive attitudes on the part of trained nurses, and the advisability of having a well-thought-out strategy for integrating HCAs into the ward team.<sup>53 54 55</sup>

## 6.5 Skill mix and safety: the evidence base

### 6.5.1 The UK

Much of the published research on nursing skill mix is of limited value in demonstrating a strong positive association between ‘rich’ skill mix and the safety and quality of care. This is a difficult area in which to produce conclusive research evidence; there are many variables affecting patient outcome, and it is difficult to control for them satisfactorily using an experimental approach. Changes in policy and practice make the findings of earlier research less applicable to current situations – for example, student nurses were still part of the NHS workforce when studies were published in the late 1980s and early 1990s. A more serious shortcoming of the research is that it did not investigate patient outcomes; the focus was often on the vexed question of the cost-effectiveness of substituting support workers for qualified nursing staff.

Two exceptions to this were studies by Bagust *et al.*<sup>56</sup> and Carr-Hill *et al.*<sup>57</sup> The Bagust report discusses the difficulties, ethical considerations and limitations

involved in a ward-based experiment to find out whether grade-mix had a measurable effect on care delivery. Using a pilot version of ‘Monitor’ to assess the quality of care, they concluded that changing the grade-mix on acute wards did influence the quality of care and that a smaller all-trained workforce should produce a ‘modest improvement in care levels while reducing staff costs by 5-10%’.

Carr-Hill *et al.* observed care in seven medical and eight surgical wards to estimate whether the effectiveness of nursing care was affected by different skill mixes. They measured effectiveness by measuring the quality of the process of nursing care using Qualpacs, and by measuring such outcomes as patient hygiene, pressure sores, pain control and nutrition. They also tried to control for different ways of organising nursing care: team allocation, primary nursing and patient allocation. Again, the researchers comment on the difficulty of designing and conducting this piece of research. They found that better overall quality of care was provided by higher grades of staff (the researchers used ‘grade’ as a proxy for ‘skill’). Variation in quality between grades was reduced when higher grades worked alongside lower-grade staff. They also commented that it was possible to achieve good outcomes even if the process of care was not very satisfactory. Their conclusion was that: ‘investment in employing qualified staff, providing post-qualification training and developing effective methods of organising nursing care appear to pay dividends in the delivery of good quality patient care’.

In his review of the research literature exploring the relationship between skill mix substitution and the quality of care, McKenna concluded that – although there were studies which support the retention of a ‘rich’ skill mix – only a minority of studies demonstrate the rigour expected for lobbying purposes.<sup>58</sup> Meyer and Spilsbury support this conclusion, adding that the research fails to offer clear guidance on an ‘appropriate’ ratio of RNs : HCAs. They suggest that it could be worthwhile to exploring this issue from the patient’s perspective.<sup>59</sup>

### 6.5.2 The USA

There is a rapidly growing research literature in the US on the relationship between staffing inputs and clinical patient outcomes. Some research teams have used large sets of routinely collected data to investigate the

relationship between nurse staffing structures and patient outcomes. In 1997, the ANA used data on nurse staffing from three states and matched it with information on five outcomes: length of stay, pneumonia, post-operative infections, pressure ulcers and urinary tract infections. The study found that shorter lengths of stay were strongly related to higher registered nurse staffing per acuity-adjusted day, and that the five patient morbidity indicators for preventable conditions were inversely related to RN skill mix. A second study, *Nurse Staffing and Patient Outcomes in the Inpatient Hospital Setting* (ANA 2000) used data from nine states, bringing together information on almost 13 million patients in 2,500 hospitals. The researchers found a positive association between better patient outcomes, better nurse staffing levels and higher numbers of RNs. (These reports are available on the ANA's website at [www.nursingworld.org](http://www.nursingworld.org).)

## 7. Discussion

This report has reviewed some past and current trends in nurse workforce planning and has considered the advantages and drawbacks of some 'top-down' and 'bottom-up' methods of establishment-setting. This is a complex area of professional activity, and one that is sensitive to changes in nursing philosophy and practice as well as to trends in the political and economic context. The literature shows that a great deal of time, effort and resources have been invested in developing and refining methods of estimating the 'right' number of nurses. The overall message is that no single 'right' way has been identified to help nurse managers to predict how many nurses, and in what combination, are needed to provide safe care. However, all the information reinforces the message that there must be greater clarity and uniformity about new nursing roles, titles and scope of practice – without these, nurses risk losing much of their present control over the determination of staffing numbers and mix.

This concluding section discusses three important themes: workload measurement tools, professional judgement and the distribution of management responsibility for decision-making about staffing.

### 7.1 Workload measurement tools

The Eastbourne inquiry recommended that the trust should use an 'agreed' workload measurement tool to set nurse staffing levels. The importance of securing the agreement of nurses and management is clearly important to the success of such an exercise. In the past, these tools have provoked disagreements on two grounds: ideological and methodological. In the first case, nurses have objected to the intrusion of 'scientific' management techniques into their professional activities; in the second case, the reliability and validity of different measurement techniques have been called into question, and their predictive capacity put in doubt.<sup>60</sup>

Some of the methodological debates can be daunting for the non-expert. However, even a non-mathematician can understand the difficulty of trying to devise a single, generally acceptable formula for predicting staff

numbers. Workload is affected by many different factors, some of which may be more stable – and measurable – than others (such as elective and emergency admission rates, turnover, lengths of stay, case mix and average age). Other, less quantifiable factors which have a direct impact on local workload are: environment (ward layout, availability of appropriate equipment, availability of intensive care facilities, bed management systems, and so on); the prevailing philosophy of nursing, and the resultant deployment of the nursing team (primary nursing, task allocation or team nursing); the individual characteristics of nursing staff (their skills, experience and knowledge of the ward); and different patterns of medical treatment. The impact of many of these factors upon workload is poorly understood, as is the relationship between direct and indirect workload – does indirect work increase in proportion to direct care needs, so that more occupied beds generate a greater workload, or is it independent of ward size and occupancy?<sup>61</sup>

The literature gives different answers to the question of the value of workload measurement tools in setting nurse establishments. The hostile view is that their predictive powers are dubious – that nursing workload is so complex, and affected by so many variables, that it is impossible to devise a formula that can capture this in any useful way;<sup>62</sup> or that different systems produce different estimates when used by the same nurses presented with the same model situation.<sup>63</sup> A very common criticism – particularly in the early 1990s when ‘bottom-up’ workload measurement systems were being piloted in the NHS – was that activity analyses and dependency calculations took too much time, and kept nurses away from direct patient care. (It is possible that experience today might be different, now that many more nurses are computer literate and computerised systems have become more streamlined.) A fourth criticism is that all the so-called scientific measurement tools require the input of nurses’ professional judgement, and cannot claim to be entirely objective.<sup>64</sup> In fact, many ‘off-the-shelf’ workload measurement systems rely explicitly on the judgements of individual nurses about patient needs and the timing and parameters of nursing activities – this is partly why they are open to criticisms of unreliability.

A more positive view is that measurement tools are a valuable aid to management decision-making about staffing, and that work should continue to improve

them further.<sup>65</sup> The report has already drawn attention to the experiences of satisfied users (section 1.5). What should not be overlooked is that, in practice, many managers are using workload measurement tools for retrospectively monitoring services rather than forecasting staffing needs. This can be a useful way of checking and identifying instances where there is a mismatch of staffing and assessed workload, or when the use of agency and bank staff was not justified. If this sort of information is linked to the reporting of adverse events, it offers one way of evaluating the links between staffing and patient safety.

There is a dearth of published technical evaluations of available workload management systems – unlike the series of reports commissioned by the Department from its technical staff in the 1980s. The 1992 Greenhalgh compilation is now badly out of date. Some systems have been withdrawn from the market altogether; others have been incorporated into integrated application packages. Of the few that are still operating, many are no longer supported by the original vendor, and have had their name changed.<sup>66</sup> Vendors will supply the names of their users to potential customers, so that they can investigate the practical advantages and drawbacks of a particular system. However, there appears to be a lack of easily accessible information for anyone interested in this area.

## 7.2 Professional judgement

In 1996, Buchan *et al.* reported that 65% of NHS trusts relied on professional judgement to determine their staffing levels, with only 14% using patient dependency measurements and a further 14% using activity analysis.<sup>67</sup> A recent (unpublished) RCN survey of trusts in the North West Region found that 21% of them used professional judgement in the determination of establishments and skill mix at strategic decision-making level. The rest used a mixture of packages such as GRASP, or benchmarking or audit data, or no tool at all. One telling statement was that nurses felt that, to carry credibility with trust management, they needed to use other criteria in support of professional judgement.<sup>68</sup>

Many nurse managers are confident that their professional judgement provides a reliable basis for decisions about ward establishments and skill mix. They argue that ward sisters and senior nurses are

familiar with local patterns of patient throughput, dependency levels, ward layout and anticipated nursing activity. They understand the requirements of medical and surgical teams, and the strengths and weaknesses of their in-house nursing staff. Some senior managers consider that they should be able to exercise their professional judgement in emergency situations by, for example, restricting new admissions to wards or departments where (in the opinion of the senior nurse) the available level and skill mix of nurses might compromise patient safety. This is an important issue of professional authority, involving the relationship of nurses with other clinical and general managers.

It is widely accepted that workload measurement tools are flawed; perhaps, therefore, it would be realistic to expect that methods which rely entirely on nurses' judgement may be fallible. In her revealing study of decision-making in this area, Procter describes the subtle ways in which organisational constraints can distort professional judgement over time. She observed that ward sisters became used to working with in-house staffing levels that were below the agreed establishments. Consequently, they planned rotas on the basis of self-imposed 'norms' about minimum staffing levels; agency or bank staff were commonly used to keep staffing up to these (low) levels, rather than being used appropriately to compensate for unforeseen shortfalls in staffing levels (for example, due to staff sickness).<sup>69</sup>

Robust systems are required to guard against this sort of 'drift' in professional judgement. When developing his 'consultative method', Telford understood the importance of the processes of review and negotiation between managers at ward level and above to act as a check on any excessive estimates of staffing numbers. His system was criticised at the time for not having any system of quality assurance. Since then, nurses have led the way in establishing sophisticated systems of quality improvement and clinical audit in the NHS. The move to clinical governance and improved risk management in the NHS offers the opportunity to establish management systems which link inputs (in terms of staff numbers and skill mix), process and outcomes for patients and staff. (The ANA's nursing-sensitive quality indicators for acute care settings might be a model worth some consideration.)

To summarise: professional judgement provides a sound basis for decisions about nurse staffing and skill mix – as long as it is applied systematically and

underpinned by the appropriate knowledge and skills (this may have educational implications for prospective ward managers). Ideally, it should be informed by specialty-specific professional guidance about staffing ratios and supported by good-quality management data. There must be some systematic way of checking its effectiveness in terms of beneficial outcomes for patients and staff. The choice of whether to use 'bottom-up' workload measurement tools as an aid to decision-making (but not a substitute for it) should be a matter for the individual manager, but preferably taken after consultation with nursing colleagues and other trust managers.

### 7.3 Staffing numbers and skill mix: whose decision?

At the operational level, it is the responsibility of ward managers to make the final decisions about the number and mix of staff to be put on duty rosters – within the budgetary constraints imposed by higher-level decisions about the funding of the nursing establishment and the proportion of different staffing groups to be employed within a trust. This is a critical area of decision-making, and one which has been described as 'sitting at the intersection of supply and demand issues and at the intersection of the professional and managerial aspects of nursing'.<sup>70</sup>

The Audit Commission's handbook *Making Time for Patients* (1991) suggests that responsibility for these decisions should be divided between different management levels. It states that one of the key functions for their managers – whether they are nurses or not – is to negotiate with medical consultants and other managers the parameters of workload, staffing, quality and budgets within which the nursing service is provided. It is more efficient for senior managers to negotiate on behalf of a group of wards than a single ward, leaving ward sisters time to run their wards (# 104).

This seems to clash with a view expressed elsewhere in the report, which favours the development of decentralised management, bringing responsibility for resources and patient care closer together and nearer to ward level. The report states that the historic split between ward-level managers and senior managers had undermined efforts to use resources effectively to achieve good patient care. Senior managers had enjoyed

the final say in staff appointments and shift times, and the authority to move staff around the hospital. Decisions about the size and composition of ward nursing establishments had often been made right at the top of the nursing hierarchy, without either the ward sister or the ward manager taking part (#64). There was great variation in the amount of responsibility given to ward sisters over the mix and deployment of nursing staff; the management of clerical staff; and over the ward budget (# 65).

There is anecdotal evidence to suggest that this blurring of responsibilities for decisions over staff numbers and skill mix continues to cause difficulties for ward managers. This suggests two conclusions: first, that it would be good practice to involve ward sisters as fully as possible in developing policies about staff numbers, skill mix and deployment. They should also be consulted about the use of workload assessment systems to support decision-making. Second, that employers and managers should be absolutely clear about the role of ward managers in relation to setting and managing ward establishments, and should provide them with any necessary training and support from the trust's human resources department. Any significant devolution of responsibility over staffing should be matched with authority over the relevant budgets. This question of the division of responsibilities for staffing may be relevant to the current debate about the role and responsibilities of 'modern matrons'.

## 8. Conclusions and recommendations

### 8.1 Improving nursing's capacity to provide safe care

This exploration of the relationship between staffing levels and patient safety suggests that the issue is too complex to be approached solely in terms of increasing staff numbers. There are six other dimensions which must be taken into account when considering the capacity of the nursing workforce to provide high-quality patient care:

1. *Professional issues:* in order to meet public expectations of safe and high-quality patient care, nursing education and regulation must aim to develop practitioners who understand and accept their professional accountability for safe and competent practice.
2. *Acuity of patients' conditions:* it is important that staffing levels take account of professional assessment of the needs of patients/clients and, where appropriate, their carers. It is widely acknowledged that nurses working on general medical and surgical wards can be faced with particular difficulties, due to the range of conditions and fluctuations in patient acuity that may present. Whilst the notion of nurses being 'qualified in specialism' may not be so relevant in these areas, managers should consider how best to provide necessary specialist nursing advice and support to staff on general wards.
3. *Organisational culture:* the Kennedy report into adverse events at Bristol Royal Infirmary is the most recent national publication to state the importance of developing organisational cultures which actively promote safe clinical practice.<sup>71</sup> Ideally, organisations should be structured and managed in a way which enables practitioners to meet the highest professional standards of care. All nurses should be able to voice their concerns about patient safety without fear of reprisal; and 'whole-systems' approaches to clinical risk

management and the reporting of adverse events should replace the culture of blaming individuals.

4. *Skill mix*: decisions about the appropriate skill mix within nursing teams – and also within multi-disciplinary teams – must take account of the dynamic nature of nursing policy and practice, and the necessity for them to keep pace with changes in the political, policy and clinical contexts. One current trend is for post-registration nursing education and practice to become increasingly specialised and differentiated (the appointment of consultant nurses being the latest ‘level’ in the clinical career ladder). At the same time, the full potential of vocationally qualified support staff should not be ignored. It is arguable that, in order for the profession to influence local employers over appropriate skill mixes in the future, it must reach a consensus on the regulation of roles, job titles, competencies, scope of professional practice, and so on.
5. *Leadership*: Marjorie Beyers (Executive Director of the American Organisation of Nurse Executives) states that staffing should be regarded as one of the indicators and outcomes of the effectiveness of nursing management practices.<sup>72</sup> Beyers argues that there is an art and a science to nurse staffing: it is grounded in clinical knowledge and measurement techniques, but it is all about nurses taking care of patients and families and consequently has to take account of personal and emotional issues. Whilst there are many nurses who would disagree with Beyers’ faith in scientific measurement techniques, it would be difficult to disagree with her basic premise about the need for good leadership in this area.
6. *Relevant research*: research findings may be indirectly useful, suggesting new ways of approaching a given problem; or they may have direct application, by providing evidence which can be used in decision-making. In the UK, there is little research evidence available to help with professional decisions about the best ways to plan and manage the nursing workforce to produce good-quality care. The next section deals with potential research topics in more detail.

## 8.2 Scope for research and development

The RCN Institute is currently undertaking development work of direct relevance to these staffing issues. There are projects on clinical governance;<sup>73</sup> developing specialist faculties; accrediting expertise in nursing; and clinical and political leadership. The RCN’s Employment Relations department regularly publishes information and guidance on all aspects of the employment and utilisation of nurses – for example, the recent publication on employee-friendly working: *Shifting Patterns*.<sup>74</sup>

Other important areas for nursing R&D include:

- ◆ *New nursing roles and new technologies*  
Whilst the development of new nursing roles is important, it is also important for the profession to monitor and evaluate their impact, not only on patient care but also on existing roles and systems of professional and managerial accountability.
- ◆ *Safety and continuity of care*  
The existing evidence base in this area is insubstantial, with little published UK research on important dimensions of nursing and safety. Important issues include: how nurses and other practitioners can contribute to safety by identifying and bridging the gaps that occur in complex systems;<sup>75</sup> evaluating the impact on safety of different ways of organising nursing (team nursing, primary nursing, etc.); investigating the relative safety of different shift patterns and the effectiveness of care pathways.
- ◆ *Inputs and outcomes sensitive to nursing*  
The recent Audit Commission report into ward staffing reiterated the need to identify patient and staff outcomes of care which are sufficiently sensitive to the nursing input. Without credible measures of outcome, the clinical- and cost-effectiveness of nursing care will remain open to dispute.
- ◆ *Nurse-friendly organisational characteristics*  
There is a growing nursing research literature in the US into the organisational characteristics that facilitate good nursing practice and produce good patient outcomes. The current crisis of recruitment and retention of nursing staff in the NHS makes this an important area for UK research.

- ◆ *Understanding the decision-making process*  
There is little work on the way in which decisions about nurse staffing are reached, and how they relate to other organisational decisions.
- ◆ *Nursing in settings other than hospitals*  
Most of the research into nurse staffing and nursing workloads has been done in the acute hospital sector. There is clearly scope for programmes of work focused on other specialised groups within the UK's nursing workforce. The Department of Health will shortly publish its review of the primary health care workforce, which doubtless will have major implications for nurses in this sector. The NHS Executive has already issued guidance to primary care groups and trusts on developing the nursing workforce in primary care.<sup>76,77</sup>

### 8.3 Continuing professional education and development

Many registered nurses go on to acquire formal post-registration qualifications relevant to the specialist area in which they work. In the increasingly complex world of modern health care, this makes sense in terms of building a more fulfilling clinical career for nurses whilst improving standards of safety and care in specialist wards and departments. There is a trend for trusts and universities to collaborate on developing more systematic approaches to post-registration education – for example, by setting up rotational schemes for staff nurses to gain experience in different clinical areas. Such schemes have also been shown to help with problems of recruitment and retention.<sup>78</sup> There appears to be a lack of confidence amongst some ward managers and team leaders about the basic techniques of undertaking staffing reviews and re-profiling exercises. Learning resources are available in this area (see Appendix 3), but there may be implications here for the continuing education of clinical leaders.

### 8.4 Need for more guidance from DoH

There is a dearth of information and guidance about what information management systems are available to support decision-making about nurse staffing and

safety. The Department last published a comprehensive resource in 1992.

### 8.5 Need for critical analysis of current DoH policy

The main thrust of the new NHS workforce planning strategy is towards more integration – of structures, budgets and of traditionally separate professions. Nurses form the major part of the NHS workforce, and for the past 40 years nurse managers have become accustomed to a uni-disciplinary approach to the education and deployment of nurses. It will be important to monitor the implementation of the government's current initiatives and their impact upon nursing. The profession may be put under pressure by a highly centralised system which, arguably, will strengthen the power of employers and accelerate the current trend towards locally tailored, competency-based training.

### 8.6 Challenges for profession's new regulatory body

The current emphasis on integrated workforce planning and team working across traditional professional boundaries requires clarity at national level about different nursing roles, titles and their scope of practice. The UKKC's successor, the Nursing and Midwifery Council, will need co-operation and support from the RCN and other professional bodies if it is to make progress in this key area.

### 8.7 Specialism-specific nurse : patient ratios

This paper has drawn attention to some of the drawbacks of making – and enforcing – recommendations about minimum staffing levels. However, some professional groups may wish to adopt the approach of recommending nurse : patient ratios for their specialism, along the lines of current recommendations for some intensive care and psychiatric services (see Appendix 1).

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# Appendix 1

environment, clinical and organisational policies, competence and qualifications . . . size and geographical layout of the unit [are factors to be considered]

(# 3.7)

## Some recommended nurse : patient ratios in the UK

### Children's acute care services

The Department of Health standards (DH 1996) are that:

- ◆ there are at least two Registered Sick Children's Nurses (RSCN) or Registered Children's Nurses (RCNs - who have completed the child branch of Project 2000) on duty 24 hours a day in all hospital children's departments and wards;
- ◆ there is an RSCN or RCN available 24 hours a day to advise on the nursing of children in other departments, e.g. the intensive care unit, the A&E department, outpatients.
- ◆ The RCN has published general guidance for clinical professionals and nurse managers: *Skill-mix and Staffing in Children's Wards and Departments* (RCN 1999). This draws attention to DH guidance, and suggest the principles that should underpin any changes to nursing skill-mix or staffing

### Paediatric intensive care

Standards for these services are contained in two reports: *Paediatric Intensive Care: A Framework for the Future* (NHS Executive 1997) and the report of the Chief Nursing Officer's taskforce – *A Bridge to the Future: Nursing Standards, Education and Workforce Planning in Paediatric Intensive Care* (DH 1997). The CNO's report gives recommended nurse : patient ratios for Level 1 (high-dependency care ) and intensive care Levels 2 and 3. The report states that, using these standards in combination with the NHSE's framework, it should be possible to formulate nurse staffing and skill mix. It recognises that decisions about managing the workload and staffing of paediatric intensive care and affiliated units should be recognised as complex:

the availability of staff needs to be balanced and flexed according to changing care dependency . . . physical

### Adult intensive care

Since 1967, the standard nurse : patient ratio for adult intensive care has been 1 : 1. This is supported by the DH, the British Association of Critical Care Nurses (BACCN), the Intensive Care Society (ICS) and by the RCN's Critical Care Forum. In terms of nurses per bed, the ICS's recommendation is that units employ 6.3 nurses per bed, or 7.0 WTE if the full complement of beds is to be maintained at all times. Not all units follow this standard.

A recent report - *Critical to Success* (Audit Commission 1999) – found a considerable variation in staffing levels between intensive care units. The report suggests that national research is needed to record more scientifically the cost benefits of 1 : 1 nursing. (The report's scepticism about the conventional ratio has since been vigorously challenged by many critical care nurses.) With regard to the variations in staff numbers, the authors did not consider that 'a simple formula' was the main answer to a complex problem; but they suggested that there should be research into a 'more precise' method of setting staffing levels. Such a method should be 'forward-looking, taking account of the changing scope of nursing practice . . . and the notion of team-based nursing.'

Appendix 6 of the report considers the limitations of current approaches to measuring nursing workload in intensive care settings. It states that, although a more effective way of setting establishments is desirable, 'it will be necessary to move beyond this to decide how nurses *should* spend their time' (p. 104) – in other words, to move towards a nationally agreed policy on the scope of nursing practice within critical care, the lack of which means that currently each trust has to determine its own policy (# 58).

The DH's report: *Comprehensive Critical Care. A Review of Adult Critical Care Services* (2000) recommends a new approach to the organisation and delivery of critical care based on the severity of illness, replacing the current division into high-dependency and intensive care beds. 'Staff numbers, skill and expertise should depend upon the workload and

complexity generated by the condition of individual patients. Beds should be staffed flexibly according to workload generated by individual patients . . . there should be a move away from the use of rigid ratios to determine nurse staffing for patients requiring level 2 and 3 [higher levels of dependency] to the use of more flexible systems for assessing nursing workload using tools such as the System of Patient Related Activity (SOPRA)' (#38). The report favours a multi-disciplinary approach to the skill mix of clinical teams.

## Mental health

1. Royal College of Psychiatrists (1998) *Not just Bricks and Mortar. Report of the working party on the size, staffing structure, siting and security of new adult psychiatric in-patient units*  
(RCPsych, London)

'It is unlikely that a ward of 15 acute patients could be safely managed with less than 3 registered nurses per shift during the day and 2 at night, irrespective of other staff available. "Minimal" staffing levels are not good for patients [and may lead to] burnout, poor staff retention, and a reactive rather than proactive approach to emerging patient tension and distress . . . the determination of appropriate staffing will involve dialogue between managers, nurses and other clinicians.'

**Rec 14: A minimum of three registered nursing staff must be able to attend a disturbance without depriving other wards of safe cover. For a three ward unit, this suggests a minimum staffing during the day of three registered nurses per shift.**

2. Royal College of Psychiatrists (1999) *Guidance on Staffing of Children and Adolescent In-Patient Psychiatry Units*  
(RCPsych, London)

These multi-disciplinary guidelines on staffing and skill mix are intended to represent a 'realistic aspiration' for units and management to undertake safe and therapeutic work. The exact nature of the staffing required for a given unit will depend on its particular patient group. The guidelines may be used as a benchmark against which clinicians may judge staffing levels in their own units and as a reference point for use in discussions with purchasers or trusts. They are based on research literature, data from a clinical study, guidelines developed in the US and on consultation with

the RCN (which had done some work on definitions of 'low' and 'high' dependency) and relevant user groups.

For the ward team, the focus should be on the shift ratio: i.e. the specific number of staff on a particular shift related to the number of patients cared for during that shift. This calculation should take into account the skill mix; the task demands of a particular shift; and case dependency and case mix. On the basis of this, the report sets some ratios, e.g. 1 : 3 at night for 'high' dependency-patients, or two staff (plus additional on-call for emergency) for 'low' dependency-patients.

## Midwifery

- Royal College of Obstetricians and Gynaecologists and Royal College of Midwives (1999) *Towards Safer Childbirth: Minimum Standards for the Organisation of Labour Wards*  
(RCOG, London)

The committee which drafted this paper consisted of nine midwives and seven obstetricians. It updates the recommendations of a 1994 report by the RCOG – and acknowledges that there is no information as to whether the earlier recommendations had been implemented – and incorporates recommendations on staffing levels contained in a report published by the Audit Commission in 1997: *First Class Delivery. Improving maternity services in England and Wales*.

The Audit Commission had confirmed a good practice standard of 1.15 midwives to one woman in labour, and stated that this level of staffing should be achieved on at least 60% of occasions. It recommended that trusts should try to improve the flexibility of labour ward staffing overall, provide support staff and deploy staff in response to workload, taking into account the case mix as well as peak and troughs in activity.

The 1999 RCOG/RCM report states that:

'The number of midwives required to provide care on any particular ward will be dependent upon local workload activity in conjunction with casemix and pattern of service provision. Various workload analysis tools such as Telford, Aberdeen and Birthrate have been developed. The RCM recommends the use of Birthrate as a workload dependency and skill mix tool.' (# 4.1.5)

# Appendix 2

## Victoria, Australia: recently agreed nurse : patient ratios

### Medical/surgical wards

#### GROUP A HOSPITALS

a.m. shift	1 : 4 + in charge
p.m. shift	1 : 4 + in charge
ND shift	1 : 8

#### GROUP B HOSPITALS

a.m. shift	1 : 5 + in charge
p.m. shift	1 : 5 + in charge
ND shift	1 : 10

#### GROUP C HOSPITALS

a.m. shift	1 : 6 + in charge
p.m. shift	1 : 7 + in charge
ND shift	1 : 12 + in charge

(use floater if required)

#### GROUP D AGED CARE FACILITIES

a.m. shift	1 : 7 + in charge
p.m. shift	1 : 8 + in charge
ND shift	1 : 15

### Accident & emergency departments

#### GROUP 1 HOSPITALS

a.m. shift	1 : 3 + in charge + triage
p.m. shift	1 : 3 + in charge + triage
ND shift	1 : 3 + in charge + triage

### Accident & emergency departments

#### GROUP B & C HOSPITALS

- ◆ In small hospitals that have A&E departments where there are less than four presentations per shift, there should be two RN Div 1s plus one

'floater' per shift as staffing for the facility including A&E. The 'floater' may be a RN Div 1 or Div 2. In these hospitals, there is no dedicated staff rostered in A&E departments.

- ◆ Where there are four but less than 12 presentations per shift, there should be one RN Div 1 plus one RN Div 1 in charge per shift rostered in A&E.
- ◆ Where there are between 13 and 20 presentations per shift, there should be two RN Div 1s plus one RN Div 1 in charge per shift in A&E.
- ◆ If there are more than 20 presentations per shift, there should be three RN Div 1s plus one RN Div 1 in charge in A&E.
- ◆ The staffing profiles . . . must be on a dedicated basis for the whole of each shift.
- ◆ In hospitals where seasonal adjustment is not required, the ratios should be based on the average presentations over the previous 12 months for each shift, i.e. - a.m., p.m. and night duty.

### Midwifery

#### LABOUR WARDS

a.m. shift	1 : 1
p.m. shift	1 : 1
ND shift	1 : 1

#### ANTE NATAL

a.m. shift	1 : 5 + in charge
p.m. shift	1 : 5 + in charge
ND shift	1 : 8

#### POST NATAL

a.m. shift	1 : 5 + in charge
p.m. shift	1 : 5 + in charge
ND shift	1 : 8

### Operating rooms

#### GENERAL CASES

3 RNs per theatre

#### COMPLEX CASES

4 RNs per theatre

## Coronary care

### GROUP A HOSPITALS

a.m. shift	1 : 2 + in charge
p.m. shift	1 : 2 + in charge
ND shift	1 : 3 + in charge

### STEP DOWN UNITS

a.m. shift	1 : 4
p.m. shift	1 : 4
ND shift	1 : 4

### GROUP B HOSPITALS

a.m. shift	1 : 2 + in charge
p.m. shift	1 : 2 + in charge

### MONITORED BEDS (within a medical ward/unit)

a.m. shift	1 : 3
p.m. shift	1 : 3
ND shift	1 : 4

## High-dependency units

### GROUP A HOSPITALS

a.m. shift	1 : 2 + in charge
p.m. shift	1 : 2 + in charge
ND shift	1 : 2

### GROUP B HOSPITALS (3 sub-groups)

#### SUB GROUP 1

a.m. shift	1 : 2 + in charge	
p.m. shift	1 : 2	
ND shift	1 : 2	
Hamilton	Warragul	Wimmera
Sale	Warrnambool	Wodonga

#### SUB GROUP 2

a.m. shift	1 : 3 + in charge	
p.m. shift	1 : 3	
ND shift	1 : 3	
Angliss	Mt Alexander	Sandringham
Bairnsdale	Portland	Sunshine
Echuca		

### SUB GROUP 3 (part of general ward)

a.m. shift	1 : 4
p.m. shift	1 : 4
ND shift	1 : 4
Swan Hill	Williamstown

## Palliative care

a.m. shift	1 : 4 + in charge
p.m. shift	1 : 5 + in charge
ND shift	1 : 8

### REHABILITATION AND GEM BEDS

a.m. shift	1 : 5 + in charge
p.m. shift	1 : 5 + in charge
ND shift	1 : 10

Where it can be demonstrated that patients are occupied for most of the day with external activities, e.g. physiotherapy, hydrotherapy, etc. then the above ratios may be varied.

### AGED CARE ASSESSMENT WARDS

a.m. shift	1 : 6 + in charge
p.m. shift	1 : 7 + in charge
ND shift	1 : 12 + in charge

### PACU AREAS

1 : 1 for unconscious and paediatric patients.

### DAY PROCEDURES UNIT

The ratio will be less than the standard 1 : 4 in those units where patients are 'recovered' in the unit post procedure.

### NURSERIES

Level 3	Neonatal intensive care unit (any ventilated baby must have a 1 : 1 ratio)
Level 2	Special care nurseries with sick babies not on a ventilator
Level 1	Well babies
Levels 3 & 2	

There are 4 hospitals with a mixture of NICU and Level 2 babies in the one unit. These are:

Monash Medical Centre  
Mercy Hospital for Women

Royal Women's Hospital  
Royal Children's Hospital

Where Level 3 and Level 2 babies are in the one unit, the overall ratio is to be 1 : 2 plus in charge on ALL shifts.

Where the above units are larger than 30 beds, an additional associate charge nurse to assist the nurse in charge of each shift is required.

**Ratios in these units to be implemented as soon as possible with final implementation date being 1 / 1 / 2001.**

Level 2 (discrete unit)	a.m. shift	1 : 3 + in charge
	p.m. shift	1 : 3 + in charge
	ND shift	1 : 3
Level 1	a.m. shift	1 : 4 + in charge
	p.m. shift	1 : 4
	ND shift	1 : 4

## Appendix 3

### Suggested resources: for nurses and nurse managers

Audit Commission (1992) *Caring Systems: A handbook for managers of nursing and project managers*. HMSO: London.

Audit Commission (2001) *Ward Staffing*. Audit Commission Acute Hospital Portfolio: London (also available on website: [www.audit-commission.gov.uk](http://www.audit-commission.gov.uk)).

Audit Commission Portfolio Project Team (2001) *Ward Staffing Management Tools: Practical tips for budget setting*. Published on Audit Commission website: [www.audit-commission.gov.uk](http://www.audit-commission.gov.uk)

Bevan, S., Stock, J. and Waite, R.K. for the NHSME (1991) *Choosing an Approach to Reprofileing and Skill Mix*. Institute of Manpower Studies: University of Brighton.

Dean, D.J. (1987) *Manpower Solutions*, RCN/ Scutari Projects: Harrow-on-the-Hill.

Department of Health (2002) *A Guide to Ward Staffing Budgets*. [www.nursingleadership.co.uk](http://www.nursingleadership.co.uk).

Dunne, L. (ed.) (1991) *How Many Nurses Do I Need? A guide to resource management issues*. Wolf Publishing Ltd: London.

Five Regional Consortium/Greenhalgh & Co Ltd (1991) *Using Information in Managing the Nursing Resource*, Greenhalgh & Co. Ltd: Macclesfield.

This 'Rainbow Pack' is learning resource aimed at prospective nurse managers. There are five 'learning modules', with exercises to be worked through. The topics covered are: workload; skill mix management; human resource management; quality; and financial management.

Greenhalgh & Co. Ltd (1992) *Nurse Management Systems. A guide to existing and potential products*. Greenhalgh & Co. Ltd: Macclesfield.

Hurst, K. (1993) *Nursing Workforce Planning*. Longman Information and Reference: Harlow.

International Council of Nurses (1993) *Guidelines on Planning Human Resources for Nursing*. ICN: Geneva.

International Council of Nurses (1994) *Planning Human Resources for Nursing*. ICN: Geneva.

NHSE/Consortium of informatics systems and service suppliers/Greenhalgh & Co. Ltd (1996) *Using Clinical Information in Integrated Healthcare*, Greenhalgh & Co. Ltd: Macclesfield.

Another 'Rainbow Pack', containing learning modules on clinical audit and operational research; management of resources; patient care management; managing the business; and managing the information environment.

NHSE/ Information Management Group & British Computer Society Nursing Specialist Group (1995) *Benefits Realisation Monograph on Nursing Information Systems*, NHSE: London.

**Please note: inquiries about RCN publications should be made to RCN Direct 0845 772 6100**

RCN (1992) *Skill Mix and Reprofiting: A guide for RCN members*. RCN: London

RCN (1993) *Skill Mix in Accident and Emergency Nursing: A framework for managers*. RCN: London

RCN/Critical Care Forum (1995) *Dependency Scoring Systems: Guidelines for nurses*. RCN: London

RCN (1997) *Practice Nursing and Skill Mix*. RCN: London

RCN (1999) *RCN Assessment Tool for Nursing Older People*. RCN: London

RCN (1999) *Skill-mix and Staffing in Children's Wards and Hospitals: Guidance for clinical professionals and managers who are responsible for children's services in acute settings*. RCN: London

## Appendix 4

### Details of literature search

#### *Electronic databases:*

The following electronic databases were searched for research-based items and other relevant items written for discussion and debate, in the English language:

CINAHL  
DEPARTMENT OF HEALTH ('POINT')  
ENB HEALTH CARE DATABASE  
KING'S FUND LIBRARY  
MEDLINE  
INDEX OF NURSING RESEARCH

#### *The following key words were used:*

activity analysis AND nursing  
clinical grading  
health care assistants  
nurse manpower  
nursing assistants  
nursing workforce  
nursing AND workload  
patient classification systems  
patient dependency AND measurement  
patient nurse ratio  
risk assessment  
skill mix AND nursing  
workforce planning  
workload analysis/assessment  
workload measurement

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