Measuring nursing dependency: background information for costing professionals

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Shaping healthcare finance

hfma

Contents

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Foreword

Having the right number of nursing staff with the right skills to meet the needs of patients on a ward is fundamental to delivering high-quality, compassionate healthcare to patients. There are clear links with outcomes, and recent safety reviews, including the Francis inquiry into events at Mid Staffordshire NHS Foundation Trust, have underlined the dangers of not taking the issue seriously enough.

The clear requirement is to enable organisations to understand the link between the needs of specific patients on a ward and the mix of staff numbers and experience needed to meet those needs.
This understanding is also needed for a secondary purpose – to improve the costing of services delivered to individual patients. Better cost data – at the patient level, rather than, for example, at specialty, healthcare resource group or some other higher level grouping – can itself support the improvement of patient care. It can help clinicians and managers to understand current service delivery, help identify opportunities for service and cost improvement and inform discussions about the transformation of services and patient pathways.

This discussion paper aims to support finance professionals in developing these approaches to costing. It supports the 2014/15 acute clinical costing standards (Standard 3A) and examines some of the issues connected to establishing, collecting and using patient acuity data to improve the accuracy of patient costing. The challenge is to undertake these activities in a way that does not impose additional burdens on busy frontline staff, potentially building on the same data that will be needed to inform safe staffing levels on wards.

We hope that by looking at some current approaches being pursued by trusts, we can help other organisations to make progress in this area.

John Graham
Chair HFMA Costing Practitioner Groups

The Royal College of Nursing supports the efforts of the HFMA to promote the importance of measuring patient acuity/nurse dependency, so that we can be more confident that funding can support the number and skill mix of nursing staff required to deliver high-quality, compassionate care. There isn't yet a consensus on how best to capture patient acuity/nurse dependency, and how it can change during a patient's stay, but this should not stop nurses and their finance colleagues working together to find ways that are clinically meaningful, minimise administration and support good-quality patient-level costing.

Royal College of Nursing

INTRODUCTION

The HFMA's 2014/15 *Acute clinical costing standards* include a new chapter on allocating wards costs (Standard 3A). The standard focuses on the most material component of ward costs: nursing costs. This briefing provides background information for finance professionals on nursing dependency and ward workforce planning, so that they can have more informed discussions about improving the allocation of nursing costs at patient level within their trust.

The briefing summarises some of the issues currently being debated, and signposts to additional reading material are noted in the margins. The National Institute for Health and Care Excellence (NICE) is expected to begin its first evidence-based guidance on safe staffing levels in summer 2014. The HFMA will update this briefing once the NICE guidance has been published.

DEFINING PATIENT ACUITY AND DEPENDENCY

Patient acuity refers to the patient's medical condition. A higher acuity would indicate a more serious medical condition or likelihood of deterioration that would require more nursing input and at a higher skill level. Two patients of the same acuity, however, may still require different levels of nursing input according to factors such as their condition, mobility and mental capacity. This is known as patient dependency on nursing. Dependency, therefore, is the cost driver of the nursing resource consumed.

The clinical costing standard (Standard 3A) uses the term 'nursing dependency' to describe a model for allocating nursing costs taking into consideration the acuity and dependency of patients.

ALLOCATING NURSING COSTS

Patient-level costing requires nursing costs to be allocated on the basis of the time spent with the patient. While the most accurate method would be to require nurses to complete timesheets to record the time spent with each patient and time spent on other tasks, this could place an unnecessary burden on nurses' time if the information were not routinely collected as part of ward staffing management.

In practice, it is easier to estimate the time spent with the patient by each nursing grade. The easiest but least accurate method is to use patients' length of stay. The current 'gold standard' used by the HFMA's MAQS costing templates is to use the actual number of hours a patient spends on a ward, with a weighting for actual patient acuity/nurse dependency.

Some organisations are able to meet the gold standard for costing with confidence because they have data on the nursing resources directed towards patients according to their acuity and dependency. Data is collected to ensure the right number and mix of nursing staff is available on the ward to provide safe care.

Accurate costing is an important issue. The national tariff is based on reference costs calculated by trusts, so any errors will feed into the prices paid to trusts. All trusts' actual costs will be slightly different to the tariff price they receive, although these differences can be exacerbated if the underlying costs are inaccurate. While some trusts will be over-reimbursed, some will be underpaid. If acuity and dependency are not properly taken into account when calculating costs, those trusts with high acuity and high dependency patients may be underpaid.

At a time when financial constraints are tight, and there is increasing emphasis on providing safer nursing levels, it is important that trusts receive income that reflects their costs. Improving the accuracy of ward costs will help to address this, as well as provide useful management information.

DETERMINING SAFE WARD STAFFING LEVELS

There are many approaches to determining safe ward staffing levels and many tools available to support this. Several organisations, such as the Royal College of Nursing, the Association of UK University Hospitals (AUKUH), Skills for Health and the Scottish Government, have devoted significant time and effort to developing tools, which many trusts have adopted. In addition, there are a range of commercial software solutions to help with rostering and reporting on ward staffing. Examples of tools and case studies are described later in this briefing.

The NHS England (formerly NHS Commissioning Board) report *Compassion in practice*[1] recommended refining workforce tools such as the *Safer nursing care tool* and PANDA (a paediatric nursing tool). More guidance has recently been issued in the form of a how-to guide by the National Quality Board[2].

The Francis Report[3] raised the issue of minimum ward staffing levels, and there is currently much debate around how to determine those ratios. Francis has since suggested that a fundamental standard for nurse staffing levels should be implemented, based on the research evidence. There is a view that minimum levels may still not result in the best quality care if the minimum is seen as the target – the CQC and RCN in particular feel that minimum staffing levels do not guarantee safe care and that some element of professional judgement should be applied.

NICE is planning to publish guidance on safe and efficient staffing levels in a range of NHS settings. The first guidance is expected in July and will focus on adult wards in acute hospitals. From August, further guidance will be published for other settings, including accident and emergency units, maternity units and acute inpatient paediatric and neonatal wards. The guidance will also review and endorse any associated tools currently being used within the NHS.

METHODOLOGIES FOR WORKFORCE PLANNING

Workforce planning methodologies help trusts to estimate how many nurses they need, and the skills that they should have. Much work has gone into developing ward staffing methodologies. An independent review by Dr Keith Hurst[4] gives a good overview of this. His review suggests that there are six broad types of methodology:

- Macro, top-down, population-based methods – benchmarking databases
- Micro, bottom-up or workload-driven methods from simple to sophisticated – professional judgement or consensus methods
- Staff to bed ratios – for example, Leeds University Nursing Database
- Workload quality – for example, the *Safer nursing care tool*
- Timed task – for example, GRASP
- Regression

Table 1 (overleaf), taken from the NHS Institute *Safer nursing care tool web application report*, provides a summary of each methodology. It should be used as a guide as there are different views on the strengths and weaknesses of each methodology.

Dr Hurst's review concludes that trusts should use more than one method and triangulate the results. NHS Scotland has an established triangulation process in use, as set out in Table 2 (overleaf), with permission from the Scottish Government.

[1] *NHS England, 2012:* Compassion in Practice: Nursing, Midwifery and Care Staff. Our Vision and Strategy

[2] *NHS England National Quality Board, 2013:* How to ensure the right people, with the right skills, are in the right place at the right time – a guide to nursing, midwifery and care staffing capacity and capability

[3] *Report of the Mid Staffordshire NHS Foundation Trust Public Inquiry, February 2013*

[4] Nursing Times, *October 2010:* Evaluating the strengths and weaknesses of NHS workforce planning methods

[5] *Source:* NHS Institute Safer nursing care tool web application report

TABLE 1: WARD STAFFING METHODOLOGIES[5]

METHOD	STRENGTHS	WEAKNESSES
Professional judgement Involves expert, multidisciplinary groups that have local intelligence first used in 1970s – one of the oldest methods for workforce planning and development (Telford, 1979). Free software (SfH WPT, 2010a) is available to help with these calculations.	• Enduring • A springboard to using other methods • Handles complex issues • Clinician views • Cheaper than developing fieldwork-based multipliers and free software available to help with calculations	• No built-in service quality • Selected a more sophisticated method • Workload insensitive • Seen as subjective • Awkward to calculate staffing manually
Staff to bed ratios The staff per occupied bed method uses staff (by grade) to occupied bed ratios from best practice wards that pass a service quality test. UK has staff to bed ratios for all services (SfH WPT, 2010a), but these have to be used with caution	• Evidence-based • Excellent benchmarks • Free software available • Used with all care groups • Quality based	• Updating is costly • Use correct numerator – (occupied beds)/denominator (FTE) • Workload fixed, throughput ignored • Open to manipulation, such as adjusting ratios to produce lower costs • Insensitive to acuity/dependency changes • Hidden variables
Workload quality method (also known as the acuity-quality method) A sophisticated algorithm that uses occupancy, throughput, patient dependency, direct patient care times and ward overhead data from best practice wards.	• Accounts for most variables • Workload-based plus patient acuity • Flexible • Free software • Quality weighting • Measures throughput • Ward layout/housekeeper • E-rostering potential	• Costly – uses seven data sets • Adds to ward overheads – nursing workload • Not useful for small wards • Concerns about importing data • Auditing not standardised • Poor forecaster of staffing • Data on this currently limited • Competition
Time task methods Nursing care times attached to interventions so ward staffing can be estimated. The GRASP approach (Anderson, 1997) attaches care times to interventions in patients' care plans before adding ward overheads to cover indirect patient care activities. This can be used to estimate nursing hours per patient day.	• Evidence-based • Accurate • Easily computerised • Easily updated • Links to care nursing pathways	• Updating is costly • Costly, commercial • Missing care groups • Overhead costly • Task oriented
Regression methods The regression formula uses one main ward element, such as theatre sessions (in surgery wards), complex nursing procedures (in critical care units) and escorts (in diagnostic wards), to predict how many staff are needed.	• Best forecaster • Cheaper	• Limited supporting literature • Commercial systems costly • Importing data • Statistics off-putting, specialist input required • Specialist advice needed • Lacks ownership • Is data from quality-assured wards?

TABLE 2: NHS SCOTLAND TRIANGULATION METHODOLOGY [6]

Research studies carried out over the years have shown that while workload and workforce planning tools can offer useful assistance to nurse/midwife managers, there is no 'perfect tool' that is going to answer all queries and solve all problems. There are nevertheless advantages in using tools to provide evidence to support proposals for staffing changes.

In the Nursing and Midwifery Workforce Planning Project report (SEHD, 2004), professional judgement was identified as the foundation for nursing and midwifery workload and workforce planning. While the value of this subjective approach was acknowledged, the importance of using objective approaches and methods to validate the subsequent findings was noted. In other words, we should not rely on any single tool as a stand-alone determinant of staffing requirements.

The report went on to state that a combination of tools should be used, with all services using a nationally agreed professional judgement approach as a minimum. It highlighted that as patient dependency measures offered a means of recording changing patient acuity and associated workload, this type of methodology should be used.

Quality was also identified as being a key part of nursing and midwifery workload and workforce planning. It was therefore accepted in principle that NHS Scotland, in line with best evidence, would utilise these approaches as a national standard for workload and workforce planning practice.

This principle is often referred to as triangulation. The NHS Scotland triangulated approach means that you have three main sets of indicators on which to base your judgements (see Figure 1 overleaf). These are obtained from three sources:

- **Outcome of the specialty specific workload measurement tool**
- **Outcome of the professional judgement tool**
- **National quality measures such as hospital-acquired infection, waiting time guarantees, patient safety initiative, or evidence from local quality dashboards or scorecards – for example, falls risk, immunisation rates, maternity clinical quality indicators, mental health therapeutic interventions, documentation audits, patient experience.**

Other helpful indicators to be included in the assessment are:

- **Budget establishment and actual establishment, including use of supplementary staffing (bank and agency)**
- **Present funded establishment data, including agreed staffing establishment, turnover/throughput and skill mix – available from your line manager.**

It is also important to be mindful of the local context. There may be a history of integrated workforce planning in your area. For example, there may be a ward housekeeper or the non-registered nurses may have been through competency-based training. Different practice models can have an effect on the numbers of staff required and this would also be part of the local context. It is equally important to be mindful of turnover/throughput.

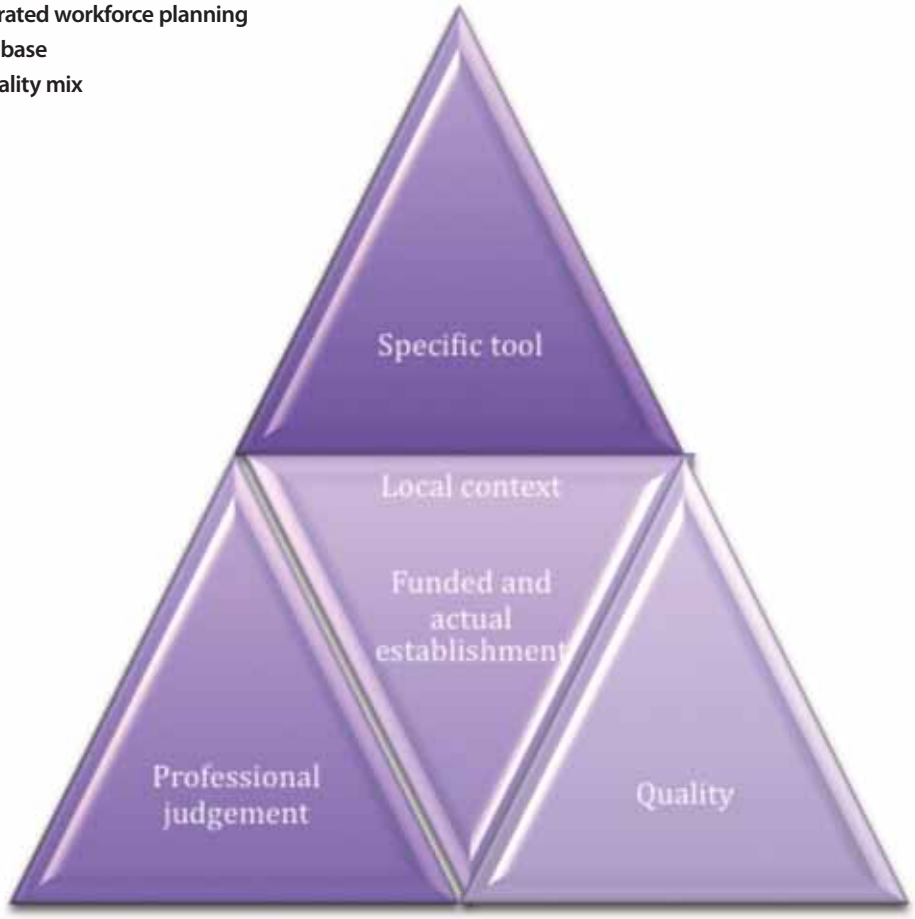
[6] *Source:* Nursing and Midwifery Workload and Workforce Planning, Learning Toolkit *(second edition), Scottish Government, NHS Education for Scotland, 2012*

FIGURE 1: TRIANGULATED APPROACH TO WORKLOAD MEASUREMENT

The triangulation approach offers a reliable method against which to deliver evidence-based workforce plans to support existing services, redesigning of services and/or the development of new services.

Local context includes:

- **Integrated workforce planning**
- **Skills base**
- **Speciality mix**



WORKFORCE PLANNING TOOLS IN PRACTICE

Trusts use a range of workforce planning tools for ward staffing. This section describes some of these tools and provides a number of case studies.

The NHS Institute for Innovation and Improvement (NHS Institute) developed the *Safer nursing care tool*, a web-based application based on the AUKUH model. The AUKUH model, designed for use in acute general settings, uses the workload quality method (see Table 1, page 4). It categorises patients according to acuity and dependency. Each of the five categories is assigned a WTE number of nurses per bed, or multiplier, which determines the staffing and hence can be used to allocate costs.

The NHS Institute has recently reviewed the *Safer nursing care tool* in detail[7]. The review includes several criticisms of the functionality of the tool, rather than the underlying AUKUH model on which it is based (although this is currently under review too). For this reason the web tool has been withdrawn, as it is not considered fit for purpose, although it is still used by some trusts.

The NHS Institute report also considers a range of other tools that are in use in different settings and sets out the characteristics of an ideal tool (Table 3).

[7] *The NHS Institute for Innovation and Improvement, January 2012:* Safer nursing care tool web application report

TABLE 3: CHARACTERISTICS OF AN IDEAL STAFFING TOOL

- **An assurance tool for ward managers and boards to make sure that wards are staffed at a safe level. This data would be used in forward planning and budgeting to determine changes in establishment for wards and to demonstrate to legal bodies that the trust's duty to provide safe care is being fulfilled.**

- **A real-time staffing solution in which data from e-rostering systems on current staff levels is combined with data from the tool on required staffing levels to give a real-time report on which wards are under- or over-staffed. This allows transfer of staff between wards and more efficient use of staff and money.**

The NHS Institute report draws on the work of the Scottish Government, which has recently mandated the use of workforce planning tools. The *NHS Scotland local delivery plan guidance 2013/2014* states:

> "Nursing and midwifery have developed a series of workload and workforce planning tools. The application of these tools is mandatory to support evidence-based decisions in relation to nursing and midwifery establishments … These tools should form part of a triangulated approach to incorporate professional judgement and quality measures which will enable flexibility in decision-making on staffing needs at local level. The Scottish Government will work closely with boards to refresh and continue to develop these workload tools to ensure they capture and reflect the changing case mix and modes of health care delivery."

The Scottish Government has significant experience in developing and using ward staffing tools and producing standard reports. The tools have been mandatory since April 2013 and now cover 95% of services across all types of nursing (Table 4). They are used for clinical purposes but provide the evidence that allows nursing staff to start conversations with finance directors. They have resulted in increased nursing establishment in Scotland in some hospitals.

TABLE 4: WORKFORCE TOOLS IN SCOTLAND

- **Adult inpatients**
- **Clinical nurse specialists**
- **Community nursing**
- **Community nursing – children**
- **Emergency medicine**
- **Maternity**
- **Mental health**
- **Neonatal care**
- **Paediatrics (SCAMPS tool; Scotland has not adopted the PANDA tool developed by Great Ormond Street)**
- **Peri-operative tool**
- **Professional judgement**
- **Small wards**

The Scottish adult inpatient tool is based on a database and tool developed by Skills For Health.[8]

[8] Skills for Health Nursing Workforce Planning Tool

The Scottish experience is that nursing staff are happy to collect the data required to populate these tools as they know it will help to ensure appropriate staffing. The formula-driven tools are combined with professional judgement approaches and triangulated against:

- The actual establishment
- The staff that are/ were on duty
- What the desired staffing would be/would have been.

[9] Healthcare Finance, *May 2013:* Visual acuity

The May 2013 edition of the HFMA's H*ealthcare Finance* magazine[9] includes an article on nurse dependency with the following case studies. The HFMA is monitoring progress on these case studies and plans to report progress in future briefings. In addition, the HFMA is currently reviewing how best the tools outlined in this report can support better allocation of nursing costs.

- **Guy's and St Thomas' NHS Foundation Trust** worked with a software developer to produce a patient-level system for calculating and recording acuity and dependency. It is used to help nursing staff document the acuity and dependency of patients, determine the appropriate staffing level and help staff to decide quickly whether more staff are required. Nurses record patient acuity according to the levels set out in the AUKUH model, in real time, and this can be used by finance to allocate nursing costs.

- **Western Sussex Hospitals NHS Trust** has recently adopted the National Early Warning Score recommended by the Royal College of Physicians to identify and respond to deteriorating patients. The trust records nursing observations electronically, allowing the frequency of nursing input to be reported at a patient level on all the wards using this tool. The trust believes this should provide a reliable means of assessing the relative input of nursing staff for each patient on the ward and is looking at ways of incorporating this data into dynamic acuity weightings for patients on those wards.

- **Royal Devon and Exeter NHS Foundation Trust** does not have the *Safer nursing care tool* data available electronically and believes alternative approaches may offer greater granularity to reflect the differences in nursing support needed by patients. Discussions with nursing staff suggest the two biggest influences on nursing time are the patient's cognitive ability (for example, dementia or delirium) and comorbidities – both of which can be picked up from existing ICD10 diagnosis codes. It also has information about nursing observations alongside indicators of risks (such as risk of falling, risk of pressure ulcer or the need for support with feeding) recorded on an electronic whiteboard. The trust intends to run a project this year to observe nurse time spent at a patient's bedside. It will then look for a correlation between actual time spent and comorbidity codes and risk indicator scores. The project will involve a medical ward, a surgical ward and a trauma/orthopaedic ward.

- **Nottingham University Hospitals NHS Trust** has been exploring nursing acuity for about six months and the trust has three months of nursing dependency scores for wards using the AUKUH tool. The trust is working with a software developer to analyse these scores alongside procedure and diagnosis codes and healthcare resource groups. This might enable certain groups of patients (by HRG or code) to be assigned different nursing dependency weightings. The trust also has bed management software that predicts length of stay based on a number of variables, including age, admission type, diagnosis, procedure and specialty and is keen to explore the correlation with nursing dependency.

CONCLUSIONS

There are many methods available to help nursing staff determine safe staffing numbers. Finance departments may find that acuity and dependency data is already being collected by some wards to support ward staffing planning and patient care. Some trusts, however, may find it easier to use a system driven by routinely collected data such as HRG and standardised nursing data for patients with these HRGs, rather than the actual nursing input as recorded by nurses at the point of care.

More work is required to determine the accuracy of each approach for costing purposes and trusts will be at different stages of implementing their own ward staffing arrangements. What is clear is that safe nursing staffing is a full board executive's responsibility and establishments must be checked and discussed every six months. NICE is expected to produce its first guidance topic and review/endorse any associated tools in July. Once NICE has reported on this, the HFMA will update this briefing. ■