Nursing metrics: measuring quality in patient care


Summary
Nursing metrics have been used increasingly in UK health services over the past two years to measure and improve nursing performance and to aid commissioners in linking funding to quality. This article provides an introduction to nursing metrics, including some of the nurse-sensitive indicators and the background to their development. It also provides examples of how metrics are used in practice to improve the care and experience of patients.

Introduction
Nursing metrics are ways of measuring the quality of nursing care. They include the use of indicators to measure nurse-delivered outcomes and patient experiences (Griffiths et al 2008). However, there is no clear definition of what nursing metrics are or what the phrase means. The concept of ‘metrics’ has been borrowed from the fields of management, business and finance, where the term is used to describe a set of measurements to quantify results or outcomes. The concept of metrics in health care was promoted in the document High Quality Care for All: NHS Next Stage Review (Department...
of Health (DH) 2008a), which made the case for a set of national metrics and a set of locally determined ‘local’ metrics. The publication proposed combining national and local metrics to form ‘clinical dashboards’, which could be used to summarise the performance of local NHS bodies. Clinical dashboards can be used as a tool to inform decisions to improve the quality of patient care and are discussed in more detail later. The nursing and midwifery aspects were outlined in the separate publication Framing the Nursing and Midwifery Contribution: Driving up the Quality of Care (DH 2008b), which supported the development of robust nursing metrics to demonstrate that the quality of nursing care can be measured and subsequently improved. The nursing metrics focused on outcomes for which nurses could realistically be held accountable.

**Principles of nursing metrics**

The healthcare theorist Donabedian (1980) believed that all health systems consisted of three factors: environment (or structure), processes and outcomes. The environment includes staff, the physical space (ward), equipment and resources. Processes include the way care is organised and delivered. Outcomes include the results of the care delivered, which could be from a range of qualitative and quantitative outputs, for example patient experience or infection rates. According to Donabedian (1980), measuring any of these three factors could give the assessor an indication of the quality of the whole system.

The document High Quality Care for All: NHS Next Stage Review (DH 2008a) placed a new emphasis on quality accounts and the development of quality-based contracts with commissioners. A quality account is a report on the quality of services provided by an NHS healthcare service. The report is published annually by each NHS healthcare provider and made available to the public. The DH suggested that payment to healthcare providers should be based, in part, on their performance which is measured against key metrics; this concept has been consolidated in the development of the Commissioning for Quality and Innovation (CQUIN) payment framework (DH 2010). Nurse-sensitive indicators—those that reflect nurse-delivered outcomes and their effects on patients, such as pressure ulcer development, falls and patient experience—form part of this framework. The CQUIN payment framework enables commissioners to reward excellence, by linking a proportion of English healthcare providers’ income to the achievement of local quality improvement goals. Nursing metrics and non-nursing metrics are not the same but are linked by the requirement to be measured.

**What do nursing metrics measure?**

For the past 20 years, the American Nurses Association has been formally compiling a database of nursing quality indicators, the National Database of Nursing Quality Indicators, using nursing audit data collected from 1,700 hospitals in the United States (US). These data currently include metrics relating to (American Nurses Association 2011):

- Nursing hours per patient, staffing levels, patient turnover and skill mix.
- Patient falls (with and without injury).
- Hospital-acquired infections.
- Pressure ulcer rate.
- Pain assessment (paediatrics).
- Nurse satisfaction and education.

There is no UK equivalent to this database, but information is now being collected against CQUIN framework measures and it may be possible to compile some of these data at some point in the near future.

Following a review of the evidence, Griffiths et al (2008) concluded that particular indicators could be used to measure nursing’s contribution to safety, effectiveness and compassion. These indicators were selected based on the strength of evidence supporting them (Box 1).

Griffiths et al (2008) determined that a good nursing indicator should be:

- Measurable using existing data and at reasonable cost.
- Evidence-based and linked to important outcomes.
- Able to inform remedial action.
- Sensitive to nursing—this sensitivity should be evidenced and there should be substantial variability associated with nursing practice.
- Recognised as important to nurses, managers and the public.
- Risk-adjusted to compare performance in different settings.
- Recognised as being the responsibility of nursing staff.

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**Time out 1**

Describe nursing metrics in your own words. Do you or your colleagues collect any data in your clinical area, and, if so, what are these data used for?
learning zone quality assurance

- One that minimises the risk of a ‘perverse incentive’ (where improving performance on the indicator detracts from overall performance).

Pressure ulcers, falls and staffing levels are discussed in more detail below to illustrate their use as quality indicators.

Time out 2
Consider your area of work and your role. If you wanted to improve the care being delivered, what would you measure and how would you go about this?

Pressure ulcers
Commissioners and NHS organisations are encouraged to include the assessment and reduction of pressure ulcers in local contracts as part of the CQUIN payment framework and quality accounts (Newton 2010). The NHS Information Centre has identified pressure ulcer incidence as a metric for health care, and it could mean that, in future, hospitals may be financially penalised if the rate of pressure ulcer development rises higher than the level agreed by the hospital and the commissioners. This not only focuses attention on this particular aspect of nursing care, but also emphasises the way data on pressure ulcer development are collected. Lomas (2009) highlighted the lack of a unified approach to pressure ulcer risk assessment, and reported a reliance on long-established assessment systems, such as the Waterlow Scale, that may no longer be as relevant as they were previously because they assess the risk of developing pressure ulcers, rather than measuring them when they occur. This may mean that it will be difficult to compare performance nationally across a range of organisations.

The use of CQUIN quality accounts means that commissioners will ask service providers, such as acute hospitals, to provide information on pressure ulcer development. To do this each area in a hospital will grade and record all pressure ulcers and report this internally to improve pressure area care and focus on reducing pressure damage. The data will be compiled and provided to the commissioners. Improved or maintained performance shows not only that nursing care is of satisfactory quality and patient harm is reduced, but also that the hospital (or other provider) is performing at a level that does not incur financial penalty. Box 2 describes a case study that used nursing metrics to reduce the prevalence of pressure ulcers in an intensive care unit.

Falls
Falls constitute the largest type of patient safety incident in hospital, particularly among older patients, and are also linked to increased bed days (Healey et al 2008). A reduction in the number of falls reduces patient harm and saves health resources. There is evidence that the number of falls can be reduced by initiating targeted programmes (Haines et al 2004). Fifty two acute trusts in England have included a reduction in the number of falls as an indicator under the CQUIN payment framework and quality accounts (NHS Institute for Innovation and Improvement 2011a). Care providers will be expected to submit data on falls to commissioners, with the expectation that the

Box 2
Case study: reducing the prevalence of pressure ulcers
Elliott et al (2008) described the case of a 14-bed intensive care unit where nurses found the prevalence of pressure ulcers to be high. Over the next 26 months, the nurses assessed every patient on the unit for pressure ulcers each month. They recorded the site and severity of any pressure ulcers, including grade 1 ulcers, and evaluated the risk factors for each patient. Training was provided to ensure the techniques used were consistent. The results were published monthly on a staff noticeboard. Staff were encouraged to use appropriate pressure-relieving devices, such as mattresses, as a result of these assessments. Awareness training was carried out when the number of pressure ulcers increased. During this period, the prevalence of pressure ulcers fell from 50% to 8%. Publication of the data provided feedback for nurses and allowed them to regain control of pressure area care.

Box 1
Indicators that reflect safety, effectiveness and compassion in nursing care

Safety
- Failure to rescue (death among patients with treatable complications).
- Falls.
- Healthcare-associated infection.
- Healthcare-associated pneumonia.
- Pressure ulcers.

Effectiveness
- Staffing levels and patterns.
- Staff satisfaction.
- Staff perception of the practice environment.

Compassion
- Patients’ experience of care.
- Patients’ experience of communication.

(Griffiths et al 2008)
number of falls will be reduced. However, no clear definition or categorisation of patient falls is available to assist comparison (Hauer et al 2006).

Box 3 illustrates how data can be used as part of a targeted programme to reduce falls.

Nurse staffing levels Staffing levels is one of the factors associated with the environment or structure in a health system. Kane and colleagues (2007) carried out a systematic review of the evidence linking staffing levels to patient outcomes. This review found that increased numbers of registered nurses were associated with lower mortality rates in medical and surgical wards and in intensive care units. They also found a link between the rate of healthcare-acquired pneumonia and the level of trained nurses working in a specific area (Kane et al 2007).

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Some nurse-sensitive indicators, such as the number of falls and incidence of pressure ulcers, were not. This has led to interest in using staffing levels as an indicator of the quality of nursing care. Box 4 describes different ways that staffing levels can be used to measure quality of care.

Measuring the patient experience of care Part of the challenge in developing meaningful nursing metrics is how to incorporate patient feedback and views into the system. Nursing is essentially a patient-centred activity with a significant qualitative component. Griffiths et al (2008) suggested that one area of potential measurement was the patient’s experience of compassion. In practice, however, the development of such an indicator based on patient experience has proved problematic and has led to widespread criticism that such a qualitative factor could be measured reliably (Ford 2009).

The use of patient experience questionnaires could provide a more straightforward metric. In the US, patient satisfaction and experience surveys are used routinely and hospitals are required to participate in national schemes. Sen et al (2005) reported on a US survey of healthcare providers where 75% believed that capturing the patient experience through surveys was important for the long-term success of their healthcare programmes.

In the UK, patient experience surveys that are focused specifically on the patient’s experience of waiting times and of access to GP appointments inform the performance-related aspect of GP salaries (Kontopantelis et al 2010). In addition, High Quality Care for All: NHS Next Stage Review (DH 2008a) places patient experience at the centre of quality assurance. This implies the need for accurate measurement of the patient experience.

The type of patient experience survey being used increasingly by healthcare providers in the UK and the US involves a questionnaire that asks patients to rate their experiences of different aspects of care on a scale, with scores ranging from unsatisfactory to a high level of satisfaction. These questionnaires have been shown to be successful in identifying patients’ concerns and areas where care is poor (Jenkinson et al 2002), and are popular with patients (Boyer et al 2006). Re-surveying patients following the introduction of actions to address specific issues can improve the quality of the patient experience. Questionnaires can also be used to compare different areas of care within or between healthcare providers.

Patient stories or narratives can also be used to assess the patient’s experience, and with some

**BOX 3**

**Case study: preventing falls**

Ross (2009) described the case of a district general hospital which collected data on falls on all wards over a three-month period, and also analysed the causes of these falls. The project leaders devised a falls reduction observation tool which focused on reducing high-risk activities. Staff training on the new tool and on methods of reducing falls was given as part of the project. Within three months of implementing the measures there was a 68% reduction in the number of falls.

(Ross 2009)

**BOX 4**

**Nurse staffing levels as indicators**

Kane et al’s (2007) systematic review considered the number of trained staff on duty per shift rather than the total numbers of staff (trained and untrained). Lankshear et al (2005) found that it was the number of trained staff on the shift that had the most marked influence on the quality of nursing outcomes. Griffiths et al (2008) acknowledged the link between quality and staffing levels, but argued that it would be difficult to use staffing as a quality indicator and set benchmarks for different clinical areas. The use of actual staffing versus planned staffing levels was suggested as an alternative indicator.

analysis improve quality (Dawood and Gallini 2010). This approach is similar to the methods used in qualitative research.

**Clinical dashboards**

The different metrics being captured and reported by a healthcare organisation can be combined to form a range of scores and reports. This combined scoring is known as a ‘clinical dashboard’. A clinical dashboard can include metrics from infection rates, number of falls, and number and grade of pressure ulcers. These combined reports can be used to compare and consider the overall health and performance of different wards or areas within one hospital. They can also be used by commissioners to decide whether a provider has met the clinical performance criteria for payment. The reports can often appear as a list of scores that are given green, amber, or red ratings so that overall performance can be summarised at a glance.

Clinical dashboards can also be used in the delivery of service improvement projects which allow clinical staff to see where work still needs to be done.

A good example of this is the Productive Ward project (NHS Institute for Innovation and Improvement 2011b). This project incorporates ‘lean’ principles in the running of hospital wards. Lean principles focus on maximising value for the users of any service and reducing waste across a whole process, not just at key points (Womack and Jones 2003). The project aims to increase the amount of time nurses spend with patients, reduce waste of resources such as the ward’s stock of equipment and drugs, and increase the control nurse managers have over their work area. One of the most important approaches to delivering these changes is for staff to concentrate on measuring performance indicators at ward level and to act to improve these indicators. In collecting a range of clinical metrics and compiling them, staff participating in the scheme are effectively using a clinical dashboard to indicate ward performance. The number and location of falls, number and grade of pressure ulcers, and number of drug errors are typical of what might be recorded and displayed on the ward’s noticeboard.

**Specialist metrics**

Griffiths et al (2008) pointed out that the literature on nurse metrics is currently dominated by general inpatient wards. In the author’s opinion the measure of nursing quality outside general inpatient wards is not well served by many of the most widely used metrics. For example, wards for older people could be disadvantaged by comparisons based on data on falls or pressure ulcer development in general wards, as nurses in these clinical areas care for a much more frail patient group who are more prone to falls and pressure ulcers. Griffiths et al (2009) explored the development of metrics and indicators for ambulatory chemotherapy. The indicators identified were the patient experience, management of nausea and vomiting, and safe administration of medicines. In this review the authors found that there was little evidence on which to base the indicators, but with further work these could be developed. Griffiths et al 2009 recognised the need for involvement of patients and the importance of capturing their experience. The authors also acknowledged that the data should have already been collected, negating the need for nursing staff to collect additional information (Griffiths et al 2009).
Conclusion

An emphasis on the quality of nursing care and keeping quality high on the agenda of commissioners and managers is vital for the continued improvement of nursing. In this respect nursing metrics may be both important and effective. Metrics could allow nurses to regain control of nursing quality. It seems likely that to achieve this goal, measurement and analysis of nursing care outcomes will become more important. For this to be meaningful, the outcomes measured need to be consistent and sensitive, and have the ability to be measured without detracting from the core role of nursing, that of providing care for patients.

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