

Quality indicators are important measurement tools for pharmacy

This is the first article in a new series that looks at quality assessment in clinical pharmacy services. Here, Raliat Onatade describes how quality in health care can be measured and how quality indicators can be developed.

Assuring the quality of health care services is a basic concept underlying the provision of services, and has become increasingly important in the NHS. It is reasonable to expect that the quality of clinical pharmacy services should also be assessed. Many organisations have set standards for clinical pharmacy practice, but, indicators allow the quality of care and services to be measured. At King's College Hospital, we have developed a set of quality indicators for our clinical pharmacy service. Adapted from the literature to suit our local priorities and circumstances, these indicators provide a means to not only measure aspects of the service, but also demonstrate

and monitor improvements, by way of a programme of repeated testing, feedback, and targeted service developments to drive improvement. This article provides an overview of the quality assessment of health care, clinical pharmacy and pharmaceutical care, and describes how this was applied to the development of our quality indicators.

What is quality and how can it be measured?

Quality of care is usually defined as 'the degree to which health services for individuals and populations increase the likelihood of desired health outcomes and are consistent with current professional knowledge'.¹

However, there are different views about what constitutes quality depending on one's roles and responsibilities within the system.² Indicators are explicitly defined and measurable items, which act as building blocks in the assessment of care.³

It is well known that there are gaps between recommended practice or care and that which is actually given or received,¹ but the multi-dimensional and multi-professional nature of health care makes it notoriously difficult to assess. Despite this, quality indicators now abound, including those that are specific to

diseases, medication or patient-groups. This reflects the huge interest in this topic.

There are several different ways of classifying quality indicators, but this article will focus on the most common paradigm of structure, process and outcome.^{3,4} Patient outcomes are frequently thought of as the best measures of care quality.³ What interests most people is whether care has improved the patient's health, and a good outcome (however it is defined) is the most desirable endpoint of an episode of care. Also, the desired (or undesirable) outcome is often easily defined, whether it is recovery, survival, symptom improvement, disability or disease.^{3,5,6,7} Outcomes are also of greater interest to patients and can cover many different aspects of care. For an outcome to be a valid measure of quality, it must be closely related to processes of care that can be manipulated to affect the outcome. Nevertheless, outcomes as a measure of quality have their limitations (Box 1).

Considering clinical pharmacy, one obvious problem with using patient outcomes as a measure of quality is that it may be impossible to single out the effect that a pharmacist's input had on the outcome.⁹ Changes in patient knowledge, lifestyle changes and satisfaction with care and services are considered outcomes, and these are often measured by providers of pharmacy services. Response to drug therapy (such as INR, the presence or absence of bleeding episodes during treatment with warfarin, blood pressure control, blood glucose measurements) may also be easily measurable. Where, for example, a pharmacist-led anticoagulation clinic is part of a clinical pharmacy service, there will be

Box 1. Features of outcome measures as indicators of care quality^{1,4,5,6,7,8}

Advantages

- Outcomes are intrinsically important
- Outcome measurements will reflect those aspects of care that are not easily measured
- Outcome data is often routinely collected and so may be easily available

Limitations

- Outcome measures are not a direct measure of the quality of health care provided
- Variations in outcome may be due to several factors, such as:
 - patient type
 - differences in data collection
 - chance
 - quality of care
- Outcomes may be difficult to measure and interpret
- It is not always obvious what needs to be done to improve outcomes
- Often, outcomes occur a long time after the care has been given
- A poor outcome is not necessarily indicative of poor care and a good outcome does not necessarily reflect good care
- Outcome measures may need large patient numbers to be valid
- For an outcome measure to be valid, one must be able to demonstrate that the outcome being measured can be affected by different processes or organisational features

The place of outcome indicators in quality assessment

- Outcomes are said to be the ultimate validators of the effectiveness and quality of care
- In general, outcome indicators are most relevant if a broad perspective is required (such as, mortality and morbidity rates)

Quality assessment

Box 2. Features of process indicators^{1,4,5,6,7,8}

Advantages

- Process indicators avoid confounding factors by looking at whether particular activities were undertaken
- Process indicators directly measure the care that was provided
- Process indicators are easier to interpret
- Process measures are more sensitive than outcome measures to differences in the quality of care

Limitations

- For a process indicator to be valid, it must previously have been shown to produce a better outcome
- Process indicators must be closely related to an outcome people care about

Process indicators are used when

- Quality improvement is the goal of the measurement process
- An explanation is sought for why specific providers or practitioners achieve particular outcomes
- Short time frames are necessary
- Tools to adjust for patient factors are lacking
- The outcome lacks a valid or reliable measurement method
- Outcome measurement is not economically or logistically possible
- The outcome of interest is far removed from the process
- The process measures are closely associated with outcomes

outcome measures that can be used to assess the quality of such a service and/or the pharmaceutical care provided. Because clinical pharmacy services aim to ensure rational, safe, cost-effective use of medicines, economic outcomes (such as cost savings and reductions in drug expenditure) may also be valid measures of the quality of a service. However, one must also consider whether the service can influence the economic outcome sufficiently.

Another approach to quality measurement is assessing the process of care. Process indicators measure the activities and tasks undertaken in giving care and how well they were carried out.^{3,6} Examples are the physical examination, performance of diagnostic tests, prescribing, the surgical procedure undertaken.^{3,10} Prescribing and medicines-use indicators are very common process indicators used to assess the quality of care. Clinical pharmacy standards by definition are based on processes, such as how to endorse a chart, monitoring drug and biochemistry levels and documenting contributions. Monitoring gentamicin therapy (checking levels, adjusting doses) is therefore a process. The patient's response to treatment with gentamicin (improvement in infection markers, recovery, development of adverse effects) are outcomes. Because valid process indicators must have a demonstrable link to a

quality of clinical pharmacy services, process indicators are most widely used. A process indicator can measure whether or not a patient with atrial fibrillation (AF) receives appropriate anticoagulation, whereas rates of stroke in such patients may be difficult to collect and interpret.⁶ Failures to provide appropriate care or failure to provide care without error can result in considerable harm to patients. For this reason process indicators are critical measures of quality (see Box 2).¹

Apart from what happened to, or what was done for, the patient, a third accepted way of assessing care is to look at the capabilities of the health system, organisation or unit providing care. Structural indicators describe such things as facilities, equipment, staffing, resources, training, presence of policies and guidelines.^{1,5,6} The assessment of structure is a judgement on whether care is being provided under conditions that are either conducive or detrimental to the provision of good care. Structural indicators that predict variations in processes or outcomes of care are of most use.⁶ In hospital pharmacy practice, examples of structural indicators may include the integration of specialist pharmacists into multi-disciplinary teams, provision of an adverse drug reaction (ADR) monitoring service, availability of protocols or guidelines and number of

good outcome, one might question the validity of measuring, for example, the achievement of endorsement standards such as writing 'with or after food' on prescriptions for NSAIDs, since there is no evidence that this makes a difference to the development of NSAID-induced peptic ulceration (an outcome) or indeed, whether such an endorsement influences whether the drug is administered at meal-times (a process).

It is not surprising that in measuring the

pharmacists per 100 beds. Some clinical pharmacy structural indicators have been shown to predict outcomes in improvement. Bond and colleagues showed in American hospitals that clinical pharmacy services (including a pharmacist drug history-taking service, provision of education, participation on ward rounds, ADR management and drug-protocol management) were associated with reduced ADR rates. Increased clinical pharmacy staffing also reduced ADRs.¹¹ In the UK, more recently, Borja-Lopetegui and co-workers found an association between high activity in clinical medicines management, pharmacy staff establishment and lower hospital mortality rates.¹²

Why and how should the quality of clinical pharmacy services be assessed?

Quality should be measured to drive improvements in patient care and outcomes. Standards aim for consistency in practice by ensuring everyone understands what needs to be done and how, and indicators are based on standards of care. Most measures of clinical pharmacy service quality are either structural or process-based. Historically, pharmacists have not measured the outcomes of their service (except perhaps patient satisfaction) because it has been difficult to directly relate our activities to patient outcomes. With our increased involvement in, and responsibility for, direct patient care, it will become much easier and more important to relate our activities (processes) to outcomes. In assessing quality, one should use a combination of all three types of indicators because each element of quality is dependent on the others — certain structures must be available to support appropriate processes of care, which in turn result in specific outcomes.⁸ Using an appropriate mixture of the three may therefore give a better measure of quality (Box 3).⁷

In considering how to assess the quality of our service, the literature was searched for examples of appropriate measures. Although there are several examples of desired and measurable service standards, published work from the UK on quality indicators, which met the criteria detailed above, was lacking. Radley and colleagues in Tayside developed and audited four standard

Box 3. Eight essentials of performance measures or quality indicators¹³

- Use a balanced set of measures
- Make sure you measure what matters to service users and other stakeholders
- Involve staff in determining the measures
- Include both perception measures and performance indicators
- Use a combination of outcome and process measures
- Take account of the cost of measuring performance
- Have clear systems for translating feedback from measures into a strategy for action
- Measurement systems need to be focused on continuous improvement, not a blame culture

statements of service quality.¹⁴ After local discussion with lead clinical pharmacists, we based our performance indicators on the Tayside indicators, but adapted them to suit our priorities. Box 4 shows the original indicators and our modified statements, with an indication of the type of indicator each one represents. Structural indicators were not included, for two reasons – we are continually reviewing and informally benchmarking our staffing levels and services provided, and new policies and procedures are implemented whenever gaps are identified. We therefore considered that formally measuring these aspects would be unlikely to lead to a change in the rate of improvement. Also, making changes to structural indicators are often strategic decisions, which makes them more removed from the day to day work of staff delivering care. It was important that the indicators were relevant to clinical staff and their daily work so they could see how their efforts were making a difference.

Equally, it was important that all aspects of the patient pathway were considered, so the quality statements encompass the full acute patient pathway, from admission through to discharge.

The next step was to take baseline measurements to translate the statements into indicators and to set targets for improvement. Each indicator has now been measured at least twice. We have set up an annual quality improvement programme for measuring and assessing the indicators. Further articles will describe this work for each indicator. Quality indicators should be under continual review to ensure they remain relevant to the service and care provided. Future articles will also discuss our reviews on the feasibility and value of the indicators as quality measures. ✚

Declaration of competing interests

The author declares she has no competing interests.

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Box 4. Quality statements for the clinical pharmacy service at King's College Hospital

Our statements	Indicator type*	Radley et al**	Rationale for change
Each patient will have an accurate medication history within two working days of admission	Process	Each patient will have an accurate medication history	It is important to take drug histories as soon as possible after admission, therefore a reference to timeliness was appropriate
Patients will be discharged with all medication already available on the ward with no additional dispensary input	Process, outcome	Timely and effective discharge planning for each patient is enabled	Waiting for discharge medication is the most common complaint patients have about pharmacy. By ensuring availability of discharge medication waits are minimised. This emphasises patients' and the trust's priorities
There is seamless continuation of prescribed therapy (during inpatient stay) to achieve the desired patient outcome	Process	There is seamless continuation of prescribed therapy to achieve the desired patient outcome	No change
All pharmaceutical care issues have been addressed for each patient	Process, outcome	Prescribed therapy for each patient is assessed and medicines-related care issues are addressed	Focus on pharmaceutical care

*=Indicator type represented by our statement; **Statement by Radley et al¹⁴