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 and care, and that which is actually given or received,4 but the multidimensional 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.5,6 Patient outcomes are frequently thought of as the best measures of care quality.7 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.8,9 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.10 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

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**Box 1. Features of outcome measures as indicators of care quality**

<table>
<thead>
<tr>
<th>Advantages</th>
<th>Limitations</th>
<th>The place of outcome indicators in quality assessment</th>
</tr>
</thead>
<tbody>
<tr>
<td>□ Outcomes are intrinsically important</td>
<td>□ Outcome measures may be difficult to measure and interpret</td>
<td>□ Outcomes are said to be the ultimate validators of the effectiveness and quality of care</td>
</tr>
<tr>
<td>□ Outcome measurements will reflect those aspects of care that are not easily measured</td>
<td>□ Variations in outcome may be due to several factors, such as:</td>
<td>□ In general, outcome indicators are most relevant if a broad perspective is required (such as, mortality and morbidity rates)</td>
</tr>
<tr>
<td>□ Outcome data is often routinely collected and so may be easily available</td>
<td>□ Patient type</td>
<td></td>
</tr>
<tr>
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<td>□ Differences in data collection</td>
<td></td>
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<tr>
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<td>□ Chance</td>
<td></td>
</tr>
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<td>□ 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</td>
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**Quality assessment**

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Box 2. Features of process indicators

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<td>Process indicators avoid confounding factors by looking at whether particular activities were undertaken</td>
<td>For a process indicator to be valid, it must previously have been shown to produce a better outcome</td>
</tr>
<tr>
<td>Process indicators directly measure the care that was provided</td>
<td>Process indicators must be closely related to an outcome people care about</td>
</tr>
<tr>
<td>Process indicators are easier to interpret</td>
<td>Process indicators are used when</td>
</tr>
<tr>
<td>Process measures are more sensitive than outcome measures to differences in the quality of care</td>
<td>Quality improvement is the goal of the measurement process</td>
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- 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. Examples are the physical examination, performance of diagnostic tests, prescribing, the surgical procedure undertaken, and the drugs chosen.

Process indicators are used when an explanation is sought for why specific providers or practitioners achieve particular outcomes. Short time frames are necessary and the outcome lacks a valid or reliable measurement method. Outcome measurement is not economically or logistically possible and the outcome of interest is far removed from the process.

Process indicators are easier to interpret and measure, for example, whether the drug is administered at meal-times (a process).

It is not surprising that in measuring the quality of clinical pharmacy services, process indicators are used most widely. A process indicator can measure whether or not a patient with atrial fibrillation (AF) receives appropriate anti-coagulation, whereas rates of stroke in such patients may be difficult to collect and interpret. 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).

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. 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.

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 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, drug-protocol management) were associated with reduced ADR rates. Increased clinical pharmacy staffing also reduced ADRs. In the UK, more recently, Borja-Lopez and co-workers found an association between high activity in clinical medicines management, pharmacy staff establishment and lower hospital mortality rates.

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.

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...
statements of service quality. 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 consid-
ered, 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.

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

<table>
<thead>
<tr>
<th>Our statements</th>
<th>Indicator type*</th>
<th>Radley et al**</th>
<th>Rationale for change</th>
</tr>
</thead>
<tbody>
<tr>
<td>Each patient will have an accurate medication history within two working days of admission</td>
<td>Process</td>
<td>Each patient will have an accurate medication history</td>
<td>It is important to take drug histories as soon as possible after admission, therefore a reference to timeliness was appropriate</td>
</tr>
<tr>
<td>Patients will be discharged with all medication already available on the ward with no additional dispensary input</td>
<td>Process, outcome</td>
<td>Timely and effective discharge planning for each patient is enabled</td>
<td>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</td>
</tr>
<tr>
<td>There is seamless continuation of prescribed therapy (during inpatient stay) to achieve the desired patient outcome</td>
<td>Process</td>
<td>There is seamless continuation of prescribed therapy to achieve the desired patient outcome</td>
<td>No change</td>
</tr>
<tr>
<td>All pharmaceutical care issues have been addressed for each patient</td>
<td>Process, outcome</td>
<td>Prescribed therapy for each patient is assessed and medicines-related care issues are addressed</td>
<td>Focus on pharmaceutical care</td>
</tr>
</tbody>
</table>

*Indicator type represented by our statement; **Statement by Radley et al

Box 3. Eight essentials of performance measures or quality indicators

- 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 blames culture

References