Can clinical pharmacy services be quantified?

Ron Purkiss asks us to think about how pharmacy services are measured and quantified when attempting to prove their financial worth

The development of clinical services is supported by the Healthcare Commission report: *The best medicine*.[1] The report concludes that effective management of patients' medicines reduces length of stay and readmission of patients to hospital. This is based on the evidence-based practice available. In Appendix B of the report under 'Recommendations for Trusts', 6c recommends that: 'Trusts whose clinical pharmacy support to wards is below average should review their current practices with a view to identifying whether changes in staffing levels and/or deployment could lead to improved services.'

The Healthcare Commission report demonstrates that the provision of clinical services and pharmacy staffing levels are variable across England and Wales. In order to benchmark services, the Healthcare Commission tried to define aspects of clinical services in the guidance provided to conduct the audit. The variability of many of the returns and anecdotal information would indicate that the interpretation of the guidance was subjective.

How best to benchmark and quantify clinical pharmacy services?

Several attempts have been made to standardise and quantify clinical pharmacy and the staff needed to provide the service. One of the simplest ways for a Trust to compare its efficiency is to benchmark with other similar Trusts. It is assumed that similar Trusts provide similar services to the same standard. Recent benchmarking of pharmacy services conducted by my Trust has confirmed the Healthcare Commission's data that what is called 'clinical services' are provided by variations in staffing levels. This either demonstrates that some hospitals are more efficient, or we cannot be comparing like for like.

Several surrogate measures have been used to try to quantify clinical services. This includes:

- number of pharmacist interventions
- number of reported adverse events
- number of beds
- bed turnover
- patient severity ratios.

In 1997 I was able to relate the staffing requirements of a number of pharmacy services to an easily available, quantifiable measure.[2] However, I opted for a surrogate measure for clinical pharmacy: 1.0 WTE D Grade Pharmacist per area of expertise or directorate. Over the last decade clinical services have developed and today this is insufficient resource to provide what I consider to be an adequate clinical service.

Clinical pharmacy standards are another attempt to specify what is expected from a pharmacist in a given period of time. As with any standard this tends to be the minimum service that can be expected, and non-quantifiable terms are still used within the standards, such as 'twice daily visits'.

Service Level Agreements (SLA's) between service providers have led to clinical services being quantified in terms of frequency of visits or amounts of pharmacists' time available within the SLA. It does not address the problem of the false assumption that everybody agrees on what a clinical service is.

Balancing the books must be considered

Service Line Reporting (SLR) is another method being looked at to quantify the costs of a pharmacy service in order for the NHS to move from a budget-based finance system to an income and expenditure-based system more akin to the business environment. Services such as pharmacy are apportioned to admitting directorates on the basis of volume of pharmacy computer transactions per directorate. Some Trusts have modified this to number of items dispensed. Clinical pharmacy costs are being allocated on the number of hours of staff time associated with that activity.

However, this is a very crude measure of any service.

The evidence suggests that pharmacy services are well worth the investment

It would appear that whatever it is we call clinical pharmacy has considerable benefits. The practice-based evidence for clinical pharmacy is extensive. Child, Cantrill and Cooke list more than 200 practice research papers providing good evidence of the benefits of clinical pharmacy.[3] A 2003 meta-analysis cited 1,465 papers, and after applying strict economic criteria, 59 articles from Australia, Canada, USA and the UK demonstrated a positive economic benefit of clinical pharmacy — the authors noted that for every $1 invested, clinical pharmacy saved $4.[4] A systematic review of 364 publications demonstrated that clinical pharmacists reduce adverse drug events, shorten length of stay, reduce medication errors, lower medication use, improve medicines reconciliation on admission, lower mortality and reduce costs.[5]

A landmark British study demonstrated that clinical pharmacy reduced length of stay by two days (P=0.003), decreased rates of readmission over a 12-month follow-up and increased the time to readmission by an average of 20 days.[6] The number needed to treat for clinical pharmacy to prevent one readmission was 12. Other benefits were taking accurate drug histories, use of patients own drugs, improved discharge, improved patients knowledge of their medicines, improved user satisfaction and better primary/secondary care communication. The extrapolated economic benefit of the reduction in length of stay was an opportunity cost of £3.3m to the Trust.

Unfortunately in the studies above little attempt was made to define what constitutes a clinical service and what staffing, in terms of training and numbers, are needed to provide a service.

The practice of clinical pharmacy meets the classic marketing characteristics of a service: intangibility, inseparability, heterogeneity, perishability and ownership.[7] When a patient receives the service nothing tangible is transferred, the service is provided by a pharmacist to a patient and it varies depending on the pharmacist's skills and knowledge and the patient's needs, and once received it is perishable in the sense that it cannot be resold.

Measuring clinical pharmacy services

The NHS is obsessed with measurements and targets, trying to prove that what is being provided is value for money. Surrogate markers are used to place a monetary value on a service that is difficult to measure.

Decisions made are based on, at best, limited data and, for the most part, on perceptions. We do not know what clinical pharmacy, as practised, is, we do not know the resources needed to provide it so that it is provided efficiently, and we do not know how best to provide the service. What we do know is that it is variable and meets the classic characteristics of a service. Given this lack of data, the conclusion that could be most appropriate is, that clinical pharmacy is the service provided with the resources that the Chief Pharmacist can obtain, that may or may not meet the needs of patients, medical, nursing and management staff. Practice research is needed to answer some of these questions.

Declaration of competing interests

The author declares that he has no competing interests.

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References

1. Commission for Healthcare Audit and Inspection. *The best medicine. The management of medicines in acute and specialist trusts.* Commission for Healthcare Audit and Inspection. London, 2007.
2. Purkiss R. How to get the staff you need. *Pharmacy in Practice* 1997; **7:** 393–6.
3. Child D, Cantrill J, Cooke J. The Effectiveness of hospital pharmacy in the UK: methodology for finding the evidence. *Pharmacy World and Science* 2004; **26(1):** 44–51(8).
4. Shumock, GT et al. Evidence of the economic benefits of clinical pharmacy services 1996-2000. *Pharmacotherapy* 2003; **23(1):** 113–25.
5. Kaboli PJ, Hoth AB, McClimon BJ, Schnipper JL. Clinical pharmacists and inpatient medical care: A systematic review. *Archives of Internal Medicine* 2006; **166:** 955–64.
6. Scullin C, Scott MG, Hogg A, MacElnay JC. An innovative approach to integrated medicines management. *Journal of Evaluation in Clinical Practice* 2007; **13:** 781–8.
7. Purkiss R. Prove your place in the market. *Pharmacy in Practice* 1997; **7:** 26–30.