

Case studies

The role of quality in pharmaceutical care management

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Abstract

Pharmaceutical care has caused considerable attention in the pharmacy literature, because this concept alters the care and services that pharmacists provide to the public. In the pharmaceutical care concept, pharmacists must ultimately accept their responsibility not only to dispense drugs but also to identify, correct and prevent drug-related problems. Pharmaceutical care represents a significant transition in the profession of pharmacy, where the primary focus is the patient and outcomes of care rather than the distribution of drug products. This article evaluates the concept of pharmaceutical care as a standard of quality care for many hospital pharmacy practices. As pharmacy directors accept this concept and pharmacists begin to provide pharmaceutical care, it is important to elaborate the concept further.

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Introduction

Pharmaceutical care represents a significant transition in the profession of pharmacy, where the primary focus is the patient and outcomes of care, rather than the distribution of drug products (Hepler and Strand, 1990). The Institute of Medicine (IOM) has advanced one definition of quality of care as "the degree to which health-care services for individuals and populations increase the likelihood of desired health outcomes and are consistent with current professional knowledge" (Lohr, 1990). This definition has much in common with the Hepler and Strand (1990) definition of pharmaceutical care as "the responsible provision of drug therapy for the purpose of achieving definite outcomes that improve a patient's quality of life". Both definitions direct attention to the application of health services for the purposes of achieving specific health outcomes.

The emphasis on quality in health care focuses increasing attention on the management processes required for providing services to patients (Shah *et al.*, 1994). Pharmaceutical care results from the application of the principles of quality management to the use of medications. Quality management can be summarised as requiring:

- dialogue with consumers of care;
- teamwork among providers of care;
- process definition and assignment of responsibility;
- measurement and recording of data to prompt continuity of care (UKCPA, 1996).

The delivery of pharmaceutical care therefore requires a quality system to be established for the individual treatment of patients with medications. By its nature, the care of hospitalised patients has always required the contributions of professionals trained in many different fields and, clearly, pharmacy has always played a critical role in patient care. It is the function of the multidisciplinary team to implement a system for the overall management of the use of medications in patients. It is the function of the pharmacist to take responsibility for that system of medication usage which will provide the required level of quality assurance. Quality assurance is the traditional strategy that has been used to enhance quality care. The test of quality assurance in drug therapy is the

demonstration that the usage of medications accords with patient needs. The patient's pharmaceutical care needs can be said to have been met when his/her drug treatment meets identified objectives, in terms of clinical benefits, safety, efficiency of medication usage and patient preferences (Mount, 1994).

Many patients present with a complex combination of illnesses and are in need of an equally complex combination of therapies. Pharmacists are beginning to view the patient holistically, that is, as a single individual with an assortment of needs – including health, economic, and social – that should be addressed and tended to in harmony.

At this time, many forces external to pharmacy are dramatically affecting the health-care delivery system. Moreover, advances in biomedical technology and the specialisation of medical care have drastically altered the way health care is practised. Such alterations present problems for pharmacists reluctant to adapt but, in contrast, they provide great professional opportunities for those focused and prepared to provide solutions to their patients' problems. Gouveia (1993) stressed the idea of continuously improving outcomes at both the patient level and the practice level. Hepler (1993) applied three propositions connecting pharmaceutical care and continuous quality improvement (CQI):

- (1) pharmaceutical care is the application of CQI principles at the patient level;
- (2) at the patient level, CQI is a way to put the word "care" into action; and
- (3) pharmacists practising CQI for the outcomes of drug therapy will discover pharmaceutical care.

Successful use of TQM/CQI process to improve quality in hospital pharmacy departments

University of Kansas Medical Center

Hospital background

The University of Kansas Medical Centre (Goodwin and Sanborn, 1995) is a 465-bed teaching hospital. For the past several years it has used TQM/CQI methods throughout the facility. Cross-functional teams including physicians, pharmacists, nurses and other health-care professionals continually seek improvement in a number of areas. The pharmacy department at Kansas hires

104 full-time-equivalent pharmacists and support pharmacy technicians, who provide unit-dose, intravenous admixture, and fully decentralised clinic services. The department has developed its own quality improvement plan in compliance with the Joint Commission on the Accreditation of Healthcare Organisations guidelines. The Kansas pharmacy department has a quality improvement planning process that relates the guidelines to the FOCUS-PDCA quality improvement mnemonic and defines each guideline as a quality assessment (QA) or quality improvement (QI) function. These guidelines include the following:

(1) *Assign responsibility-plan:*

- appoint director of the department/designee(QA);
- determine the leader and team (QI);
- share responsibility with all (QI).

(2) *Delineate scope of care/service:*

- determine the department's function (QA);
- identify internal and external customer (QI);
- identify customer's needs/expectations (QI).

(3) *Prioritise aspects of care/service:*

- determine high-volume, high-risk, problem-prone areas, high cost of poor quality (QA), or opportunity for improvement (QI);
- identify possible cross-discipline problems (QI).

(4) *Select indicators:*

- choose indicators that conform to customer needs/expectations (QA/QI).

(5) *Establish thresholds for evaluation:*

- establish control limits, tolerance levels, or performance standards (QI/QA).

(6) *Collect and organise data – do:*

- compile existing data source (QA/QI);
- determine frequency of data gathering (QA/QI);
- gather data (QA/QI).

(7) *Evaluate results:*

- examine data (QA/QI);
- analyse data to identify areas of non-conformance with thresholds (QA).

(8) *Determine and implement appropriate action to improve care/service or to correct problem:*

- choose the best plan or action to be implemented (QA/QI).
- (9) *Evaluate effectiveness of the action – check:*
- document level of improvement (QA/QI).
- (10) *Communicate and report relevant information – act.*
- (11) *Continuously monitor/improve process:*
- evaluate effectiveness of new strategy on the basis of established threshold or customer expectations (QI);
 - monitor to ensure that you are holding the gain (QI).

The pharmacy department used the FOCUS-PDCA model to investigate the problem, eliminate it, and improve the quality. Duncan *et al.* (1991) have devised a useful quality improvement tool that consolidates the principles of TQM/CQI in a convenient mnemonic device: FOCUS-PDCA divides the TQM/CQI process into the following steps:

- *F* Find a process to improve (customer focus).
- *O* Organise a team that knows the process (cross-functional team).
- *C* Clarify the current knowledge of the process (situation analysis).
- *U* Understand the causes of process variation (process mapping).
- *S* Select the process improvement (proposed improvement).
- *P* Plan the improvement (implementation-plan).
- *D* Do data collection, data analysis, and improvement (implementation-execution).
- *C* Check data for process improvement and customer outcomes (implementation-measures).
- *A* Act to hold the gain and continue improvement (implementation-follow-up).

The FOCUS-PDCA model simplifies the TQM/CQI implementation stage by dividing it into a number of smaller, more easily accomplished steps.

Management on the basis of mission and vision

The quality improvement plan of the Kansas pharmacy department has the overall purpose of maintaining and continuously improving the high quality of pharmaceutical care and services and the effective use of those services

and resources. This purpose is in accord with the department's mission and vision, recognising that each hospital pharmacy department must articulate its own vision and mission to reflect its commitment to pharmaceutical care. The following are what this researcher considers to be the essential elements and those that guide the pharmacy department at Kansas as it strives to use the TQM/CQI process to improve quality in the department. The greatest challenge is to create a department in which every employee, section, and function is linked inextricably to the department's mission and vision.

The following is an example of how the pharmacy department at Kansas used the TQM/CQI technique successfully to improve quality. The FOCUS-PDCA model was used to investigate the problem, eliminate it, and improve quality:

- *Documentation of pharmacist intervention.* To demonstrate the impact of clinical pharmacy services on patient care, documentation of pharmacist interventions is essential. A focus team, composed of several members of the pharmacy staff who continually seek out and investigate opportunities for the improvement of clinical services, noticed that the number of interventions reported was substantially greater than normal during the months of June, August, and December.

The questions raised by this observation were:

- Why did the increase occur during these three months?
 - What implications did this increase have in regard to quality of service and patient care?
- *Find process to improve.* Through discussions with pharmacy staff, the focus team realised that these increases in reporting occurred during months when pharmacists were not teaching pharmacy students. The decentralised clinical pharmacists at The University of Kansas Medical Centre act as preceptors for the clinic pharmacy clerkships of all students attending the University of Kansas School of Pharmacy. These clerkship rotations require a significant amount of pharmacist time for preparing and co-ordinating teaching activities. The focus team concluded that, although the number of potential interventions

remained fairly constant from month to month, time constraints on the preceptor pharmacists resulted in decreased reporting during the teaching months. From this conclusion, it follows that the intervention documentation process presented an opportunity for quality improvement.

- *Organise team members who know process.* A quality improvement team includes the assistant director for clinical services, the clinical co-ordinator, a pharmacy practice resident, and a clinical pharmacist. This team was organised to investigate the intervention process. Team members were familiar with the process and were prepared to devote the time and energy necessary to produce quality improvement.
- *Clarify current knowledge of process.* The critical steps of the intervention process were outlined in flow-chart form. They included: identifying the need for intervention, collecting the necessary patient and therapy information, contacting the appropriate physician or nurse, transcribing any changed orders on the patient chart, and summarising the intervention on the departmental intervention documentation form. The diverse perspective offered by the focus team enabled all members to gain a thorough understanding of the process.
- *Understanding causes of process variation.* During each step in the intervention process, the potential exists for variation in the way the step is completed, which can lead to errors and quality lapses. The time required to document the intervention on the appropriate form is another important variable that depends on the complexity of the intervention, the availability of forms, and even the time of day. The team found that some pharmacists were less likely to document interventions that occurred late in the day, saving them instead for the following workday.
- *Select process improvement.* After proposing a number of solutions to increase intervention reporting, the focus team selected revision of the documentation form as the one that would probably have the greatest and most cost-effective impact on overall documentation. The team recommended that the form be redesigned to minimise the time required to document routine interventions. Other proposed solutions included regular feedback to the staff on the number of interventions reported and computerisation.
- *Plan the improvement.* The focus team decided to establish a simple five-day intervention report card that pharmacists could carry with them throughout the week to record interventions as they occurred. New reporting categories were listed to make the card easy to use and quick to complete. The focus team decided that patient-specific information and summaries of interventions would be necessary only for clinically significant or unusual interventions. Attendance on patient care rounds, as well as documentation of nursing or physician in-service programmes, could also be reported on the same card. The focus team also decided to distribute the summaries of departmental intervention activities to the pharmacy staff through the monthly pharmacy newsletter to improve reporting, demonstrate the value of their actions, and provide peer acknowledgement.
- *Perform data collection, data analysis, and improvement.* After the new form was designed, data collection and analysis of intervention continued. The focus team considered that it was important to analyse the number of interventions reported by individual pharmacists, to allow for follow-up assistance for those who were not using the form to maximum advantage. Overall, feedback from the pharmacists about this process and improvements made was positive.
- *Check data for process improvement and customer outcomes.* Continual review of the data is essential to maintain the quality improvement process. Each month, the number of interventions documented was checked to measure compliance with use of the new documentation form. Also, frequent informal surveys of pharmacists provide feedback on the use of the new form and help to identify additional areas for improvement.
- *Act to hold the gain and continue improvement.* The sense of “ownership” engendered by staff participation in creating the new form raised awareness of

both the importance of documenting interventions and the usefulness of TQM/CQI techniques. Several pharmacists suggested to continue this focus. One pharmacist proposed a brief, informal discussion each week to highlight an intervention that the clinic coordinator felt was particularly significant. Another suggestion was the automation of intervention documentation through use of computers. The information could be imported into a spreadsheet and analysed. Two pharmacy teams were assigned to this project.

Passaic General Hospital Centre

Hospital background

The general hospital centre at Passaic is a 303-bed community hospital (Shah *et al.*, 1994) with an acute care facility where 560 open-heart operations were performed. The facility also provides comprehensive surgical, obstetric, paediatric, emergency, and critical care services, with a total occupancy of 89.9 percent.

Pharmacy department background

In December 1991 and January 1992, the pharmacy staff, working Monday to Friday from 8 am to 4 pm, consisted of a director, two supervisors, three full-time pharmacists, three technicians, and one secretary. The pharmacy service was provided through traditional methods, with medication orders placed on the nursing units manually by a clerk, and copies of those orders sent to the central pharmacy to be filed.

Increasing medication incident rate

Through monitoring and evaluation, the medication incident rate from 1987 to 1990 at the Passaic General Hospital was charted. To address the marked increase in the incident rate during the Fall of 1990, an interdisciplinary review was conducted that included the nursing, risk management and pharmacy departments. Although incidents were analysed by subcategories, such as omission, timing, duplication, wrong drug, wrong dose and so forth, the increase reported for 1987 to 1990 crossed all categories. The increase was not more prominent in any particular area. While the scope of the problem was broad, it was determined that many of the incidents were related to transcription problems. The following flow chart describes the existing

process for writing and transcribing medication orders:

Physician writes prescription → Clerk transcribes prescription → Nurse checks prescription → Pharmacy dispenses prescription

Pharmacy system changes

In December 1991 and January 1992, a system change was achieved that decentralised pharmacy services. One of the full-time pharmacists working the 8 am to 4 pm shift was assigned to the nursing units on a rotating basis. Initially, this was piloted on two nursing units, but was expanded within a few weeks to cover all floors. In addition, the pharmacy department was scheduled for computerisation as part of a complete hospital information system change in 1991, and it needed to revise the mechanism for order entry. It was proposed that eliminating the clerk and the nurse from the transcribing prescription process, thereby having the pharmacist directly enter physician prescriptions, would streamline the process, meet computerisation needs, and decrease the number of medication incident reports. The pharmacy department mapped a standard route for the roving pharmacist to follow, particularly avoiding elevators in an effort to maximise efficiency. The roving pharmacists made rounds every half-hour on all designated units, performed prescription entry, and provided a clinical task to the nursing staff and the physicians. The pharmacist discussed with the head nurse or his or her nominee when arriving on each unit to identify any pharmacy-related problems. After resolving any problems, the pharmacist reviewed the medication orders for accuracy. The decentralised pharmacists were making a greater contribution to patient care. The pharmacist was able to facilitate appropriate changes of medication routes, decrease prescribing of non-formulary drugs, and advise the nurses and other health-care professional staff on the units. If any prescriptions were inaccurate or incorrect, the pharmacist immediately intervened to resolve the issue with the appropriate party (the physician, nurse, patient chart, and so on) and then entered the prescriptions into the computer. These were dispensed and checked within 20 minutes in the main pharmacy. The unit then sent an aid to collect the medication within 30 minutes. The programme operated

between 9 am and 12:30 pm, and 1:15 pm to 4 pm on weekdays. During other hours, orders were brought to the pharmacy by an aide, sent by facsimile, or were collected by a pharmacy technician. The pharmacist in the pharmacy then entered the prescriptions into the computer, where they were processed as mentioned previously.

Continuous enhancement of process

Although some logistic changes were made to accommodate the system, they were minimal. For example, no additional staff were hired, but the day-shift pharmacists were specially trained on the hospital information system and in online drug information such as IOWA and Micro Medex. Several of the nursing units installed additional hospital information system terminals to allow the pharmacist greater access without interfering with other nursing needs for the computer. Cooperation with the management information system was necessary to effect small programming changes to allow labels for medications to be printed in the pharmacy, even though the prescriptions were placed on the units. The job description of the pharmacist was modified to accommodate the tasks inherent in the new role. There was initially some staff resistance because the pharmacists were unsure how this would affect their workload. This resistance dissipated quickly, however. When the system was actualised, each pharmacist assumed the role, and they saw how they could better meet patient care needs.

Outcomes

The logistic modifications made to implement this system were minimal when weighed against the benefits gained. Many benefits were completely unexpected, although the pharmacy department expected improvements relating to smoother operation of the computer system. The most significant outcomes of this system at the Passaic General Hospital Center were:

- *Pharmacist as member of health-care team.* In addition to performing drug prescription entry, locating a pharmacist to be physically present on the patient care area allowed the central pharmacy to become more of a manufacturing and dispensing area, with the clinical functions located in the nursing unit. In addition, the physical accessibility of the pharmacist had demonstrably positive

results. With more direct interaction with physicians, the pharmacist had been effective in improving drug therapy. The pharmacist worked closely with physicians, discussing the patient's drug regimens and recommending alternative drugs or other interventions that might resolve the patient's problem more quickly. The pharmacist also provided adverse drug interaction consultation to all health professionals on the nursing units; suspected adverse drug reactions were identified more promptly and accurately as well. Drug information and consultation were available to physicians and nurses on site. The quality of total patient care was dramatically increased. The elements of patient care were provided on a more personnel basis and more within care areas. Patient discharge prescriptions were reviewed by the pharmacist for the appropriateness of therapy and dosage, accuracy of instructions, and use of the most cost-effective medication and dosage form.

- *Decrease in number of reported medication incidents.* The pharmacist identified all medication orders that did not follow established standards and could send this information through the pharmacy department's quality improvement programme. The most visible measurable benefit was a marked decrease in the number of reported medication incidents.

Evaluation

Through continued monitoring of medication incident reports, a substantial decrease in the number of reported incidents became evident. The evaluation shows a 29 percent improvement in the incident rate from 1990 to 1991, and a 43 percent improvement from 1991 to 1992, yielding a total rate of improvement in the reported medication incidents of 63 percent from 1990 to 1993.

Future improvement plan

The success of this programme has promoted an effort to expand the service further. The pharmacy department has a strategic plan to convert two technician positions into one registered pharmacist position, to provide an additional roving pharmacist to the nursing unit. Furthermore, plans have been designed to supply the roving pharmacist with a laptop computer to provide immediate online drug information. The next phase will also involve

investigation of a pharmacy courier system to provide an even more comprehensive pharmaceutical service to patients, nursing staff, and physicians.

Summary

As a major component in the health-care system, the profession of pharmacy has also been influenced by tremendous forces of change in the recent past. The profession of pharmacy has been facing a dramatic change both internally and externally. The forces of change demand pharmacists to take more active roles in patient care, in the name of practice reform. In addition, pharmacists must realise not only the changes affecting their practices, but also how these changes are influenced by the forces affecting the entire health-care system and society as whole. Like their counterparts in other industries, many health-care professionals, administrators, and regulators have come to embrace the widely touted quality improvement programme, which underlies a variety of new management methods such as total quality management (TQM) and continuous quality improvement. Quality in its broadest sense is proportionate to the attainment of achievable improvement in health. Quality improvement has been defined as the application of scientific methods to understand and continuously improve the ability of all processes to meet the needs of customers. CQI/TQM are process-focused techniques that are gaining acceptance in hospitals and health-care institutions. This study indicated that pharmacists must pay equal attention to the structure, process and outcomes of pharmaceutical care. This approach contains three basic elements:

- (1) a technique, "the application of scientific methods";
- (2) a mechanism, "to understand and continuously improve the ability of all processes"; and
- (3) a goal, "to meet the needs of patients".

This study, therefore, shows that the principles of pharmaceutical care management approach and TQM/CQI are complementary. This leads to the conclusion that the pharmaceutical care management approach is the application of CQI/TQM in the field of pharmacy. In addition, CQI and

TQM are customer focused and are consistent with pharmaceutical care management approaches.

Quality is defined in terms of values of individuals and society. Pharmaceutical care management, as a new concept, introduces the notion of "doing the right things" for patients and re-considering how health care, generally speaking, gets delivered.

The study from which this paper was derived represents a useful contribution in the desired new direction. The challenge facing both the academic and practitioner communities is, however, still significant. It is therefore suggested that the following areas are examined to ensure that pharmaceutical care management gets absorbed as a logical, effective and modern approach in the context of health-care management:

- The process of reviewing the literature revealed a pressing need to develop guidelines on a standardised method for pharmaceutical care practice. Research is therefore needed to develop common standards in the field of pharmaceutical care practice.
- Further, work is required at policy-making, professional and hospital levels to study the wider views of the profession regarding necessary changes and the most appropriate action to implement the pharmaceutical care management approach.
- As this study indicated that pharmacist commitment is one of the most significant factors to facilitate the pharmaceutical care implementation, it would be very interesting for future research to test empirically the influence of pharmacists' satisfaction and commitment on performance.
- Additional research is needed to explore the implementation of the pharmaceutical care approach in the community pharmacies in the various health-care contexts.
- Finally, additional research is needed to examine the relationship between top management style and hospital pharmacy orientation. This study should be introduced to establish empirically a theoretical link between the leadership and experience of pharmacy top management and pharmaceutical care.

References

- Goodwin, H.N. and Sanborn, M.D. (1995), "Total quality management in hospital pharmacy", *Am. Pharm.*, NS35, pp. 51-9.
- Gouveia, W.A. (1993), "Measuring and managing patient outcomes", *Am. J. Hosp. Pharm.*, No. 49, pp. 2157-8.
- Hepler, C. (1993), "Issues in implementing pharmaceutical care", *Am. J. Hosp. Pharm.*, No. 50, pp. 1635-41.
- Hepler, C.D. and Strand, L.M. (1990), "Opportunities and responsibilities in pharmaceutical care", *Am. J. Hosp. Pharm.*, No. 47, pp. 533-43.
- Lohr, K. (1990), *Medicare: A Strategy for Quality Assurance*, Vol. 1, National Academy Press, Washington, DC.
- Mount, J. (1994), "The quality revolution and pharmacy practice", *Am. Pharm.*, NS34, pp. 62-70.
- Shah, N.R., Emonts, A.J. and Johnson, V.P. (1994), "Total quality management in action: pharmacy system changes to decrease medication incidents and increase clinical services", *Hosp. Pharm.*, Vol. 29, pp. 679-80.
- UKCPA Statement on Pharmaceutical Care (1996), *Pharm. J.*, No. 256, pp. 345-6.