

Pharmaceutical care management: a modern approach to providing seamless and integrated health care

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Abstract

Institutional pharmaceutical services have widely evolved over the past 20-30 years. Hospital pharmacy practice has changed from a profession concerned chiefly with the bulk preparation and distribution of drug products to one centred on ensuring optimal drug therapy. Whereas hospital pharmacists were charged with maintaining large drug stock on nursing units, many of them now provide individualised patient therapies. The practice of hospital pharmacy has therefore become one encompassing all aspects of drug therapy, from the procurement of drugs and drug delivery devices, their preparation and distribution, to their most appropriate selection and use for each patient. Hospital pharmacy services have traditionally had little involvement at the key stages in patients' hospital care. This leads to the conclusion that the model of clinical pharmacy practice adopted by many pharmacy department hospitals is no longer appropriate for the demands of today's health-care services. Reviews many new models proposed for clinical pharmacy practice including an integrated model for providing a pharmaceutical care management approach in the health-care system. This model is a response to the failures of traditional drug therapy. It is primarily an idea about how health professionals and patient should integrate their work to obtain outcomes important to patients and clinicians.

Pharmacy practice evolution

Pharmacy's history falls into three stages, compounding and dispensing, clinical pharmacy, and pharmaceutical care. For hundreds of years, people relied on pharmacists to prepare and dispense medications; thus, pharmacists were required to be skilled in compounding. As technical knowledge of drug components grew, and the drugs which were discovered became more potent and more dangerous, large manufacturers took over the role of preparing medications, leaving pharmacists only to dispense these drugs. The new medications, that are extremely effective and precise therapeutic and diagnostic tools, carry much greater risk and higher cost than those they are replacing. Evidence shows that, despite the cost-effective value of medications to society, the traditional method of prescribing and dispensing drug products is no longer enough to ensure the safety and effectiveness of drug therapy. Too much has gone wrong and can go wrong and the consequences are costly in terms of increased hospitalisations, physician visits, laboratory tests and remedial drug therapy (Manasse, 1989).

About 25 years ago, there was a shift in education and practice that allowed pharmacists to play a larger clinical role. As a result, clinical pharmacists now have an important function in the drug use system, working primarily in hospitals, nursing homes, and some ambulatory clinics, but not usually in community pharmacies. Despite the advances made in clinical pharmacy, problems remained within the drug-use-system. Recognition and documentation of these problems stimulated the acceptance of the concept of pharmaceutical care as the new basis for pharmacy practice.

The vision of pharmacy's future is now shifting to pharmaceutical care, a system of drug use in which pharmacists share with other health-care professionals the responsibility for optimising the outcomes of patients' drug therapy (Hepler, 1990). This role requires pharmacists to apply a higher level of drug knowledge, clinical skill and independent judgement to their work, and to accept a greater burden of responsibility for it. It is time for pharmacists to acknowledge that drug products are one component of the drug use process, and to understand that drug related disease and treatment failure are hazards of the process. That means, however, that pharmacists will have to accept some responsibility for the undesired consequences of the drugs that they dispense. It is time for pharmacists to learn how they can help people to obtain safe and effective drug therapy.

Clinical pharmaceutical services

The pharmacist entered the twentieth century performing the social role of apothecary (preparing and selling medicinal drugs). Throughout this traditional stage the pharmacist's function was procuring, preparing, and evaluating drug products. Their primary obligation was to ensure that the drugs they sold were pure, unadulterated, and well prepared, although they had a secondary obligation to provide good advice to customers who asked them to prescribe drugs over the counter. In recent years the role of the pharmacist has undergone significant changes. As the number of available proprietary medicines has increased, the day-to-day activities of the pharmacist have consequently changed, so that the actual process of compounding and formulating medicines has become less

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demanding on their time than in the past. The traditional role began to wane as the preparation of pharmaceuticals was gradually taken over by the pharmaceutical industry and as the choice of therapeutic agents passed to the physicians. The pharmacist's professional role became narrowly constrained. A corollary of this development has been the opportunity for pharmacists to promote themselves as primary health-care professionals, from whom medical advice may be sought, prior to, in addition to, or instead of visiting a medical practitioner (Hepler, 1985).

The time when pharmacists could spend their days closeted in the dispensary at the back of a shop is long gone with the increasing tendency of the pharmaceutical manufacturing industry to present medicinal products in packages suitable for dispensing direct to the consumer. Even those pharmacists with the heaviest dispensing loads find that they have more and more time available for taking on what has been referred to as the pharmacist's extended role. This extended role requires the pharmacist to interact directly with the public, offer a range of services including health-care advice, information, recommendations, directions and instructions, in addition to ensuring that people receive the correct medication and understand how to use their medicines correctly.

Before describing a clinical pharmacy service, a non-clinical pharmacy service, nursing and physician functions will be described. Pharmaceutical services in a hospital which does not provide clinical services are focused on the accurate compounding and dispensing of drugs, purchasing drugs, accountability, and inventory control, and drug formulary presentation. These functions are performed and managed within the central hospital pharmacy. Extension of service outside the pharmacy department is limited to narcotic control and drug formulary distribution. The pharmacist's drug knowledge is focused on the physical and chemical aspects of drug use.

The primary functions of nursing in the hospital medication system have been to order drugs from the pharmacy, prepare doses for administration, administer medications, chart drugs administered, keep drug records, monitor patient response to drug therapy, and provide information to the physicians. The physician's primary functions have been to prescribe drugs and dosages, monitor patient response, and make appropriate changes in drug and dosage when necessary.

The pharmacist's interprofessional relationships are limited because of the physical location of practice: physicians and nurses are in the patient-care areas and the pharmacists are in the central hospital pharmacy. Communications between a physician and pharmacist or a nurse and pharmacist are limited to drug distribution situations. The opportunities for interprofessional co-operation in the care of patients, or even interprofessional conflict, are limited (Phillips *et al.*, 1987).

The demands on the pharmacy managers in a non-clinical service are for drug purchasing and inventory control, policies and procedures for the distribution systems, control of drugs outside the pharmacy area, working with nurses to improve the operational and communication problems inherent in the system, drug-related policies and procedures for the pharmacy and therapeutics committee, the drug formulary, and proper accountability to hospital administration for financial, legal, and professional standards (Smith, 1988).

The results of this type of pharmaceutical service and limited interprofessional relationships are as manifested by the following list of drug-related problems (Smith, 1988):

- high rate of medication error;
- excessive rate of adverse drug reactions;
- drug-drug interaction;
- drug admixture incompatibilities;
- drug induced disease;
- inefficient use of health manpower;
- drug-laboratory test interactions;
- physician contribution to medication errors;
- drug waste;
- high cost of the hospital medication system.

Hospital pharmacy leaders in the mid-1960s recognised the drug-related patient problems inherent in such a hospital medication system and set about to make changes in systems and professional relationships. The drug distribution system was changed through implementation of unit dose and intravenous (iv) drug admixture services. Pharmacist practice in patient care areas was directed at the clinical use of drugs. The composite of these changes in systems and services has become known as clinical pharmacy. From the point of view of the patient, who is expecting drug therapy that is safe, accurate, efficient, effective, and of least cost, the hospital medication system without clinical pharmacy services does not achieve patient expectations and needs (Phillips *et al.*, 1987).

Pharmacists have been influenced by the clinical pharmacy movement over the past 30 years. The early concept of clinical pharmacy services was included in the philosophy that pharmacists should use their professional knowledge to foster the safe and appropriate use of drugs in and by patients while working with other members of the health professions (Franke, 1969). This concept has been supported since the 1960s with extensive documentation of various types of clinical activities and services performed by pharmacists. Clinical pharmacy practice was born in the mid-1960s and has been growing at a rapid rate over the past ten years. There began a period of professional transition in which pharmacists sought self-authorisation, the full achievement of their professional potential. The transitional stage was a time of rapid expansion of function and increased professional diversity, driven by individualistic, some times zealous, pioneers (Angaran *et al.*, 1988). Pharmacists not only began to perform functions that were new to pharmacy but also began to innovate functions and to make original contributions to the literature (Hepler, 1987). It seemed that, by moving to the bedside, pharmacy might finally be restored to its erstwhile importance in medical care.

Moreover, clinical pharmacy services are offered to ensure that drug therapy is appropriate and cost-effective. Clinical pharmacy represents an important step in the professionalism of pharmacy, moving it from a product-centred, technological subject to one that can judge the rights and wrongs of drug use. So, clinical pharmacy has been defined as the provision of structured services by pharmacists to meet the drug-related needs of patients, physicians and nurses in a commitment to the optimisation of drug therapy. In doing so, pharmacists exercise professional judgement and accept responsibility for the quality of drug-related patient care outcomes (Hepler, 1987). Clinical pharmacy services include formulary system management, drug use evaluation, maintenance of patient drug profiles, and a review of every drug order for therapeutic appropriateness. A comprehensive clinical pharmacy programme includes the pharmacist's clinical practice, a clinical drug information service, and a clinical pharmacokinetics service. These services place the pharmacist in the arena of helping to ensure appropriate clinical outcomes of patient drug therapy, active interprofessional relationships with physicians and nurses, and a practice in the environment of the patient's bedside. Pharmacists' clinical activities have been

developed and are being performed in many hospitals (Hepler, 1985).

Clinical pharmacy activities in many hospitals in the USA

The elements of clinical pharmacy services in many hospitals in the USA are:

- interpreting, questioning, and validating drug orders;
- monitoring patients' drug therapy;
- managing selected drug therapies (e.g. aminoglycosides, heparin, aminophylline, parenteral nutrition);
- detecting and reporting drug allergies and adverse drug reactions;
- providing drug-use education;
- answering drug information requests;
- conducting patient reviews;
- participating in patient care rounds;
- performing drug use review and patient care audits;
- performing drug therapy research.

Numerous papers and studies have chronicled advances in clinical pharmacy in US community hospitals. The results of the American Society of Hospital Pharmacists (ASHP) national surveys point to great advances in the provision and scope of hospital-based pharmaceutical services in community hospitals. The findings of these surveys (Crawford, 1990; Crawford and Myers, 1993; Santell, 1995; Santell and Kamalich, 1996; Reeder *et al.*, 1997) of clinical pharmacy services and ambulatory care services reveal substantial improvements, and suggest that the value of clinical pharmacy services is being recognised, and that hospital pharmacists are holding on to their personal resources and increasing their involvement in clinical activities. Another study, conducted by Oleg *et al.* (1996) to evaluate the clinical pharmacy services in 17 Canadian hospitals, has demonstrated that the more involved the pharmacist is in patient therapy, the more problems he/she can identify. By intervening, the pharmacist can improve the outcome from the intended therapy. In addition, with more involvement, the pharmacist can also alter the drug therapy before it is prescribed, which should reduce the potential for initiation of sub-optimal therapy. This study also suggests that any Canadian hospital pharmacist can have an increased involvement in patient care, if they are provided the opportunity for increased assessment of individual patient cases.

Clinical pharmacy represents an important step in the professionalisation of pharmacy, moving it from a product-centred technological subject to one that can judge

the rights and wrongs of drug use. The pharmacy profession has expanded the level and scope of services which it provides to society by developing and providing an array of services that are designed to improve the way medications are used in treatment and diagnosis of disease (Hepler, 1987).

While acknowledging the influence that the clinical pharmacy philosophy emanating from the USA has had on pharmacy practice in the UK, the Nuffield report on pharmacy (Nuffield Foundation, 1986) identified the role of the clinical pharmacists as:

- Contributing to the choice of drug regimen, particularly when more than one condition is being treated.
- Being in a position to supply the physician with evaluated information on pharmaceutical and therapeutic aspects of drug use as well as on the changing awareness of the toxicity profile of drugs.
- Helping to decide on which dosage, form, or formulation of an active principle should be used and the best route of administration for a medicine.
- Undertaking the responsibility for deciding the formulation of a medicine or the treatment which the clinician prescribed.
- Taking responsibility for dosage calculations.
- Contribution to the counselling of patients.
- Encouraging the development of adverse drug reaction monitoring schemes.
- Contributing to the economic use of medicines through the provision of information on costs and independent "best buy" data.
- Participating in multidisciplinary teams to optimise therapy in patients at risk.

Conceptually, clinical pharmacy is drug use control: "the sum total of knowledge, skills, and ethics that assures optimal safety in the distribution and use of medicine" (Brodie, 1967, 1981).

Despite the advances made in clinical pharmacy, problems remained within the drug-use system. Recognition and documentation of these problems stimulated the acceptance of the concept of pharmaceutical care as the new basis for pharmacy practice.

Classification of clinical pharmacy services

The clinical pharmacy service should positively improve the patient's drug therapy outcome. To assist practitioners with identifying the types of clinical pharmacy

services, the ASHP has issued a position statement on the pharmacist's clinical role (ASHP, 1989). Four groups have been proposed for evaluating clinical pharmacy services. This grouping increases in complexity from class I to class IV. It requires an increase in the specialisation of the practitioners providing them.

Clinical pharmacy services in Class I are generally viewed as the foundation of any clinical programme. These services are not focused on any particular patient but are embedded in any hospital-wide programme that purports to influence the positive outcome of drug therapy. These programmes often are performed by all pharmacists who focus on selection of drug therapy, drug therapy monitoring, and education.

Clinical pharmacy services in Class II are categorised based on their direct role in communication with patients. These activities, whether providing drug histories or performing medication counselling, require interaction with patients. When performed by practitioners, they provide the most visible contribution to patient care as reflected from the lay public.

In Class III, these services are most formal and structured. They focus on specific patient groups or drug classifications. Pharmacists providing these services are often more specialised.

Finally, Class IV category of clinical services represents the most specialised type of clinical service. Practitioners in this area are highly trained in a particular area. Preparation for providing these services requires an in-depth understanding of pathophysiology and pharmacotherapeutics for the particular disease state or patient type.

The vision of pharmacy's future is now shifting to pharmaceutical care, a system of drug use in which pharmacists share with other health-care professionals the responsibility for optimising the outcomes of patients' drug therapy (Helper and Strand, 1990). This role requires pharmacists to apply a higher level of drug knowledge, clinical skill, and independent judgement to their work and to accept a greater amount of responsibility for it. It is time for pharmacists to acknowledge that drug products are one component of the drug use process, and to understand that drug-related disease and treatment failure are hazards of the process. That means, however, that pharmacists will have to accept some responsibility for the undesired consequences of the drug that they dispense. It is time for pharmacists to learn how they

can help people to obtain safe and effective drug therapy (Hepler, 1990).

For pharmacists to perform clinical functions successfully in the health-care marketplace in future, the concept of clinical pharmacy itself will have to mature into an understanding of pharmacists as self-controlling, truly patient-oriented professionals who devote their efforts to improve therapeutic outcomes and willingly accept their direct responsibility to patients. So, the primary element needed to move beyond dispensing models of practice is a clear concept of purpose and responsibilities of pharmacists to patients (Hepler and Strand, 1990). To accept responsibility for that mandate, the mission of pharmacy practice is not only clinical pharmacy. Despite the advances made in clinical pharmacy, problems remain within the drug system. In addition to clinical knowledge and basic dispensing skills, there must be an appropriate philosophy of practice and organisational structure within which to practise.

Hepler and Strand (1990) have proposed such a philosophy of practice called pharmaceutical care and an organisational structure to facilitate the provision of that care, called a pharmaceutical care system.

Pharmaceutical care system

In order to make a substantive contribution to outcomes management, the pharmacy profession is beginning to embrace this new philosophy of practice. Pharmaceutical care was introduced in its modern sense by Brodie *et al.* (1980). They proposed that:

... pharmaceutical care includes the determination of drug needs for a given individual and provision not only of the drug required but also necessary services (before, during and after treatment) to assure optimal safe and effective therapy.

Pharmaceutical care has been defined as the care that a given patient requires and receives, which assures safe and rational drug use (Mikeal *et al.*, 1975).

Pharmaceutical care is a concept developed in the USA by Hepler and Strand (1990). In their paper, these authors envisaged the future role of the pharmacist as clinical with pharmacists co-operating with other health-care professionals in designing, implementing and monitoring therapeutic plans designed to produce specific therapeutic outcomes for patients.

Hepler and Strand (1990) have developed a model for pharmacy practice whose goal is to make sure that pharmacists have a direct

responsibility to patients for the outcomes of drug therapy. Pharmaceutical care is the term used to describe this practice, and their definition is as follows:

Pharmaceutical care is the responsible provision of drug therapy for the purpose of achieving definite outcomes that improve a patient's quality of life. These outcomes are:

- 1 cure of disease;
- 2 elimination or reduction of a patient's symptomatology;
- 3 arresting or slowing of a disease process; or
- 4 preventing a disease or symptomatology.

A definition of care may be to promote deeper understanding of the concept of pharmaceutical care. The *American Heritage Dictionary* (2001) defines care as "caution, protection, supervision, charge attentiveness to detail; painstaking application".

Professional care encourages the relationship that is needed by both the profession and client for the professional to provide services that succeed in improving the client's situation. The idea of professional care goes beyond the idea of professional service. While both indicate actions, care adds a dimension of concern and commitment. Service is cooler, more detached and perhaps less focused on outcomes (Hepler and Angaran, 1996).

Pharmacists have to assume responsibility for providing a service of real value and in a way for which they could be paid. This responsibility is much more than simply providing a product. If there is a difference between pharmaceutical care and clinical pharmacy, it is that pharmaceutical care has a management system, and clinical pharmacy is on the periphery of a system that is essentially a dispensary and being managed as such (Strand, 1997).

Pharmaceutical care practice is just like any other health practitioners' practice. It has a philosophy, a patient care process and a management system (Strand, 1997).

Pharmaceutical care involves the process through which a pharmacist cooperates with a patient and other professionals in designing, implementing, and monitoring a therapeutic plan that will produce specific therapeutic outcomes for the patient. This, in turn, involves three major functions:

- 1 identifying potential and actual drug-related problems;
- 2 resolving actual drug-related problems; and
- 3 preventing potential drug-related problems.

Drug-related problems can occur in the following ways (Hepler and Strand, 1990; Strand *et al.*, 1990a):

- needing pharmacotherapy but not receiving it (prescribing may be inappropriate);
- taking or receiving the wrong drug;
- taking or receiving too little of the correct drug;
- taking or receiving too much of the correct drug;
- experiencing an adverse drug reaction;
- experiencing a drug-drug, drug-food, or drug-laboratory interaction;
- not taking or receiving the drug prescribed;
- taking or receiving a drug for which there is no valid medical indication; or
- pharmacists or physicians may not monitor patients appropriately.

Recognising that simply compounding drug products and dispensing drug products to patients without the appropriate pharmaceutical care processes are not always effective means of reducing drug-related problems, the profession evolved clinical functions and responsibilities to maximise the benefits, while reducing the risks of drug therapy. Thus, in addition to the compounding and dispensing process, the scope of a contemporary pharmacist's activities may now also include:

- participating in the process of drug therapy decisions;
- selecting the drug product dosage form;
- determining the dose and dosage schedule;
- selecting the drug product source of supply;
- preparing the drug product for patient use;
- providing the drug product to the patient;
- monitoring the patient to maximise compliance with therapy instructions;
- monitoring to detect adverse reactions and drug interactions; and
- monitoring the patient to ensure that therapy is proceeding in accordance with established therapeutic objectives.

The objective of these services is the achievement of specific outcomes that improve patients' quality of life (Hepler, 1996).

The integration of the services described above with the responsibilities for their effect (outcome) on patients is another aspect of the application of the philosophy of pharmaceutical care. Pharmaceutical care directs pharmacists' attentions and efforts towards their results in the patients pharmacists serve. Consequently, pharmaceutical care implies the total integration of all functions or services which

pharmacists perform within the care rendered to patients.

Generally, the complexity, effectiveness, efficiency and risks of drug therapy have evolved to the point that patient care cannot succeed without pharmaceutical care. By definition, pharmaceutical care is the integration of both traditional dispensing functions and newer, evolving clinical activities into a philosophy of patient care in which pharmacists share in the responsibility with other health professionals caring for patients for the outcomes of that care (Strand *et al.*, 1990b; Hepler and Grainger-Rousseau, 1995).

Clinical pharmaceutical services have been described, studied and implemented for the past 30 years. However, the rate of implementation on a daily basis has not kept pace with the rhetoric or the claims of sophisticated clinical services. A number of reasons have been proposed for the slow growth of clinical services on a consistent predictable basis. However, one explanation addressed less often than the others is the need for, and perhaps lack of, good, sound management practices by those responsible for the implementation of clinical pharmaceutical services.

Pharmaceutical care services or patient-oriented pharmaceutical services are now a recognised and necessary component of health care. However, new trends in reimbursement, such as prospective pricing and capitation payments, provide different incentives for hospitals to manage in terms of product lines instead of patient services. In such a financial environment, it is essential that the value of any non-product-centred service is well documented and that service is cost-justifiable.

Level of the pharmaceutical care system

Patient needs determine the type of pharmaceutical care services that should be provided by pharmacists. The functions the pharmacist performs are activities that result in pharmaceutical services. These services, which are necessary to ensure desired clinical outcomes, are applications of pharmaceutical care. The pharmacist is responsible for achieving the desired outcome of drug therapy at all levels of the pharmaceutical care system. Established pharmaceutical care levels could provide the pharmacy profession with a model to use in evaluating pharmaceutical services in relation to patient care. Levels of pharmaceutical care are organised according to level of care, namely primary, secondary and tertiary (Smith and Benderev, 1991).

Primary pharmaceutical care

Primary pharmaceutical care begins when it is first determined that drug therapy may be needed for a condition not requiring hospitalisation. The basic pharmacist functions are:

- Develop and use a patient medication profile.
- Interpret, question, clarify, verify and validate all drug-related orders.
- Provide a safe and efficient drug dispensing system.
- Monitor drug therapy for safety, efficacy and desired clinical outcomes.
- Screen for drug allergies, drug-drug interactions, drug-food interactions and concomitant drug use.
- Detect and report drug allergies and adverse drug reactions.
- Recommend initial or alternative drug therapies.
- Respond to drug information requests from physicians, nurses, and patients.
- Teach health-care provider and patient about drug use.
- Obtain medication histories by interviewing.
- Assist in the selection of the drug of choice and dosage forms.
- Conduct drug use evaluations to gauge the appropriateness of drug use and achievement of desired therapeutic outcomes.
- Apply pharmaceutical principles for selected drug therapy (Smith and Benderev, 1991).

In addition to the basic pharmacist functions, five other functions are performed in primary pharmaceutical care. The primary care pharmacist must be competent in all of these areas:

- 1 monitoring for compliance and proper drug use;
- 2 dispensing out-patient prescriptions with appropriate labelling including auxiliary labels;
- 3 counselling patients about proper self-administration of agents;
- 4 counselling patients about proper storage of medications in the home; and
- 5 assisting the physicians in choosing the right drug and the right dosage.

Primary pharmaceutical care is practised in out-patient pharmacies in hospitals and community pharmacies.

Secondary pharmaceutical care

Secondary pharmaceutical care begins with the initial drug therapy for a more complex medical condition than in primary care. In addition to the common basic pharmacist

functions already listed, six other tasks are performed in secondary pharmaceutical care:

- 1 managing selected drug therapies by using approved protocols;
- 2 managing drug delivery;
- 3 providing formal pharmacokinetic services;
- 4 participation in cardiopulmonary resuscitation;
- 5 answering nurses' drug related-questions; and
- 6 assisting the physician in choosing the right drug and ancillary therapy.

Secondary pharmaceutical care is practised in acute-care hospitals and specialised care programmes such as oncology and pain control.

Tertiary pharmaceutical care

Tertiary pharmaceutical care takes place in institutions that render critical-care services. Here, the most comprehensive clinical pharmacy services are offered. Rapid pharmacological and pharmacodynamic changes are occurring in the patient. Patients in the tertiary care setting require the most complex judgements, skills and knowledge from the pharmacist. Tertiary pharmaceutical care includes all the functions already listed, plus the functions performed in secondary pharmaceutical care. Tertiary pharmaceutical care is practised in hospitals that provide in-patient critical-care services. These institutions frequently have corresponding teaching programmes for providers.

Management requirement of pharmaceutical care systems

Management is the activity that helps groups of people to achieve a common purpose. Pharmaceutical management helps groups of pharmacists, technicians and patients to achieve optimum drug therapy management.

Management, especially the management necessary for the successful delivery of pharmaceutical care, is a complex activity to master. The delivery of pharmaceutical care is a relatively new practice and needs to be managed as such. Hepler and Strand's now widely promulgated and accepted definition of pharmaceutical care has become a key construct and galvanising force for the entire pharmacy community. Its realisation, however, requires not only a new management and leadership paradigm but significant introspection and corresponding attitudinal and behavioural changes on the part of the profession, departmental practices, and, more importantly, individual practitioners. Moreover, the introduction of

any new service requires that a standard set of structural and functional prerequisites be in place and functioning before successful outcomes can be expected. The organisation of the department and its policies, procedure and rules provide the structure that facilitates professional work towards pharmaceutical care objectives, and provides consistent performance when coordination is importance. Smith (1988) effectively described the major determinants of excellence in the management of clinical pharmacy services well before Hepler and Strand's published definition of pharmaceutical care. He outlined the differences in the management of clinical and non-clinical pharmaceutical services and identified a spectrum of ten issues. These issues ranged from a need for a basic philosophical tenet of management that recognises the important potential for drug misadventuring and the pharmacist's assumption of new responsibility for outcomes to the documentation and evaluation of cost-effectiveness. Smith's theme reflected the need to manage the people aspects of change, to obtain appropriate resources, and to design a supportive operational system. The basic management theory describes the minimum structural and functional prerequisites that must be successfully implemented for a manager to ensure delivery of service (Charns and Mschaefer, 1983). These prerequisites are necessary regardless of the specific management style practised, the relative availability of financial resources, the number of personnel managed, or the specific service delivered. A practice management system should include all the support required to provide pharmaceutical care to patients in an effective and efficient manner. To accomplish this, a practice management system is a prerequisite to provide pharmaceutical care that includes (Phillips *et al.*, 1987):

- 1 Defining a philosophical framework and a clear mission for the practice that integrates the dual mission of the pharmacy department:
 - delivery of the drug to the right patient at the right time; and
 - delivery of the drug information needed to ensure that each patient receives the appropriate drug in the correct dose for the optimal duration of time, with the necessary precautions taken to prevent complications from these decisions. The integrated philosophical framework needs to be expressed explicitly, first in the mission statement, and second in the

goals and objectives of the department. Clearly, providing the drug without the information needed to ensure its appropriate use is as unacceptable as delivery of the information without any contact with the drug product. A mission statement as well as a very detailed strategic and tactical plan should be developed and should be continually monitored and revised.

- 2 Defining the short-term and long-term goals of the pharmacy based on the new mission statement. Goals and plan are closely related. While goals are the desired ends, plans are the means that will be used to bring about the desired goals. Clear goals provide a framework on which to design the pharmaceutical care practice model. Pharmaceutical care practices with different goals may have completely different components and structures.
- 3 Defining the job responsibility for the pharmacist based on the standards of practice expected for each patient admitted into the hospital. All pharmacists must understand clearly and define explicitly the service that will be offered to patients. This is the most important step and impacts on all subsequent decisions. Pharmacists must be fully aware of the integrated framework outlined above and must change the way they think about their business enterprise.
- 4 Designing an organisational structure that supports the drug delivery and clinical service functions, so that both can be accomplished effectively. This organisational structure also needs sufficient supportive staff (technicians and secretaries) to facilitate the provision of these services. The support staff are responsible for facilitating the patient care process, including patient flow, work flow, and meeting any other needs to facilitate the provision of pharmaceutical care. Additionally, the organisational structure must reflect a consistent distribution of authority, that is, decision-making capability. This suggests that a decentralised decision-making structure is necessary for the delivery of clinical pharmaceutical services.
- 5 All the resources required to deliver the pharmaceutical care including physical, financial, human resources. Clinical pharmaceutical services in general must have the same level of financial support as the drug delivery area of pharmaceutical services.
- 6 The evaluation and reward systems must be consistent with the philosophical

framework that integrates the pharmacy's dual missions, with proportionate representation of the clinical and drug delivery job responsibilities.

It is especially important in the case of pharmaceutical care to ensure that both the job responsibilities and the organisational structure disencumber individuals capable of achieving the dual missions of the department. In short, programme creativity must be rewarded.

The structural prerequisites described above are the necessary factors for the successful delivery of any service, and pharmaceutical care in particular. The first step in the management of pharmaceutical care is the pharmacy manager's possession of an attitude that the pharmaceutical care has substantial potential to improve a patient's quality of life.

Also required for the delivery of any service are a set of functional prerequisites. Smith and Mackewicz (1972) argued that the successful delivery of clinical pharmaceutical services depends on the following functions being in place:

- A drug distribution system that ensures safety for the patient, while maintaining efficacy for the institution (a unit dose drug distribution system).
- A pharmacy practice style that relocates the pharmacist from the basement of the hospital to a decentralised patient-care area.

There is a critical need within pharmacy practice to define the essential pharmaceutical care activities that need to be provided to patients in all types of patient-care settings. Pharmacists must continue to provide the pharmaceutical care to patients based on their drug knowledge. Each pharmacist is confronted with the challenge of how to maintain clinical competence. The pharmacy department management must develop strategies and programmes to assist staff members in maintaining clinical competence. The pharmacy manager's basic function is to identify the opportunities for clinical services, and to obtain the required resources to provide the pharmaceutical care. For the successful implementation and management of pharmaceutical care, the pharmacy manager's job also is to manage the people aspects of change. The hospital pharmacy can no longer survive following the old "I prescribe, you dispense" way of working. Health care is changing dramatically and leading pharmacists are expanding their scope of practice daily to meet its demands. Managers of hospital pharmacy services should be recruiting and

training staff who will eventually be able to fulfil this role. 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.

Pharmacy managers planning to initiate the new pharmaceutical care activity may have to meet certain administrative requirements (Smith, 1988), including the following:

- to provide an accurate accounting of all of the resources required;
- to delineate the costs of service and its effect on patient outcomes;
- to obtain approval from the institution's administration and medical staff for provision of the services on a routine basis (Phillips *et al.*, 1987).

Pharmaceutical care is a necessary element of health care and should be integrated with the other elements of health care. It is, however, provided for the direct benefit of the patient, and the pharmacist accepts direct responsibility for the quality of that care. Pharmaceutical care is based on a covenant between the patient, who promises to grant authority to the provider, and the provider, who promises competence and commitment to the patient (Hepler, 1985; Galt and Narducci, 1997).

The principle of pharmaceutical care requires that a professional with demonstrated expertise in drug therapy be responsible for the outcomes of drug therapy in patients and be responsible for ensuring that the desired therapeutic goals are achieved and that drug-induced illnesses do not occur. Pharmaceutical care improves patient outcomes by ensuring more effective and efficient use of drugs as therapeutic tools (Hepler and Strand, 1990).

The shift in pharmacy from a product focus to a patient focus generates many new responsibilities related to the quality of life and continuity. To begin to meet these responsibilities, the pharmacist will have to convince others of the value of pharmaceutical care and foster a climate of acceptance (Gouveia, 1993a). Also, a new level of commitment will be required. It may demand more effort to manage drug therapy with a view to outcomes than to dispense a prescription or even to perform the activities

of pharmaceutical care (Penna, 1990; Hepler, 1990).

According to Gouveia (1993b), radical organisation changes may be required, such as the elimination of directors and associate directors of pharmacy positions, greater empowerment of staff pharmacists, positioning the patient at the centre of the organisational chart, and abandoning fixed assignments within the department, so that the pharmacist can monitor patients throughout the institution. Also, the resources should be directed to the area where patient care needs are most critical. To have the personnel needed to implement pharmaceutical care, director managers to empower their staff pharmacists have to be thinned out. According to Gouveia (1993b), the staff pharmacists can be empowered by allowing them to make decisions that they believe will best serve their patients independent of the scrutiny of management.

Departments must become more integrated, as teams of patient care providers are less structured or layered. Pharmacists can then assume full responsibility for ensuring that drug therapy is facilitated and not fragmented among purchasing pharmacists, distributive pharmacists, sterile products pharmacists, and so forth. All pharmacists, no matter what their principal role, should be seen as serving their patients directly. Integration will be achieved when all pharmacists on the staff share responsibility for pharmaceutical care. The titles managers use should not segregate practitioners from one another. Perhaps the assistant director and associate director of the pharmacy should become pharmaceutical care managers with broadened responsibilities, and their performance, like that of the other pharmacists should be measured in terms of patient-care outcomes (Gouveia, 1993b; Galt and Narducci, 1997). It is clear that pharmaceutical care managers must assume responsibility for patient care and serve as role models for staff.

Excellence in the management of pharmaceutical care activities is measured by the benefits received by patients, physicians, and nurses, and the job satisfaction achieved by the pharmacists providing pharmaceutical care (Smith, 1988).

Pharmaceutical care process

Pharmaceutical care is a structure that requires a systemic, comprehensive and efficient process to achieve the goals of therapy; to identify, resolve, prevent any therapy problems that might interfere with those goals; and to assure positive patient outcomes.

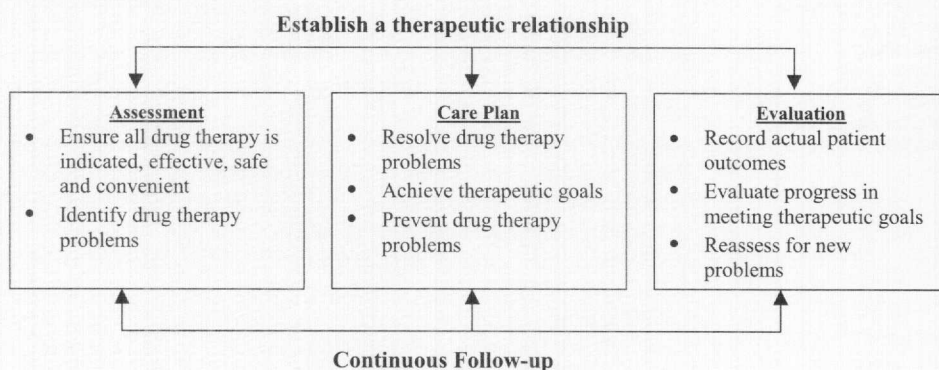
The patient care process shown in Figure 1 involves three major steps:

- 1 The pharmacist completes an assessment of the patient's drug-related needs, including identification of any drug therapy that exists or needs to be prevented in the future.
- 2 Pharmacist and patient work together to construct a care plan that should meet the goals of patient therapy.
- 3 The last major step – the pharmacist schedules and conducts a follow-up evaluation to determine the actual patient outcomes that have resulted from the care provided.

Models for hospital pharmacy practice

Hospital pharmacy services have traditionally little participation in the patient care process, which includes patient admission, therapeutic plan, outcome monitoring and the patient discharge. This gives an impression that pharmacy services have been overly centralised, retrospective, and reactive to what occurs during the patient care process. It has also indicated that the role of hospital pharmacists has been completely absent at certain times and in certain areas, i.e. outside the normal office hours and weekends, and within the admission areas, and the operating theatres areas. In this regard, Cousins and Luscombe (1995) proposed a model for hospital pharmacy practice. They indicated that the traditional model of hospital pharmacy practice in the surgical and medical wards is reactive to events that take place during the patient's hospital stay rather than a proactive role. They proposed a new model that concentrates the pharmacist's efforts toward patient care. This model requires face-to-face patient contact in order to deliver pharmaceutical care services and promotes the pharmacist to become proactive rather than remain reactive. In this model, the clinical pharmacist should attend the preadmission clinic to interview patients for elective surgery and patients admitted in medical wards. Clinical pharmacists should take a detailed drug history, and review medicines that the patients will bring with them. In case of emergency admission the pharmacists should interview as soon as possible after admission, and no later than the morning after admission. From the drug history and knowledge of the predefined care pathways or prescribing policies, the clinical pharmacists will be able to record accurate drug details on the patients' in-patient

Figure 1
Pharmaceutical care process



Source: Cipolle *et al.* (1998)

medicines chart and order the drug supplies. The medicines charts completed by the clinical pharmacists can be co-signed by medical staff later. Regarding Cousins and Luscombe, this model requires that the clinical pharmacist has an authority to perform these drug clerking duties in surgical areas. The junior surgical staff frequently write incomplete, ambiguous or incorrect in-patient prescriptions on the patient's admission, Cousins and Luscombe contended, and the pharmacist or nurse often have to clarify or correct the prescription. Both medical and nursing staff, Cousins and Luscombe said, should support the new role for the clinical pharmacists at this step of the patient's stay. It will save them time, and both groups acknowledge the clinical pharmacist's greater knowledge and accuracy in documenting drug therapy. This model also allows clinical pharmacists to introduce themselves to patients at an early stage and begin to provide them with pharmaceutical care services. Further benefits of this model are that the pharmacist will arrange for a patient's medicines to be available on the ward immediately. This will reduce any delay in patients receiving scheduled medicines, and reduce the time spent by staff from the clinical area ordering and collecting non-ward stock drugs.

An effective way to encourage the movement of pharmacy staff away from the central department is the development of satellite pharmacies in selected areas. Cousins and Luscombe indicated that there may be benefits in decentralising the pharmacy staff serving the surgical and medical areas to a pharmacy satellite. Such satellite provides a convenient and accessible base for clinical pharmacy services to the surgical and medical areas. It also enables pharmacy staff adequately to counsel the patients on their drugs before discharge.

The design of suitable models should define the structure services and the process of practice. The concept of pharmaceutical care, as described by Hepler and Strand (1990), has placed pharmacists in a patient-centred practice, and has put them in a position of preventing drug-related problems. Pharmaceutical care is moving into hospitals, but the transition from dispensing to clinical duties to patient care remains spotty. Pharmaceutical care means more than patient chart reviews – the concept requires the pharmacists to take responsibility for patient outcomes. The notion of responsibility and integration is key element of the pharmaceutical care concept. The pharmacist has a direct responsibility for the provision of rational drug therapy for the patient, and this responsibility should be carried out interactively and collectively with other health-care providers. This integrated responsibility has been described as putting the pharmacist in a cotherapist model, in which both the physician and the pharmacist have direct responsibilities for each other (Hepler, 1993). To provide an integrated pharmaceutical management model, certain prerequisites should be considered. These prerequisites involve clear principles, standards and resources to implement an integrated pharmaceutical care approach.

Principles of practice for an integrated pharmaceutical care approach

The principles of practice for an integrated pharmaceutical care approach demonstrate the knowledge required of a pharmacist and the level to which the pharmacist must participate with other health-care professionals in order to provide the best

care. Hepler and Strand (1990) stressed that two activities must occur for pharmaceutical care to be delivered. First, the practitioner takes time to determine the patient's specific wishes, preferences, and needs concerning their health and illness. Second, the practitioner makes a commitment to continue care, once initiated. The American Society of Health-System Pharmacy (ASHP) issued a statement on pharmaceutical care, which was adopted by its House of Delegates in June 1993. Its purpose was to assist pharmacists in understanding pharmaceutical care, as such understanding must precede efforts to implement the concept. The ASHP statement defines pharmaceutical care, articulates its principal elements and examines its implications for pharmacists, patients, and other providers. To aid the achievement of pharmaceutical care, a number of principles and standards which underlie pharmaceutical care should be developed. Since the introduction of the pharmaceutical care concept and the development of the ASHP statement on pharmaceutical care, considerable variation in pharmacists' provision of pharmaceutical care has been observed. Pharmaceutical care attempts to standardise the basis for delivery of all pharmacy services, including clinical services to patients. So, the ASHP (1993b) believes that pharmacists need a standardised method for providing pharmaceutical care. They issued *Guidelines on a Standardised Method for Pharmaceutical Care* in 1996. This document describes a standardised method based on tasks that all pharmacists should perform for individual patients in an organised health system. The Royal Pharmaceutical Society of Great Britain (RPSGB) (1996) issued a statement of principles and standards of good practice for hospital pharmacy in the UK in 1995. Its aim was to outline the basic precepts of a hospital pharmacy service; it deliberately takes a patient-focused approach to underline the direct involvement of all aspects of the pharmacy service in patient care. The use of this method would help consistency in the provision of pharmaceutical care in all practice settings. It would support continuity of care both within an acute care and in an ambulatory care context. Moreover, the standardised method for pharmaceutical care would establish consistent documentation, so that patient-specific and medication-related information could be shared from pharmacist to pharmacist, and among health professionals. The need to identify the functions involved in pharmaceutical care critical skills necessary to provide it was discussed at the San

Francisco (USA) consensus conference in 1993 (ASHP, 1993a).

The RPSGB believes that principles which underlie pharmaceutical care in hospitals should include the following:

- Pharmacists are professionally, ethically and legally responsible directly to the patient for the quality of care they provide.
- The pharmacist has a duty of care to ensure that the medicines the patient receives are safe, effective and represent an effective use of scarce NHS resources.
- The pharmaceutical care provided should be commensurate with and responsive to the needs of the patient.
- Pharmaceutical care is provided through interaction of the entire pharmacy team and its integration with other health-care professionals in the treatment of patients.
- The patient's right to privacy, independence, confidentiality and dignity should be maintained at all times.
- Patients and their carers should be empowered to make informed choices about their care and participate in the planning of the care.
- Pharmaceutical care should be of optimum quality and regularly monitored to ensure maintenance of the quality.
- Standards should recognise the professional independence of the pharmacy practitioner.
- Standards should be set, monitored and reviewed in response to developments and practice.

These principles are not specific to any practice setting. They can be used in hospitals, ambulatory care, home care, long-term care, and other practice settings.

Standards of best pharmaceutical care practice in hospitals

First, and foremost, pharmacy should adopt specific practice standards in implementing pharmaceutical care. Hutchinson and Schumock (1994) state that:

Pharmaceutical care will fail if each pharmacy organisation or individual pharmacists are allowed to define pharmaceutical care for their own agenda.

Perhaps the most important next step facing us is to agree on a standardised method for pharmaceutical care. It is important to decide what method pharmacists will use to collect the patient information used to identify and resolve drug-related problems. It is important also to agree on a standardised approach by which individual pharmacists will provide pharmaceutical care to individual patients. The use of a standardised

approach for pharmaceutical care will assist pharmacists in implementing and providing pharmaceutical care in their institutions.

There have been numerous calls for standards of pharmaceutical care practice in the literature. The standardised method for the provision of pharmaceutical care should include all the pharmaceutical care process elements. As has already been seen, the pharmaceutical care process consists of three inseparable steps: assessment, the care plan, and the follow-up evaluation. The pharmaceutical care process allows the pharmacist to put the philosophy of practice into action for the patients' benefit. Pharmaceutical care standards should be a clear, unambiguous set of performance expectations that are relevant towards improving patient outcomes, yet are feasible to implement and allow for flexibility depending upon the practice environment and patient case mix. The purpose of the pharmaceutical care process element will now be discussed, and a standard of the activities involved will be provided.

Assessment

Pharmaceutical care begins with an assessment of the patient's drug related needs. To carry out a comprehensive assessment of the drug related needs of a patient, the pharmacist must collect, collate and integrate several categories of patient-specific data. It is necessary that the patient should be directly interviewed by pharmacists to establish a direct relationship with the patient, to understand the patient's needs and desired outcomes, to obtain medication-related information, and to clarify and augment other available information.

Information should be collected and used as a patient-specific database to prevent, detect and resolve the patient's medication-related problems and to make appropriate medication-therapy recommendations. So it is important that the hospital pharmacists have data collection forms to record patient diagnosis, medications, drug allergies, and laboratory values.

Moreover, objective and subjective information should be obtained directly from patients, care-givers, and other health-care professionals. In addition, information can be obtained by reviewing the patient's health record and other information sources (Cipolle *et al.*, 1998; Filibeck *et al.*, 1999).

Formulating the pharmaceutical care plan

The pharmaceutical care plan is an outline of the pharmacist's and patient's responsibilities to meet stated, mutually agreed upon goals of the therapy and

interventions. The pharmaceutical care plan is constructed to define goals, determine appropriate interventions, and to define responsibilities for three different purposes:

- 1 To resolve the drug therapy problems present at this time, which were identified during the assessment.
- 2 To meet the goals of therapy for each patient's medical conditions, thereby achieving the outcomes desired by the patient.
- 3 To prevent future drug therapy problems from developing.

The therapeutic goals should reflect the integration of medication, disease, laboratory tests, and patient-specific information as well as ethical and quality of life considerations.

The goal of therapy should be designed to achieve definite medication-related outcomes and improve the patient's quality of life. Once the patient care goals have been established, the pharmacist must consider the choices to be made to meet successfully the patient's drug-related needs. Based on the patient's drug-related needs identified, the care plan will contain interventions that are designed to resolve drug therapy problems, achieve therapeutic goals for medical conditions, and prevent new problems from developing. All patients should receive the medicines required to meet their therapeutic goals throughout their course of treatment.

The formulating of a pharmaceutical care plan might include the following:

- The pharmacist reviews the plan and desirable outcomes with the patient and with the patient's other health-care provider(s) as appropriate.
- The pharmacist documents the plan and desirable outcomes in the patient's medical and/or pharmacy record.
- The pharmacist reviews, monitors, and modifies the therapeutic plan as necessary and appropriate, in concert with the patient and the health-care team.

The therapeutic plan developed in collaboration with the patient and other health-care professionals should be systematic and logical, and should represent a consensus among the patient, prescriber and pharmacists. The pharmaceutical care plan is complete when goals have been set, interventions agreed upon, and responsibilities of the pharmacists and the patient accepted (Filibeck *et al.*, 1999).

Implementing the pharmaceutical care plan

The pharmacist and the patient take the steps necessary to implement the pharmaceutical care plan. These steps may include:

- 1 Contacting other health-care providers to clarify or modify prescriptions.
- 2 Initiating drug therapy.
- 3 Educating the patient and/or caregiver(s), and coordinating the acquisition of medications and/or related supplies, which might include helping the patient overcome financial barriers or lifestyle barriers that might otherwise interfere with the therapy plan, or coordinating appointments with other health-care providers to whom the patient is being referred.
- 4 The pharmacist works with the patient to maximize patient understanding and involvement in the therapy plan, assures that arrangements for drug therapy monitoring (e.g. laboratory evaluation, blood pressure monitoring, home blood glucose testing, etc.) are made and understood by the patient, and that the patient receives and knows how to use all necessary medications and related equipment properly. Explanations are tailored to the patient's level of comprehension, and teaching and adherence aids are employed as indicated.
- 5 The pharmacist ensures that appropriate mechanisms are in place to ensure that the proper medications, equipment, and supplies are received by the patient in a timely fashion.
- 6 The pharmacist documents in the medical and/or pharmacy record the steps taken to implement the plan, including the appropriate baseline monitoring parameters, and any barriers which will need to be overcome.
- 7 The pharmacist communicates the elements of the plan to the patient and/or the patient's other health-care provider(s). The pharmacist shares information with other health-care providers, as the setting for care changes, in order to help maintain continuity of care as the patient moves between the ambulatory, in-patient or long-term care environment (Strand *et al.*, 1992).

Follow-up evaluation

The final step in the pharmaceutical care process is the follow-up evaluation of the patient. A follow-up evaluation (Strand, 1997; Cipolle *et al.*, 1998) is a patient encounter which allows the pharmacist to collect necessary data and information to determine whether the decision made and actions taken during the assessment produced positive outcomes.

The pharmacist should take the steps necessary to evaluate the patient's progress toward definite outcomes according to a

systematic process. These steps may include the following:

- 1 The pharmacist regularly reviews subjective and objective monitoring parameters in order to determine if satisfactory progress is being made towards achieving desired outcomes, as outlined in the drug therapy plan.
- 2 The pharmacist and physician determine if the original plan should continue to be followed or if modifications are needed. If changes are necessary, the pharmacist works with the patient/caregiver and their other health-care providers to modify and implement the revised plan.
- 3 The pharmacist should establish a suitable mechanism for patient follow-up evaluation. The pharmacist should use an appropriate professional judgement in determining the need to notify the patient's other health-care providers of the patient's level of adherence to the plan.
- 4 The pharmacist reviews ongoing progress in achieving desired outcomes with the patient and provides a report to the patient's other health-care providers as appropriate.
- 5 The pharmacist updates the patient's medical and/or pharmacy record with information concerning patient progress, noting the subjective and objective information which has been considered, their assessment of the patient's current progress, the patient's assessment of their current progress, and any modifications that are being made to the plan. Communications with other health-care providers should also be noted.

The follow-up evaluation process ensures the continuity of care. In practice, many patients have chronic disorders which require continuous care and serial follow-up evaluation in order to compare the previously stated goals with patient progress.

Barriers to providing integrated pharmaceutical care management approach

All new concepts face barriers and challenges, and the concept of pharmaceutical care is no exception. The barriers discussed below are not the only difficulties that will be faced, nor are they arranged in any particular order of importance. Barriers to the implementation of pharmaceutical care in the acute care setting and how they stand in order of importance vary from one hospital to another and from one geographic region to

another. However, the barriers tend to fall into four major categories: system-related, pharmacist-related, pharmacy management or pharmacy department-related, and demand-related barriers.

System-related barriers

Fragmentation of the health-care system

In recent years, society's demands to improve the quality and slow the rising costs in the health-care system have intensified. The system-related barriers discussed here reflect health care in a group practice model that integrates physicians and other clinicians with hospitals, financial incentives, and administrative management and services of a health-care plan to provide a continuum of care. Health-care organisations are in a unique position to address these barriers and to implement changes that support pharmaceutical care.

A major system-related barrier in health-care settings (May, 1993) is the lack of a comprehensive, ongoing process for defining the appropriate outcomes of drug therapy. For employers and other purchasers to understand the quality of the health care for which they are paying, defining the quality and appropriateness of outcomes is needed (Penna, 1990).

Pharmacists, physicians, and other health-care professionals are just beginning to understand the importance of, and take responsibility for, establishing clinical guidelines that include outcomes. In addition to their clinical practice role of ensuring appropriate drug therapy outcomes for individual patients, pharmacists must address the care of the health plan's entire patient population.

The health-care system has become highly fragmented. There is a clear separation between activities in inpatient acute care and activities in out-patient care. A less fragmented system is needed to allow for continuity of pharmaceutical care (Louie and Robertson, 1993).

Physical facilities limit the ability of pharmacists to provide pharmaceutical care. Dedicated areas, in which the pharmacist can provide patient consultations or drug therapy information, are often lacking. Pharmacists are also isolated from the place where diagnosis and drug therapy decisions are made. This physical isolation limits involvement in such drug therapy decisions, and results in an increased reliance on retrospective, often adversarial, interactions with physicians and other clinicians. This physical barrier also creates the perception among patients that the physician or other clinicians are the sole providers of care and

that the pharmacist, who is physically located with drug products, is merely a provider of these products (Penna, 1990; May, 1993; Swift, 1993).

Admission and discharge planning

The acute care setting often does not permit for a co-ordinated or planned admission process. Frequently, the pharmacist finds out that a patient has been admitted only when the first drug orders are sent to the pharmacy department. The opportunity for the pharmacist to make recommendations for the initial drug therapy plan is thus lost. The pharmacist is put in the position of trying to change problematic orders rather than preventing the problems in the first place (May, 1993). This creates for the pharmacist an adversarial rather than an advisory role. Even if a pharmacist is able to make recommendations routinely for the initial drug therapy plan of newly admitted patients during the day shift, it is not easy to advise prescribers about the drug therapy of newly admitted patients during the more lightly staffed evening and night shifts. Also, in many acute care settings, discharge planning does not give the opportunity for the pharmacist to become involved in a meaningful way. In many cases, the pharmacist discovers that a patient is being discharged, when the patient discharge order is received in the pharmacy department. The patient may be ready to leave by this time (May, 1993).

Lack of access to patient medical information

In addition, lack of ready access to clinical information limits the ability of pharmacists to provide care that ensures appropriate drug therapy outcomes. The information to which the pharmacist lacks ready access includes the reason for the patient's visit and admission, the patient's medical history, laboratory test results, and the patient's assessments and care plans made by other providers (May, 1993). Information can be obtained from the patients themselves, from observation, and from physicians who are willing to provide it, once they know the purpose for which it is to be used. Consequently, unnecessary personnel and administrative costs are incurred, as pharmacists attempt to carry out their tasks of identifying potential or actual drug-related problems (Louie and Robertson, 1993).

Pharmacist-related barrier

Most pharmacists, as mentioned before, lack sufficient time to provide pharmaceutical care. The pharmacist's historical preoccupation with dispensing drug products may constitute one barrier to the acceptance

of this new philosophy among product-oriented practitioners. Drug distribution continues to be their major responsibility. Patient-care activities are a secondary focus, and are often performed only when there is spare time or extra staff are available. This situation makes it very difficult to establish the continuity of care necessary for a good pharmacist-physician and pharmacist-patient relationship (Hepler, 1990; Penna, 1990; Strand and Cipolle, 1993).

According to Louie and Robertson (1993), pharmacists have failed to accept and fulfil the pharmaceutical care concept for the following reasons:

- Some pharmacists do not understand the responsibility for ensuring appropriate outcomes and believe that consultation and education are the only ingredients of pharmaceutical care.
- Pharmacists tend to stick to their traditional role. They continue to direct their innovative energies towards product and service improvement rather than focusing on the patient.
- Many pharmacists are eager to become involved in patient care and may be misdirected into providing patient care services that do not draw on their drug expertise. These functions may duplicate the work of other health-care professionals and may not contribute to the goal of ensuring the best drug therapy outcomes.

Pharmacists are not accustomed to documenting pharmaceutical care, and many lack an appreciation of its importance. Documentation of pharmaceutical care is essential for recording clinical information and drug therapy outcomes, and for assessing the therapeutic benefits and cost-effectiveness of that care (Hepler, 1996). It also facilitates communication among clinicians. Many pharmacists enjoy providing direct patient care but view documentation of that care as a bureaucratic hassle (Penna, 1990).

Management or department-related barrier

Pharmacy managers in acute care settings often fail to hold pharmacists and other pharmacy managers accountable for drug therapy outcomes. Job descriptions and performance evaluation criteria for pharmacists in hospitals still reflect traditional functions and accountabilities (Gouveia, 1993a). Managers and pharmacists do not jointly develop standards of competence in the area of pharmaceutical care. Evaluations and accountabilities are not related to drug therapy outcomes. Many pharmacy departments create a barrier to

pharmaceutical care when they design their organisation chart. Pharmacy managers lack sufficient time to plan for pharmaceutical care and for an evolving, patient-centred practice. The daily responsibilities of pharmacy managers are overwhelming and leave little time for innovation. Pharmacy managers are accountable to a departmental bottom line defined by traditional fiscal criteria (Louie and Robertson, 1993). Financial success is not defined in terms of improved patient outcomes that reduce overall health-care costs, but in terms of pharmacy department costs. Current accountability structures motivate pharmacy managers to concentrate on drug products rather than the outcomes of drug therapy.

Most pharmacy managers do not take the risks necessary to demonstrate cost-effectiveness of the pharmaceutical care model. They do not adjust the department's cost structure to create even small opportunities to demonstrate the cost-effectiveness (Hepler, 1993). Pharmacy managers also lack integrated mechanisms for measuring the impact of services on patient care, there is little consensus about what measures should be and few resources are devoted to developing them (Hepler, 1990). In large hospitals, the responsibilities for clinical and distributive activities are divided between pharmacists who are clinically-oriented and pharmacists who are distributively-oriented. This division is not efficient and wastes time. Organisation charts should be redrawn, so that all pharmacists may contribute to pharmaceutical care (Gouveia, 1993a).

Professional and administrative barriers

There is a lack of demand on the part of patients, insurance purchasers, clinicians, and administrators for pharmacists to take responsibility for ensuring appropriate drug therapy outcomes. This can be explained by the lack of well controlled studies on the specific benefits of pharmaceutical care, and the general failure of the pharmacist profession to promote adequately the impact that pharmacists can have on patient care overall costs. The value of pharmaceutical care is simply not being perceived. Patients are familiar only with the traditional role of pharmacists and have not been taught the need for follow-up beyond drug dispensing. Other health-care professionals are generally not aware that pharmaceutical care complements their own roles, that it meets a unique need, and does not duplicate or threaten their roles. Pharmacists may be responsible for this lack of understanding. Most pharmacists lack the communication

skills necessary to promote pharmaceutical care to their colleagues. Physicians as a group may resist a pharmacist's taking a more active role in patient care. Nurses too may view the presence of pharmacists on the units as a threat (May, 1993).

Finally, administrators of most health-care plans do not know that pharmacists can make contributions well beyond their traditional distributive duties. They do not hold pharmacy managers accountable for ensuring appropriate drug therapy outcomes (Gouveia, 1993a). They have not been enlightened about these responsibilities, so of course they have not come to demand that pharmacists should meet it. However, the success of pharmaceutical care in hospital should help to overcome opposition by these providers.

Pharmaceutical care outcomes

In studying pharmaceutical care, an important concept to be understood is that of patient health outcomes. Outcomes have been defined as a change in state or condition attributable to antecedent health care (Donabedian, 1992). A tremendous amount of exciting momentum towards pharmaceutical care as the new model for pharmacy practice has developed. Pharmaceutical care is about the role of pharmacists in assisting patients, as they strive to achieve the intended outcomes from their therapies, prescribed and otherwise. It is the profession's attempt to make a contribution to the world of outcomes, as this construct takes on greater significance in the organisation and finance of health services. Pharmacists have a responsibility to ensure positive patient outcomes (Hepler and Strand, 1990). The commitment that pharmacists entering the profession make to promote the health of their patients, is one of the most compelling reasons for them to be concerned with patient outcomes (Hepler and Grainger-Rousseau, 1995). The pharmacist naturally should care about the effects drug therapy and pharmaceutical care are having on patient outcomes such as quality of life, satisfaction, functioning and morbidity. In addition, optimising a patient's therapy and improving outcomes can and should translate into added professional satisfaction for pharmacists (APHA, 1994). Some pharmacists have indicated not only that patients are experiencing improved outcomes from pharmaceutical services, but also that pharmacists themselves have achieved greater professional satisfaction from providing the pharmaceutical care (Practice Profile, 1994). Fundamental changes

are occurring in the health-care role of the pharmacist. Pharmacists are increasingly responsible for decision making that requires access to information on patient outcomes. In developing treatment guidelines or protocols, pharmacists must consider patient outcomes when deciding what treatment should be given to which patients under what circumstances. In selecting and managing patient drug therapy, pharmacists should be aware of relevant patient outcomes associated with the therapy to monitor changes in health status (Kozma, 1995). Pharmacists must agree on what outcomes mean to their practices and their patients. Pharmacists should be patient counsellors and advocate under a broadened view of outcomes that encompasses economic, clinical and humanistic elements of pharmacotherapy. There has been considerable confusion over so-called outcomes indicators. Outcomes indicators are relevant only if and when the predictability of those indicators is demonstrated in well-controlled studies (Kozma, 1995). The best patient care will come from health-care practitioners who document structure, process and outcomes and evaluate these measures to provide appropriate care. The pharmacist takes a medication history, monitors the drug regimen, and counsels the patient on the appropriate way to use the treatment, all vital process activities (Kozma, 1995). Pharmacists cannot dispense prescriptions or provide pharmaceutical care without a pharmacy, drug inventory, or patient profiles, all of which are essential structural inputs. The objective of these inputs and actions is to improve the health status of patients. Outcomes, therefore, are intended endpoints of care and unintended effects as well. The future of pharmacy is based on demonstrating the positive effect of pharmaceutical care on patients (Fitzgerald, 1994). Pharmacists have always been part of a health-care system of checks and balances in health-care delivery. As the provision of health services changes, opportunities to assess the process and structure of care and to document patient outcomes will increase. Pharmacists are well positioned to intervene in patient care but, if they do not show the value of pharmaceutical care activities, they will face competition from other health-care providers (Hepler, 1996).

Summary

Likewise, the growth of the health-care sector has put pressure on the profession to redefine

its patient provider role. Despite this change in professional focus, many pharmacists may find it difficult to incorporate this new philosophy into their current practices. This is especially true for many older-generation pharmacists, lack the formal training and skills necessary to manage drug therapy and who still submit to a product orientation. Pharmacists and pharmacy managers have attempted to establish and implement clinical pharmacy services by using many approaches of pharmacy practice that lack a clear philosophy and a definition of the actual role of the pharmacist in the patient care process. These deficiencies have affected the extent and consistency of clinical pharmacy services provided in hospitals.

Nevertheless, pharmacy practice reform cannot be achieved simply by changing a slogan or even by a piece of legislation. The success of practice reform is absolutely dependent upon changing the individual pharmacist's practices. In order to contribute improvement in the quality of patient care, pharmaceutical care tenets mandate increased involvement by pharmacists in direct patient care activities. Pharmaceutical care is the responsible provision of drug therapy for the purpose of achieving definite outcomes that improve a patient's quality of life. To implement pharmaceutical care as an integrated approach, the pharmacist is required to co-operate with patients and other health-care professionals to identify, resolve and prevent actual or potential drug-related problems. As any other business endeavour, a number of prerequisites should be addressed for delivering an integrated pharmaceutical care approach. These prerequisites are listed below as follows:

- It is important to define pharmaceutical care and determine how it affects pharmacists' daily practice.
- It is necessary to create a vision and a mission statement for the practice to achieve consensus, commitment and teamwork that will serve as a basis for the development of pharmaceutical care.
- Development of the strategic plan for pharmaceutical care in conjunction with the pharmaceutical care mission statement.
- Development of a timeline for implementation of the strategic plan.
- Determining the organisational structure and resources that will be needed to implement a pharmaceutical care approach.
- Establishing methods to provide for the skills and resources needed to provide pharmaceutical care services.

- Development of a procedure for implementing the plans that has been made.
- Evaluating, revising and adjusting plans as necessary to ensure high quality of care and business success.
- Examining and identifying causes of the specific barriers that impede the implementation of a pharmaceutical care practice model.
- Development of strategies for overcoming barriers and to identify the needs of specific stakeholders.

Pharmaceutical care is a necessary element of health care and should be integrated with other elements. An integrated pharmaceutical care approach is likely to have a significant effect on pharmacy services. Pharmacy managers must plan and act effectively to ensure that the integrated approach is developed in their institutions in concert with pharmaceutical care. The pharmacy managers must support and respond to the pharmaceutical care mission by delivering pharmaceutical care in a comprehensive fashion. In an integrated pharmaceutical care model, it is necessary for pharmacists to use a standardised process for patients' care and to accept responsibility for identifying and managing or referring all of a patient's drug related problems. To perform this responsibility, pharmacists must adhere to a consistent, thorough process to ensure that they identify all of these drug-related problems, manage the simple, and refer the more complex appropriately to other health-care providers, including specialist pharmacists. Furthermore, the pharmacist must document the decisions made at each of these steps, the information used to make these decisions, and the rationale for the decisions. So the pharmacy department must continue to be a valuable member of the integrated health care team and must continue to prove its value in assuring optimal drug therapy. Pharmaceutical care is an excellent mission and no one seems to disagree with the principles. The challenge is implementation. Any model of pharmacy practice that describes itself as pharmaceutical care must be comprehensive and integrate all functions and responsibilities that are both necessary and sufficient for accomplishing the desired outcomes. The integrated pharmaceutical care model provides a patient-oriented philosophy of practice for integrating the role of pharmacist as a pharmaceutical care provider and the role of other health-care providers, so that the patient can be assured of receiving the best pharmaceutical care and health care possible.

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