# Structural Process and Implementation Programs of Pharmaceutical Care in Different Countries

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**Abstract:** Pharmaceutical care started in the nineties in the United States and has rapidly extended in many other countries. Although there are different trends, such as clinical pharmacy services, cognitive services, medication management, medication review, they all share the same philosophy and objectives, namely "the responsible provision of drug therapy for the purpose of achieving definite outcomes that improve a patient's quality of life". To attain these objectives, a pharmaceutical care process has to be followed point-by-point in order to detect possible medication-related problems. Furthermore, pharmacists have to work together with patients, and ultimately with physicians to establish a care plan. This methodology requires basic skills of documentation and communication and therefore, it is important to establish implementation programs aimed at community-, hospital-, and consultant pharmacists, and to consider PC as a basic element of University teaching programs and postgraduate studies. Moreover, there are still barriers that hinder the provision of this service and have to be overcome.

In this article, we have revised the implementation process and the existing projects in many countries and we conclude that despite the enormous amount of work, there is still much to be done from sides of Administration and pharmacists themselves.

## INTRODUCTION

Pharmaceutical care is considered as pharmacy's opportunity to mature as profession by accepting its social responsibility to reduce preventable drug-related morbidity and mortality [1].

The present meaning of pharmaceutical care evolved from a term, defined in 1975 by Mikeal *et al*. [2] as a subset of medical care, using an analogous definitional format as medical care. It was Brodie [3], who developed this concept by including in it the drug needs for a given patient and the provision, not only of the required drugs but also of the services needed for safe and effective therapy, in an environment of changing societal purpose of pharmacy [4]. The development of clinical pharmacy over the past 30 years has had its share of supporters and doubters some years ago. This debate frequently focused on the concept and need for adequate role justification. When clinical pharmacy practice first emerged, such a justification became necessary [5]. Clinical pharmacy represented an important, not sufficient, change in pharmaceutical practice as it was created in terms of informative functions [6]. As Hepler stated, "performing informative functions alone seems less valuable to society than acceptance of responsibility for the appropriate use of drug products themselves" [6].

A subsequent evolution was necessary. The end of this process and the beginning of a new era in pharmaceutical profession were marked by the publication in 1990, of an article in which Hepler and Strand defined pharmaceutical care as "the responsible provision of drug therapy for the purpose of achieving definite outcomes that improve a patient's quality of life" [1].

According to this concept, the patient care process in pharmaceutical care includes the following [7]:

- establishment of a therapeutic relationship
- assessment, including identification of medication-related problems
- development of a care plan
- evaluation
- continuous follow-up.

## WHAT IS PHARMACEUTICAL CARE?

Although pharmaceutical care is widely accepted on a philosophical basis, there is, for some authors [8], a lack of comprehensive information, and comprehension, about the functions and responsibilities pharmacists undertake when providing pharmaceutical care. This is the reason why, in spite of numerous works and investigation projects conducted in this field, these not always coincide with the concept and philosophy of the practice defined by Hepler and Strand [1].

Likewise, although an important amount of studies call this practice by different names, such as clinical pharmacy services, cognitive services, medication management, medication review, they all describe similar practices [9].

This fact led to a state of confusion about what is and what is not pharmaceutical care, as well as trying to identify

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and specify the different cognitive services that pharmacists can offer.

Assuming this new philosophy of pharmaceutical practice it is evident that many of the studies, which claim to be pharmaceutical care, are in fact works that use this designation as a trendy concept, though they are just papers based on the usual pharmaceutical practice. This is where the difficulty to revise the implantation of pharmaceutical care services or programs lies, and therefore, no matter which denomination, these programs have to be based on the philosophy and care practice underlying this concept: they must be directed towards the pharmacists' responsible involvement in patients' health outcomes.

Moreover, due to national specifications, much more complications may arise. For example, in the UK the concept known as "medicines management" has further been developed. Despite the original idea of this philosophy of practice was more oriented towards the "health care provider" instead of "to the care of the patient", as happens in pharmaceutical care, both tendencies have evolved and both are growing closer to each other to some extent so that now there is probably little difference between them.

Some authors affirm that both concepts, pharmaceutical care and medicines management, were created from limited viewpoints, that of patients' care in the case of pharmaceutical care, and that of the health care provider in the case of medicines management, and pharmacists have added a societal viewpoint into pharmaceutical care and the patient's perspective into medicines management [10]. Anyway, this confirms that although an idea of change prevails in the objective of pharmacists' assistential practice, this practice is not always based on the same principles.

The same happens in Portugal, where the ANF (Pharmacy National Association) has adopted programs on disease management in diabetes, hypertension and asthma, in order to try to implement pharmaceutical care programs on a nationwide level.

In Australia, programs based on "clinical interventions" [11], medication reviews [11, 12] or on Cognitive Pharmaceutical Services (CPS) [13] are being undertaken.

In an effort to clarify all these terms, the American Pharmacists Association (AphA) has prompted a classification of the pharmacist practice activity. A consensus group coordinated by the AphA, which comprises numerous pharmaceutical institutions, has prepared the Pharmacy Practice Activity Classification (PPAC) [15], an ample document that is divided into four areas or *domains*:

Domain A: Ensuring appropriate therapy and outcomes.

Domain B: Dispensing medication and devices.

Domain C: Health promotion and disease prevention.

Domain D: Health Systems management.

Each domain includes more specific classes of activities, those of domain A, are directly related with pharmaceutical care practice:

A.1. Ensuring appropriate pharmacotherapy.

A.2. Ensuring patient's understanding /adherence to his or her treatment plan.

A.3. Monitoring and reporting outcomes.

The PPAC provides a common language that if used consistently by researches and others would yield comparable data among studies.

Similar issues are taking place in the rest of the industrialized countries. In Spain, the Ministry of Health patronized an experts' committee that has drawn up the Spanish Consensus on Pharmaceutical Care [16], featuring three pharmacists' basic cognitive services:

- Dispensing
- Pharmacist consultation and over- the counter-prescription
- Drug- Therapy Follow-up (DTF), according to the pharmaceutical care philosophy of Hepler and Strand [1].

Therefore, it is essential to precisely define what pharmaceutical care means. Only then, we will be able to tackle the structure of its methodological process and its implantation in countries of the industrialized world.

## DEVELOPING THE PHARMACEUTICAL CARE PROCESS

The philosophy of this practice consists of a number of elements. It begins with a statement of social need; it continues with a patient-centered approach to meeting this need, has at its core the caring of and for another through the development and maintenance of a therapeutic relationship, and ends with a description of the practitioner's specific responsibilities [7].

Social need resides in the fact that most of the failures of pharmacotherapy can be ascribed to incorrect use of drugs on the side of the patients, and failing to achieve the therapeutic objectives. This happens in over 50% of the cases where the intended outcomes are not obtained [17] despite a correct prescription and dispensation [18] and hence represent an important economic burden on the sanitary costs [19].

In accordance with other authors [20], we can affirm "an intervention can be considered to be a pharmaceutical care intervention if it includes, as a minimum, the following:

· a one-to-one consultation between a patient and a pharmacist with a focus on managing health or resolving drug related-problems,

· development of a care-plan,

· pharmacotherapy follow-up.

The primary purpose of the process is to identify and solve drug-therapy problems [21]. In order to achieve this, the pharmacist must conduct a series of interviews focused on obtaining the necessary information about the disease and the patient's treatments.

Summers indicates that a planning for improved patient outcomes must be prepared. The requirements to standardize the documentation process have to be based in four main areas [22]:

- Demographic data.
- Medication list.
- Health Problems list.
- Plan.

**Offering the Service**

Dader Method of DTF [23] indicates the necessity that the pharmacist offers this service during his usual work set and contact with patients and identify those who may need DTF.

Most of the patients are not used the pharmaceutical care services, although pharmacist-managed clinics exist in many practice settings, such as physician offices, hospital-based outpatient clinics, and pharmacies. Even more, many people are not aware of pharmacists offering this service. Therefore, it is important to start marketing pharmaceutical care.

Recommendations for beginning this process have to be done to improve patient's perception of that service [24]. It is necessary to emphasize all the potential benefits for a patient receiving these services: making sure medications are working appropriately to improve the patient's health, reducing problems associated with medications, such as adverse effects and interactions with other medications [25].

Dader Method [23] suggests three main characteristics and goals that patient must know:

- to optimize patient's pharmacotherapy,
- patient and pharmacist must collaborate and look for common consent goals,
- pharmacist is not a physician substitute but a collaborator, with the same objectives about patient's needs.

**Pharmacist- Patient Interview**

The second step should be an interview by the pharmacist oriented towards learning about the patient's health problems, his worries and the drugs he is taking. The pharmacist has to reach an agreement with the patient and acquire a compromise with him for working together with the aim of achieving/ obtaining the expected therapeutic results.

Next, the pharmacist conducts a thorough audit of all medications that the patient has taken or is still taking [26]. The pharmacist must analyze which drugs the patient is taking, how and how long he has to do so, as well as thoroughly study the complete medication. Furthermore, the pharmacist has to know which outcomes are expected for each health problem. This way he will be able to establish parameters for the effectiveness of pharmacological treatments and identify the possible drug-therapy problems.

Before pharmacists can start the process, they need to establish a therapeutic relationship with their patients. Pharmacists need to be active listeners and demonstrate empathy for patients. They then need to interview the patient and collect relevant data to evaluate patient drug therapy and health status. Critical thinking skills improve pharmacists' abilities to identify drug therapy problems [27].

Therefore, the first step of the pharmaceutical care process is the development of a collaboration relationship between pharmacist and patient. The value of this relationship becomes evident by the quality and quantity of patient information the pharmacists acquired and by the types of interventions they made [28].

DTF implies a continuous patient-pharmacist relationship that is based on mutual responsibility and reliance in order to achieve the therapeutic outcomes [29].

Ellington *et al*. [30] show the essential communication skills for a medication history interview, such us active listening, emphatic responding, open-ended or close-ended questioning as needs, verbal following, silence, timing, etc.

**Study of Patient Situation: Drug Therapy Problems Detection**

Once the interview with the patient has taken place, the pharmacist has to analyze the possibility that the patient may be suffering any therapeutic failure on which to act, and even detect those situations that might happen at some time and must be prevented.

Not in vain, we have to bear in mind that pharmaceutical care involves three major functions on behalf of the patient [1]: (1) identifying potential and actual drug-related problems (DRP), (2) resolving actual drug-related problems, and (3) preventing potential drug-related problems.

Since DRP were defined and classified for the first time in 1990 [31], they have undergone several different classifications. Many of them are not exhaustive [32, 33], and in other cases, they do not distinguish between aspects relating to the process and those related to the outcomes, that is, the causes and the health problems they generate [7, 33-35].

Drug therapy problems (DTP) are defined as [36] health problems, understood as negative clinical outcomes, resulting from pharmacotherapy, that for different causes, either do not accomplish therapy objectives or produce undesirable effects. They can be considered in two classes:

- Real DTP, which are occurring in that moment,
- Potential DTP, which means that the problem is not taking place in that moment, but it will probably happen at some time; in these cases it would be more appropriate to say, using medical terminology, someone is "at risk of suffering from a DTP" [37].

In order to prevent DTP, objectives have to be established to ensure that the patient's medication is the needed and the most effective and safe as possible.

The criteria of necessity and effectiveness should be based on the guides of clinical practice proposed by the physicians for each pathology, so that alerts can be established which induce to suspect any DTP or risk of it.

Regarding safety problems, the minimum literature to be consulted is the technical sheet approved by the sanitary authorities for each drug; nevertheless, the revision of further specialized literature is recommended.

The creation of Drug Information Centers (DCI) was recommended many years ago [38] at the same time as the emerging of Clinical Pharmacy. In 1983, Cardoni [39] stated that they would have to provide drug information services to community practitioners in the future. It is necessary to count with DCI in the practice of pharmaceutical care for assessing pharmacists providing this service.

However, in providing pharmacotherapy consultations, some authors estimate that DCI generally failed to obtain pertinent patient data, thereby risking incorrect responses and inappropriate recommendations [40].

Information is very important for health professionals. They have to support their decisions on the best available information. That is why Davidoff *et al*. [41] claim for the creation of a new health profession: the informationist, to improve medical information to health practitioners.

According to Byrd [42], the PC model suggests that health information professionals in clinical settings could be educated and trained to provide health information care to other professionals.

### Developing a Care Plan

As soon as the health problems and medication of the patient have been studied, it is necessary to establish the possible DTP in the patient and a Care Plan to prevent and resolve these [7]. Pharmacists should design, implement and monitor a care plan to optimally accomplish the therapeutic objective by solving as many DTP as possible. This implies interventions aimed at improving the outcomes that require the physician's collaboration when a change in the treatment is necessary. In order to assess if the plan has succeeded or not, it is necessary to do a continuous follow-up, which evaluates if the DTP have been resolved, and given the case, if the therapeutic objectives have been reached.

Intervention strategies will depend on the individual situation of each patient. Ibáñez *et al*. [43] suggest a model based on evaluating in each patient and in each pharmacotherapy failure, the ratio value/ effort, by analyzing which issues provide value and to which extent, and which produce effort and how much. This means that, in the authors' opinion, the priority of the pharmacists' interventions should depend on the seriousness of the DTP and on the effort or complexity entailed by the intervention for pharmacist and patient in the solving of DTP.

Garavalia *et al*. [44] emphasize defining, developing and implementing the evidence-based medicine skills needed for pharmacists, in making health-care decisions.

Pharmacist intervention to solve DTP must frequently count with the participation of the physician who usually treats the patient. Machuca *et al*. [45] proposed a standard model of written intervention based on the six categories of DTP of Granada Consensus [36], which should be handed by the pharmacist to the patient to be delivered to the physician.

As represented in Fig. (**1**), the pharmaceutical care process focuses on the patient as the core of interprofessional relationship. In his range of action stands the family physician in general practice, centralizing all detailed information about the patient's problems from the other specialists.

### Changes of Philosophy

In order to be successful in this task, it is fundamental that the pharmacist changes the way of understanding the practice. Indeed, Hepler and Strand [1] affirmed in 1990, "the mission of pharmacy practice is not only what we have called clinical pharmacy. Clinical knowledge and skills by themselves are not sufficient to maximize the effectiveness of pharmaceutical services. There must be an appropriate philosophy of practice and an organizational structure within which to practice".

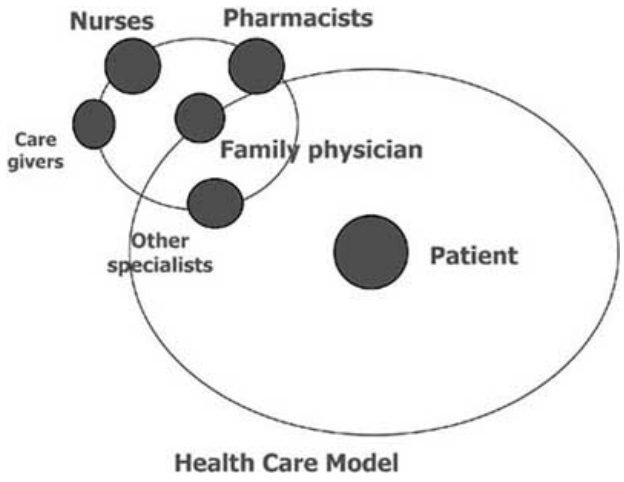


**Fig. (1).** Diagram representing the Health Care Model.

The assumption of the philosophy of pharmaceutical care is to such an extent important, that a recent Danish study demonstrated that, precisely because the training of community pharmacists is primarily technical without much focus on the philosophical aspect, a lack of proper readiness of pharmacists to practice PC [46] exists.

The objective of the process is patient education and monitoring of outcomes of drug therapy by pharmacists [1, 47]. The step from product – towards patient orientation, in particular, towards evaluating the outcomes of pharmacotherapy in the patient, regardless of the setting, is actually a change in the paradigm of pharmaceutical practice. In fact, "the preoccupation of pharmacists with process has tended to diminish awareness of responsibility in the minds of provider and recipient alike. Indeed, in most cases pharmaceutical services are still performed at the request or order of another, usually the prescriber. In the philosophy of pharmaceutical care, pharmacists serve patients in order to improve outcomes; they take credit when outcomes are positive and accept blame when the result is negative" [26].

## DOCUMENTATION OF THE PHARMACEUTICAL CARE PROCESS

The profession of pharmacy has applied the term "documentation" to count activities that more closely approximate descriptive protocols or administrative reports. This extended non-clinical use of the term documentation has resulted in the profession losing sight of a necessary step in the development, justification, and successful implementation of

clinical pharmacy services. It consists of the following six interrelated steps: (1) establish a comprehensive patient-specific database; (2) identify patient-specific, DRP; (3) describe desired therapeutic outcomes; (4) list all therapeutic alternatives that might produce the desired outcomes; (5) select the drug recommendation(s) that most likely will result in the desired outcomes; and (6) establish a plan for therapeutic drug monitoring that documents that desired effects occur and undesired effects are minimized [48].

Currie *et al*. [49] have designed guidelines for the documentation elements that need to be included in any record of pharmacist-provided care to allow the quality of the care to be assessed and to describe the use of these guidelines to improve the quality of pharmacist documentation.

Schaefer [33] discussed basic principles of the development of a coding system and the prerequisites for its application. Coding systems are important tools for the documentation of DRP and subsequent interventions. They should be suitable not only for scientific studies but for the broader implementation of pharmaceutical care in the pharmacy.

Documentation is very important to grant a correct implementation of the process. Aguas *et al*. [50] have designed a model to discuss clinical cases in workshops conducted by pharmacists, which compiles the main data that reflect the patient's condition and treatments. This document should also include the DRP detected in the patient, classified in three categories: need (N), effectiveness (E), and security (S), as shown in Table (**1**). In this way, Machuca *et al*. [51] have proposed a uniform method of case presentation to ensure all the necessary information to be provided to the workshop participants.

## COMMUNICATION SKILLS

### Pharmacist-Patient

Effective communication skills are essential in the practice of pharmacy. Pharmacists interact with a variety of individuals including patients, family members, health care professionals and other pharmacists. By virtue of their location, they are thought to be among the most accessible health care workers in the delivery system. They must build strong relationships using effective interpersonal communication skills.

The transition from dispenser of pharmaceutical products to dispenser of information is not enough. Patient counseling and pharmaceutical care require much more than the provision of information. They need a commitment on the part of the pharmacist to the well-being of the patient, and require the formation of a therapeutic alliance [52], which implies the acquisition of communication techniques.

**Table 1. Document that Reflects Patients' Condition: Patients' Data, Health Problems, Treatments and DRP (Drug-Related Problems) Evaluation. The Last Column Features the Date of the Pharmaceutical Intervention (PI)**

| **PATIENT:** | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **GENDER:** | **AGE:** | **BMI:** | **ALLERGIES:** | | | | | | | | | |
| **ACTUAL SITUATION OF PATIENT** | | | | | | | | **EVALUATION** | | | | **PI** |
| **HEALTH PROBLEMS** | | | | **DRUGS** | | | | | | | | |
| **Health problems** | **Date of Beginning** | **Controlled (Yes/No)** | **Worried (Yes/No)** | **Beginning of treatment** | **Drug** | **Posology** | **Knowledge/ Compliance** | **N** | **E** | **S** | **DRP suspect** | **(date)** |
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N: Necessary

E: Effective

S: Safe

| OBSERVATIONS: | PARAMETERS |
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| | |

Really, the development of pharmacist-patient communication in pharmacy practice is still in its infancy. In an interesting review, Schomer [53] assessed that numerous theoretical frameworks have been proposed and used in the study of physician-patient communication, including social learning theory, communications theory, rational decision making, health belief model, theory of reasoned action, or self regulative systems. However, the pharmacist-patient communication is different from the physician-patient communication in according to their different practitioner roles and the environment in which the encounter takes place. Therefore, the author suggests that pharmacy specific frameworks are needed to help understand and explain pharmacist-patient communication.

Several studies analyze different variables of this interaction; some of them related to the patient, such as age, gender, patients' expectations about the service provided by the pharmacist, or information and counseling depending on the prescription type [54-56]. Other variables are associated with the pharmacist: importance of information, the role of pharmacists in orientation toward counseling patients, pharmacists approachability, or time barriers [57]; and others with the pharmacy environment: presence or absence of a consultation area, privacy, situation of prescription area counter, physical appearance of the pharmacy, new or refill prescription status, etc [56]. The results of these studies suggest that although the pharmacists have a favorable orientation towards communication with patients and would like to spend more time in this professional activity, the patients have low expectations and knowledge of these services. The pattern of response shows that pharmacists and patients do not share common expectations about pharmacists' roles in health care. It appears that, whereas pharmacists view their role as one that adds value to a patient's health care beyond a level that can be provided by a physician alone, patients view the pharmacist's role as one that fits into their overall health care plan and is controlled by their physician [56]. Differences between health providers and patients in race, ethnography and, especially, in language, influence the quality of the professional-patient relationship and constitute barriers which hinder the outcomes in patients' health [58].

Recently, Svarstad *et al*. [59] undertook an observational, cross-sectional trial, with the aim to describe the nature and extent of patient counseling in community pharmacies and determine whether pharmacist and pharmacy characteristics influence current counseling practices. The study took place in 306 community pharmacies from eight states. Regression techniques were used to analyze the effects of pharmacist age, pharmacy type, and business. The results showed that counseling varied significantly according to some of these parameters: patients with a younger responsible pharmacist were more likely than others, to receive risk information, a higher number of informational items and, assessment of understanding; while pharmacy type was unrelated to counseling, business reduced the odds of any pharmacist talk, oral information-giving and, assessment. The authors concluded that these data present important challenges to state boards of pharmacy, pharmacy associations, managers, and individual practitioners who are in a position to improve this important element of patient care.

Alkhawajah and Eferakeya [60] found that both physicians and pharmacists explained the use of medication; however, pharmacists were much clearer in their instructions than physicians. Pharmacists, as the last health professional to meet the patient, play a vital role in patient education on drug use. They should, therefore, acquire the proper training and communication skills to enable them to provide this service more effectively.

Most of the studies, both quantitative as well as qualitative, have focused on the analysis of communication in the medical field. Rainer *et al*. [61] reviewed the literature from 1975 to 2000 and found 14 studies of verbal communication and 8 studies of nonverbal communication that met inclusion criteria. Verbal behaviors positively associated with health outcomes included empathy, reassurance and support, encounter length, explanations, both dominant and passive physicians styles, humor, psychosocial talk, time in health education and information sharing, friendliness, courtesy, orienting the patient during interview. All these parameters can be perfectly applicable to pharmacist-patient communication [62]. In this way, Ijben *et al*. [63] developed the *problem analysis solution* (PAS) *system*, to quantify oral communication processes during counseling in pharmacy practice. PAS has two objectives: first, the registration of drug-related questions from patients, which gives the pharmacist insight in the most common issues addressed by patients, and second, it might help the pharmacist to structure the communication with the patient during the consultation. The participants, 41 pharmacists, translated the patient's drug-related questions into a P-code, the analysis of the question into an A-code and finally, the given solution upon the question into an S-code. The authors found that the external validation of the three codes for the total set of questions indicated a moderate to poor agreement, because pharmacists categorized the drug-related questions from patients in a different way. They concluded that PAS system is less reliable for research purpose. However, the internal reproducibility is good for P-code, thus, it can be used for registration of patients' questions in their own pharmacy. Moreover, the usage of the PAS system during counseling in pharmacy practice can help to structure the consultation.

In an effort to identify what constituted effective communication performance with community pharmacists, Hargie *et al*. [64] carried out a study in 15 pharmacies in which upon the consent of patients who had been extensively informed, a video recorder located in a similar position in all pharmacies filmed pharmacists' performance for total real-time periods of between six and nine hours. This research makes an important contribution to the analysis of pharmacy practice: the pharmacists were making a clear distinction between the *construction* of communication as distinct from its *content*. They identified the principal elements needed for the development of their skills, and it was assessed that a pharmacist who is able to employ a wider repertoire of skills during consultations is likely to be judged as a more effective practitioner.

The actual health model requires enhanced interaction of pharmacists with patients and with other health care providers. It is essential that patients be actively involved in their care and informed about their diseases, pharmacotherapy,

and the risks, benefits and expected outcomes of their therapy. In this way, O´Neil and Poirer [65] showed that more knowledge and better perceptions about drugs could be associated with a reduced risk of therapy changes due to DRP; by contrast, no association was found between the quality of the pharmacist-patient counseling relationship and adverse drug outcomes.

However, the fact is that patients are not yet becoming integrated in this process. Skoglund *et al.* [66] analyzed the relation between patients and pharmacists when dispensing prescriptions of analgesics in community pharmacies, and found that most of the patients had a passive role. The analysis testifies to a short and asymmetric communication between the interlocutors. One-third of questions from clients were related to medication, i.e. dose, effect, written information, symptoms or disease. The study points out that the concordance in pharmaceutical care assumes a much more active patient, and therefore facilitating a more active role for them is of the outmost importance.

In addition to the personal encounters between both interlocutors, establishing appointments for many patients-provider telephone conversations would improve the quality of the encounter and efficiency of the practice. This sort of communication has been successfully assayed in the medical care area, with patients who cannot leave work or just cannot come along for consultation and it is appropriate when a physician-patient relationship already exists and physical examination is unnecessary. It can reduce a patient's office visits without degrading therapeutic outcomes or patient satisfaction [67] and it has been successfully used for monitoring such treatments as depression [68], asthma [68] or urinary tract infections [68].

Recently, some articles have demonstrated that the telephone may also be a useful tool in pharmacist-patient relationship for extending information, for short consultations, or for verifying the outcomes of a pharmacotherapeutic strategy.

The University of Nebraska developed a community-pharmacy-based telephone callback program for antibiotic therapy in order to reinforce basic patient counseling given at the time of dispensing. This study reported 15% of therapeutic failures and only half of these had to be referred back to their physician. The authors concluded that such a callback program is an effective and inexpensive mechanism for assessing and improving drug therapy outcomes [71]. In this way, Machuca *et al*. [72] used telephonic interviews to know the compliance degree of patients taking antibiotics.

Certainly, miscommunication often reflects a breakdown in collaboration between health care professional and clients [73]. Law *et al*. [74] explored the perception of unmet needs in the medication use process from the perspectives of three of the principal participants in the process –physicians, pharmacists, and patients—and to identify the individual(s) or strategy(ies) perceived to be the best or most likely candidate(s) to resolve the problems identified. Providers and patients reported substantially different perspectives on medication use problems and on improving the process. Addressing the unmet needs identified in this study will require better understanding, communication, and collaboration among physicians, pharmacists, and patients.

This situation reflects the need to elaborate guides with recommendations aimed at improving the quality of communication, and including suggestions for a start, messages of easy comprehension, simple systems which allow evaluating the outcomes, and strategies of individualized conversation for each patient.

During the ten last years pharmaceutical institutions all over the world, such as the AACP [75], the American Council of Pharmaceutical Education [76], the International Pharmacists Federation (FIP) [77] and the European Association of Faculties of Pharmacy (EAFP) [78] recognized the importance of this abilities in the context of modern pharmacy practice.

To meet these standards, most schools and colleges of pharmacy in USA and only some in Europe, have included some type of communication skill development in their professional curricula. Students need new approaches aimed at improving patient comprehension of their medication instructions, therefore they must possess knowledge and skills not only in pharmacology and therapeutics, but they also have to be aware of the influence that environmental, cultural, ethnic, linguistic or literary factors exert on their patients population [79]. Thus, a variety of communication courses have emerged in pharmacy educational programs which present different formats: a) individual required courses oriented towards teaching communication techniques; b) individual elective courses to be chosen by students, and c) integrated courses where the material is included with other contents [80]. However, the implementation of these instructions has not yet sufficiently extended and more efforts are needed in order to integrate teachers into Pharmacy academy who are experts in communication techniques and social sciences, hence delivering an education in accordance with the current necessities of pharmaceutical profession.

**Interprofessional Relationships**

One of the most important barriers to implement pharmaceutical care is pharmacists' concern about their relationship with other health care providers, especially with physicians. A lack of good intercommunication ways among health care providers in primary care setting is essential to understand these difficulties. Pharmacists, who are professionally trained to be an integral part of the medical team, are well prepared to ensure optimal drug therapy and medication safety for patients. Consequently, collaboration between physicians and pharmacists can lead to improved patient care [81].

Muijrers *et al*. [82] have explored similarities and differences in opinions between general practitioners and pharmacists about the pharmacist's role. No significant differences in opinions were found between pharmacists and non-dispensing general practitioners with respect to a number of the pharmacist's signaling tasks. Pharmacists and general practitioners largely agree on the pharmacotherapeutic-signaling role that a pharmacist should fulfill.

Ranelli *et al*. [83] tried to understand physicians' perceptions of their communication with pharmacists, pharmacists' professional duties, and the degree of responsibility with

which pharmacists perform these tasks. Physicians were most comfortable with pharmacists' responsibilities of catching prescription errors (88.0%), providing patient education (65.1%), suggesting nonprescription medications (63.4%), and suggesting prescription medications to physicians (52.0%).

Two decades ago several studies had demonstrated, that physicians' acceptance of pharmacist role was already good [84]. There are other attempts to improve communication from physicians' perspective. Liddell *et al*. [85] have designed a new prescription form to provide more information to pharmacists and patients in Melbourne (Australia). This form has had a good acceptance for pharmacists and patients in clinical practice.

Machuca *et al*. [45] have proposed six pharmacist- physicians rapports, depending on the type of DTP detected, to enhance communication between pharmacists and family physicians in primary care setting. They emphasized that a pharmacist must not initiate or suppress drug therapies, not even increase or diminish medicaments doses, without physician's knowledge and acceptance [23].

Howard *et al*. [86] intended to learn about the experiences of specially trained expanded role pharmacists and family physicians in a program in which they worked together to optimize drug therapy for elderly patients and to identify shortcomings of the program, obstacles to its implementation, and strategies to overcome these obstacles. Issues to be addressed for future programs include clarification of the roles of pharmacist and physician when the professionals work together, targeting of appropriate patients for the program, identification of a more efficient way to deliver recommendations, and development of an appropriate compensation mechanism.

Pharmacists included in Dader Program to implement pharmaceutical care in community pharmacies in Spain, have obtained success in 72.4% of their interventions resolving DTP in collaboration with the physicians [87].

As the World Medical Association stated, physicians and pharmacists have complementary and supportive responsibilities in achieving the goal of providing optimal medicinal therapy. This requires communication, respect, trust and mutual recognition of each other's professional competence [88]. This is in concordance with the position paper by the American College of Physicians-American Society of Internal Medicine [89], and with the joint statement by the Canadian Medical Association and Canadian Pharmaceutical Association [90].

As Ambler [91] refers, times they are a-changing to general practitioners and pharmacists relationships.

## TEACHING PHARMACEUTICAL CARE

### Pharmaceutical Care in the Faculties and Schools of Pharmacy: Curriculum Integration

Change is a universal constant: culture, political systems, technology; everything changes at a constant flux. How does this change affect pharmaceutical education? Wertheimer and Seller [92] asked following question: "Do we educate pharmacy students to practice as we see the profession today, or do we teach for what we anticipate will be the needs during the next 40 years of a graduate's career?" They added: "If we miss a trend, we have done a disservice to our students and if we teach about something that does not come to pass, we have erred in the other direction…"

This need to introduce changes in the teaching at the faculties of Pharmacy, including new subjects related to assistential practice, has been evident over the past ten years in universities all over the world, with variable results of implementation.

In the last decade, two important studies were published in USA, which have influenced the curricular design of pharmaceutical education in that country:

First, the Pew Health Profession Commission (PHPC), after analyzing all sanitary professions, recommended that pharmaceutical education "should begin with a curricular reform in order to be qualified to perform pharmaceutical care" [93].

The PHPC recommends acquiring following abilities: critical judgment, communication, ability to detect and solve DRP, ethical behavior, team work, continual education and leadership. This involves introducing new subjects apart from the existing ones that are still important for pharmaceutical practice. Moreover, it suggests that this curriculum should provide education for Pharmacy students together with those of other sanitary professions, such as medicine and nursing.

The second study was carried out in 1994, by the American Association of Colleges of Pharmacy (AACP) by means of the Commission to Implement Change in Pharmaceutical Education (CCPE). This work considers that "pharmaceutical practice and the objectives of the profession must determine educational contents" and, bearing in mind that the main objective of the practice is to provide pharmaceutical care, the CCPE concludes that the main responsibility of the teaching staff is providing the skills needed to perform it. Furthermore, the report states that this should be accomplished in the basic curriculum rather than being left for postgraduate education [94, 95] and it cites techniques and educational methods for this purpose: discussions, simulations, direct students' interventions, and ability to solve problems…

Cipolle *et al.* [96] proposed that the product of a pharmacy curriculum must be a generalist practitioner who has the skills and knowledge to provide pharmaceutical care. In this way, in fall of 1996, the College of Pharmacy of the University of Minnesota started a new program that included, not only the curriculum, involving its didactic and experimental courses, but also the environment, culture, socialization processes, and relationships that must be developed between faculty, students, practitioners and patients. The third objective of the program said: "The specific practice is pharmaceutical care. It must be understood completely and at an intellectually sophisticated level by both faculty and administration" [96, 97]. This educational project includes three years of laboratory experiences which are designed to focus on four skill areas: community/ambulatory, inpatient hospital, compounding, and intravenous admixture [98]. In 1998, an interesting experience was

developed with the aim to evaluate pharmacy student's abilities to provide direct patient care. The results indicated that the establishment of pharmaceutical care clinics within schools and colleges of Pharmacy could help to effectively prepare students for the challenges of an active practice [99].

In this line, the curriculum of numerous North American Universities, such as Florida, Indianapolis, Virginia Commonwealth and many others, was modified [100-103]. These changes extended also to other countries, like Canada, where some Universities adopted the new necessities in their curricula. In 1994, the Faculty of Pharmacy of Toronto increased the undergraduate studies [104] by one year expanding the old program of therapeutics from one to two courses, pharmaceutical care II and III and introducing five seminars on key disease states. Other Faculties, such as Alberta and Vancouver are working in similar way.

In 1996, the EAFP created a work group, coordinated by Prof. FJ Tromp, which comprises eleven countries and whose objective is to define the concept of pharmaceutical care and to establish the foundations for education in this field [78]. The group proposed that the curriculum should be divided in three steps:

- First, an introduction to the concept, which should be taught during the first or second term, intended the students to understand the philosophy of the process and to learn pharmacist's professional role and responsibility. In addition, in this phase, students have to acquire knowledge about ethics, about the health system management, as well as about the sociology of health and disease.
- The second phase deals with attaining the abilities to perform pharmaceutical care: collecting patients' information, evaluating their conditions, detecting DRP and development of a plan for solving them, as well as evaluation systems. This phase has to coincide with the teaching of basic sciences (Biochemistry, Physiology, Pharmacology…) and social sciences (Fig. **2**).
- This would be the principal part of the curriculum and it would be convenient for students to acquire experience in community and hospital pharmacies.

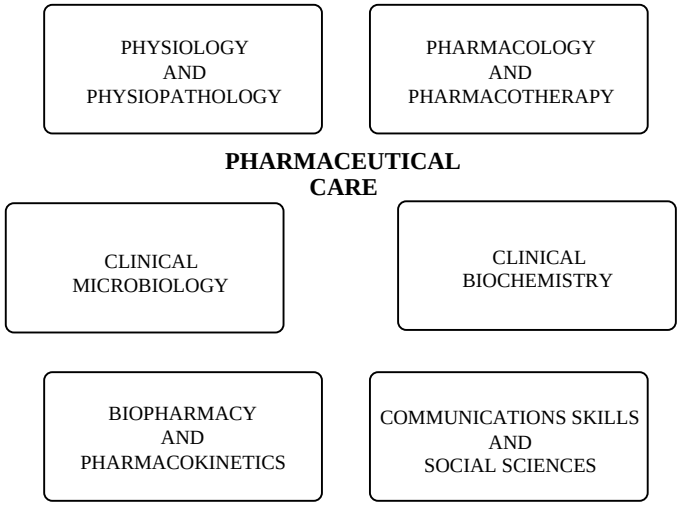


**Fig. (2).** Curriculum integration of PC: Second phase. Following the recommendations of European Association of Faculties of Pharmacy, EAFP.

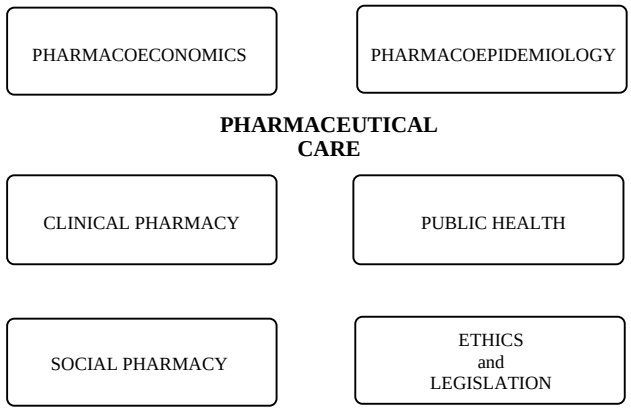


**Fig. (3).** Curriculum integration of PC: Third phase. Following the recommendations of European Association of Faculties of Pharmacy, EAFP.

- In the third phase, it is proposed that the emphasis is put on patient-oriented subjects: Clinical Pharmacy, Pharmacoeconomics, Pharmacoepidemiology… (Fig. **3**).

Nevertheless, the document asserts that the process of incorporating new elements in the curriculum or introducing changes in the existing one is very different in each country.

In some countries, University is in charge of those changes, in others, it is the Ministry of Health or Education, whereas in the rest the professional associations of scientific societies make the decisions. Until now, these proposals have had little influence on the existing programs, despite the efforts of some colleges and schools of Pharmacy in order to introduce pharmaceutical care in the curriculum. The Netherlands, Scotland, Germany, UK and Spain, among others, have developed programs for teaching this matter [105-108].

Frequently, they offer optional subjects that perform simulated pharmacist-patient interviews, show how to detect and solve DRP, teach the use of information sources and how to structure clinical sessions in pharmacotherapy.

However, at present, there is an active trend for constructing the European Higher Education Space (EHES) with the aim of unifying university studies all over this continent.

This movement started in 1998 with the declaration of the Sorbonne [109] as a key point for promoting mobility of the graduates and augmenting the expectations of employment. In 1999, the declaration of Bologna [110] set the specific objectives to be reached before year 2010. Later, in 2001, the Prague communication [111] and in 2003 during the meeting in Graz [112], additional lines were introduced that include systems of quality guarantee and mechanisms of accreditation and certification.

Pharmacy has now a gold opportunity to develop programs, which allow next generations of pharmacy students their integration in the Health Systems and provide clinical care. This challenge includes the academy, the administration and the professional institutions, and despite the difficulty to reach agreements that satisfy all, it is necessary that beyond institutional interests, the real professional needs be considered.

Latin America has also joined this movement and pharmaceutical care education is being progressively implemented in many universities. This happens in Chile, Argentina, Panama o Brazil [113, 114], and other countries like Cuba are making an approach in some faculties [115].

Recently, in USA the AACP recognized that the quick advances in science, e.g. biotechnology, genomics, proteomics, will affect drug therapy and diagnostics modalities, thus, the practitioners will be better equipped to understand why drugs work in some patients, and not in others, and how to optimize response in all patients [79]. They suggest that the curriculum must be a dynamic and evolving program responsive to developments in science, technology, practice and public policy, to ensure that graduates are prepared to lead advances in practice and adapt to change throughout their professional career.

Special emphasis is put on fostering communication techniques from the academia, which permit optimizing the relationship between pharmacist-patient and with other health professionals (see Communication chapter). Furthermore, innovatory learning methods, which include the use of computer programs specially designed to register patients' pharmacotherapeutic history [98], utilization of interactive virtual patients [116], real patients and development of a web infrastructure [103], should be triggered.

All these experiences show that pharmaceutical care education has to be tackled in a multidisciplinary way, involving different professionals of health care and social sciences, as declared by organizations like FIP [77], PCNE [117], and others [118].

### Postgraduate Education

In order to adequately implement and extend the pharmaceutical care practice, a postgraduate formation is necessary. As just mentioned, the introduction of this subject in the curricula of the faculties of Pharmacy is very recent, and in many of them, it is still not being taught. For this reason, the pharmacists who graduated earlier than five years ago, lack such education, or have only approached it in a superficial way.

Over the last years, numerous courses are being offered, ranging from pharmacotherapeutic follow-up, to communication techniques, actualization in pharmacotherapy, access to information sources, among other abilities needed by the pharmacists for providing pharmaceutical care.

These courses are of very different format and accreditation; some of them have the master degree and are taught using different didactic techniques that include distance and on line courses.

Academy and the professional associations have intervened in postgraduate education as these have acknowledged that this lack in pharmacists' formation constitutes one of the most important barriers. International organizations such as the FIP [77] claim that a continuous formation is needed to ensure competency in each pharmaceutical service provided by continually updating knowledge and skills.

It has been demonstrated that professionals who take part in formation courses and programs, significantly improve their abilities in providing pharmaceutical care and diminish the level of perception of the barriers [119-121].

In addition, over the last years the offer of doctorate courses has increased in the faculties of Pharmacy. Among the objectives of the programs of Pharmacy Practice to obtain the Doctor of Pharmacy Degree, the American Council of Pharmaceutical Education (ACPE) includes "communicate with health care professionals and patients regarding rational drug therapy, wellness, and health promotion"; "monitor and counsel patients regarding the purposes, uses, and effects on their medication and related therapy" and "…counsel and monitor patient use of nonprescription drugs" [122].

In the faculties of Pharmacy in Europe there is also a wide-ranging offer of doctorate courses with different levels of implementation, and the new guidelines proposed by the EHES include postgraduate education in two aspects: mas-

ters focused on professionals and specific programs for doctorate students.

The main objectives of these programs are the designing of courses involving different departments and universities, as well as the multidisciplinary of the teachers, because, in order to optimize education outcomes, physicians, practitioners, clinical pharmacists and experts in social sciences have to contribute with their experience and skills.

## IMPLEMENTATION OF PHARMACEUTICAL CARE PROGRAMMES

Although USA is the country where most of the works and studies on implementation of pharmaceutical care programs have taken place, this service is still not introduced on a broad scale, and hence, it is not yet known by society [123]. However, despite all the studies trying to prove its effectiveness, its adoption by American community pharmacists' is being very slow [124], with limited success [125].

Besides, in order to attain the acceptance of these programs as a feasible sanitary technology, they will also need to prove their efficiency. Although several works have been published, which reflect that these programs improve the quality of pharmacotherapy [7, 126, 127], and others proving that assistential costs decrease [1, 128-131], a Cochrane revision [20] referring to ambulatory patients concluded that there are doubts about the efficacy of pharmaceutical care due to the difficulty of extrapolating the outcomes, poorly defined interventions, and insufficient evaluation of costs and patient outcomes.

These problems are also evident in hospitals, because the existing studies exhibit methodological limitations that fail to reflect determinant conclusions about efficiency or efficacy of pharmaceutical care programs [132]. This fact demonstrates that it is essential to measure the clinical impact of this practice in inpatients, as this is a less investigated but vital field for proving that the implantation of this service is a need.

The IMPROVE project (Impact of Managed Pharmaceutical Care on Resource Utilization and Outcomes in Veterans Affairs (VAMC) medical centers) was the first study of the impact of ambulatory care clinical pharmacists on patient outcomes in the U.S.A. [133]. Collected data provided information to clinical pharmacists developing pharmacy-managed clinics for patients at high risk for DRP [134].

Another broad implementation study was conducted by members of Minnesota University [135]. The Minnesota Project was a very important project according to the number of pharmacies participating and the analyses of cases and outcomes are still going on [136].

Similar models, such as the Michigan Pharmaceutical Care Model [137] have been proposed:

This program extends to community, hospital and consultant pharmacies and intends to:

- Help pharmacists assess their practice on the continuum of pharmaceutical care provision.
- Provide suggestions, which would add more elements essential for mature pharmaceutical care provision.
- Define the elements of pharmaceutical care for professional service remuneration.

The AphA [138] defines similar goals and principles of practice for pharmaceutical care. The Pharmacists' Implementation of Pharmaceutical Care (PIPC) model designed at West Virginia University [139] tried to develop a theoretical framework that will explain pharmacists' behavior relative to the provision of this service. The model was based undeveloped from four attitude models by testing their predictor validity relative to the process implementation. 617 community pharmacists in the state of Florida, U.S.A., were surveyed twice using mail survey methodology to collect data.

In Canada, Pharmaceutical Care Research and Education Project (PEP) [140] was implemented to enable community pharmacists to acquire the necessary skills, knowledge, and attitudes to deliver comprehensive pharmaceutical care to elderly ambulatory patients.

On the other side, a study conducted in New Zealand [141] demonstrated that the community pharmacy environment had a high level of understanding of the process, but identified some significant barriers to implementation

Furthermore, Dutch pharmacy is gradually implementing pharmaceutical care in daily community practice. However, a proactive attitude, not only from the "front runners", but also from all pharmacists, is desired if the process may be incorporated into routine community practice [142].

Denmark included pharmaceutical care as part of the professional standards for community pharmacy practice in 1995, but, in its fullest sense, as defined in policy documents, it is not evident in practice [143].

Although there are many pharmacists and some research groups in Spain, working in improving dispensing [144], or in OTC pharmacist prescription [145] there is little implementation of pharmaceutical care as a common practice [146].

In India, in comparison with other settings where cognitive services have been reported, Indian Health Service (HIS) pharmacists detected fewer problems, but their interventions resulted in higher percentage of drug therapy changes [147].

It is evident that there has been a big advance, but in terms of real service implantation, there is still much work to be done.

## BARRIERS FOR PHARMACEUTICAL CARE IMPLEMENTATION

Pharmaceutical care process implies changes in all the health care process offered by pharmacists.

As an innovative professional practice, this often arises reluctance among professionals, which is aggravated by the absence of a professional acknowledgement and economic compensation from sides of the healthcare authorities. Therefore, the implementation process is slow and difficult to accomplish.

The pharmacy profession should set standards of quality for pharmaceutical services in emerging care settings [148]. Under the business of pharmaceutical care, the pharmacist

should focus on the selling of services that even preclude the sale of a medicine. It is expected that this practice will become patients advocate in future. The patients will benefit from the best medication management and the society in controlling sanitary cost.

Desselle and Hunter [149] indicate several barriers that must be removed:

- Pharmacy should adopt specific practice standards in implementing pharmaceutical care.
- Lack of documentation mechanisms for community pharmacists in the managed care environment.
- Interprofessional relationships between pharmacists and physicians.
- Pharmacists, themselves, as a barrier.

A Delphi study about pharmaceutical care performed in Spain also assesses different barriers depending on the degree of experience of the professionals [150]:

- The pharmacists, who have already embraced this practice are concerned about education issues and communication with physicians.
- Those who intend to start pharmaceutical care soon, claim that they lack time, skills and reimbursement.
- Those who have abandoned reason that it was because of lack of time, of space in the pharmacy, of reimbursement, of consensus about the proceeding, of cooperation between their group, that of the patients and the physicians. Moreover, this practice is incompatible with working hours.
- Those who consider pharmaceutical care unviable insist on structural problems (lack of personnel, education, money, space), and on the lack of acknowledgement by the Administration and professional institutions.

Low [151] is skeptic about pharmaceutical care implementation in the future by pharmacists. He thinks that implicit in pharmaceutical care is the pharmacist taking the responsibility for drug therapy decisions and outcomes. This has legal implications in that there is always the potential for civil litigation or professional discipline if reasonable expectations of the patient are not met.

In the same way, Lloyd [152] says that the pharmaceutical care external management needs include reimbursement, regulations, and professional education and practice standards. Farris *et al*. [153] have tried to design a system of outcomes- based pharmacist reimbursement that may reduce health care costs, converting therapeutic regimens to generic drugs or preferred formulary medications when a prescriber contact is required. In addition, conducting patient education and follow-up after initiation of new medications, changes in drug therapy, or following an over-the-counter consultation, and resolving drug-therapy problems.

Norwood *et al*. [154] state that pharmacies incur considerable expenses in making the transition to pharmaceutical care, and the majority of the pharmacies do not receive sufficient additional revenues within the first or two years after making the conversions to cover the additional costs incurred.

Evolution is slow, but some progress has been achieved. In the USA, pharmacy practice acts have increased the codification of pharmaceutical care services as integral pharmacy functions. Although substantial progress has been made over the past decade, a number of states have not incorporated definitions of pharmaceutical care functions into their state statutes. Comparing 1998 with 1988, codification of interpreting and evaluating prescriptions increased 22% (1998, 39/47, four states contain no definition of the practice of pharmacy), compounding 8% (47/47), consultation 19% (41/47), dispensing 2.5% (47/47), drug administration threefold (24/47), drug product selection twofold (45/47), drug utilization review 70% (35/47), patient assessment 6.5-fold (6/47), pharmacokinetic services three-fold (3/47), pharmacist prescribing 4.6-fold (15/47), and participation in drug research 10.5-fold (10/47) [155].

Transtheoretical Model of Change developed by Prochasa and DiClemente in the 1970s and 1980s applied to pharmaceutical care implementation have demonstrated that, with any behavior change, individuals will fall into several stages of readiness for change, and the vast majority will not be ready to take action within the next six months. Continuing education efforts must address the needs identified in each stage of readiness [156].

Time seems to be one of the major barriers for their actual implementation into practice for pharmacists in Texas, after their participation in a pharmaceutical care Certificate Program [157].

In Canadian pharmacy, reimbursement is a major barrier. Pharmacists think they need to establish formal linkages with other home care providers, evaluate their services, and use the data obtained to develop marketing and reimbursement strategies [158].

Other research indicates that many pharmacists feel confused with the new practice paradigm, and believes that the provision of pharmaceutical care services has a limited impact on therapeutic outcomes [159].

Another important barrier is Administration itself. Although the legislation of the different countries takes account of pharmacotherapy follow-up by pharmacists, in general it is not established how to perform it and under which circumstances. Neither is the economic burden of its implementation and development contemplated, nor the possibility of reimbursement for the services. Health systems are undergoing a change, but Pharmacy has always been on the periphery of the primary care team. Dr. Christine Glover, President of the Royal Pharmaceutical Society of UK, says "what has been apparent over the past few years is that Governments have laid plans about the health of the nation with little or scant regard to pharmacy" [160].

Most of the agreements between pharmacy and sanitary administrations have only focused on strictly economic aspects, leaving assistential questions aside [161]. The evolution of medicaments that often derive from new technologies, and are complicated to evaluate and very expensive, implies that public health systems have to regulate drug use in order to guarantee its maximum rationality. This task requires sanitary professionals, such as pharmacists.

### Physicians as a Barrier

For many pharmacists, physician's attitudes are the major barrier to implement pharmaceutical care. Nevertheless, from the physician's perspective, the most appropriate areas for expansion of the community pharmacist's role into patient advocacy are in monitoring pharmacotherapy, assisting physicians in coordinating pharmacotherapy, and providing patients with medication information. Physician resistance is more likely in areas where community pharmacists assume a more autonomous role in patient care [162].

Family practice physicians' perceptions of the usefulness and clinical outcome of drug therapy recommendations made by clinical pharmacists in a family medicine clinic were determined at Cheyenne. Physicians in a family medicine residency-training program had positive perceptions of the usefulness of drug therapy recommendations made by clinical pharmacists. A majority of the physicians believed that the recommendations had a positive effect on patients' clinical status [163].

In the UK, to ascertain general practitioners' attitudes to an extended role for community pharmacists, a postal questionnaire to general practitioners were made. Most doctors would favor an extension of the activities of community pharmacists but worry about their role in screening and counseling patients and in prescribing. Despite relationships being generally felt to be good, there may be a need for better communication and cooperation locally and for proper evaluation of initiatives to extend the role of the pharmacist [164].

Other investigation at the UK has been proposed that pharmacists should review patients. The Royal College of Physicians and the National Service Framework for Older People emphasize the need for regular review of treatment for elderly patients, and they found that a clinical pharmacist can conduct effective consultations with elderly patients in general practice to review their drugs. Such review results in significant changes in patients' drugs and saves more than the cost of the intervention without affecting the workload of general practitioners [165].

Other randomized controlled trial in family practices in 24 sites in Ontario (Canada) has not found any improvements in patient outcomes, but this study has demonstrated the feasibility and acceptability of a collaborative relationship between family physicians and trained pharmacists [166].

In the Netherlands, to explore similarities and differences in opinions between general practitioners and pharmacists about the pharmacist's role, and to identify factors, which determine the attitude of the general practitioner towards the role of the pharmacist as a care provider, 926 non-dispensing general practitioners, 93 dispensing general practitioners and 328 community pharmacists participated in a questionnaire survey. Pharmacists and general practitioners largely agree on the pharmacotherapeutic-signaling role that a pharmacist should fulfill. A good relationship benefits the attitude of general practitioners towards the pharmacist's care-providing function [167].

Other work has been the development of an experimental pharmaceutical care program in which a registered pharmacist works in a physician office to evaluate the medication needs of patients and to provide this service and medication information to health professionals and patients. The authors found that there is a career opportunity for pharmacists to provide pharmaceutical care in the setting of a physician office practice. Many of the barriers can be eliminated or diminished in this setting [167]. Physician's barrier is not really a barrier.

## EPILOGUE

Through a united effort, pharmacy organizations, schools, and individual pharmacists can translate the need for pharmaceutical care into demands for it by patients, insurance companies, health maintenance organizations, and the government. Pharmaceutical skills and knowledge have developed to the point where pharmacists must share in responsibility for the outcomes of drug therapy. As Penna, says, the only obstacle to provide pharmaceutical care is nothing but the pharmacists [26].

It is not doubt about we are in the face of a new and young practice. As Cochrane review indicates [20], doubts about the generalizability of the studies, the poorly defined interventions, and the lack of cost assessments and patient outcome data, indicate that research that is more rigorous is needed to document the effects of outpatient pharmacist interventions. A good example is the randomized controlled trial conducted at 39 community drugstores in Indianapolis for patients with Reactive Airways Disease [168]. Pharmaceutical care increased patient satisfaction but also increased the amount of breathing-related medical care sought.

In the past decade, growing numbers of practitioners worldwide have adopted this method as an integral component of pharmacy practice. Established models of pharmaceutical care can reduce the burden of preventable DTP, but this promise has not yet been realized. Although many challenges remain, the profession has key resources to expand and improve the delivery of this practice [169].

The heterogeneity of the studies and the variety in quality of much of the research design prevent the rigorous assessment of the direction and magnitude of any changes reviewed. Few studies have employed adequate research designs to control threats to internal and external validity [170]. There is a need to investigate the effect of such services [171] and quantify what we do [172]. However, there are already studies [173, 174] all over the world that reflect the hope of materializing the new pharmacist's role in sanitary attention. A new era has just begun.

## ABBREVIATIONS

| | | |
|---|---|---|
| AACP | = | American Association of Colleges of Pharmacy |
| ACPE | = | American Council of Pharmaceutical Education |
| AphA | = | American Pharmacists Association |
| CPS | = | Cognitive Pharmaceutical Services |
| CCPE | = | Commission to Implement Change in Pharmaceutical Education |

| | | |
|---|---|---|
| DCI | = | Drug Information Centers |
| DTF | = | Drug- Therapy Follow-up |
| DRP | = | Drug-related problems |
| DTP | = | Drug-therapy problems |
| EAFP | = | European Association of Faculties of Pharmacy |
| EHES | = | European Higher Education Space |
| HIS | = | Indian Health Service |
| PHPC | = | Pew Health Profession Commission |
| PC | = | Pharmaceutical care |
| PEP | = | Pharmaceutical Care Research and Education Project |
| PIPC | = | Pharmacists' Implementation of Pharmaceutical Care |
| ANF | = | Pharmacy National Association |
| PPAC | = | Pharmacy Practice Activity Classification |
| PAS system | = | Problem analysis solution |

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