THE ROLE OF THE CLINICAL PHARMACIST IN A HOSPITAL SETTING

by

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Introduction

Law and tradition have established the responsibilities of the various health professions to provide pharmacotherapy: medicine and dentistry to prescribe, pharmacy to compound and dispense, and nursing to administer medications. In our health-care delivery system however, difficulties are caused by a certain degree of isolation within and between professions, and by the restricted scope of pharmacy service in traditional systems of medication distribution. As pharmacotherapy has become more complex, these difficulties have become more acute.

Pharmacy is beginning to provide the services needed to solve some of these problems in our health-care delivery system. Consequently, the practice of pharmacy is currently at a significant juncture. The role of the pharmacist is undergoing rapid changes.

In the early 20th century the compounding of prescriptions, using natural products or their derivatives, persisted as the primary function for the pharmacist. Over time the compounding function declined and the pharmacist's major activities involved the processing and dispensing

of prescription orders, using drug products manufactured in remote factories.

Today, pharmacy practice reflects an increased interest in direct patient care. Due to a multiplying knowledge of drugs and their actions and the complexity of modern health care, an expanded role for the pharmacist is evolving. This emerging role focuses on knowledge-based, patient-centered activities, and those practitioners emphasizing this role are designated as "clinical pharmacists."

For some years, the health care of this nation's people has been a growing concern. Numerous voices have cried out that the health-care delivery system has failed to provide what they consider a basic right, namely health care for everyone. Under such influences, the United States is moving toward a system for delivering comprehensive health care to a comprehensive part of the populace.

Steps in this direction have been the "Medicare" and the "Medicaid" legislation. The arrival of some form of national health insurance, along with the continued growth of neighborhood health centers, health maintenance organizations, and other third-party health-care programs signalize this new attitude toward health care.

The current philosophy encourages closer relations among health professionals, working together as a "health care team." The "clinical pharmacist" has the potential

to be a significant contributor within the concept of a "health care team," and thus play an integral part in a comprehensive delivery system. But, in order to work together effectively, it is important that each member of the health care team be aware of, and agree about, what the other members are doing.

The role of the clinically trained pharmacist has evolved to the point where definition of the role would aid delineation of the clinical pharmacist's contributions to the health care team. This definition could also be used as a benchmark by which to measure future changes in the role.

No one has yet developed a strategy for codifying the roles of individuals in new or emerging occupations. Such a project could be undertaken if all the factors which make up an occupational role were drawn together within the proper framework. As one step in this direction, a small-scale exploratory field study has been done to determine the extent to which clinical pharmacists perform various clinical functions in a hospital setting.

The field study operates out of the broad framework of role theory. An understanding of the concepts involved in the analysis of an occupational role definition is helpful. Thus follows a background discussion on role theory and its applications to the immediate area of concern.

Background

Of all the concepts which bridge the social sciences, that of role may be one of the broadest and most useful.

> Its usefulness, in simplest terms, lies in the fact that it provides a concept intermediary between "society" and "individual." It operates in that strategic area where individual behavior becomes social conduct.[1]

This central concept of role applies to both the functioning and structuring of social systems and to individual behavior. Occupying such a location, role theory is relevant to sociology, psychology, social psychology and anthropology, as each attempts its own formulation of human experience.

The fact that the concept of role is so broadly based has presented problems with regard to clarity of definitions used by role theorists.[2] Inevitably, however, the growth of empirical research and the need to operationalize

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[1] S. F. Nadel, The Theory of Social Structure, (Glencoe: The Free Press, 1959), p. 20.

[2] L. Neiman and J. Hughes, surveying the literature in 1951, concluded:

> "The concept of role is at present still rather vague, nebulous, and non-definitive. Frequently the concept is used without any attempt on the part of the writer to define or delimit the concept. . . . concomitantly, the concept is found frequently in popular usage, which adds further confusion."

From "The Problem of Role — A Re-survey of the Literature," Social Forces, 30 (1951), p. 149.

the concept of role has led to conceptual clarification. Two outstanding attempts to link theoretical and empirical analyses are the works of Gross, Mason and McEachern, and of Biddle and Thomas.[3]

There are two basic theoretical traditions from which role theory has evolved. The first tradition derives from Cooley's concept of the "looking-glass self," Mead's taking the role of the "other," and Piaget's theory of the stages of development and infant socialization.[4] Primarily a symbolic-interactionalist perspective, this approach developed from the analyses of the inter-relationships among childhood development, the childhood socialization process,

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[3] N. Gross, W. Mason and A. McEachern, Explorations in Role Analysis (New York: Wiley and Sons, 1958); B. Biddle and E. Thomas, eds., Role Theory: Concepts and Research (New York: Wiley and Sons, 1966). Gross and his associates empirically explored the role of the school superintendent, dealing with questions of consensus on role definition, conformity of expectations, and role conflict resolution. They developed a relatively clear, theoretical conceptualization of role by specifying an exact language for their particular use. Biddle and Thomas approached role theory from a broader perspective. Their work offers a classification system in which they place the various concepts authors have used heuristically in examining properties, variables, and the general phenomenon of role. In addition, Biddle and Thomas bring together essays of theory and research on the central topics in the field of role.

[4] C. H. Cooley, Human Nature and the Social Order (New York: Scribner's, 1922); G. H. Mead, Mind, Self and Society (Chicago: University of Chicago Press, 1934); J. Piaget, The Language and Thought of the Child (New York, 1955).

and the attributes of personality formation.

Concepts embodied in this tradition have been fused with the more refined social psychology of Theodore Newcomb, and Biddle and Thomas to provide a broad view or role theory.[5] Within this combined framework the concept of adult socialization arises, facilitating an understanding of occupational roles. In this sense, adult socialization is the process by which persons acquire the knowledge, skills and dispositions that make them more or less able members of their society.[6]

The few prototypical studies dealing with adult socialization are primarily in the area of job training or, more broadly, occupational socialization. A number of these studies focus on socialization into health professions, but little has been done on clinical pharmacy. Possibly the best studies have been by Becker and his colleagues in their research on medical students, but there are also worthwhile

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[5] T. M. Newcomb, Social Psychology (New York: Bryden, 1950); B. Biddle and E. Thomas, eds., Role Theory: Concepts and Research.

[6] The symbolic interaction framework within which the descendants of Mead and Cooley operate contains little provision for the study of adult socialization. Most theory in this tradition leaps skillfully from adolescence to old age. This perspective reflects the fairly firm belief that the person is "made" in his childhood. As a result, adulthood between the ages of twenty and fifty lies relatively unexplored and unexplained.

studies concerning socialization into nursing.[7]

The second theoretical tradition in role theory emphasizes the structural components of societies. This perspective regards the structural or functional requirements of societies as the defining set of constraints (obligations and rights) which governs individuals occupying different positions in society. The assumptions underlying this tradition are based, at least originally, on simple societies or those in which social positions appeared relatively fixed or constant. Today it is acknowledged that in all societies the law specifies certain rights and obligations which individuals in reciprocal roles may demand of each other. This theoretical tradition is exemplified by Parsons, Davis, and Merton, who employ somewhat similar structural frameworks in their systematic treatments of society.[8]

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[7] See for example, Howard S. Becker and James Carper, "The Development of Identification with an Occupation," Am. Jour. Soc., 61:4 (January 1956), pp. 289-98.; Howard S. Becker et. al., Boys in White, Student Culture in Medical Schools (Chicago: University of Chicago Press, 1961); V. L. Olesen and E. W. Wittaker, Silent Dialogue: The Social Psychology of Professional Socialization (San Francisco: Jossey-Bass, Inc., 1968).

[8] Talcott Parsons, The Social System (Glencoe: The Free Press, 1951); K. Davis, Human Society (New York: MacMillan, 1949); Robert K. Merton, Social Theory and Social Structure (Glencoe: The Free Press, 1957).

Within role analysis there exists a plethora of definitional networks, but difficulty is minimized if one general definition of role is chosen and the concepts necessary for an analysis are clearly delineated. The three basic ideas that are common to most role conceptualizations provide an excellent starting point: 1) individuals are in social locations (positions); 2) they behave in certain ways; and 3) they do so with reference to certain expectations (norms). Hence, role will be defined as: a set of norms for the behavior of an individual occupying a particular position within a given social structure.

It is important that the degree of consensus among role definers concerning positional expectations be considered an empirical variable. That there is societal agreement on role norms is a view that regards roles as "ready made" and does not sufficiently allow for role innovation or the emergence of new roles.[9] Of course, members of a social system must agree among themselves to some extent on values or norms as a matter of definition of a social system.

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[9] Gross and his colleagues, in Explorations in Role Analysis, have discounted the "postulate of role consensus" which appears in much of the earlier role theory literature:

> "If individuals hold variant orientations this should be expressed in variant definitions of a role as well as in different behavior. This implies that one of the factors accounting for different role behavior may be variant role definitions, a possibility completely ignored by the postulate of role consensus." (p. 30).

This definition of role may be applied to the clinical pharmacist. When a new occupational role emerges, such as that of the clinical pharmacist, usually no clear definition for that role exists. The clinical pharmacist in essence fills a new social location that has no clearly established norms. Once expectations for the clinical pharmacist are established, more predictable behavior will follow. Although norm acquisition is not investigated here specifically, a discussion of some of the theory behind norm development is helpful.

When one moves into a position he carries certain expectations with him. These expectations are influenced by his ongoing personal socialization. Childhood experiences, personal values, and personality characteristics form an important base for this ongoing process. A professionally educated individual such as the pharmacist gains certain expectations through his formal educational experiences. Also, it is assumed that the pharmacist undergoes additional socialization during his training period as an intern. These processes serve to accomplish what Merton calls "anticipatory socialization."[10]

In addition to this, the individual reinforces or modifies his expectations prior to entry into a role be-

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[10] Robert K. Merton, Social Theory and Social Structure, pp. 265-71.

cause of structural constraints imposed upon the role. His new position has limitations that the individual is aware of before moving into it. Restraints may take the form of an organization's internal regulations or of legal restrictions on an occupation's role performance. The clinical pharmacist, for example, is under legal constraints regarding the prescribing and administration of medications. Part of an individual's role is thus learned before entry into the role.

Organizations are likely to develop a new position when they desire novel and creative programs. For the clinical pharmacist in this type of situation, change becomes a valued aim, and innovation is seen as a legitimate function. Wheeler notes that ". . . the person entering such a position may be left free to define his role as he sees fit, becoming in effect his own socializing agent."[11]

When a new role develops, the formal socialization processes cannot always immediately prepare individuals to a sufficient extent to fill this role. There will usually be a "lag period" during which definition of the new role has to filter through society. The first to

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[11] Stanton Wheeler, "The Structure of Formally Organized Socialization Settings," in O. Brim and S. Wheeler, eds., Socialization After Childhood: Two Essays (New York: J. Wiley and Sons, 1966), p. 65. In this case the individual would acquire some expectations prior to occupancy of the new role through his previous socialization, but he learns a significant number of other norms upon moving into the position, by carving out his own role definition.

pick up on the new role will be what are called "developmental socialization systems."[12] For clinical pharmacy, the system that provides the closest link to the new role consists of the schools of pharmacy. These have as a goal the design of a curriculum that fosters internal socialization processes to meet changing role requirements.

So far the focus has been mainly on the occupant of a position and the way he establishes norms for his position. As a result, the importance of an incumbent's reciprocal position has not been emphasized. Almost every role theorist adopts the view that a position is an element of a network of positions. As Newcomb notes, "Since every position is a part of an inclusive system of positions, no one position has any meaning apart from the other positions to which it is related."[13]

When a system of interdependent parts exists, a change

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[12] Ibid., p. 68. According to Wheeler, the length of the lag period in which society gears up to provide more complete socialization to a new role depends to a great extent on how closely the role is aligned with other roles already present in the social structure. This lag period is also dependent on how closely these developmental systems are in contact with the changing nature of the role. Sometimes developmental systems lose contact with changing professional realities and supply inappropriately trained people.

[13] Newcomb, Social Psychology, p. 277.

in any relationship will have an effect on all other relationships, and the positions can be described only by the relationships. Therefore the role of the clinical pharmacist must be examined in the context of reciprocal roles. This is depicted diagrammatically by modifying Haas' representation of positional relationships to fit the clinical pharmacist position (see Figure 1). [14]

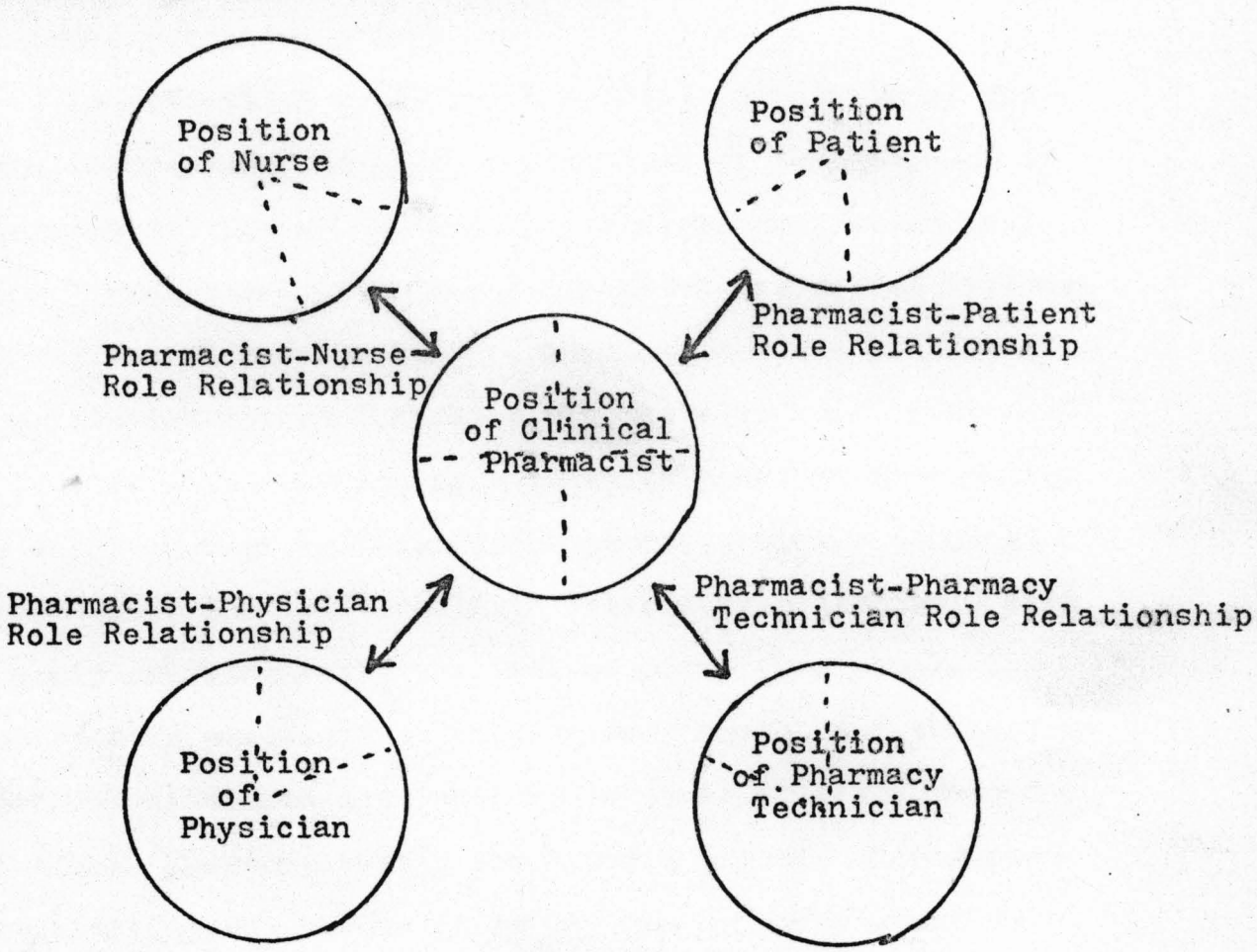

Figure 1

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[14] E. Haas, Role Conception and Group Consensus (Columbus Ohio: College of Commerce and Administration, 1964), p. 29.

Some of the reciprocal positions the clinical pharmacist interacts most frequently with include patient, physician, pharmacy technician, and nurse. To fully describe a position it is necessary to spell out its various role relationships, with a role relationship being a part of each of two positions. A role-set, rather than a role relationship, specifies the combination of all these positionally related roles.

In attempting to define a specific occupational role, this study concentrates on definitions of the role-set of the clinical segment within the clinical pharmacist position, recognizing that such definitions are molded by those in reciprocal positions. To obtain a complete picture of any role-set the reciprocal positions also must be studied.

With this in mind, norm establishment can be expected to occur through an interaction process between clinical pharmacists and individuals in reciprocal positions. With a newly emerging role, the lack of norms from people in interacting positions is particularly acute, but the establishment of stable expectations is usually only a matter of time. However, during the interim period, when norms are established, he who is in the new role may often be exposed to conflicting expectations from individuals in reciprocal positions. Any situation in which the person perceives a confrontation with opposing expectations can

be called a role conflict.[15] Role conflicts should occur less often once new positions become established, but some level of conflict will continue on both intra- and inter-role levels as positional norms change with societal trends.

Because professionals retain and cherish a certain degree of autonomy with regard to the practice of their occupation, the concept of role conflict may be of greater importance when applied to them. Merton observes that "Every profession is to some degree surrounded by a zone of ambiguity. . . . the trouble . . . is not that it is a no man's land, but that it seems to be an everyman's land. And sometimes this leads to undeclared war between adjacent occupations."[16]

The processes by which conflicts are resolved are usually identified by role theorists as extensions of the methods of norm establishment.[17] Individuals tend to minimize their conflicts through compromise with opposing

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[15] Gross, Mason and McEachern, Explorations in Role Analysis, p. 248.

[16] R. Merton, quoted through J. Ladinsky in "Evolutionary Patterns in the Roles of the Health Scientists," Wisconsin Pharmacist, 43:9 (September 1974), p. 289.

[17] Biddle and Thomas, eds., Role Theory: Concepts and Research, pp. 273-310.

demands. The level of compromise is dependent on situational characteristics and the perceived legitimacy of a demand. Another method through which role conflict is minimized is avoidance behavior. With this method conflicting norms do not become an issue. Expediency often sways the decision to resolve a conflict in one direction or another, particularly if one position can exercise some degree of authority over another.[18]

The establishment of norms involves a long and variable course. The individual carries with him orientations and values from early periods of life. These are intensified and modified through educational institutions or occupational apprenticeships. Upon moving into a position, norms are established and reinforced through an individual's own innovative processes, his prior expectations, and organizational constraints on his activity. Finally, interaction with reciprocal positions, moderated by situational demands, is an important mechanism for resolution of conflicts and establishment of role expectancies. Once developed, these norms provide a basis for role definition.

The need for role definition is increased by certain factors.[19] One such factor is the number of persons in-

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[18] Gross, Mason and McEachern, Explorations in Role Analysis, pp. 244-58.

[19] A. Southall, "An Operational Theory of Role," Human Relations, 12:1 (February 1959), p. 25.

teracting with a position. The larger the role-set in terms of reciprocal positions, the greater the need to define the role. In addition, if the role is expected to be maintained over time, irrespective of the person occupying it, then this also increases the need for defining the role.

To enable one person to substitute for another in the same role and to enable several individuals to interact without conflict the role must be defined over both space and time. Establishing the definition for an emerging role is thus important, especially if the role involves much social interaction and is expected to exist over time. The role of the clinical pharmacist appears to satisfy these conditions. Establishing a definition of this role thus seems to be in order.

An individual's definition of his own role can be examined on two levels. First, at the ideal level, we speak of a role conception. Secondly, at the behavioral level we identify a role performance pattern.

A role conception provides an individual with his ideal definition of a position within the social structure.[20] This ideal role definition, or role conception,

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[20] D. Levinson, "Role, Personality, and Social Structure in the Organizational Setting," Jour. Abnorm. and Soc. Psych., 58:2 (March 1959), pp. 170-80.

held by clinical pharmacists is examined in this field study.

Role performance refers to the overt behavioral aspects of a role definition. In other words, role performance is ". . . the more or less characteristic ways in which the individual acts as the occupant of a social position."[21] The actual role definition examined in this field study refers to this concept of role performance.

Upon moving into a social position, an individual's actual role definition (role performance) is established by expectations of those in reciprocal roles, situational demands and previous expectations. The ideal role definition (role conception), however, is not as constrained by reciprocal roles, since they tend to have more influence at the actual behavioral level.

From this, we anticipate that the ideal role definition will encompass more than will the actual role definition. This is especially true when a role is still in its developmental stages, such as the clinical pharmacist's role.

Currently, the pharmacist is confronted during his educational experience with numerous possibilities of what

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[21] Ibid., p. 176.

his role could be. For example, a young pharmacist may envision a wide range of functions within his future role. When actually placed into the position, however, his actual behavior results from the processes (noted earlier) by which norms are established. The resulting actual role activities are a subset of the possible functions viewed by the individual as comprising his role.

Clinical Pharmacy

Before role definitions of the clinical pharmacist are examined, a bit of background relevant to this emerging role is appropriate. The concept of clinical pharmacy has appeared in various forms since the late 1950's.[22] Some have said that clinical pharmacy is nothing more than a new name for activities that many pharmacists have been performing all along. Now, however, it is generally recognized that the clinical concept represents a new trend in pharmacy practice. It is a type of job expansion that allows the pharmacist to move into spheres of activity that previously were

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[22] G. Francke, "Evolvement of 'Clinical Pharmacy,'" Drug Intel. and Clin. Pharm., 3:12 (December 1969), p. 348.

not actual role functions and in part not even ideal role functions.

Clinical pharmacy is an area of practice that has been poorly and diversely defined since its inception. In 1967, Parker commented on the lack of an adequate definition for the term "clinical pharmacy." He said: "The term clinical pharmacy is grossly overused, misused and poorly defined . . ." He went on to suggest that, "'Clinical pharmacy' is a concept or a philosophy emphasizing the safe and appropriate use of drugs in patients. It places the emphasis of drugs on the patient, not on the product."[23]

The American Association of Colleges of Pharmacy Committee on Curriculum has similarly defined clinical pharmacy as ". . . . that area within the curriculum which deals with patient care with emphasis on drug therapy."[24] Although applied to the curriculum this definition could easily be rewritten to apply to pharmacy practice.

There is general agreement that the one common denominator present in all aspects of clinical pharmacy practice is patient-centered activities. Beyond this point of agree-

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[23] Paul Parker, quoted in: Francke, "Evolvement of 'Clinical Pharmacy,'" p. 348.

[24] A. Lemberger, "Report of the Committee on Curriculum," Am. Jour. Pharm. Ed., 32:3 (August 1968), p. 435.

ment, there is less consensus regarding the clinical pharmacist's role. A number of educators in both pharmacy and medicine have advocated a clinical role for those pharmacists trained to function in areas of drug-related patient care, but their conception of the clinical pharmacist role varies in both scope and depth.[25] And, on the practical level, little is known regarding how the clinical pharmacist as practitioner envisions his ideal role, or how he actually performs this role.

Although clinical programs are concentrated in hospital practice, the idea of clinical pharmacy is not confined to any single practice setting. Clinical pharmacy is a concept that is assumed to be applicable to all practice settings. The clinical concept may be applied to ambulatory patients visiting their community pharmacy or neighborhood health-care center, as well as to hospitalized patients.

Because clinical training programs usually take place in the hospital environment, some problems exist for the student in applying his hospital-acquired knowledge to other practice settings. Such a disadvantage is tolerated though because the hospital is the best setting for the student to follow the entire course of a patient's

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[25] R. Hutchinson and D. Burkholder, "Clinical Pharmacy Practice — Its Functional Relationship to Drug Information Service," Drug Intel. and Clin. Pharm., 5:6 (June 1971), pp. 181-2.

therapy, including observation of both beneficial and adverse drug reactions. Additionally, these institutions have been leaders in the implementation of clinical programs. This is due to the large number of supporting personnel available in the hospital and to the assumption that the average intern's preceptor is not yet well-enough equipped to serve as a role model in applying clinical concepts to community practice.

While it is agreed that the clinical pharmacist emphasizes knowledge-related services rather than product-related services, no operational definition of the role of the clinical pharmacist has yet gained general acceptance. In fact, one writer has maintained that such a role did not yet exist in 1975. She attributed the tendency for the young pharmacist to design his own role to the scarcity of role models.[26] The young pharmacist, by looking to role models for guidance in applying clinical concepts, is going through part of the process of norm establishment discussed earlier. This suggests that role models are necessary for the efficient development of an emerging role. But, these role models cannot be easily identified until the clinical pharmacists' role is operationally defined.

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[26] Margaret McCarron, "An Approach to Clinical Pharmacy," Drug Intel. and Clin. Pharm., 9:1 (January 1975), pp. 14-15.

Under revised accreditation standards of 1974, each pharmacy school in the United States is required to have a clinical component in its curriculum.[27] This underscores the importance placed by the American Council on Pharmaceutical Education in an eclectic spirit of goal-setting on the expanding concept of clinical pharmacy. When one considers that the role of the clinical pharmacist has not been operationally defined nor formally accepted among organized pharmacists, this represents an outlook oriented toward the future.

The first major attempt to define the clinical role for the pharmacist came out of an interdisciplinary task force. This task force, commissioned by the National Center for Health Services Research and Development, set out to develop working criteria for the clinical role.[28] Their assessment was based on professional "functions" being performed at that time (1970) and those likely to be performed during the subsequent five years. The final Report of Task Force on the Pharmacist's Clinical Role cited clinical role functions in seven general areas: prescribing drugs, dispensing and administering drugs,

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[27] American Council on Pharmaceutical Education, Accreditation Manual, 7th ed., (Chicago: American Council on Pharmaceutical Education, 1975), p. 15. These standards were in effect as of July 1, 1974.

[28] "Report of Task Force on the Pharmacist's Clinical Role," Jour. A.Ph.A., NS11:9 (September 1971), pp. 482-5. See Appendix V for a copy of this report.

documenting professional activities, direct patient involvement, reviewing drug utilization, education, and consultation.

Members of the task force recognized that existing laws prohibited some of the role functions identified, such as prescribing or administering medications. This prohibition was a contributing factor to the relative lack of implementation of these functions over the subsequent five-year period.

Pharmacy practice laws still do not provide for clinical practitioners. The present laws do not recognize certain aspects of the clinical pharmacists' knowledge, but rather regulate the day-to-day traditional practice of pharmacy. While there are stirrings within the profession urging re-examination of pharmacy practice regulations, the present clinical pharmacist operates in a legislative limbo.[29]

This field study uses a modified portion of the task force Report as a yardstick for assessment of the clinical pharmacist's role. In defining this role, the present

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[29] The American Association of Colleges of Pharmacy has recently passed a resolution urging examination of "the regulations governing pharmacy practice . . . and to work for changes which would allow for the most effective utilization of the pharmacists' unique skills and training." From the "Report of the Committee on Resolutions," (mimeograph), July, 1975, p. 4.

interest is not in the pharmacist's complete role in a hospital setting. The complete role consists of a number of role-segments. For example, one role-segment is concerned with distributive functions, another segment deals with administrative functions, and so forth. The role-segment that involves a significant portion of the pharmacist's time is the "clinical" role-segment, and it is only this segment with which we are concerned here.

In the past the role-segments have been more or less defined functionally, although not always in great depth.[30] Some task analyses have included a "clinical category" of activities.[31] This type of study estimates how much time is spent in clinical activities, but does not go far enough in defining what clinical functions are actually performed to elucidate the emergent role segment.

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[30] See, for example, David Knapp, "The Development of an Instrument for Measuring the Occupational Roles of the Pharmacist," (Unpublished Ph.D. dissertation, Purdue University, 1965), or C. A. Rodowskas and W. M. Dickson, A Task Analysis of the Community Pharmacist, vol. 4, (Silver Spring, Md.: American Association of Colleges of Pharmacy, 1973)

[31] See, for example, Michael Ryan, "An Analysis of the Work of Fifty Community Pharmacists in Northern Mississippi," (Unpublished Ph.D. dissertation, University of Mississippi, 1973), and B. Munger and J. Reichel, "Analysis of the Floor Pharmacist Function at the University of Wisconsin Hospitals," (Unpublished paper submitted to the Assistant Administrator, Central Services Division, University of Wisconsin Hospitals, December 12, 1973).

Ryan took the categorizations for clinical-pharmacist functions from the task force Report and applied them to the work activities of pharmacists in the community setting. His analysis did not sufficiently differentiate the clinical role-segment from other role-segments, however, when assessing clinical activities performed. In his sample of community pharmacists, clinical-pharmacy functions accounted for about 20% of the pharmacists' time.[32] If this 20% were to be broken down by role-segment though, over three-quarters of this time could be classified in the distributive role-segment.

The Field Study

Today, pharmacists are being trained to perform functions in areas not formerly stressed in the undergraduate curriculum. In many cases the recently graduated pharmacist is qualified to undertake activities new to pharmacy practice. This results from the increased emphasis on the clinical component of pharma-

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[32] Ryan, "An Analysis of the Work of Fifty Community Pharmacists in Northern Mississippi," pp. 82-3.

ceutical education.

While "clinical pharmacists" are being trained, it is not clear how practicing clinical pharmacists perceive or perform their relatively new role. And, as noted, there is still no formal agreement among pharmacists on what the role of the clinical pharmacist is, nor has anyone sufficiently defined the pharmacists' "clinical" role-segment in a manner as to be operationally useful. Time will eventually produce agreement regarding this role, but empirical inquiry into its composition will facilitate a profession-wide consensus.

This study focuses on the clinical role-segment of the pharmacist in a hospital setting. For present purposes the clinical role-segment is defined as those patient-centered functions and knowledge-based services which closely relate to patient care. In this context, we examine the clinical role-segment in six areas: patient interaction, drug administration, monitoring, prescribing, consultation, and education.

The field study explores three areas basic to the understanding of this role-segment. First, the actual role (role behavior) of the clinical pharmacist is delineated in terms of functions performed. Secondly, the ideal role (role conception) of the clinical pharmacist is described. Finally, differences between the actual

and the ideal clinical role-segments are ascertained.

Population and Setting

The study setting is the University of Wisconsin Hospitals, in Madison, Wisconsin. The Hospitals' delivery of pharmaceutical services is organized through the grouping of hospital wards into eight pharmacy units. Each unit consists of one or more wards combined together. Some units contain a related group of wards, but other units contain wards on which very different health problems are treated. For example, one pharmacy unit is responsible for children's wards only, while another unit covers plastic surgery, oncology, neurology, gynecology, and ear, nose, and throat wards.

The number of beds comprising a unit varies from fifty-seven to ninety-one, the average being approximately seventy beds. Some units have a high rate of patient turnover while others provide long-term care. Also, because of the types of health problems treated on particular units, the number and the dosage forms of medications administered to the average patient vary.

University Hospitals employ approximately thirty full-time registered pharmacists. These pharmacists hold positions in several areas: clinical education, drug infor-

mation, administration, supervision, and direct patient care. This particular hospital is a state leader in innovative pharmacy practice, and individual pharmacists are given a wide latitude in performing their jobs, thus allowing for possible differing role definitions.[33] Pharmacists have functioned in the patient-care areas of this hospital since 1967, and they identify themselves as clinical pharmacists.[34]

Each unit's pharmaceutical services are provided by a team of pharmacy personnel. A team usually consists of four individuals: two pharmacists, who are permanently assigned to a floor unit, and two pharmacy residents or pharmacy interns. The residents and interns, particularly the former, serve in fundamentally the same capacity as the regularly assigned floor pharmacists. These residents and interns periodically rotate from unit to unit, and fill in where needed as part of their educational experience.

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[33] T. Thielke and P. Maddrell, eds., "Policy and Procedure Manual," (Unpublished text for University of Wisconsin Hospitals, Division of Central Services, Madison, Wisconsin, May 1, 1974). This manual identifies the types of functions pharmacists in various positions may perform, and notes that the pharmacist should decide for himself the amount of time or emphasis to be placed on each activity.

[34] Personal interview with T. Thielke, Assistant Director of Central Services, University of Wisconsin Hospitals, March 24, 1975. This touches on the whole question of just who a clinical pharmacist is. It is possible that at a future time, an individual might have to receive certain specialized training in order to be called a clinical pharmacist. For the purposes of this study, I accept the designation made by the Assistant Director of Central Services that the patient-care area pharmacists are indeed clinical pharmacists.

At any given time, eight residents and six to eight interns are employed by the Hospitals.

The nuclei of the eight pharmacy teams are formed by the fifteen full-time, non-rotating, floor pharmacists who comprise this study population. In addition, four other pharmacists, involved in clinical education, fill vacancies on work shifts and during vacation time as necessary. Although permanently assigned to a particular unit, each of the floor pharmacists is familiar with the duties for all units because he may, in the event of a staff shortage, be switched to another unit temporarily.

As noted, the study population consists of all full-time patient-care area pharmacists who work on non-rotating floor assignments at the University of Wisconsin Hospitals. These fifteen pharmacists are a remarkably homogeneous group. Thirteen received their pharmacy degrees from the University of Wisconsin, and eleven of these thirteen interned at University Hospitals. Length of experience as a pharmacist ranges from less than one to over seven years. Their age varies from 24 to 29 years, with an average age of 28.4. Two hold Master of Science degrees, while none of the others has undertaken any formal graduate training beyond the five-year Bachelor's degree. The sample includes two female pharmacists.

Pharmacy residents and interns were excluded from this study primarily because the interest is in how many

people generally perform a given function. Through their rotations, the residents and interns are exposed to an even greater variation in patient contact than are the permanently assigned floor pharmacists. Consequently, the functions they generally perform are much more difficult to delineate. It is for this same purpose that the four pharmacists involved in clinical education also were omitted.

Methodology

Entree to the study population was gained through the cooperation of Thomas Thielke, R.Ph., Assistant Director of Central Services. Following meetings with Mr. Thielke and the distribution of an introductory letter to the floor pharmacists, they were met in two groups.[35] During these meetings, cooperation of the pharmacists was requested, and after the project was briefly explained, questions relating to it were answered.

To determine which functions the pharmacists actually perform or would like to perform, a role-definition instrument was developed. This instrument contains a list

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[35] See Appendix IV for a copy of the introductory letter.

of fifty-nine functions that relate directly to patient care or involve interaction with other health personnel, indirectly relating to patient care. The clinical functions selected were those that could be performed in a hospital setting.

Twenty-nine functions were drawn from the aforementioned Report of Task Force on the Pharmacist's Clinical Role. These functions, some in modified form, involved only the clinical segment of the total clinical pharmacist role.[36] Using the same selection criteria, another thirty possible functions within the clinical role-segment were obtained through a search of the pharmacy literature and personal interviews with individuals in the clinical pharmacy education program at the University of Wisconsin.[37]

The fifty-nine functions were categorized into six general content areas: patient interaction, drug administration, monitoring, prescribing, consulting, and edu-

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[36] The format of the Report is such that some functions are repeated under different classifications, using varied wording. Some functions are vaguely worded or do not directly relate to the clinical role-segment of the clinical pharmacist role. And other functions identified do not apply to the hospital setting which is the present interest. The functions extracted were usually reduced in wordage and/or clarified to fit the format of the instrument.

[37] Personal interviews with T. Thielke, Assistant Director of Central Services, March 24, 1975, and with A. Schuna, Pharmacy Resident, March 18, 1975. The journals searched include: Jour. A.Ph.A., Drug Intel. and Clin. Pharm., Am. Jour. Hosp. Pharm., and Hospitals.

cation. Before applying the instrument, the items were reviewed with a hospital pharmacist and a clinical pharmacy resident to improve the terminology and remove ambiguities. The fifty-nine items, as worded in the instrument, are presented in Appendix II.

The instrument was administered in two parts. First, the respondent was asked whether or not he generally performed each of the fifty-nine functions on the unit he was currently assigned to. Second, he was asked whether or not he would want to perform each of these functions if he had the privilege of structuring his job situation the way he would like it.[38] The two sets of responses correspond respectively to the actual and the ideal roles as perceived by the respondents. The order of items within each set was varied in an effort to neutralize any effects caused by recollections of responses to previous items.

The responses were examined by function within content area to determine differences between the pharmacists' role performance and their role conception. Within content area, the distributions of the actual and the ideal role-item responses were analyzed for statistically significant differences. To do this, a technique was employed similar to one that Dahlem used to examine differences between the ideal and the actual role defin-

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[38] See Appendix I for the exact wording of the preface to the role-inventory instrument.

itions of school counselors.[39] Respondent data were analyzed in fifty-nine 2 X 2 matrices. Since the sample size was small, Fisher's exact test was used to compare the item distributions to one another.[40]

Further analysis of the data employed two different methods to determine a core group of functions (from the list of items) that comprise the actual and the ideal clinical-role segments for the clinical pharmacist. These two methods were primarily for data organizational purposes, but they do indicate the extent to which particular items are included in the clinical role-segment.

When describing role content, some use of role consensus is necessary. A problem arises, however, in deciding how much consensus is necessary on a particular activity to include it in the definition of a role. Newcomb once noted that a 50% agreement should be sufficient to define a role function.[41] This 50% agreement level was chosen as one method of rating individual items and tentatively structuring the actual and the ideal role-segments.

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[39] Glenn Dahlem, "Actual, Ideal, and Expected Role Concepts of Secondary Counselors," Jour. Ed. Research, 64:5 (January, 1971), pp. 205-8.

[40] Sidney Siegel, Nonparametric Statistics (New York: McGraw-Hill, 1956), Chapter 6.

[41] Newcomb, Social Psychology, p. 282.

The second strategy extracted functions representing the actual and the ideal clinical role-segments through the utilization of a unanimous positive consensus criterion (100% agreement level). Additionally, functions were examined under these criteria to identify the content areas that provide the bulk of items defining the clinical role-segment of the clinical pharmacist.

The pharmacist's working area in the hospital also was explored to determine if any relationship exists between unit assignment and items included in the actual and ideal roles.

Prior to the application of the role definition instrument, background information was collected and other open-ended questions were asked of each respondent.[42] Information obtained through these personal interviews was used to provide support for data interpretations and to suggest areas for future research.

Results

Tables 1 through 6 show, by content area, the percentage of pharmacists including each function in their

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[42] Appendix III contains the interview questions asked of the respondents.

actual and ideal role. These tables also indicate items having response distributions significantly different between the actual and the ideal roles.

Within the area of patient interaction (Table 1), seven of the eight functions are generally performed by a majority of the pharmacists. A majority also report that they would want to perform these seven functions is allowed to structure their job situation the way they would like to. Six of these seven activities are included by all pharmacists in their ideal roles. In an ideal situation every respondent would want to counsel patients on drug abuse. This is a significantly higher number than presently do so, based on the Fisher probability test. None of the pharmacists are currently giving instruction regarding the use of appliances and only three would want to give such instruction.

(See following page)

Table 1

Actual and Ideal Role by Type of Activity:

PATIENT INTERACTION

Function	in Actual %	in Actual (n)	in Ideal %	in Ideal (n)	$p \leq .01$* (n=15)
Obtain drug history	100	(15)	100	(15)	——
Identify drugs	100	(15)	100	(15)	——
Discharge conference	93	(14)	100	(15)	——
Adninistration instruction	80	(12)	100	(15)	——
Dosage instruction	67	(10)	100	(15)	——
Drug abuse counseling	60	(9)	100	(15)	**
Health education	53	(8)	67	(10)	——
Appliance instruction	0	(0)	20	(3)	——

* Fisher exact probability
** Item significant at .01 level or greater

The drug administration area (Table 2) shows a low level of both functions generally performed and functions included in the pharmacists' ideal roles. The only activity carried out by a majority of pharmacists is the administration of injectable medications. In the entire role-inventory this is the only item included in the actual role, but not in the ideal role using a 50% inclusion cri-

terion.

Among these functions, the supervision of medication administration by technicians is the single activity the majority of pharmacists would like to perform. This item shows up significantly when the Fisher exact test is applied.

Table 2

Actual and Ideal Role by Type of Activity:
DRUG ADMINISTRATION

Function	in Actual %	in Actual (n)	in Ideal %	in Ideal (n)	$p \leq .01$* (n=15)
Injectable medications	53	(8)	40	(6)	——
Supervise technicians	47	(7)	93	(14)	**
Oral medications	33	(5)	20	(3)	——
Start IV therapy	20	(3)	33	(5)	——
Immunizations	13	(2)	33	(5)	——

* Fisher exact probability
** Item significant at .01 level or greater

Table 3 displays monitoring functions. Within this area, more than half of the pharmacists generally undertake each activity, with the exception of the monitoring

of outpatient drug usage. Response distributions for this particular item significantly differ under the Fisher exact test. All items in this area are incorporated by a majority of the pharmacists in their ideal roles.

Table 3

Actual and Ideal Role by Type of Activity:

MONITORING

Function	in Actual %	in Actual (n)	in Ideal %	in Ideal (n)	$p \leq .01$* (n=15)
Overall therapy	100	(15)	100	(15)	——
Update knowledge	100	(15)	100	(15)	——
Screen orders	100	(15)	100	(15)	——
Laboratory values	100	(15)	100	(15)	——
Emergency team	100	(15)	93	(14)	——
Interactions/incompats.	87	(13)	100	(15)	——
Assess IV therapy	87	(13)	93	(14)	——
Check chart recording	87	(13)	93	(14)	——
Patient on IV's	73	(11)	87	(13)	——
Hyperalimentation therapy	73	(11)	87	(13)	——
Involved in irrigations	60	(9)	67	(10)	——
Monitor outpatients	7	(1)	93	(14)	**

* Fisher exact probability
** Item significant at .01 level or greater

Using a majority criterion, the pharmacists currently perform only three of the nine prescribing functions, whereas ideally seven of the nine would be performed by the pharmacists (Table 4).

Three of the prescribing functions are unanimously incorporated in the pharmacists' ideal role conceptions. One of these activities, selecting the proper drug, is within the ideal role significantly more often than it is within the actual role. The response distributions on two other functions, (prescribing in emergency situations, writing "PRN" orders) also differ significantly in the same direction. No pharmacist is currently involved in the selection or fitting of medical appliances, and only one individual desires to participate in this activity.

(See following page)

Table 4

Actual and Ideal Role by Type of Activity:
PRESCRIBING

Function	in Actual %	in Actual (n)	in Ideal %	in Ideal (n)	p≤.01* (n=15)
Determine drug scheduling	93	(14)	100	(15)	——
Help medical students	87	(13)	93	(14)	——
Team prescribing	73	(11)	100	(15)	——
Discharge medications	47	(7)	73	(11)	——
Select drug	33	(5)	100	(15)	**
Emergency situations	33	(5)	87	(13)	**
"PRN" orders	27	(4)	93	(14)	**
Primary diagnosis	27	(4)	33	(5)	——
Appliances	0	(0)	7	(1)	——

* Fisher exact probability
** Item significant at .01 level or greater

Of seventeen consultation activities, a majority of respondents generally perform thirteen (Table 5). Six of these thirteen are performed by every pharmacist in the sample.

Within the ideal role, a high percentage of pharmacists includes most of the consultation functions in their role conception. Ideally, eleven of the seventeen activities

would be carried out by every pharmacist. Only two functions are named by less than eleven pharmacists for inclusion in their ideal roles (consult with laboratory technicians, consult with physical therapists). Two functions, (make grand rounds, make independent rounds) have significantly divergent response distributions between roles.

Table 6 shows educational functions are not generally performed by the respondents. Only three of the eight activities are carried out by a majority. Two functions, (participate in the activity of the Pharmacy and Therapeutics Committee, present drug therapy conferences to physicians) are not generally performed by any pharmacist in the sample. But, as seen in the table, a majority of the pharmacists would like to undertake each educational function.

Seven of the fifteen items found significant (using the Fisher exact probability test) are concentrated in this area. Only the presentation of drug therapy conferences to pharmacists shows no significant discrepancy in distribution by role, as it is an activity unanimously embraced in both roles.

Table 5

Actual and Ideal Role by Type of Activity:

CONSULTATION

Function	in Actual %	in Actual (n)	in Ideal %	in Ideal (n)	p≤.01* (n=15)
Drug problem	100	(15)	100	(15)	——
Physicians	100	(15)	100	(15)	——
Nurses	100	(15)	100	(15)	——
Report drug reactions	100	(15)	100	(15)	——
Information to team	100	(15)	100	(15)	——
Information to physicians	100	(15)	100	(15)	——
Referrals	93	(14)	100	(15)	——
Dieticians	93	(14)	100	(15)	——
Suggest laboratory tests	93	(14)	100	(15)	——
Rounds with physician	93	(14)	100	(15)	——
Team rounds	87	(13)	100	(15)	——
Poison information	60	(9)	73	(11)	——
Grand rounds	47	(7)	93	(14)	**
Social workers	47	(7)	80	(12)	——
Physical therapists	33	(5)	53	(8)	——
Laboratory technicians	27	(4)	40	(6)	——
Make independent rounds	20	(3)	73	(11)	**

* Fisher exact probability
** Item significant at .01 level or greater

Table 6

Actual and Ideal Role by Type of Activity:

EDUCATION

Function	in Actual %	in Actual (n)	in Ideal %	in Ideal (n)	p≤.01* (n=15)
Conferences to pharmacists	100	(15)	100	(15)	———
Conferences to nurses	53	(8)	100	(15)	**
Teaching rounds	53	(8)	100	(15)	**
In nursing conferences	33	(5)	93	(14)	**
Organize programs	20	(3)	80	(12)	**
Medical staff meetings	7	(1)	53	(8)	**
Pharmacy/Therapeutics Comm.	0	(0)	67	(10)	**
Conferences to physicians	0	(0)	60	(9)	**

* Fisher exact probability
** Item significant at .01 level or greater

From an overall examination of the six tables, it is noted that only four of the fifty-nine possible functions in the clinical role-segment are not generally performed by any of the respondents, and each of the fifty-nine activities is included in at least one pharmacist's ideal role conception.

In fifteen cases (using the Fisher exact test) the distributions on items between the actual and the ideal roles were found significant at the .01 level or greater.

In every case where there was a significant difference between actual and ideal role items, the ideal role response totals were higher than the actual role totals. Twelve of these fifteen items were generally performed by less than half of the pharmacists, but would be highly accepted if the pharmacists were allowed to structure their own roles. The other three items moved from just over a 50% performance level to unanimous acceptance at the ideal role level.

The fifteen significant items can be grouped into two general classes. The three items in the prescribing area may be viewed as functions on which there is potential role conflict with the physician group. There is evidence that the remaining significant items (a majority concentrated in the education area) are those which the pharmacists consider to be time-consuming, lower priority functions. The exception to this classification is the supervision of technicians, which will be discussed later. Potential role conflicts and time pressure affecting functions performed also will be discussed later in this paper.

Tables 7 and 8 show the distribution of role items, grouped by content area, according to the percentage of respondents including them in their actual and ideal roles.

The actual role distribution is found in Table 7. From this table it may be seen, through addition of the first two column-totals, that there are thirty-seven functions from the list of fifty-nine that a majority of the clinical

pharmacists perform. If a 50% agreement level is accepted, these thirty-seven functions could be considered the core group that serves to define the central role-segment of the clinical pharmacist at this hospital.

Fourteen functions are performed by all fifteen of the clinical pharmacists. The core group of activities that defines the role-segment would be reduced to these fourteen were a complete consensus necessary to include a function in a role definition.

In examining content areas, using as criteria either the 50% consensus or the 100% consensus, three areas merit attention: patient interaction, monitoring, and consultation. Only seven of the thirty-seven items in these three content areas are not included in the actual role using the 50% criterion. Applying the 100% criterion, thirteen of the fourteen role-inventory items on which there is unanimous positive consensus are found in these three areas.

Under the majority agreement standard, the other three content areas (drug administration, prescribing, education) provide only seven functions from among twenty-two for inclusion in the actual role. And, only one of the fourteen functions performed by all pharmacists (drug therapy conferences to pharmacists - Table 6) is found within one of these areas.

On this basis, it appears that the content areas of patient interaction, monitoring, and consultation provide a core group of functions for the clinical pharmacists at this particular hospital.

Table 7

Item Distribution According to % of Respondents Generally Performing Function by Content Area

Content Area	% Respondents Including Item in Role			Total # of items
	100%	99-50%	<50%	
Patient Interaction	2	5	1	8
Drug Administration	0	1	4	5
Monitoring	5	6	1	12
Prescribing	0	3	6	9
Consultation	6	6	5	17
Education	1	2	5	8
Total	14	23	22	59

The first column total in Table 8 shows that twenty-eight of the fifty-nine items are included by every pharmacist in his ideal role. This group would define the central clinical role-segment if complete consensus were considered necessary to incorporate a function into a role definition. If just majority agreement on a function is

required for inclusion, then fifty-one functions would comprise the role for these pharmacists, (the sum of the first two column totals in Table 8).

The role conception is demonstrably more inclusive than the role performance. As noted earlier, the core group of functions for the actual role are comprised largely by the three categories of patient interaction, monitoring, and consultation. The ideal role, at the 50% level, incorporates thirty-five of the thirty-seven items contained in these categories, and as would be expected ideal role functions having unanimous consensus are concentrated within these three areas. In addition, the entire category of education (eight items total) and seven of nine functions within the prescribing category are also part of the ideal role conception using majority consensus. This is in contrast to the actual role performance where only three items are included in each of these two categories using the same criteria.

The content area of drug administration is the only one without a majority of items embodied in the pharmacists' role conception. This category, as in the actual role, has only one function out of five included by a majority of pharmacists in their ideal role.

Table 8

Item Distribution According to % of Respondents Identifying Ideal Functions by Content Area

Content Area	% Respondents Including Item in Role 100%	99-50%	<50%	Total # of items
Patient Interaction	6	1	1	8
Drug Administration	0	1	4	5
Monitoring	5	7	0	12
Prescribing	3	4	2	9
Consultation	11	5	1	17
Education	3	5	0	8
Total	28	23	8	59

The original plan of this study included an examination of certain background characteristics to determine whether they affect which items are incorporated into the actual and the ideal roles of these pharmacists. But as noted earlier, the population is quite homogenous, so mean-

ingful comparisons generally cannot be undertaken. Unit assignment is the one area though on which the pharmacist's responses may be analyzed for differences. Although not essential for identification of items comprising the pharmacists' actual and ideal roles in total, unit breakdowns do point out role differences among individuals. Tables 9 and 10 display the average number of functions performed and idealized in the six content areas, broken down by unit. The units are not specifically identified, but rather are assigned letter designations for reasons of respondent confidentially.

If the actual role is examined by unit assignment in the hospital, a few interesting patterns develop. (Table 9). These patterns occur within the categories of prescribing and drug administration. As indicated in the table, the average number of prescribing functions performed varies across units from 2 to 6.5 of 9 possible functions. Drug administration activities vary across units from 0 to 3.5 of 5 possible functions. The unit (H) which performs the highest average number of prescribing functions (6.5) undertakes no drug administration functions.

Monitoring and consultation content areas have uniformly high levels of functions performed with no major differences by unit. A majority of the patient interaction functions also are performed on all units with

the exception of unit "H." A smaller number of educational functions are performed by the pharmacists, but once again this level is relatively constant across units.

Turning to the ideal role, examination by unit assignment shows only one minor difference in item responses (Table 10). With the exception of the drug administration category, most items within each content area are included in the role conception at a uniformly high level with no significant discrepancy among units. In comparison, items within the drug administration area are less often incorporated, and more variation exists across units. For example, unit "B" pharmacists would want to perform an average of only 0.5 of 5 drug administration functions in their ideal role. This is in contrast with unit "D" pharmacists who include an average of 3.5 of these activities in their ideal role.

(See following page)

TABLE 9

Number of Functions Performed in Content Areas by Unit*

Unit Designation	Function Content Area: Patient Interaction	Drug Administration	Monitoring	Prescribing	Consultation	Education	Total Functions Performed
A	6	0	11	3	13	2	35
B	6.5	3.5	10	5.5	11.5	2.5	39.5
C	6	3	10	2	12	1	34
D	6	3.5	9	3.5	12.5	3.5	38
E	7	3.5	10.5	4.5	15	3	43.5
F	5.3	0	9.3	3.3	13.3	2.7	34
G	4.5	0.5	8	4	12.5	2.5	32
H	3.5	0	11	6.5	13	3	37
Total # of Functions in Area	8	5	12	9	17	8	59

*In each case the number is the average number of functions performed by pharmacists on the unit. For example, unit E has two pharmacists, one performs 4 prescribing functions and the other performs 5 prescribing functions, resulting in an average of 4.5 functions performed. Due to recent personnel changes and the promotion of two individuals to supervisory positions, units A and C had one pharmacist and unit F had three assigned pharmacists at the time of this study. The remaining units had the normal complement of two floor pharmacists on their teams.

TABLE 10

Number of Functions in Role Conception Content Areas by Unit

Unit Designation	Function Content Area: Patient Interaction	Drug Administration	Monitoring	Prescribing	Consultation	Education	Total Functions in Conception
A	8	3	11	7	14	8	51
B	7	0.5	11.5	6.5	15.5	5	46
C	7	1	10	6	16	7	47
D	6.5	3.5	10.5	7.5	15	6	49
E	7.5	3	10.5	6.5	16	8	51.5
F	6.3	1.7	11	6	14.3	5.7	45
G	6.5	2.5	10	7.5	16	7	49.5
H	7	2	11.5	7	14.5	7	49
Total # of Functions in Area	8	5	12	9	17	8	59

Discussion

Regardless of how we decide which functions define the clinical role segment, the role conception of these clinical pharmacists is broader than their actual role behavior. As noted earlier, fifty-one of fifty-nine functions are included within the ideal role under a majority agreement criterion. Only thirty-seven functions are within the actual role using this same standard. The application of a 100% criterion provides a similar result. Fourteen activities are performed by every pharmacist, while twenty-eight functions ideally would be performed by these same individuals. There are several factors which might explain the discrepancy between roles.

Appearing repeatedly throughout the personal interviews with the pharmacists was the general opinion that their work is accomplished under a great deal of time pressure. Eleven of the fifteen pharmacists spontaneously mentioned that they do not have enough time to perform all the functions they would like to. Even when proceeding through the role inventory it was not uncommon to hear comments such as, "I don't do that; I don't even have enough time to do the things I'm doing now well enough." The pharmacists indicated much of their time is

expended on the many time-consuming, non-professional functions they must perform. These tasks include such things as walking to obtain medications, waiting for technicians, or repeating transcriptions of medication orders for entry into the hospital's computer system. One pharmacist noted, "We don't have the flexibility we are supposed to have because of the many little, mechanical things we are locked into."

Additional support for their opinion is provided by a 1973 task analysis study undertaken at University Hospitals.[43] Among the findings of this study was the fact that pharmacists at the hospital usually take a much shorter lunch break (or none at all) than allowed, and on some units, the pharmacist's work day averages up to an hour longer than his normally scheduled shift.

Even if time pressures account for a substantial portion of the discrepancy between the pharmacists' role behavior and role conception, other factors are operating. The fact that the differences between the roles fall into certain patterns suggests that something other than time is involved.

Earlier it was observed that three areas of pharmacotherapy (patient interaction, monitoring, consultation) comprise a core-group of functions for the clinical pharmacists at this hospital. The conversations held with these pharmacists also indicate that they believe these three areas

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[43] Munger and Reichel, "Analysis of the Floor Pharmacist Functions at University of Wisconsin Hospitals."

to be the most integral parts of their role. This suggests that perhaps the setting of priorities by the pharmacists has some bearing on which activities are undertaken.

It should be noted that there are three item distributions found significant in these core areas that a majority of the pharmacists do not currently perform (grand rounds, independent rounds, monitor outpatients). Grand and independent rounds are time-consuming, voluntary functions. The fact that few pharmacists undertake these types of rounds indicates there are priorities to be considered even among these core-group functions. The monitoring of outpatients, on the other hand, is generally impossible under the structural organization of this hospital as floor pharmacists do not often come in contact with outpatients.

On examination of the items within the three core-content areas, it appears that certain functions are extensions of activities particular pharmacists have been performing in various practice settings for some time. In the past, pharmacists have not been specifically trained to carry out many of these activities, but practical experience in certain settings has tended to channel some practitioners toward them. Those who feel clinical pharmacy is really nothing new to pharmacy practice may be largely correct only with regard to certain isolated components of the ideal role of a "clinical pharmacist."

The remaining content areas of drug administration, prescribing, and education contain functions which are

generally foreign to traditional pharmacy practice. The fact that a number of functions in these three areas are somewhat alien to pharmacy is due largely to constraints placed on the profession by society. Societal control mechanisms play a large part in the development of any role. We noted earlier that societal restraints or endorsements may arise from either legal structures or through interpersonal (reciprocal position) interaction.

As observed previously, role theory presents the view that a person's role-set is molded through interaction with those in reciprocal positions. Reciprocal roles effect situational restrictions on activities undertaken by those in a focal role, in this case that of the clinical pharmacist, more than they affect the ideal role definition.

Both conflicts and cooperation resulting from inter-role interactions are suggested by the study. Results from the interviews indicate that all of the duties of the professional health workers in this hospital, particularly those of the nurses, physicians, and pharmacists, are not strictly outlined. Some of the division of labor is worked out through inter-professional agreements within individual units. When one considers that pharmacy practice regulations do not provide for the performance of most prescribing or drug administration functions, it is obvious that interactions between pharmacists and physicians or nurses had to occur for the pharmacist to acquire the right to perform certain of these activities.

This inter-professional cooperation is reflected in the performance of some "illegal" prescribing functions by the pharmacists. Closer examination reveals that every function not currently undertaken by a majority of the pharmacists is illegal to perform. It seems the legality of prescribing activities affects the extent to which the pharmacist undertakes these functions. Relatively few prescribing functions are performed by the pharmacists (see Table 4). But, the fact remains that some pharmacists are performing these functions. Although prescribing is normally within the physician's realm of responsibility, interview responses suggest the physicians grant pharmacists the right to perform certain prescribing functions on a one-to-one basis.

On the other hand, prescribing is the area where the clinical pharmacist's potential role is most likely to conflict with that of the physician. As seen from their role conceptions, the pharmacists feel it would be appropriate if they were to prescribe "PRN" orders, discharge medications, and medications in emergency situations. The respondents also believe they should select the proper drug based on the physician's diagnosis. Possible conflict is underscored with this last function because every pharmacist included this activity in his ideal role conception.

Some physicians reportedly view the pharmacists as a threat, particularly those in specialist groups that deal

less with, and hence know less about, medications. Five respondents mentioned the presence of conflicts with physicians, although these difficulties were not always directly related to prescribing functions. However, most pharmacists stated that they have good rapport or that they have no particular conflicts with the physicians in this hospital. During the course of the interviewing, it was stated more than once that pharmacist-physician cooperation has increased substantially over the past few years.

A somewhat dissimilar situation exists in the area of drug administration. While most drug administration functions are considered illegal for the pharmacist to perform, the pharmacists have little involvement in it, nor do they seem to show much interest for future participation in this area.

Drug administration is the category that has the most potential for conflict with the nursing staff. Information obtained through the interviews suggests that when there are conflicts with nurses, they are likely to occur over who should administer various medications on certain wards.

Generally, not much conflict is created though, because pharmacists do not often administer drugs. In fact, within this category, the administration of injectable medications is the only activity that a majority of the pharmacists carry out. Moreover, several pharmacists noted that where duties are not specifically codified in this hos-

pital, problems due to functional overlap between the pharmacy and nursing groups are resolved unit by unit with little difficulty. Pharmacists interviewed put forth a view that communication at the individual level with the nursing staff is generally good, with only isolated areas of chronic friction.

A factor that affects which functions are performed in the drug administration area is that of "ward policy." Pharmacists perform no drug administration functions on certain units (see Table 9) due to decisions made at the administrative level for organizational purposes. On some wards, for example, the nurses administer medications exclusively, while on others the pharmacist or pharmacy technician might do so.

From all appearances, the pharmacists consider it adequate to supervise the administration of medications by technicians, rather than be involved in the actual administration themselves. This attitude can be discerned from the ideal role distributions in the drug administration category (Table 2). Pharmacists stated often that they would prefer to administer the first dose of a new medication in order to perform a teaching function for the patient. Beyond this point, however, the majority of the pharmacists believe that drug administration is far too time-consuming to justify their personal attention.

A third area not heavily represented in the pharma-

cists' actual role consists of educational functions. Some respondents indicated that since they do not have time for involvement in all the activities they would like to take on, educational functions are among the first to be sacrificed. Those pharmacists who commented on these activities left the impression that they do not believe the majority of these functions to be central to their role, but if they did have the time they would be involved in more educational activities.

No staff pharmacists are allowed to participate on the Pharmacy and Therapeutics Committee, as pharmacy representation is through administrative or supervisory positions. Also, the organization of inservice and continuing education programs usually falls under the responsibility of just one of the pharmacists. These situational restraints thus eliminate most clinical pharmacist participation in these two educational functions.

In summary, the clinical pharmacist at University Hospitals could be characterized as follows: Within the clinical role-segment, his ideal role is significantly more inclusive than his actual role. His actual role performance is situationally restricted due to, among other factors, time pressure and/or administrative organizational policies. He considers the functional content areas of patient interaction, monitoring, and consultation as most crucial to the performance of his role. He would

like to be more involved in prescribing medications and educational activities, but he is prevented from doing so by certain obstacles. In the case of prescribing, the primary obstacles are legal restrictions and potential role overlap with the role of the physician. Educational functions are neglected for the most part due to a lack of time to perform these activities, combined with the belief that these functions are of less importance to the performance of his role. The clinical pharmacist at this hospital participates little in the administration of medications, nor does he desire more involvement, other than in a supervisory capacity.

Future Research and Limitations of Study

On the basis of this exploratory study, investigation could be expanded at a future time into other dimensions of the role definition of the clinical pharmacist. Specifically of interest is the role definition as it pertains to those in reciprocal positions. This area is especially relevant due to the importance that reciprocal positions play in defining the role of a focal position.

This study could have been strengthened considerably through interviews with those in reciprocal roles. Information from those who interact with the clinical pharmacist

is almost essential to obtain a complete picture of this role.

Another area worthy of investigation is the definition of the clinical role-segment by those in other pharmacy practice settings. These pharmacists, while often performing clinical functions themselves, are not normally designated as clinical pharmacists. To investigate the clinical role-segment definition of individuals in other pharmacy settings a revised instrument of role definition would be constructed to allow for functions performed outside of the hospital setting.

Since elements of both conflict and cooperation are suggested from this study's data, a primary emphasis should be placed on the understanding of the dynamics through which conflicts arise and are resolved, and how cooperation between reciprocal positions is arrived at.

The study of conflict and cooperation needs to be undertaken in all settings in which the clinical role-segment of pharmacy is practiced. There is a strong possibility that the amount of inter-professional conflict or cooperation varies by pharmacy practice setting. Potential for conflicts and/or misunderstandings might be greater when moving from the confines of a teaching hospital, where the various professionals are trained and encouraged to work closely together, to other practice settings where patient care is somewhat fragmented.

A review of conversations with the respondents suggests that these pharmacists recognize certain content areas as having higher priority in the clinical role-segment. Inquiry into this process of priority setting should be undertaken in future studies. Particular attention should be given to any relationship between the priorities identified and factors which may affect these priorities, such as the pharmacists' educational experiences or training programs.

It is important to recognize that those items which comprise the role, as it has been identified, only do so to the extent that they have been included in the role-definition instrument. While there are certainly relevant items omitted, the instrument is definitely representative of all general areas of clinical pharmacy practice in the hospital setting, and has contributed toward a sound conceptualization of the actual and the ideal roles of the clinical pharmacist.

The use of either majority or unanimous consensus as criteria for inclusion of a function within a role was primarily for the organization of data, as noted. It is recognized that the application of a strict 100% criterion cannot be validly used to define a role-segment. For example, it is not practicable to perform some functions given the nature of the medical problems treated or the ward policies in existence on particular units. The present

sample was small and homogenous, but it would be expected that variance due to these factors would be magnified with a more heterogeneous sample.

Any future investigation into the role of the clinical pharmacist would profit from a more sophisticated role-inventory instrument. Such an instrument could provide for multiple categorical measures of role performance and role conception. The present study queried respondents as to whether they generally perform a function or whether they would perform a function if they could structure their work in a way they wanted to. This dichotomous system provides no measure of intensity for the classification of functions. Multiple response categories would allow for items to be graded as they relate to the role and hence would provide for more accurate reporting by the respondents.

Another concern involves modifying the wording of the role-inventory items to obtain more accurate responses. Some functions included on the inventory are of a very general nature, while others are quite specific activities. Changing the wording of inventory items in order to place them on the same level of generality could conceivably make significant differences in the results of an application of the instrument.

Also, the fact that the investigator must rely on self-reporting by the respondents, hinges validity on the

accuracy of self-reporting. Since the respondents knew something about the purpose of this study, any assumption of complete accuracy might not be entirely valid. The possibility exists that there is a systematic respondent bias of over-reporting actual and ideal functions in order to present themselves in a more favorable light. A study that employed additional observational techniques might partially overcome this difficulty.

Summary and Conclusion

This study has attempted a preliminary functional description of the clinical pharmacist's clinical role-segment in a hospital setting. Through the application of a role-definition instrument, specific functions and functional content areas providing a core-group of the clinical role-segment activities were identified. The distributions of role items resulting from application of the role-definition instrument were examined and comparisons were made between the actual and the ideal roles of the clinical pharmacist. Information obtained through personal interviews with the respondents was utilized to provide support for interpretation of the data, and for a characterization of the clinical pharmacists' clinical role-segment in a specific hospital.

Results of the study, in concurrence with role theory approach to occupational role, suggest the need for detailed investigation into areas only touched upon in this exploratory analysis. Special attention should be paid to the prominence that reciprocal positions play in the development of an occupational role definition. Those in reciprocal roles affect the level of cooperation and conflict present between positions, and analysis of the dynamics involved in reciprocal role interaction is ultimately necessary for a complete understanding of an occupational role-segment.

Today's pharmacists face an uncertain future, but they have the potential to shape the future of the profession through new or altered roles. The concept of the pharmacist as a more actively involved member of the health-care team is in a stage of rapid development, and this study indicates that the pharmacist can indeed make a more significant contribution.

While no one can predict with certainty what the future pattern of pharmacy practice will be, it seems clear that the nation's health-care system is on the verge of major changes in structure. It remains to be seen just how the clinically trained pharmacist will function in such a system. At this stage in its evolution, the concept of clinical pharmacy continues to undergo dynamic changes, and we must wait until a future time

to assemble a relatively static definition of the role of the clinical pharmacist.

APPENDIX I

Interview Wording Prefacing Role Inventory Items

I. Actual (role performance)

Now I am going to read off a number of possible functions performed by a patient area care pharmacist. Not all may be applicable to your unit or even to this hospital. The items range from relatively general to quite specific functions. I want you to tell me whether or not you generally perform these functions on your unit.

DO YOU . . . . . ?

II. Ideal (role conception)

Now the final thing I will do is read off the items we have just gone through again. This time I want you to tell me which of these functions you would perform if you had the privilege of doing only the things you wanted to do in your job situation. In other words, if you could structure your job the way you wanted to, which of these things would you do?

WOULD YOU . . . . . ?

APPENDIX II

Wording of Role Inventory Items

A. Patient Interaction

1) obtain drug histories from patients or their representative upon admission

2) identify drugs brought into the hospital by patients

3) meet with the patient at time of discharge for purposes of reviewing instructions and counseling for the home use of medications

4) instruct patients on medications to be self-administered while in the hospital

5) instruct patients on new dosages of medications when changes are made

6) counsel patients on drug abuse or other drug related problems

7) provide instructions to patients in the use of medical appliances

8) provide patient education in personal health matters

B. Drug Administration

9) supervise the administration of medications by technicians

10) administer oral medications

11) administer injectable medications

12) administer biological products for immunizations

13) start intravenous medication therapy

C. Monitoring

14) monitor the overall drug therapy of a patient

15) spend time updating your knowledge on a patient's condition

16) check patient charts to determine if changes in drug therapy are properly recorded

17) check patient charts for drug interactions and incompatibilities.

18) screen new medication orders for possible problems

19) assess intravenous medication therapy

20) observe patients for specific changes when under intravenous medication therapy

21) monitor laboratory values

22) evaluate hyperalimentation therapy

23) have involvement in irrigation therapy

24) monitor outpatient drug usage

25) participate on the hospital emergency team (blue cart)

D. Prescribing

26) help medical students plan drug regimens

27) select the proper drug, based on the physician's diagnosis to provide optimal effect

28) determine drug scheduling based on the physician's diagnosis to provide optimal effect

29) participate in team prescribing, with the doctor and/or nurse

30) prescribe "PRN" (as needed) orders

31) prescribe discharge medications

32) provide primary diagnosis of newly occurring problems in a patient

33) prescribe medications in emergency situations when it appears to be in the best interest of the patient

34) participate in the selection or fitting of medical appliances

E. Consultation

35) make rounds with the physician

36) make rounds with members of the health-care team other than the physician

37) make independent rounds

38) participate in grand rounds of the hospital

39) consult with the physician if a real or potential drug problem exists

40) suggest laboratory tests to physicians for patients

41) consult with physicians

42) consult with nurses

43) consult with physical therapists

44) consult with dieticians

45) consult with social workers

46) consult with laboratory technicians

47) answer poison information questions

48) report adverse drug reactions to those collecting ADR (adverse drug reaction) data

49) disseminate information concerning the use of drugs to physicians

50) provide information concerning the use of drugs to other members of the health-care team

51) participate in referrals of patients to outside agencies

F. Education

52) participate in teaching rounds

53) participate in nursing conferences

54) present drug therapy conferences to nurses

55) participate in medical staff meetings

56) present drug therapy conferences to physicians

57) present drug therapy conferences to pharmacists

58) organize inservice or continuing education programs for hospital staff groups

59) participate in the activity of the Pharmacy and Therapeutics Committee

APPENDIX III

Interview Questions Asked of Respondents*

1) What is your present age?

2) Which pharmacy school did you receive your B.S. degree from? (what year?)

3) Have you undertaken any formal graduate work, or do you presently hold any degree past the B.S. level? (where? when?)

4) Where did you intern before becoming licensed?

5) In what year did you become registered?

6) How many years have you practiced as a registered pharmacist?

7) How many years have you been at this hospital?

8) What patient-care unit team are you presently assigned to?

9) How long have you been on this team?

10) Have you been permanently assigned to any other units in the past? (which one(s)? how long?)

11) Are there any things the pharmacist should be doing, or functions he should be performing on your unit that are not currently being done? (any activities currently done that you should do more of?)

12) Are there any things the pharmacist does on your unit that you think he should not be involved with? (any activities currently involved with that you should do less of?)

13) Have you noticed any conflict with other health personnel on your unit over who should be doing which things? (how well defined are the duties of the various health personnel?)

*Open-ended interview questions were partially-structured, probing where necessary to obtain more complete responses.

APPENDIX IV

Introductory Letter Sent to Clinical Pharmacists at University Hospitals

March 24, 1975

Dear Floor Pharmacist:

I am a graduate student at the School of Pharmacy doing a seminar project in conjunction with my master's degree work on the role of the pharmacist in the clinical setting. My particular interest is in those functions the floor pharmacist performs, or would like to perform given a choice.

Since each of you is qualified to provide me with some of the information I am interested in, I would like to take a short interview (about 30 minutes) with each of you. I will not be interviewing the residents or interns as my study is limited to pharmacists on non-rotating floor assignments. I will contact you within the next two weeks to arrange a convenient time for the interview. Your cooperation will be greatly appreciated, and I will be glad to answer any questions you might have regarding the project.

Holly L. Mason, R.Ph.
H L Mason
Office 2148 Pharmacy
263-3959 or 256-7289

The term, "clinical pharmacy" has not had precise definition although it is used widely today. This has contributed to confusion within and outside the profession.

The following report represents the first attempt to define a clinical role for the pharmacist in terms of function. It appears at a time when clarification is much needed. Further, this first effort provides the basis for continuing examination of the role and further definition.

Because of the American Pharmaceutical Association's interest in clarifying the definition of "clinical pharmacy," the report is timely and the Association is pleased to make it available.

APPENDIX V

Report of Task Force on the Pharmacist's Clinical Role*

The pharmacist is a health resource whose potential contribution to patient care and public health is grossly underdeveloped and which, thereby, is used ineffectively. In order to initiate an appraisal of potential and emerging roles for the pharmacist, the University of California School of Pharmacy and the National Center for Health Services Research and Development co-sponsored an interdisciplinary Conference on Pharmacy Manpower in September 1970. A "clinical" role prompted the greatest apparent interest and enthusiasm among the participants, although this role, as yet, lacks precise definition. Included in the results of the conference were three mandates calling for—(1) the development of a set of working criteria for a clinical role, (2) a demonstration of role effectiveness and (3) a determination of cost effectiveness.

In response to the first of these mandates, the National Center convened an interdisciplinary Task Force to draft a set of criteria. It was agreed that an assessment should be made on the basis of "functions"—those now being performed or likely to be performed during the next five years. It was assumed that the "procurement and distribution" and "management" functions traditionally performed by pharmacists would be performed by nonpharmacists. This would occur except in cases where pharmacists might perform a supervisory function, including the supervision of allied health personnel. The Task Force decided, therefore, to concern itself *only* with professional functions.

An arbitrary classification was used in arranging those functions that a pharmacist would perform in a clinical role—

A. Prescribing Drugs
B. Dispensing and Administering Drugs
C. Documenting Professional Activities
D. Direct Patient Involvement
E. Reviewing Drug Utilization
F. Education
G. Consultation

The Task Force found that existing laws prohibit some possibly useful changes. For example, when the role of the pharmacist is extended to include the treatment of minor illnesses, there is an immediate legal challenge because existing laws restrict the diagnosis and prescription of treatment to the physician or other clinician. The same problem is encountered when the pharmacist's role in the hospital includes the administration of drugs, a function which in many states is assigned legally to the nurse. The Task Force attempted to avoid suggesting that the pharmacist perform functions that were obviously in direct conflict with existing laws. On the other hand, it attempted to point the way to functions that would be reasonable in light of the pharmacist's training and present day health care needs.

The Task Force continually found a clinical role for the pharmacist to be compatible with the health team concept. It identified him as an active participant on the patient care team with his unique contribution coming from his expert knowledge in the field of drug use. Although the report only occasionally refers to his relationship to the health team, the Task Force intended that the pharmacist would function through the health team effort.

The work of the Task Force has been completed, and its report will become a working reference document for the Drug-Related Studies Program of the National Center. The report will be made available to the profession of pharmacy as a guideline for the further development of a clinical role for the pharmacist.

A. Prescribing Drugs

The physician determines if drug therapy is indicated and usually chooses the drug to be used as part of his overall therapy. Under certain circumstances the pharmacist does assist in planning drug therapy, and at times may prescribe medications at the request of the physician.

1. Pharmacists, in reissuing prescriptions designated to be refilled at the request of the patient (p.r.n.), may be regarded as performing a prescribing function.
2. Pharmacists, in complying with "standing orders" of the physician, may be performing an independent prescribing function. "Standing orders" refers to a prearranged plan or understanding between the physician and the pharmacist which permits the latter to dispense medications under certain circumstances without the immediate concurrence of the physician.
3. Pharmacists and pharmacy residents often help medical students to plan drug regimens.
4. Physicians may share responsibility for prescribing with the pharmacist when the latter has demonstrated competence. This may include the selection of drugs, the dosage forms and frequency of use, based upon the physician's diagnosis.
5. Pharmacists prescribe over-the-counter (OTC) drugs. Also, by recommending against the purchase and/or use of OTC drugs, they enter into the prescribing function.
6. Pharmacists prescribe medications in emergency situations when it appears to be in the best interest of the patient.

*Reproduced with permission of the Drug-Related Studies Program, National Center for Health Services Research and Development, Health Services and Mental Health Administration, Department of Health, Education, and Welfare, Rockville, Maryland. The report appeared originally in *HSRD BRIEFS*, No. 4, Spring 1971, a publication of the National Center.

7. Pharmacists, after consultation with the prescriber, may select and dispense a drug other than the one prescribed by the physician, when they practice under the authority of the drug formulary system.
8. Pharmacists may be considered to be performing a prescribing function when they reply to inquiries from patients about continued use of medications previously prescribed.

B. Dispensing and Administering Drugs

The responsibility for dispensing medication upon an order from a physician rests with the pharmacist and his staff. The physician has a legal right to dispense, although in general he does not do so. Exceptions are found in rural communities where a pharmacist is not available and in those few cases where the physician chooses to dispense. When the pharmacist performs the dispensing function, it is assumed that he has drugs available by both brand and established (generic) names in products which are of known and acceptable quality. Furthermore, it is assumed that he has the knowledge to exert a discriminating judgment in selecting a drug product when several products of the same therapeutic class are available that meet the needs of the patient. When generic-name drugs are dispensed, it is assumed that if there is a potential savings the patient will benefit.

1. The pharmacist receives and interprets the drug order and either supervises the dispensing function or performs it himself.
2. The pharmacist should consult with the physician when the latter prescribes products of suspected or known low quality, or when a question arises as to the appropriateness of a drug or drug product in light of the patient's condition.
3. The pharmacist has a responsibility for personally dispensing or supervising the filling of orders that require technical knowledge and skill, such as preparing and dispensing intravenous fluids, radiopharmaceuticals, and compounded prescriptions, etc.
4. The pharmacist's dispensing function in the hospital overlaps with the administration of drugs, an act performed traditionally by the nurse. This is manifest today or will be in the future through (a) administration of medicines by the pharmacist, (b) administration by a technician who works under the supervision of the pharmacist or (c) administration by a nurse who is responsible for this act. In addition to the pharmacist's potential responsibility for administration of bedside medication, his responsibilities could include the starting of as well as sharing in the assessment of intravenous therapy, and administering drugs in special programs, i.e., cancer chemotherapy.
5. The pharmacist, wherever he practices, may administer biological products for immunizations, i.e., polio (oral or injectable) and smallpox vaccines.
6. The pharmacist's function in preparing the dispensing medication extends logically to inclusion of the function of administering drugs.

Combining these functions provides for improved drug-use control. The nurse realizes that her traditional role in administering drugs is one delegated by the physician, but she appears amenable to the transfer of this role to the pharmacist. If this transfer takes place, the pharmacist's function would include responsibility for administering drugs; and his decision may determine who performs individual tasks. There are ethical, legal and economic problems today that provide barriers to this transfer of function, but model state health legislation may eliminate some of them. In addition, the pharmacist will require special training if he is to serve such an expanded role.

C. Documenting Professional Activities

The pharmacist is required to keep certain records of his activities in order to meet legal requirements. These are largely operational in nature and pertain to the acquisition and dispensing of narcotics, dangerous drugs, and appliances. In addition to keeping legally-required records, the pharmacist should keep records to document his activities related to patient care. The following are reasonable functions for the pharmacist to perform:

1. The pharmacist should obtain a drug history by recording medications currently used (prescription and OTC) and idiosyncrasies to specific drugs. He notes the past history of drug and/or chemical intoxication and present exposure to industrial, domestic and/or environmental chemicals, etc. The pharmacist may be able to obtain a detailed drug history by using check off forms. This history becomes the medication part of the patient profile record developed by the health care team. In the community the pharmacist may use a system designed to meet the limitations of both his and the patient's time. This may include the use of a self-administered questionnaire and of automated equipment to provide record linkage with other health care providers used by the patient.
2. The pharmacist should have a meeting with the patient for purposes of reviewing instructions and counseling for home use of medications (a) at time of discharge from the hospital or (b) at time of delivery of medication to him at his community pharmacy. These instructions include mode of administration, conditions of storage, time of renewal, and signs of untoward reactions. The patient is advised in the event of an unanticipated drug reaction to contact the physician or, if the physician is unavailable, the pharmacist.
3. The pharmacist in the hospital or other health care facility has access to the patient's chart and has the obligation to notify the physician when real or potential drug problems arise, such as development of an adverse drug reaction. He also checks charts to determine if changes in drug therapy are properly recorded. In outpatient clinics, the pharmacist may dispense or administer medication directly from instructions in the chart order.
4. The pharmacist, among others, makes proper reporting of adverse drug reactions (ADR) to those collecting ADR data.
5. The pharmacist's records in the community indicate when patients should renew their prescriptions; and if they fail to do so, the pharmacist should contact them in order to assure continuity of care. This is a follow-up function, primarily applicable to, but not limited to, the chronically ill patient.
6. The pharmacist prepares adequate records to assure himself of a documented source of expanding clinical experience which enhances his services as a drug specialist and consultant. The pharmacist in the hospital should make rounds with the physician and others on the health care team, or independently as appropriate. In the community setting, his direct contact with patients and physicians permits him to acquire a body of experience through which he becomes a useful clinician in the total care of patients.
7. The pharmacist's function in reviewing chart orders and other documents is to focus on four questions: (a) Is use of these drugs or this drug necessary? (b) Are they the drugs of choice (best drugs for need)? (c) Is the monitoring effort directed to the desired effects? (d) Is the monitoring effort designed to identify adverse drug reactions?
8. The pharmacist in the community setting does not have, in all cases, the equivalent of the patient's hospital chart. He may have no data on the patient's diagnosis or condition; in fact, he may not know whether the physician is treating symptoms or a specifically diagnosed disease. The pharmacist's record, therefore, becomes the historical record of drug utilization, which in time defines the pattern of prescribing of the physician and the pattern (rate, cost, etc.) of utilization by the patient. This permits a periodic review and control function by the pharmacist. The record permits him to monitor therapy for both under- and over-utilization and to identify patients procuring drugs from multiple sources unknown to the physician(s). It also provides an opportunity to acquire information upon which rates of clinical response to individual drugs can be

Task Force To Develop Criteria for a Clinical Role for the Pharmacist

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determined by epidemiologic techniques. These data, in correlation with other health records, provide a basis for judgments in which a benefit/risk ratio can be established or, expressed otherwise, an index for predicting likely drug effectiveness.

D. Direct Patient Involvement

The pharmacist should have a direct contact with the patient when he enters or leaves either the hospital system or the community (non-hospital) system. The objective of this contract in either case is the same, but implementation is adapted to fulfill local needs. The pharmacist should be capable of performing the following functions:

1. Conduct an admission interview, or equivalent, to obtain the drug history.
2. Conduct a discharge interview, or equivalent, to review instructions and provide counsel for home use of medications.
3. Provide patient education in personal health matters, i.e., smoking, drug abuse, need for annual health checkup and other preventive measures.
4. Provide patient education and referral when patients are continually using laxatives, antacids, analgesics, etc., or when patients describe symptoms such as one of the cardinal signs of cancer.
5. Screen patients and direct them to sources of appropriate services—a triage function based on the pharmacist's knowledge of community resources, services and means for obtaining access to them.
6. Provide instructions for home use of medications: how and when to take, how to store, cautions in use, when to reorder, expiration date, when to see the physician.
7. Provide instructions in the use of appliances such as inhalers, colostomy bags, trusses, etc. Anatomical models and other demonstration equipment are useful. Special facilities to insure privacy are desirable.
8. Interpret physician's instructions as they relate to drug therapy as well as the total treatment regimen.
9. Conduct rounds in the hospital and develop a system in the community for following a patient's progress when under drug treatment. The monitoring of patients should determine if patients are taking their medicines.
10. Acquaint patients with the name of their pharmacist and how he can be reached. A pharmacist should make arrangements with other pharmacists to provide for the special needs of his patients when he is not available.

E. Reviewing Drug Utilization

Some functions in this section have been noted, in part, previously.

1. Demonstrating concern for the need for organized programs to review and control drug utilization.
2. Developing and/or promoting planned drug utilization review programs.
3. Developing techniques that will lead to identification of drug prescribing patterns by physicians and drug use patterns by patients.
4. Disseminating accurate information concerning the use of drugs to physicians, other members of the health care team, and the public.
5. Implementing a local formulary system of drug-use control in the hospital and in the community.

F. Education

Education refers to those ongoing activities that are designed to influence the prescribing, the dipsensing and the use of drugs. The pharmacist's goal as a member of the

health care team is to improve patient care by improving the use of drugs and lessening the degree of misuse. Specific functions include:

1. Participation in continuing education through self-directed study and other methods.
2. Organization of inservice and continuing education programs—seminars, lectures, etc., for hospital staffs, group medical practices and professional societies.
3. Participation in the health education of the patient.
4. Participation in public information programs to promote respect for drugs as agents of good health.
5. Participation in the activity of the Pharmacy and Therapeutics Committee or its equivalent organization.
6. Organization of drug information service for physicians and other clinicians.
7. Participation in special programs in the hospital, such as grand rounds, teaching rounds, nursing conferences, medical staff meetings, etc.

G. Consultation

The pharmacist should exert a consultative function by being available to the physician and other clinicians and to the patient for advice and guidance. Although his role as consultant is based primarily on his role as a drug specialist, it is based also on his knowledge of personal and public health matters, community health resources, the treatment of minor illnesses, etc. The pharmacist exerts an *active* role when performing as a consultant. Particular consultations are carried out with the physician and patient concerning:

1. The screening process. For example, the pharmacist might perform certain screening procedures, i.e., determine blood pressure, and in consultation with a physician at some remote point decide what measures should be taken. This is part of the triage function.
2. The selection of drugs and monitoring of drug therapy.
3. The refusal to furnish medication when the best evidence supports this position.
4. The referral of patients to sources of competent medical care.

Summary

The pharmacist's usefulness as a specialist in his own field can be enhanced by his assuming an attitude that will lead to an active concern for direct patient welfare. In addition, the pharmacist's usefulness as a professional health worker will likewise be enhanced through active participation in patient care with other health professionals. The present clinical role of the pharmacist is associated more easily today with hospital than non-hospital practice. However, the opportunity for clinical experience in the care of ambulant patients does exist. One difficulty at the present time is the fragmentation of the out-of-hospital delivery system. The role will become more uniform as the medical care delivery system is standardized in group medical practice, health education centers, and other systems. Furthermore, much of community pharmacy practice remains rooted in traditional patterns in which the pharmacist appears to be more or less apathetic to direct patient care needs. When pharmacists become identified actively with group medical practice or perhaps modify their own traditional practice arrangements, the true clinical nature of community pharmacy practice will emerge.

Stinging and Biting Insects

(continued from page 481)

man or animal, they attack the skin. They insert their mouth parts in the skin and secrete a digestive fluid which causes disintegration of the cells of the affected area. Siegel[19] reported that chiggers do not burrow into the skin. However, as a result of the injected fluid, the skin hardens and a tube is formed in which the chigger lies and continues to feed until engorged, after which it drops and changes to adult.

In order to control chiggers, infested areas should be treated with insecticides such as chlordane, toxaphene, lindane or sulfur. As preventative measure, weeds and briars should be eliminated from around the home and the lawn should be mowed regularly. Campers, hunters, ranchers and farmers should protect themselves by applying insect repellent to their exposed skin and clothing, particularly cuffs, waistbands, sleeve hems and neckbands.

Spiders. Spiders are arachnids and characterized by the fact that the head and thorax are fused together. The poison sacs which are located in the cephalothorax are connected to two horny fangs from which they kill by introducing a poison with the bite. They only suck the fluids from their victims. Although spiders are feared, for the most part, they are harmless and only a few species are poisonous to man. Spiders live practically everywhere, from the arctic to the tropics. They are found in and around homes, in fields, under stones and in cavities of all kinds.

The black widow spider is one of the spiders dangerous to man. The adult female is glossy black, covered with microscopic hair and may have light streaks on the abdomen. A characteristic reddish, hourglass marking is present on the lower side of the abdomen. However, the marking may vary in shape and at times may be absent. The abdomen, which is globose in appearance, has an average width of one-quarter inch and overall length (legs-extended) is about one and a half inches. The male black widow is black and has light streaks on his abdomen. It is smaller than the female and recognized by the knob-like appendages in front of the head.

The bite of the black widow spider feels like a pin prick and usually is accompanied by a local swelling and two red spots at the site of the bite. The symptoms of poisoning vary from one individual to another but usually consist of pain and spasms of the body muscles, abdominal pain, vomiting, profuse perspiration, rise in blood pressure and body temperature. The venom of the black widow spider is neurotoxin. It is believed that approximately four to five percent of those bitten by black widow spiders die of poisoning.

The control of spiders consists of destroying the web and spraying it with chlordane or lindane in petroleum distillate.

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