SOME ASPECTS OF DRUG DISTRIBUTION UNDER TAX SUPPORTED PROGRAMS

by John Alexander Bachynsky

(Under the supervision of Professor Robert W. Hammel)

Controls imposed by third parties to regulate expenditures for pharmaceuticals were examined. Some control procedures were listed and four of them, insistence upon prescribing and dispensing drugs by their generic name, the use of formularies, patient participation in the payment for medication, and the dispensing of medication through (hospital) outpatient pharmacies, were examined. Data for the first three of these procedures were obtained from secondary sources. Primary data were used to calculate the cost of providing medication through outpatient pharmacies.

The prescribing and dispensing of drugs by their generic name was examined from the point of view of third parties, the pharmaceutical industry, physicians, and pharmacists. Methods used by the Federal government in purchasing drugs are described and some implications noted. A policy of insisting on the prescribing and dispensing of drugs by their generic name would produce potential savings to the third party of six to seven per cent.

Formularies can be used to control pharmaceutical expenditures by limiting the number of drugs for which

payment will be made, or by their use as a formal medium through which one or more other control procedures can be exercised. Potential savings depend upon the severity of the restrictions imposed by the use of the formulary, or by the control procedures embodied in the formulary.

Patient participation in payment either through a fixed fee for each prescription or as a percentage of the prescription price will result in the dispensing of fewer prescriptions and a larger average quantity of medication per prescription. The saving obtained from the control procedure depends upon the extent of the patients' participation in paying for the medication. Advantages that accrue from this procedure are increased flexibility through the ability to vary the participation rate, and a minimal distortion of physicians' prescribing patterns.

The cost of providing 40 representative drugs through two outpatient pharmacies and through a county welfare vendor system were compared. Both the cost of the medication and the cost to the third party of having the drugs dispensed were determined.

A prescription audit of the sample drugs was performed in both the government hospitals and from the county welfare prescription records. Information on the average quantity dispensed, the average number of days' therapy, and the cost of the medication were obtained.

The cost of dispensing in the two hospitals was determined by cost finding procedures using the pharmacy

as a cost center. For the vendor system the dispensing cost was the amount charged the county less the cost of the medication. This amount was determined from the welfare prescription pricing schedule.

It was found that the cost of dispensing through outpatient pharmacies was less than the cost of dispensing through community pharmacies. The cost of the drugs dispensed also was lower for the hospitals than for community pharmacies. These data were adjusted for quantity dispensed and prescription mix.

COMPARISON OF AVERAGE DISPENSING AND DRUG COSTS

	County Hospital	Federal Hospital	County Welfare Vendor System
Drug products available from a single source			
Dispensing cost	$ 0.632	$ 0.935	$ 2.361
Drug cost	2.282	1.669	2.987
Drugs available from multiple sources			
Dispensing cost	$ 0.632	$ 0.935	$ 1.590
Drug cost	0.674	0.564	1.492

The lower price paid for drugs by the government hospitals was attributed to the governmental units' quantity purchasing, their larger functional discount, and competitive bidding where a drug was available from

more than one firm. Reasons for the difference in dispensing costs are discussed.

Comparisons of dispensing cost should be based on defined criteria for pharmaceutical service. Proposed standards for pharmaceutical service are presented.

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by

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CHAPTER I

INTRODUCTION

Third parties, defined as organizations or governmental units that pay part or all of the expenses incurred by an individual, are assuming a greater role in the payment for pharmaceutical services. Recent major changes include the increased medical care provisions under the Social Security Act, expansion of medical care benefits to veterans who receive aid and assistance, and the provision of medical care to dependents of military personnel through the vendor system. As a result of these and other programs, an increasing amount of dispensed medication is being paid for by third parties.

Administrative controls must be applied by the third parties since they are fiscally responsible for the incurred expenditures. In addition, they usually are also constrained by budgetary limitations. These factors combine to generate policies which decrease or slow the growth of expenditures for prescribed medication. These policies usually affect the pharmacist who provides the medication by placing on him the responsibility of determining eligibility, requiring him to compile and submit information that is not required for other patients, and by regulating his compensation. Other imposed measures also affect physicians and patients.

Despite the magnitude of these changes, there has been little research in the field of controlling drug expenditures. However, various groups have applied several types of controls and new types continually appear.

Three measures often advocated or taken by third parties to control expenditures are: (1) the use of a formulary, (2) purchasing and encouraging or restricting prescribing and dispensing to drug products identified only by their generic name,[1] (3) and providing medication through a hospital pharmacy. The subject of prescribing and dispensing generic drugs has evoked considerable controversy, as has the use of a formulary. In contrast the provision of medication through a hospital's outpatient pharmacy[2] has been less subject to controversy.

While the cost of the medication provided through hospitals generally is acknowledged to be lower than the same drugs provided through community pharmacies there is no known definitive research comparing these costs or the cost of dispensing these drugs. Some reasons given for the

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1. Drug products described by their generic name will be referred to hereafter as generic drugs.

2. A hospital's outpatient pharmacy will be referred to hereafter as outpatient pharmacy. Outpatients will refer to the patients receiving prescriptions (outpatient prescriptions) from the outpatient pharmacy.

lower cost of providing drugs through hospitals are: (1) that the hospital is a tax-supported institution and does not pay taxes, (2) hospitals purchase drugs at lower prices, and (3) that hospital pharmacies are more efficient.

This research was undertaken in an attempt to compare the costs of providing prescribed medication through hospital pharmacies and community pharmacies. Analysis of the differences in cost of identical ingredients, the cost of dispensing the medication, and the services provided should enable a more knowledgeable basis for the formulation of policy. Throughout this study the term dispensing cost will refer to the cost incurred by the third party to have the medication dispensed, excluding the cost of the medication itself.

General Statement of the Problem

Charged with the task of paying for medical benefits but having only indirect control over the suppliers of service places third parties in an awkward situation. This situation is compounded by the increasing use of medication in society and the increasing proportion of persons, mainly the aged, who have chronic diseases. It is in this context that the problem is posed.

Third parties paying for prescribed medication incur expenditures which continue to rise and opposition to their obtaining more money to meet these expenditures. This

opposition in the case of programs administered by governmental units, would come from legislators, and indirectly from taxpayers; and in the case of programs administered by insurance companies, from policy holders resisting increases in the premiums. Caught between these forces, third parties must examine methods of minimizing expenditures wherever possible. Some of the methods they might consider are: (1) the use of a formulary or list of eligible items for which they will pay, (2) insist on generic drugs or pay only for the "lowest cost medication", however that may be defined, (3) have the beneficiary pay a portion of the cost, (4) have the medication dispensed through an outpatient pharmacy or government owned dispensary, or (5) establish maximum prices that they will pay for each drug.

Other methods and combinations of these methods doubtlessly have been suggested and tried. All methods, however, have one thing in common; so little is known about the effect of imposing them or making adjustments in them, that the results obtained can be predicted only in terms of direction rather than of degree, and even this is not reliable. In one of the few published studies in this area the conclusion was drawn:

> . . . that to introduce economic factors into the already complex relationship between doctors, patients, and their

illnesses leads to unexpected results. While adequate prediction of these effects is clearly described for formulation of policy, equally clearly it cannot be achieved by the use of simple a-priori assumptions.[3]

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3. J. P. Martin and Sheila Williams, "The Effects of Imposing Prescription Charges," Lancet, Vol. 1, (January 3, 1959), p. 39.

CHAPTER II

HISTORICAL BACKGROUND OF THIRD PARTY PAYMENTS

Through the medieval period in Europe there were no special treatment facilities since little was known about disease and the practice of medicine still relied on the knowledge of the ancient Greeks and distained practical observation and experience. What diagnosis they did employ consisted of such shiftless methods as examining renal secretions rather than the patient.[1] The major part of the population during this period of feudalism was bound to the soil and was dependent on their lord for care when they became ill or incapacitated.[2] To aid the feudal lords and later the country gentlemen, books were published giving instructions on methods of preparing medication for various diseases using locally available ingredients. In effect it enabled the establishment of small shops for the dispensing of drugs to their families, subjects and neighbors.[3]

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1. R. Westland Chalmers, Hospitals and the State (John Bale, Sons and Danielsson, London, 1928), pp. 11-13.

2. Ibid., pp. 27-28.

3. J. Constant de Rebecque, L'Apothicaire Francais Charitable (Lyon, 1683). The book is subtitled "Ouvrage necessaire atoos ceux qui exercent la Medicine a la campagene, comme aussi a ceux qui s'employent au soulagement des Pauvres."

The fifteenth and sixteenth centuries brought profound change to Europe, especially England, Stable, rigid feudalism was rocked by new ideas and an unprecedented mobility resulting from the crusades. Accompanying this was the appearance of new diseases with which medical practice was unable to cope. Bubonic plague known as the Black Death or the Plague, recurred often during the fourteenth century after its introduction in 1348 and culminated in the Great Plague of 1664-1665. This holocaust shattered the existing social structure and people drifted aimlessly across the country seeking employment, food and sanctuary.[4]

Poor Laws

To restore order during this turbulent period harsh measures were taken to reduce migrancy and the number of vagabonds on the roads. These vagabonds and beggars were forced to return to the locality in which they were born and, there to take up work, unless they were helpless or infirm, in which case they were entitled to care from the local community. Thus began the English poor laws, the codification of humanitarian beliefs. Despite these laws, the number of outlaws, beggars and vagabonds continued to be a problem even when Draconian punishments were employed.

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4. Chalmers, op. cit., pp. 15-16.

Initially the poor were cared for in the parishes by voluntary donations but when charity and the Church failed to cope adequately with the need, the people were forced to move in search of support through begging and theft, and no amount of repression could prevent this. Slowly, it was realized that this social problem was one which called for public action and systematic public provision for the destitute.[5] The Reformation with its Protestant ethic was a vital force in the shift of emphasis from charity to public responsibility and a new attitude of social responsibility spread across Western Europe.

Pauperism was condoned by the Church so that those bestowing charity could be blessed. This attitude is shown by a purported interchange, relating to poor relief:

> Someone may remark: If these sort of people also are to be relieved, will there be any end to giving?
>
> Can anything more blessed be imagined than that there should be no limit for doing good? You have said an outrageous thing; I had thought you were about to lament that at some time there would be none left to whom you could show compassion.[6]

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5. Sidney and Beatrice Webb, English Poor Law History, Part I: The Old Poor Law (Archon, Hamden, Connecticut, 1963), pp. 29.

6. Juan Luis Vives, "De Subventione Pauperum," Some Early Tracts on Poor Relief, edited by F. R. Salter (Methuen, London, 1926), pp. 26.

Swiss reformers, like Zwingli and Calvin, now attacked this belief and viewed the problem as one of character. They insisted that it was a duty to work and would not tolerate idleness. To enforce this doctrine, Calvin had the ecclesiastical authorities regularly visit every family to ascertain whether its members were idle, drunken, or otherwise undesirable.[7] For those who were sick or aged, however, provision was made for their care in special institutions which were organized under the local city government, although in this case the city magistrates were almost completely dominated by the clergy. As the Reformation progressed monastaries such as those in Zurich were taken over and used as schools and hospitals by the secular authorities.[8]

During the first half of the sixteenth century, poor laws were passed in almost every city and country throughout Western Europe. While they varied to a considerable extent they all showed some influence of the Reformation by insisting that the able-bodied work for any benefits received, and also by organized methods of raising money, either voluntarily or by compulsion. On taking over the

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7. R. H. Tawney, Religion and the Rise of Capitalism (The New American Library of World Literature, New York, 1947), pp. 101.

8. F. R. Slater, an editorial note, op. cit., p. 97.

care of these people, the community insisted whenever possible that work be done in return for aid received. This attitude influenced all subsequent poor laws in Western Europe and those in North America.

Enlightened laws for poor relief were established in Bruges in 1526 by Vives and these were copied by other cities in the Lowlands and England. It was recommended that relief be given in hospitals only to sick, indigent, blind, insane and orphans. Physicians, drugs, and men and women attendants were provided and the care and treatment of mental disease was explained in terms which sound contemporary. The treatment included individual treatment, no bonds unless needed, gentleness, teaching, and prevention of any actions which would impair their healing, such as mocking the sufferer.[9] In contrast, during the twelfth century the mentally ill usually were burnt alive because their delusions often were of a religious nature.[10]

During the reign of Elizabeth a succession of poor laws were passed, of which the act of 1601, establishing compulsory contributions, was most effective. This advance did not maintain its momentum, however, and the treatment of the poor fluctuated during the next century and a half

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9. F. R. Slater, op. cit., p. 16.

10. William Edward H. Lecky, History of European Morals from Augustus to Charlemagne, Vol. 2 (D. Appleton, New York, 1906), p. 88.

until voluntary hospitals and dispensaries were founded in response to the social exploitation of the Industrial Revolution and its concomitant urbanization. During the interim the poor were succored by the almshouses and in many cases by physicians who contracted to provide all medical and surgical care for the poor.[11] The general attitude of the government in both Britain and later North America, up to the turn of the nineteenth century and in some cases later, was to equate the sick with the criminals and to remove them from society, not for their own good, but to protect society. This was particularly true for epidemics during which patients were dragged away to pest houses located outside the city. As late as 1892 this procedure was being employed in Milwaukee.[12]

The almshouses, workhouses, asylums and pesthouses of Europe were copied in North America.[13] They gave, at best, only custodial care to the poor and not until the founding of the Pennsylvania Hospital in 1751 did the treatment and

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11. Sidney and Beatrice Webb, English Poor Law History, Part I: The Old Poor Law (Archon, Hamden, 1963), p. 304.

12. Joseph M. King, "Medicine in Milwaukee in the Nineteenth Century," Wisconsin Medical Journal, Vol. 65, No. 3 (March, 1966), pp. 114-115.

13. Robert J. Carlisle, An Account of Bellevue Hospital (Society of the Alumni of Bellevue Hospital, New York, 1893), p. 4. In 1735 the "Publick Workhouse and House of Correction of the City of New York" were built.

cure of the poor became an integral part of their care.[14] Voluntary organizations, such as the one founding the Pennsylvania Hospital, led the way in poor relief since taxpayers regarded the poor as an unwanted burden and provided them only with minimal care. The demand and need for care was so great in comparison to what was provided that the abuse of the system through overuse did not arise until well into the twentieth century.

Dispensaries and Outpatient Clinics

In London, England, in 1687, The College of Physicians agreed to provide their services to the poor at no charge. To their dismay, however, they found that the pharmacists' guild, the Apothecaries' Hall, would not lower its prices to the poor. A collection by the physicians enabled them to purchase some drugs and in 1696 they opened the first dispensary in the English-speaking world in the College of Physicians' building.[15] Following this isolated historical incident there is little mention of dispensaries until after 1770 when a number of them were founded in London and later throughout England.

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14. Francis R. Packer, Some Account of the Pennsylvania Hospital (The Pennsylvania Hospital, Philadelphia, 1957), pp. 3-5.

15. Michael M. Davis and Andrew R. Warner, Dispensaries (Macmillan, New York, 1918), pp. 1-2.

Simultaneously, the New York Dispensary was founded by a voluntary organization in New York City, in 1771. This was followed by the establishment of the Philadelphia Dispensary in 1786,[16] the Boston Dispensary in 1796, and the Baltimore Dispensary in 1801.[17] Initially these dispensaries, founded by voluntary organizations, provided free medicines and little else. Physicians provided their services at little or no cost and often visited the sick poor in their homes. On these occasions they were compensated for any medication they supplied the patient.[18] Recipients of these services were often sponsored by some person who contributed to the Dispensary. In these cases the recipient was required to be "worthy". Another restriction passed by the managers of the Bellevue Dispensary, in 1805, was that services were not to be given to bond servants, slaves or persons capable of paying the physician.[19]

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16. E. H. L. Corwin, The American Hospital (The Commonwealth Fund, New York, 1946), p. 166.

17. C. Herbert Baxley, A History of the Baltimore General Dispensary (Baltimore General Dispensary Foundation, Baltimore, 1963), p. xvii.

18. Ibid., p. 18.

19. Ibid., p. 28.

In 1805, the Boston Dispensary was moved into an apothecary shop at the suggestion of the Dispensary apothecary who had apparently just purchased the shop.

> I am about to take the store now occupied by G. S. Bedford . . . . I shall appropriate such apartments as may be necessary for the use of the Dispensary; shall attend to it for the usual salary; furnish the medicine as cheap as, if not cheaper than, they can be got elsewhere in Baltimore; and free the Institution of the burden of house rent which will be a saving of $200 per annum.[20]

By mid-century the dispensaries had expanded to provide a wider variety of services and often obtained support from public funds. An indication of their effectiveness can be gathered from the estimate that, in 1858, they treated about half the persons seeking medical treatment in New York City.[21] This popularity derived from the need for nonhospital medical care for persons who could not leave their job or who had children at home. Physicians were eager to serve in the dispensaries as it was a source of experience for inexperienced physicians and it also served as a place where apprentice physicians could be trained.

At the turn of the century the dispensaries had reached their maximum in terms of numbers and in services

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20. Ibid., p. 27.

21. Corwin, op. cit., p. 166.

provided. Thereafter they rapidly declined to be replaced by hospital outpatient departments, which could offer more complete health services. Another reason for the decline was the Flexner Report on medical education which brought about the disappearance of proprietary medical schools and the apprentice system of training.[22]

The first hospital Outpatient Department in the United States was established at Bellevue Hospital in 1866, following reports of the success of this type of service in London and Paris. Reasons for establishing the service were similar to those for founding the dispensaries plus the increased proportion of medical specialists who practiced primarily in hospitals. A Committee investigating health institutions in New York in 1913 supported the concept of outpatient services as follows:

> The Commissioners also thought that many people who suffered from diseases which did not prevent them from pursuing their usual vocations, but who were unable to pay for the services of skilled physicians and specialists, or for expensive medicines, would avail themselves of this mode of relief.[23]

The outpatient clinics, like the dispensaries, were very popular with the citizens but many people did not

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22. Ibid., p. 167.

23. Report of the Committee on Inquiry into the Departments of Health, Charities, and Bellevue and Allied Hospitals in the City of New York (City of New York, 1913), p. 473.

utilize their services because of the crowding, not only in the waiting rooms but also in the examining rooms, and also because the physicians were rushed, gave little time to each patient, and often were abusive to the patients for coming to the clinic instead of visiting their private office.[24]

Despite their shortcomings, outpatient clinics and dispensaries served not only the poor, as they had originally, but from one-third to one-half of the population of cities such as Boston and Baltimore.[25] This new stratum of patients were persons able to earn a living except when illness struck the family. In modern parlance, they were the medically indigent. Their inability to care for themselves was due to the increasing costs of medical care, particularly specialist services, diagnostic tests and medication while at the same time their wages left no margin for expenses other than food, clothing and shelter. The extremely close relationship between illness and poverty at the turn of the century is reflected by the fact that three-quarters of the families seeking assistance from

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24. Ibid., pp. 459-460.

25. John Lewis Gillin, Poverty and Dependency (The Century Company, New York, 1921), pp. 406-407; and Allen W. Freeman (Professor, Public Health Administration, Johns Hopkins University), "The Modern Phase of Health Administration," Wisconsin Medical Journal, Vol. 25, No. 4 (April 1926), pp. xxii-xxxii.

the Charity Organization Society in New York City had some physical disability in the family.[26]

The early part of the twentieth century was characterized by the introduction of preventive medicine as well as the treating and attempt to cure disease. Publicly financed clinics, often in co-operation with hospitals or dispensaries, provided an important service as illustrated by the following statement:

> In our large cities at the present time we find that one-third, or even one-half, of all infants born in the community are brought under the influence of welfare stations or well baby clinics for this purpose, and a very considerable proportion of these remain under the supervision of the clinic physician during the first two or three years of life.[27]

Initially, outpatient departments in hospitals were established primarily in metropolitan areas where the need was most easily recognized. In 1936, 769 hospitals maintained fully organized departments while others provided some outpatient services. Half of the departments had been opened after 1920.[28] Reflecting these changes, persons

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26. Edward T. Devine, Misery and Its Causes (Macmillan, New York, 1913), p. 54.

27. Freeman, op. cit., p. xxiv.

28. Franz Goldmann, Public Medical Care (Columbia University Press, New York, 1945), p. 46.

29. Goldmann, op. cit., pp. 48-49.

were requested to pay some of the cost of the services received and this payment was related to their income.[29] The concept of outpatient services has expanded so that in 1966, 39.4 per cent of all nonfederal, short term, general and special hospitals in the U.S. provide these services.[30] Over the same period the conditions of eligibility for the medically indigent have been relaxed.

In Milwaukee, outpatient services were provided in a Dispensary-Emergency Hospital, established in 1919. Preventive treatment and follow-up medical care were the main services provided. An increasing number of prescriptions were dispensed through this Dispensary over the years. In 1946, 42,526 prescriptions were dispensed, 86,284 in 1950 and 116,000 in 1954.[31] Shortly after 1955 the Dispensary was closed and its function was incorporated into the Milwaukee County General Hospital in Wauwatosa.

For a discussion of the historical background of the provision of pharmaceuticals for welfare patients the reader is referred to a dissertation by Johnson.[32]

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30. "The Nations' Hospitals: A Statistical Profile," Hospitals, Vol. 40, No. 15 (August 1, 1966), p. 428.

31. The Administration of Medical and Welfare Services in the Government of Milwaukee County (Public Administration Service, Chicago, 1955), p. 1.

32. Richard Eric Johnson, "The Historical Development of Providing Prescribed Medication for Public Assistance Recipients with Reference to Current Utilization and Expenditures Within a Selected Research Area," Unpublished Ph.D. dissertation, University of Pittsburgh, 1964.

CHAPTER III

CONTROLS ON DRUG EXPENDITURES

There is no doubt that abuses will occur under third party payment systems. In the past, there has been improper use of services and overcharging. As far back as 1735 there was evidence of the problems which plague the vendor system.

> Complaints have been made against Overseers of the Poor who have supplied the poor with necessities out of their own stores and shops at exhorbitant prices, and also against Overseers who have paid unreasonable accounts to their friends and dependents for services done the poor.[1]

Any discussion of controls on drug expenditures should consider the two problems of efficiency and fiscal integrity. To obtain maximum output for a given expenditure or a given output for a minimum expenditure, the output must be clearly measureable and the objectives of the program clearly stated. If this cannot be done the way is left open, to various degrees, for charges of fiscal irresponsibility. In areas where the goals are intangible and there is difficulty in either proving or disproving charges of fiscal irresponsibility or corruption, there is fertile

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1. Charles Laurence, History of the Philadelphia Almshouses and Hospitals (Charles Laurence, Philadelphia, 1905), p. 21.

ground for political issues to germinate and sprout. Unfortunately the provision of medical services in general, and pharmaceutical services in particular, are difficult to measure and evaluate.

Before controls can be applied, the service rendered, in this case pharmaceutical service, must be clearly defined. This is a difficult task since providing adequate pharmaceutical services does not consist of simply making medication available to the patient. The services that are provided contain a whole gamut of legal, ethical, and marketing relationships with the patient. In addition, a close professional relationship with the patient can exert a powerful placebo effect, increasing the effectiveness of the medication.[2]

In establishing controls, the welfare of the patient and a recognition of the services provided by the vendor should temper purely financial considerations. Controls that hamper the quality of medical care and alienate the providers of medical services are not achieving their purpose regardless of the resultant financial savings.

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2. While the placebo effect has not been studied in the relationship between patient and pharmacist, the strong influence resulting from physician-patient relationships has been well documented. Two studies discussing the placebo effect are: Arthur K. Shapiro, "Etiological Factors in Placebo Effect," Journal of the American Medical Association, Vol. 187, No. 10 (March 7, 1964), pp. 712-714, and "The Placebo Problem," Psychopharmacology Service Center Bulletin, Vol. 2, No. 8 (July 1963), pp. 1-65.

The purpose of controls, then, is to obtain the best possible care for the beneficiaries at a given cost. Since there is a budgetary restriction on the amount that can be spent, the monies must be allotted carefully and improper use of funds must be prevented. "Ideally the emphasis of controls should be placed upon the promotion of good medical care with a secondary emphasis on the prevention of poor care."[3]

Standards must be established to obtain good patient care. The role of prescribed medication must, therefore, be stated so that the controlling agency, physician, pharmacist and patient are aware of the guiding policy and can contribute to the success of the program. This, too often, is not done. Of 34 states financially participating in the provision of drug benefits in 1953, only 15 had established standards relating to quality, quantity or cost.[4]

Medication is a vital component of medical care. Its importance has been recognized by most third party agencies as evidenced by the incorporation of drug benefits in many plans. One illustration of its importance is shown in a statement in a publication issued jointly by the American Medical Association and the American Public Welfare Association.

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3. Julia C. Attwood, Administrative Controls in Welfare Medical Care Programs (American Public Welfare Association, Chicago, 1963), p. 2.

4. Pearl Bierman, Role of the State Public Assistance Agency in Medical Care, VIII, Drugs (American Public Welfare Association, Chicago, June 1955).

> The prescription is an intrinsic part of the physician's treatment. If the patient does not purchase the prescribed drug from his grant, or if the health and welfare agency is unable to meet the cost of purchasing needed drugs, much of the physician's and hospital care provided may be wasted.[5]

Deleting drugs from the benefits of a program may increase rather than decrease costs through substitution of other, more expensive types of treatment such as hospital care.[6]

Factors Influencing Costs

To deal adequately with costs there must be some understanding of the underlying factors affecting the costs. These factors may be classified into three broad groups: patient demand, methods used in the treatment of the patient, and the cost of the units of service. Not only must these factors be considered at a point in time but also in terms of their future trend and the resultant effect on costs.

Patient demand is the patients' use of the services available. Many underlying factors affect their use of

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5. American Medical Association and American Public Welfare Association, Guides for Drug Expenditures for Welfare Recipients (American Medical Association and American Public Welfare Association, Chicago, December 1960), p. 3.

6. Henry A. Davidson, "The Pharmacist and the Medically Indigent Patient," New Jersey Journal of Pharmacy, Vol. 38, No. 6 (June 1965), pp. 20, 58. A description of the costs of maintaining patients on psychotherapeutic drugs as outpatients or treating them in a mental hospital.

these services. Some of these factors are: number of beneficiaries, education, age, incidence of disease or disability, patients' action in response to disease or disability, longevity, and the availability of the service in both spatial and temporal terms.

Methods used in patient treatment have a profound effect on the cost of a medical care program. The use of new techniques and products, more complete therapy, emphasis on preventive or rehabilitative therapy, and technological changes have increased costs dramatically while at the same time they have improved the level of patient care. This improved patient care has enabled many persons to remain socially and economically useful.

The cost of the services provided influence the total cost both by the cost of each individual service and by the number and proportion of each type of service used.

Application of Controls

Published information on controls over health services has been reported mainly from persons in the field of welfare.[7] Guiding principles for establishing controls are

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7. Bierman, op. cit.; Avedis Donabedian and Julia Attwood, "An Evaluation of Administrative Controls in Medical Care Programs," New England Journal of Medicine, Vol. 269, No. 7 (August 15, 1963), pp. 347-354; Guides for Drug Expenditures for Welfare Recipients, op. cit.; and Attwood, op. cit.

described by Attwood,[8] Bierman,[9] and jointly by the American Medical Association and American Public Welfare Association.[10] Generally these principles advocate measures to promote good health care while ensuring the controls, while adequate, do not interfere with the proper services being obtained.

Lists of methods that can be used to control drug costs have been prepared by Goldmann,[11] Bierman,[12] Yerby,[13] and jointly by the American Medical Association and American Public Health Association.[14] These guides are often general and do not give detailed information on the advantages and disadvantages of various methods or the extent to which savings would be expected to be achieved. One attempt to do

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8. Ibid., pp. 3-4.
9. Pearl Bierman, "The Positive Approach to Medical Care Controls," Public Welfare, Vol. 17, No. 3 (July 1959), pp. 111-114.
10. Guides for Drug Expenditures for Welfare Patients, op. cit.
11. Franz Goldmann, Public Medical Care (Columbia University Press, New York, 1945), pp. 111-113.
12. Pearl Bierman, Role of the State Public Assistance Agency in Medical Care, VIII, Drugs (American Public Welfare Association, Chicago, June 1955).
13. Alonzo S. Yerby, "The Provision of Drugs in Public Welfare Medical Care Programs," American Journal of Public Health, Vol. 51, No. 5, (May 1961), pp. 655-658.
14. American Medical Association and American Public Welfare Association, Welfare Drug Expenditures: Administration (American Medical Association and American Public Health Association, Chicago, July 1961).

this was made by the Committee on Medication Costs in New York. Their stated goal was, "To recommend a program whereby the cost of drugs, with the major emphasis on prescribed drugs, would be either reduced or the cost spread, or both, so that there would be less of a financial deterrent to obtaining medication when needed."[15] Implicit in their discussion is the assumption that the expenditure for medication is high and that some form of protection is needed to reduce the risk in incurring these expenditures. Their conclusion is that some form of prepayment plan is needed and three types of controls are considered: the use of a dollar deductible feature, exclusion of certain medicines, and a small payment for each prescription to cover part of the cost.

Analyzing the subject of cost of medicines the Committee developed a list of 24 factors pertinent to ". . . the proper development and operation of any prepayment plan for medication."[16] These factors are:

1. Prescribed or nonprescribed (over-the-counter) medicines
2. Compounded or non-compounded medicines
3. Prescribing drugs by brand or generic names
4. Presence or absence of a drug formulary
5. Quantity limitations per prescription

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15. An Analysis of the Use Rates and Costs of Prescribed Medicines and Related Problems, A Preliminary Report (Committee on Medication Costs, New York, 1960), p. 1.

16. Ibid., p. 12.

6. Monthly variations of the morbidity incidence and rate
7. Acute or chronic illness
8. Presence or absence of epidemics
9. Consumers' income
10. Family size
11. Age
12. Sex
13. Exclusion of certain drugs
14. Presence or absence of prescription charge
15. Presence or absence of dollar deductibles
16. Presence or absence of a maximum change
17. Location of pharmacy in relation to patient's residence
18. Amount of the pharmacy's prescription volume
19. Quantity of drugs purchased for the pharmacy on a co-operative or individual basis
20. Permission to pharmacist to use any reliable brand (ARB) as a substitute for a trade-marked product
21. Whether data are on a national or local basis
22. Whether the drug plan includes or excludes profit motivation
23. Average cost per prescription to the consumer
24. Whether patient is insured or not insured in a medical plan which provides physicians' services in the home and hospital.

While these factors are primarily those to be considered in establishing a prepayment plan they do suggest that there are many facets to the provision of drug benefits. Quantification of some of these factors has been accomplished by Danian in order to calculate premium rates for a prescription insurance plan.[17]

Controls Directed at the Patient

Drug benefits under any third party program usually cover only medication that is prescribed by a physician.

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17. Michael Danian, "The Feasibility of Insuring Families Against the Cost of Prescribed Drugs," Unpublished Ph.D. dissertation, University of Wisconsin, 1964.

While restrictions may be applied to what can and cannot be prescribed these restrictions cannot be construed as being aimed at the patient since the patient does not determine what will be prescribed. By requiring a prescription order before medication is supplied the patient should be restricted to receiving only those drugs that are required for the treatment of his condition, and for a period of time dictated by the requirements of the disease or disability. These controls are not always sufficient, however, since patients apparently do have some influence over their physicians' prescribing. The degree of influence, although variable from physician to physician, has not been documented adequately but there are still a number of persons that believe this influence to be strong enough to warrant additional, more stringent controls.

Determining the duration of time over which prescribed medication is taken is a continual problem. Until some means of improved communication is achieved between patients, physicians and pharmacists the solution to this problem will have to be resolved by controls imposed by a third party and even then results may be disappointing. The problem arises initially from the physician not fully informing the patient of the duration of therapy or how many times the prescription should be renewed. Unless this is done the patient, who must initiate the renewal procedure, is left to decide whether more medication is needed. If it is not, and the patient obtains more, over-utilization occurs while on the

other hand if medication is needed and not obtained, the patient receives inadequate treatment. Unfortunately, controls are imposed in the former case but no action is taken in the second.

The second problem arising from renewals again originates from the physician. This is the failure to specify renewal information on the prescription order. Only about 12 per cent of a sample of prescription orders in Dane County, Wisconsin, contained specific renewal authorization.[18] While this shows the magnitude of the problem it does not reflect accurately the potential for abuse. Most prescriptions are for prescription-only (legend) drugs bearing the statement "Caution: Federal Law Prohibits Dispensing Without Prescription." As a result they cannot be renewed by a pharmacist unless specific renewal directions are on the order or the pharmacist telephones the prescriber to obtain renewal authorization. The abuse potential, except for infractions of the law, is then confined to O-T-C (over-the-counter) preparations for which policy may be separately formulated and PRN (pro re nata) orders which comprised 7.8 per cent of the orders.

Overutilization of pharmaceutical services is encouraged by removal of the price constraint. It follows naturally that the best method of solving the problem is

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18. James R. Kuersten, "Factors Relating to the Incidence of Renewal Information on Original Prescription Orders," Unpublished M.Sc. thesis, University of Wisconsin, 1965, p. 60.

to charge for the medication. Unfortunately this solution is at variance with the purpose of providing the medication through a third party. A partial solution would be to have a portion of the cost collected from the patient. This could be either a fixed sum or one which bears a relationship to the cost of providing the service. However, increased utilization which occurs when price barriers are removed may not reflect overutilization, but rather, optimal use of the service. "There is a kind of irony in the spectacle of programs, ostensibly organized to meet medical-care needs, exclusively engaged in keeping the lid on utilization."[19]

While these controls on overutilization of pharmaceutical services by patients are often employed there is little or no consideration given to underutilization. Certain groups such as welfare recipients may have less receptivity toward medical services, and underutilization in these cases may hinder preventive therapy, follow-up care and rehabilitation.

Controls Directed at the Pharmacist

Aside from the criteria determining what pharmaceutical outlets will supply pharmaceutical services, a number of

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19. Avedis Donabedian and Julia C. Attwood, "An Evaluation of Administrative Controls in Medical-Care Programs," New England Journal of Medicine, Vol. 269, No. 7 (August 15, 1963), p. 349.

controls to prevent overutilization and financial abuse of the program, have been imposed on the pharmacist. Some of the main restrictions are: (1) insistence on generic products, (2) setting maximum on prices charged, (3) prior authorization for certain products or products above a certain price, (4) restrictions on renewals, (5) determination of patient eligibility, and (6) billing restrictions. Most of these restrictions are discussed in more detail in the context of various control systems.

Controls Directed at the Physician

Since the physician is the key figure in medical care services his use of drugs largely determines the characteristics of the pharmaceutical services provided. For this reason a major part of the control measures have been aimed at the physician.[20] These have included: (1) restrictions on the drugs that can be prescribed, (2) requiring that generic names be specified, (3) restricting renewal authorizations, (4) educating physicians on economical prescribing, and (5) using statistical techniques to determine which physicians are prescribing significantly more than their colleagues.

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20. Yerby, op. cit., pp. 657-658; also, "NYC Seeks To Help Poor People Via Doctors Rather Than Clinics," American Druggist, Vol. 153, No. 5 (February 28, 1966), p. 16.

Some Methods of Control

Four methods will be described in detail in subsequent chapters. They are: (1) use of a formulary, (2) payment participation by the patient, (3) some requirements relating to the dispensing or prescribing of generic drugs, and (4) dispensing through outpatient pharmacies. These methods are specific and sufficiently documented so that some measurement of their effect can be made.

Other methods are often advocated with no real knowledge of their effectiveness. While some of these methods are intuitively useful, their effects are difficult to quantify. Further, the following methods may be combined with other methods or systems.

Pharmaceutical Consultant

Pharmacists are employed on either a full-time or part-time basis in at least 14 states, to provide consultation and guidance on welfare drug programs.[21] These pharmacists are able to provide the detailed technical advice necessary to help ensure the co-operation of pharmacists which is vital to the success of a drug benefit program.

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21. Data on State Welfare Drug Programs (National Pharmaceutical Council, Washington, D.C., June 1966). The data used are mainly for the year 1965.

Their knowledge not only of drug therapy, but also of prescription pricing, pharmacy management and professional practice enables a more efficient program to be planned and implemented. Their effectiveness has been demonstrated in New Jersey where within six months of the appointment of a consultant in one county, ". . . the upward spiral of drug costs was halted" and after a year, ". . . a significant reduction in the rate of utilization and monthly expenditures was definitely apparent."[22] Clapp, in his study of drug costs, recommends the employment of pharmaceutical consultants at both the state and national level and defines their area of responsibility.[23]

Government Owned Dispensaries

This option has been considered seriously in California and Britain but has been rejected. Dispensaries have been established in Washington, D.C. by the Department of Public Health, in the province of British Columbia in Canada, and in the State of Florida. While no information

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22. "N.J. Welfare Div. Official Describes Cost Saving With Professional Fees and Pharmaceutical Consultants," Weekly Pharmacy Reports, Vol. 14, No. 40 (October 4, 1965).

23. Raymond F. Clapp, Study of Drug Purchase Problems and Policies, Welfare Research Report 2, Welfare Administration, U.S. Department of Health, Education and Welfare (U.S. Government Printing Office, Washington, D.C., March 1966), pp. 43-45. The term pharmaceutical consultant is used to describe a consultant in drug economics.

is available on the operating costs of these dispensaries it is possible that they are able to dispense medication at a lower cost than community pharmacies.

Balanced against the possible savings are the factors of inconvenience to the beneficiaries, applicability only to urban areas, lack of delivery service, and lack of free choice of pharmacist. Inherent in the proposal of a government clinic is the suggestion of reduced services. When the provision of a clinic is proposed it is unlikely that the persons proposing the measure envision a delivery service, comfortable waiting area, emergency service, availability of related health needs, a patient record system, and pharmacists having enough time to converse with the patients. On the other hand if pharmacists in community practice suggested that they would provide less service to welfare patients than their regular patrons and decrease their price accordingly, legislators and administrators would find the suggestion difficult to accept even in view of the potential savings since it would leave them open to charges of <u>knowingly</u> providing inferior services.

As stated earlier, while there may well be some difference in the cost of distributing drugs, this is probably a reflection of difference in service. Note that the costs referred to here are the distribution costs, not the cost of the drug itself.

It is likely that the cost of the drugs distributed through a government would be lower since the government

receives greater discounts than do community pharmacies. In addition, they are able to use bidding procedures to obtain even more favorable terms.

Exclusion of Groups of Drugs

Due to their cost, legal classification, or therapeutic category, certain drug products or groups of drugs may be excluded from those available to the prescriber. The restriction most often used is that only charges for prescribed medication will be indemnified. Some states go further and allow only legend or prescription-only drugs to be provided under the program.

Other groups of drugs which may be excluded are nonnarcotic analgesics, tranquilizers, anorexiants, oral contraceptives, and vitamins. The reasoning behind these exclusions appears to be that these drugs are used in the treatment of conditions other than a disease or symptoms of a disease, or perhaps trivial complaints, and that the savings from these restrictions would enable better therapy to persons more critically ill. These restrictions are not absolute bans and where the use of these drugs is deemed sufficiently important, they may be prescribed as a benefit.

In excluding nonprescription medication, the value of such medication may be recognized and provided for by additional cash payments to the beneficiary.

Electronic Data Processing

The use of computers is essential in any system for the administration and control of expenditures for pharmaceuticals due to the large number of small claims submitted by vendors. Their use must be incorporated into some system of controls as they do not constitute a control procedure in themselves but simply allow controls to be applied in an efficient manner. The use of computers has made feasible many procedures that would not otherwise be possible or practical.

One influence of computers is that the task of controls can be left to a fiscal intermediary, such as Blue Cross or an insurance firm, that has the administrative know-how in the field and can automate its handling of prescription claims. This has already been done in California, Wisconsin, and other states.[24] Another method of accomplishing the same objective is to purchase health insurance for beneficiaries.[25]

The use of computers has enabled the Veterans Administration to process efficiently all claims for payment under

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24. "Calif. Welfare Dept. Set to Use Blue Cross-Blue Shield as Intermediary for Drug Vendor Programs: PMA's Stetler Objects to Generics and Their Substitution," Weekly Pharmacy Reports, Vol. 15, No. 5 (January 31, 1966).

25. "Wash. Welfare Patients May Go Prepay," American Druggist, Vol. 151, No. 10 (May 9, 1965), p. 25. (In the journal the volume is incorrectly given as volume 152). "Prepay Plan May Handle Welfare Rxs," American Druggist, Vol. 152, No. 1 (July 5, 1965), p. 21.

the Hometown Program after the use of state pharmaceutical associations as fiscal intermediaries was discontinued. Similarly, Florida has terminated its contract with the state pharmaceutical association for processing and checking prescription claims. On welfare prescriptions of $7.4 million it was estimated that the state could save $75,000.[26] The association had been receiving 2.4 per cent of total claims processed which cost about $177,600 a year. These estimated savings have been disputed by the pharmaceutical association.

The use of a professional fee by pharmacists will simplify the use of electronic processing and lead to its wider utilization. Other factors, such as a formulary, which enable drugs to be classified and identified also will lead to its increased employment. Only a few hundred products constitute the bulk of the prescribed items and these can easily be handled leaving the remainder to be processed in a conventional manner. In Louisiana master cards list acceptable price ranges for about 85 per cent of the prescriptions dispensed under the welfare system. If the prices are outside these limits the item is checked by an auditor.[27]

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26. "Fla. Welfare Dept's Rx Processing Contract," Weekly Pharmacy Reports, Vol. 14, No. 48 (November 29, 1965).

27. "Allegations of Fraud in Charges for La. Welfare Rxs, Include Two Members of Pharmacy Board, Point Up Problems of New Era Based on Use of Computers," FDC Reports, Vol. 27, No. 44 (November 1, 1965), p. 9.

Statistics are readily available when electronic data processing is used. An analysis of the data can serve as a useful tool in interpreting and controlling expenditures as an aid in identifying excess payment.[28]

Physician Education

Educational programs to guide the prescribing of physicians have been used to control expenditures. Where this method has been used to induce physicians voluntarily to prescribe generic products it has not proved successful. A more sophisticated technique has evolved in Britain where conservative therapy is advocated through the circulation of Prescribers Notes by the Ministry of Health. Along the same line are the distribution of price comparisons of products in the same therapeutic group. The products are listed in order of increasing cost for a fixed quantity.[29]

Prorating

The prorating of fees by paying only a part of the claim has existed for many years. This may take the form

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28. C. A. Metzner, S. J. Axelrod and J. H. Sloss, "Statistical Analysis as a Basis for Control in Fee-for-Service Plans," American Journal of Public Health, Vol. 43 (September 1953), pp. 1162-1170.

29. See "Cost of Diuretics," The Pharmaceutical Journal, Vol. 196 (May 21, 1966), p. 505; and "Comparative Costs," The Pharmaceutical Journal, Vol. 197 (November 26, 1966), p. 553.

of a 10 per cent discount granted on welfare prescriptions or a more drastic prorating when budgets are exceeded. Budgetary proration has recently been employed in Nevada (90 per cent of claim) and in Oregon (62 to 97 per cent).[30]

This method of controlling costs has been unpopular with pharmacists for obvious reasons. It does have the advantage, however, of imposing an accurate costing responsibility on third parties that may be lacking when costs are hidden as they are in a pharmacy outpatient service. By avoiding hidden costs, policy makers are better able to evaluate the cost effectiveness of various programs and distribute their allocated budget in the most efficient manner possible.

Bidding on Pharmaceutical Services

At least one state, Connecticut, has had pharmacists bid for the provision of prescription services to nonambulant patients. Interestingly, two pharmacists undertook the service at cost as a social contribution and as a protest against the state's attitude toward pharmacy.[31]

Bidding for professional service is demeaning to the profession and has been denounced as leading to poor health

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30. "May a State Prorate Welfare Rx Fees?," American Druggist, Vol. 151 (June 21, 1965), p. 21; and "PAM to Pro-Rate Drug Payments," Pacific States and Rocky Mountain Druggist, (February 1965), p. 22.

31. "Will Fill Welfare Rxs at Cost As Protest Against Bid System," Drug Topics, Vol. 110, No. 9 (May 2, 1966), p. 8.

care. Historically, physicians' services once were obtained in this way with the anticipated consequences. The unpopularity of this method with pharmacists will prevent its widespread use although there may be potential monetary savings.

Monetary Payments

Patients may be given monthly monetary payments with which they are to pay for their medication, or they may be required to pay for the medication then seek reimbursement. Neither of these methods, although widely used, is popular with the patients, providers of care, or welfare departments, as is evidenced by the growth of the vendor system. The widespread use of money payments is probably a vestigial remainder of an earlier period when matching Federal grants were available for monetary payments but not vendor services.

Some states still have no provision for pharmaceutical service at the state level. Persons on public assistance requiring drugs are forced to look to the local community for aid. Often this aid is obtained from charity, physicians, pharmacists or a municipal relief fund.

In some cases recently established vendor programs were suddenly discontinued with no organized provision for the care of the persons undergoing treatment. It is this type of irresponsibility that has entrenched the American Medical Association into its position that health care should not be left entirely to the government. In

discussing the problem of a government reconciling the provision of adequate care with fiscal restraint, Charles Hudson, President of the American Medical Association stated: "This is a point I have frequently made, pointing out that competing demands from other budgetary items would drain off funds earmarked for health care if we should become entirely dependent on the federal treasury as a source of financing."[32]

Pharmaceutical Manufacturers and Controls

Concern has been voiced by both pharmaceutical manufacturers and pharmacists about the magnitude of third party expenditures for drugs.[33] They believe it to be to their advantage to maintain the vendor system with patients having free choice of pharmacy.[34] This would provide the patient with the most satisfactory care and also would be to the advantage of the pharmacists and pharmaceutical manufacturers. A statement reflecting this opinion is that of Robert L. Leininger of McNeil Laboratories.

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32. Charles L. Hudson, "Meeting the Challenge," President's First Report, Journal of the American Medical Association, Vol. 197, No. 3 (July 18, 1966), p. 202.

33. "Help Third Parties to Control Rx Costs," American Druggist, Vol. 154, No. 10 (November 7, 1966), p. 31.

34. "Health Insurance Committee Report," Canadian Pharmaceutical Journal, Vol. 85, No. 17 (September 1, 1952), p. 683.

> Welfare officials - as well as legislators - must be convinced that it is in the public interest to provide top quality modern drugs to welfare patients; to expend sufficient sums of money to assure top quality drugs and an adequate quantity of drugs for welfare patients; to permit the welfare patient to choose his physician and his pharmacist in the same manner as the non-welfare patient; not to interfere with the physician's professional prerogative to prescribe precise drug products or brands deemed to be in the patient's best interest; not to restrict in any way the quality of quantity of drugs made available to welfare patients; and to assure the prompt and convenient availability of drugs to welfare patients.
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> The industry faces many problems in the area of state welfare programs, and it would be well advised to take the initiative in making constructive plans to cope with the problem and to find some practical solution - or state officials will do it for the industry.[35]

One method taken by some firms in the industry has been to give rebates to the individual states of a portion of the drug expenditure, usually about 15 per cent, when their products have been dispensed to welfare patients. This approach was originated in 1961 by E. R. Squibb and Sons and Merck, Sharp and Dohme.[36] Since then several other firms have adopted the program and have made

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35. Robert L. Leininger, "State Welfare Prescription Programs - Effect on The Pharmaceutical Industry," Yearbook 1964-65 (Pharmaceutical Manufacturers Association, Washington, 1964), p. 477.

36. "R.I. Accepts Squibb 10% Rebate Offer On Welfare Prescriptions," American Druggist, Vol. 143, No. 7 (April 3, 1961), p. 14.

arrangements with several states for rebates.[37] Despite the apparent success of the program there has been some opposition to it by pharmacists.[38] This attempt to reduce the drug expenditures of welfare programs and encourage the vendor system, while partially successful, does not alleviate the need for controls on the provision of pharmaceutical benefits.

Controls Used In Other Countries

In Europe, the main method used to prevent excessive expenditures for drugs is to charge the patient part of the cost of each prescription, either a percentage of the cost or a fixed fee. This use of the price system to aid in the distribution of health resources has evolved over a period of time and now appears to be firmly entrenched. This is in marked contrast to the use of administrative controls in the United States, particularly by the state governments.

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37. "Welfare Drug Reimbursement Concept Extended to Medicare," American Druggist, Vol. 154, No. 5 (August 29, 1966), p. 12; and "Ayerst Establishes Welfare Rebate Plan," American Druggist, Vol. 154, No. 10 (November 7, 1966), p. 29.

38. "ACA May Attack Welfare Rebate Scheme Plans," American Druggist, Vol. 154, No. 8 (October 10, 1966), p. 17; and "The Lions Den," The Voice of the Pharmacist, Vol. 10, No. 17 (January 24, 1967). Mr. Reed Bement, Executive Secretary of Washington State Pharmaceutical Association is quoted as saying, "Many of us are also concerned with the matter of discounts offered to welfare departments by many of your members, ostensibly to promote the vendor system. In many cases, we think such discounts tend to make the retail pharmacist look as though he were charging excessive prices . . ."

Current data are always difficult to obtain for international comparisons. Compensating for this, however, has been the appearance of several comparative studies of health insurance which describe drug benefits.[39] The benefits listed below are primarily national health insurance benefits rather than provisions for indigents only.

Some countries in which the patient makes no contribution toward the cost of the medication are: Great Britain, Bolivia, Spain, New Zealand, Turkey and Yugoslavia. Characteristics of some of the programs in other countries are listed below.

Australia[40] - patient pays five shillings per prescription (1963)

Austria[41] - patient participation averages about 20 per cent of the prescription cost (1958)

Belgium[42] - patient participation averages about 27.3 per cent (1953)

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39. The Cost of Medical Care (International Labour Office, Geneva, 1959); Expenditures on Sickness Insurance, Synoptic Tables (International Social Security Administration, Geneva, 1958); and K. C. Charron, Health Services, Health Insurance, and Their Inter-relationship (Department of National Health and Welfare, Ottawa, 1963).

40. Charron, op. cit., p. 172.

41. Expenditures on Sickness Insurance, Synoptic Tables, op. cit., pp. II 25-28.

42. The Cost of Medical Care, op. cit., pp. 36-41.

Denmark[40] - patient pays 25 per cent of the cost (1963)

France[40] - patient pays 25 per cent of the cost (1963)

Germany[41] - patient pays either 0.5 D.M. per prescription order or 0.25 D.M. plus 25 per cent of the cost of the medication (1958)

Greece[40] - patient pays 20 per cent of the cost (1958)

Italy[41] - beneficiaries are reimbursed 91.96 per cent of the cost, while medication in another program is obtained at no charge through clinics.

Luxembourg[41] - patient participation varies from 15-25 per cent (1958)

Norway[43] - some plans require patient participation, others do not.

Sweden[40] - patient payment is based on both a fixed fee plus a percentage of the prescription price.

Switzerland[41] - patient participation ranges from 10-25 per cent of the cost.

Another method of providing pharmaceutical benefits is employed in Japan[44] and Norway.[45] In these countries specified lists of drugs used in the treatment of certain diseases are provided at no charge. The recognition that

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43. Charron, op. cit., p. 294.

44. Masao Matsuo, "Health Insurance System and Drug Price Standards (2)," Japan Medical Gazette, Vol. 2, No. 7 (July 20, 1965), p. 12.

45. Resepthandboken 1963 (Norges Apotekerforening, Oslo, 1963), pp. 370-376.

some diseases are associated with high expenditures is a logical approach that provides greatest benefits to those who likely will have the greatest expenditures. The diseases covered by Norway's program are as follows:[46]

1. Pernicious anaemia
2. Bronchial asthma
3. Cancer (mammary, prostatic or testicular)
4. Ulcerative colitis
5. Diabetes mellitus
6. Hypopituitarism
7. Epilepsy
8. Glaucoma
9. Leukemia
10. Addison's Disease
11. Ankylosing spondylitis
12. Cardiovascular diseases
13. Myasthenia gravis
14. Myxodema
15. Chronic osteomyetitis
16. Parkinson's Disease
17. Chronic arthritis
18. Mental diseases
19. Cryporchidism
20. Acute rheumatism
21. Sarcoidosis
22. Thyrotoxicosis
23. Tuberculosis
24. Uveitis

Summary

Attempts must be made to reconcile quality, quantity and price. Although this is difficult it must be attempted through the formulation of a policy acceptable to pharmacists, physicians, patients and the third party. This policy should maintain a satisfactory level of patient care and should consider trends in prices and utilization

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46. Ibid., pp. 375-376.

so that budgetary limitations are made with a full realization of their consequences.

Cognizance should be taken of the tremendous increase in efficiency allowed by the use of computers and they should be employed in handling routine accounts. Their use must be subordinate, however, to pharmacists and physicians in cases where subjective considerations are involved.

The cost of imposing controls should be considered. Stringent controls in addition to increasing the cost of administration may reduce the standard of pharmaceutical services through excessive accounting, record-keeping and billing requirements. "We need to remember that no insurance system - government or private - can eliminate all questionable benefit payments except at an administrative cost that might exceed the costs of accepting the inevitability of some abuse."[47]

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47. Joseph W. Garbarino, Health Plans and Collective Bargaining (University of California Press, Berkeley, 1960), p. 84.

CHAPTER IV

GENERIC DRUGS

There has been a continual debate since the Kefauver investigation over the merits and drawbacks to prescribing drugs by their generic name. The term is used here to describe a nonbranded preparation that is sold in direct competition to a branded product basing its appeal primarily or solely on price. This narrow interpretation is not the one most often used in pharmaceutical practice, nor is it accurate, but in dealing with controls on drug expenditures it best conveys the desired meaning.

This subject will be discussed from the point of view of the Federal government, the pharmaceutical industry, the pharmacist and the physician, since the imposition of controls affects each group in a different way and also because the experience of one group often is not applicable to other groups.

Military Procurement of Pharmaceuticals

Direct purchase of pharmaceuticals by the Federal government is not a recent phenomenon. During the American Revolution there was a considerable demand for drugs resulting in the purchase of medication from pharmacists, hospitals and smugglers.[1] Supplies also were

1. George B. Griffenhagen, Drug Supplies in the American Revolution, United States National Museum Bulletin 225 (Smithsonian Institution, Washington, D.C., 1961), passim.

captured from the British army and from British ships. As the insurrection continued supplies became scarce and almost any type of medication was purchased with little or no mention of quality. An attempt was made to purchase goods on credit whenever possible.

Almost a hundred years later, during the Civil War, a high demand for medication was created again. The insatiable requirements were complicated by improvements which had been made in drug therapy, drug manufacture and drug assay so that the preparations in demand were more complex than those of the previous century and had to be prepared properly in order to be useful. Quality as well as quantity were now the guides in procurement.

> To free the Medical Department from dependence upon the vagaries of the market and drug brokers, the medical Purveyors concentrated their purchases of pharmaceuticals among a few manufacturers in various cities. In New York City, Satterlee relied upon the probity of Philip Schieffelin & Co. and Edward R. Squibb in preference to others who might outbid them in price but not in the quality of their products. "The Government," Satterlee explained, "always starts with the quality of the article as the first consideration, the next is price." In doing this Satterlee was carrying out a policy fully sanctioned by the Surgeon General's office, especially during the tenure of Hammond, and authenticated by long-established practice in the army, whose purchasing agents had exempted medical supplies and gunpowder from competitive bidding.

. . . . . .

> Such practices did not, as Hammond's enemies contended, necessarily indicate either misdemeanors by the Surgeon General or dishonesty in the Medical Purveyors. Rather they were an attempt to get medicines of acceptable quality for the armies at a time when adulterated products were common and before the development of effective tests for the more complex preparations.[2]

Purchasing only quality products increased costs. The Army decided to manufacture and process part of its requirements to help reduce these costs. This had the added advantage of standardizing purity and ensuring an adequate, regular supply of needed preparations.[3]

Immediately after the war this program was discontinued. Except for the two world wars, the federal government purchased most of their required medication from reputable firms without obtaining competitive bids.[4] This policy was probably due to the ability of industry to satisfy, with high quality products, the demand for medication, and the comparatively low expenditures for pharmaceuticals.

Since 1945 military procurement of medical supplies has been characterized by a growing emphasis on quality.

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2. George Winston Smith, Medicines for the Union Army, (American Institute of the History of Pharmacy, Madison, Wisconsin, 1962), p. 14.

3. Op. cit., p. 15.

4. Dickson Reck, Government Purchasing and Competition (University of California Press, Berkeley, 1954), pp. 173-175.

Purchase procedures have grown more elaborate so that now the manufacturer's plant and records are inspected, samples taken and assayed before the contract is awarded, and the specifications have become more complex and more stringent.

An excellent description of quality control procedures in the Defense Personnel Support Center was given by Captain Solomon C. Pflag, Chief of Technical Operations. Some of his more important comments are:

> We, at the Defense Personnel Support Center, and prior to the establishment of the Defense Personnel Support Center, its' predecessor agencies, have known for a long time that the so-called term "generic equivalent" when applied to dosage forms of a drug, does not necessarily imply "equivalent quality". It is a well known fact that it is possible to ascertain the physical and chemical specifications of a chemical compound and thus establish that it is or is not physically or chemically equivalent to another compound. It is also a well recognized fact at the Defense Personnel Support Center that chemical compounds when made in dosage form may be mixed with many ingredients and subjected to a variety of manufacturing techniques and procedures, all of which may affect physiological availability of the drug, and hence its' clinical effectiveness. The United States Pharmacopoeia XVII comments on these facts as follows:
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> 'The extent to which the therapeutic constituent of a pharmaceutical dosage form is available for absorption is influenced by a variety of factors --. Among these are the manner of compounding; the crystal size and form of the therapeutic constituent; the diluents, excipients, and other compounding aids.' The United States Pharmacopoeia further states, 'The maintenance of a demonstrably high degree of 'physiological availability'

> requires particular attention to all aspects of the production and testing process that may affect the finished article.' The United States Pharmacopoeia, of course, is referring to qualities of drugs and quality control factors as they relate to drugs.
>
> Because we at the Defense Personnel Support Center (like most knowledgeable personnel) recognize that quality and quality control aspects of drugs are highly complex, we employ and assign large numbers of highly skilled pharmacists, chemists, and engineers to develop specifications and tests necessary to assure that only high quality drugs are competitively procured, since by law, we are required to procure drugs competitively. Congress requires competitive procurement and the General Accounting Office continuously audits the program.[5]

While Congress and the GAO press for economy, the Defense Department continues to insist on these high quality standards. On July 19, 1965, the Defense Supply Agency forwarded a letter to all centers which stated in part:

> In light of the current increased tempo of operations in South East Asia, it is considered appropriate to again emphasize the need to deal only with responsible suppliers. The Assistant Secretary of Defense (Installations and Logistics) recently reiterated the concern of the Secretary of Defence about dealing with marginal producers. He emphasized that

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5. Solomon C. Pflag, Chief, Technical Operations Division, Directorate of Medical Material, Defense Personnel Support Center, The Quest for Quality, a paper presented at the Defense Supply Agency Seminar, 31 October, 1966, pp. 2-4.

> we should not risk schedules or quality by awarding contracts to such producers.[6]

The Technical Operations Division of the Directorate of Medical Material is responsible for the quality of the medical supplies purchased. A large portion of this division's staff of 218 plus 8 officers are involved in some aspect of quality control.[7] The elements of quality control which are considered are specifications, standards and evaluations.

Specifications

Specifications are definitive descriptions for items, and the tests and assays necessary to ensure their conformity. Most of these specifications are detailed and complex requiring a heavy expenditure of time and personnel. This has limited the preparation of detailed specifications for all drugs and many still are obtained by purchase description, a much less formal procedure.[8] Supplies purchased on a purchase description would by necessity rely to a greater extent on the reputation and standards of the supplier firms.

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6. Jesse N. Butler, Assistance Director, Medical Materiel, Defense Personnel Support Center, Quality Control of Medical Materiel, a paper presented to the Defense Supply Agency - Medical Seminar on 20 October 1965, pp. 6-7.
7. Solomon C. Pflag, Chief, Technical Operations Division, Directorate of Medical Materiel, Defense Personnel Support Center, The Quest for Quality, a paper presented at the Defense Supply Agency Seminar, 31 October 1966, p. 7.
8. Ibid., p. 8.

The specifications and purchase descriptions used are minimum standards and often rely on general terms in order to encompass the many production, control or analytical techniques used in industry. Many terms must, therefore, be interpreted in the light of normal or acceptable industry practices. Firms which have high standards, advanced quality control techniques, and are constantly striving to improve their products have little problem meeting the specifications and often assist in setting them.

Standards

The standards to be met include not only those of the product, but also those for the plant and the procedures used to produce the product. Rigorous standards are required for organizational structure, personnel, plant facilities, quality control procedures, in-process controls, analytical laboratory, records, maintenance and sanitation.[9] The Center is attempting to develop a qualified manufacturers list so that bids may be received and processed quickly without the necessity of first undertaking plant inspections of several firms before the bids are awarded.[10]

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9. Ibid., pp. 12-13.

10. Butler, op. cit., pp. 20-21.

Evaluation

The products and firms which have been evaluated by the Center are either accepted or rejected, based on the findings of laboratory analyses, field quality check inspections and pre-award survey techniques. The evaluation statistics over a four year period show a rejection rate of 44 per cent of 714 pre-award surveys, mainly for deficiencies in quality control and housekeeping. Fifty-four per cent of 591 pre-award samples submitted over a four year period were rejected.[11] The reasons for the sample rejections ranged from ". . . materiel being subpotent to injectables with particulate matter, insects, and fragments of insects in injectables and oral preparations, contamination with penicillin and other agents, and even mislabeled items."[12]

Once the drugs are obtained a continuing in-store quality control program must be instituted and maintained. Military depots and hospital personnel use an IN STORE Quality Control Manual which provides, among other things, the estimated life of each item, the recommended schedule for inspections while in storage, and the visible signs of deterioration which may be inspected in the products.[13]

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11. Pflag, op. cit., p. 14.
12. Ibid., p. 15.
13. Butler, op. cit., p. 14.

This program requires a considerable amount of service from the quality control and laboratory section.

Contemporary Trends

Current procedures are well summarized by Col. Butler.[14]

> These are the hard core elements of our quality control program - precise specifications and purchase descriptions - rigorous plant surveys - definitive pre-award laboratory analyses - capable inspection service - and an effective in store quality control system.

He states that in order to do an optimal job in the future there is a need for more staff, a modern laboratory, implementation of new drug plant standards, the development of stability and clinical efficacy standards for items presently excluded from the FDA regulations, the implementation of MIL Q 9858* for pharmaceutical and other medical materiel manufacturers, and the establishment of a prequalification program for plants or products.[15] These developments, even individually, are formidable and will require the services of highly trained personnel.

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14. Ibid., pp. 14-15.

15. Ibid., pp. 15-16.

*MIL Q 9858 is a regulation covering the inspection of pharmaceutical and medical supply firms and products.

Application of Findings

> The procurement of pure, safe, clinically effective drugs under a competitive procurement system, generic buying if you will, requires an organization and *modus operandi* similar to that of the Defense Personnel Support Center. We are willing to share our experience with, and assist any governmental agency confronted with competitive procurement of medical materiel. In this manner, we believe quality is less likely to become subordinate to price.[16]

It seems clear that there is no short cut to obtaining quality pharmaceutical products at low prices. Any governmental agency which attempts to decrease its expenditures on pharmaceuticals by demanding that generic drugs be purchased and dispensed is following a course fraught with danger unless steps are taken to ensure the quality of the products. Other than using branded drugs from reputable manufacturers, these quality assurances must be obtained from "an organization and *modus operandi* similar to that of the Defense Personnel Support Center." This means that: (1) a modern laboratory with adequate equipment and staff must be established, (2) firms will have to be inspected, (3) specifications written, and (4) a follow-up of products purchased to ensure stability and quality. These costs may outweigh the savings from buying generic products.

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16. Pflag, *op. cit.*, p. 19.

These tests and standards, however, do not and cannot measure therapeutic equivalency or consistency from lot to lot. To expand the testing program to include these criteria would be a major long term project that would be economically prohibitive. Some attempts are being made, however, to implement testing procedures of this type on a limited scale.[17]

Should this course of action be taken a second problem arises, that of distribution. Will the drug be purchased by the agency, and if not, how will standards be met? One solution would be that employed by the Veterans Administration. The firms contract to supply the drugs at a given price and ship them to any of the VA hospitals on demand. While this method could be applied there is some doubt as to its practicality if applied to the vendor system, involving thousands of pharmacies. A centralized system of distribution through governmental clinics or hospitals is better suited to this type of arrangement.

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17. "PHS Considers Probe Into Variation in Drug Efficacy," Drug Trade News, Vol. 42, No. 2 (January 16, 1967), p. 1. "The U.S. Public Health Service is considering setting up a series of clinical investigations aimed at determining the relative degree of clinical efficacy of prefabricated medications, a PHS spokesman said" and further on: "What is greatly needed, he said, is a new and more sophisticated set of standards for determining relative efficacy of drugs on an across-the-board-basis. The present chemical assays are not good enough for present-day drugs . . . What we need is standards which will equate drugs with their clinical performance instead of with their chemical potency."

There is a tendency to consider the cost of a drug as its purchase price. For example, if the government purchases a drug at a cost of $2.00 per hundred the cost of providing this medication to a patient also would be considered to be $2.00 per hundred. This is incorrect since the costs involved in purchasing, testing, inventory, shipping, record keeping, distribution and cataloging are neglected.

The Veterans Administration (VA) has found that the cost of distributing drugs through its three depots* is about nine per cent. This figure does not include depreciation and certain other indirect costs, but does cover transportation and warehousing costs; travel costs incurred in the administration of the program; travel costs in connection with the inspection of plants of foreign and domestic suppliers; inspection, testing, import duties and customs fees in connection with procurement of foreign made products; samples of depot products issued to hospitals; material used in tests; equipment purchased for testing; and testing of supplies.

Direct Purchase of Pharmaceuticals by the Veterans Administration

The Veterans Administration purchases pharmaceuticals and chemicals for its own hospitals and outpatient clinics.

*The three VA depots are located at Sommerville, N.J.; Hines, Illinois; and Wilmington, California.

It also makes contracts for the General Services Administration (GSA) and maintains the Federal Supply Schedule for drugs and chemicals. It is through this contract list that many governmental agencies obtain their drug supplies. The VA system is, therefore, of interest not only in its own right but also as an indicator of the developing trend in government purchasing.[18]

An important event in government purchasing of pharmaceuticals was the formation of the Intra-governmental Procurement Advisory Council for Drugs (IPAD) in March 1963. Consisting of representatives from the armed services, Veterans Administration, General Services Administration, Food and Drug Administration and the Department of Health, Education and Welfare, IPAD serves as a means of communication between the government agencies involved in the use of pharmaceuticals. They exchange price and procurement information, discuss problems involving quality and delivery, co-ordinate plant inspections, pool orders for certain products, and co-ordinate purchases. Firms which are found to be unacceptable and are deleted from the list of qualified bidders for one government department are now revealed to other branches of the government and suitable action taken. This has ended the anomaly of a firm not meeting the standards of one government agency, yet supplying drugs to several other agencies.

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18. The information in this chapter is based on an interview with Mr. L. L. Lollis, Chief, Marketing Division, Drugs and Chemicals, VA Marketing Center, Hines, Illinois, 16 March 1966.

Bidding

A qualified bidders list maintained by the VA is based on the past performance of the firms, results of inspections by VA personnel, reports on firms from other government agencies, and certification of firms by the Small Business Administration. The Small Business Administration certifies that a firm has the capacity, technical ability and resources to bid on government contracts. Requests for bids are based on either product specifications or product descriptions. Product descriptions are used primarily for products where there are few qualified manufacturers producing a product and the usual commercial product is suitable for VA requirements.

Bids are of two main types. First, there is the request for a bid for a specific quantity of a product, with rigid terms regarding delivery and quality. The products obtained in this way normally are sent to the three VA depots for further distribution. The second form of contract is based on an estimated annual purchase of a product. This open end contract allows VA hospitals and clinics, as well as other government agencies, to obtain these products at a known price without the submission of bids for every purchase that is made.

An interesting new development in the purchase of pharmaceuticals, known as Centralized Purchase Plan, has recently been introduced by the VA Marketing Center. After establishing an annual term contract, all the requests for

a drug product, or products of one firm, are sent to one depot. The combined order is then submitted to the firm and paid for as a single order. The part of the procedure which is different, is that along with the order the VA sends a computer print-out of the products to be sent to each participating VA hospital and a shipping ticket to be used in shipping. This procedure is advantageous to the firm because it has only one invoice to submit instead of dealing with each participating hospital, also the itemized lists of products to be sent to the hospitals are well suited to the firms' normal shipping procedures. The procedure is advantageous to the VA in that it encourages a low price to be quoted and the goods can be shipped directly to the hospitals instead of being distributed through the VA depots.

The VA also obtains drugs through two other routes, the Defense Personnel Support Center and foreign purchases. When the Defense Personnel Support Center (DPSC), through quantity purchasing, is able to obtain a better price on a drug that can be used in the VA, the VA will purchase it from the DPSA, provided its packaging and form are suitable. This procedure, however, only accounts for about $300,000 of the $38 million of pharmaceuticals purchased by the VA. The second method, foreign purchase, currently is used for only two products, meprobamate and tetracycline. In order to purchase drugs abroad the foreign bid must be at least six per cent lower than the lowest domestic bid

after transportation and the cost of inspecting the foreign plant have been added to the price.

Distribution

A more understandable view of drug distribution in the VA can be obtained looking at the process from the point of view of the individual hospital. The hospital may receive its pharmaceuticals from one of three main sources: a VA depot, a contracted manufacturer, or a drug wholesaler. The Supply Officer in the hospital is responsible for determining the source of supply. This is normally the depot; however, depots supply only about 455 items which may be ordered on a monthly basis. This order frequency restriction necessitates maintaining at least a 30 day inventory of the drugs obtained from a depot. In practice a 60 to 90 day inventory of these items, referred to as posted items, is maintained. Emergency orders for drugs also may be sent to the depot but these are discouraged unless there is a proven need for them or their value is high enough to compensate for the extra costs involved in processing a special order.

Supplies of drugs also may be obtained direct from the manufacturer at the contract price. Here again, for commonly used drugs the Supply Division may maintain a stock of these items as posted items, and issue these drugs to the Pharmacy Service from their own inventory.

This procedure is followed: (1) when the depot does not stock the particular drug needed, (2) when the drug is available at a lower cost from the manufacturer than the depot, and (3) when the Pharmacy and Therapeutics Committee of a hospital stipulate a brand of drug other than that stocked by the VA depots. For products infrequently used or products which may be needed immediately, wholesalers are used as a source of supply. In general, wholesalers account for only a small part of the drugs used. The pharmacist as a member of the Pharmacy and Therapeutics Committee has an influence on the products obtained and also acts as an advisor to the Supply Officer on the purchase of drugs and chemicals.

The three VA depots in the United States carry an inventory of about $5 to 5.5 million in drugs and issue about $14 million annually. Another $5.5 million of drugs are distributed under the Centralized Purchase Plan. The remaining $18-20 million of drugs are obtained directly from manufacturers and drug wholesalers.

Indirect Purchases of Pharmaceuticals by the Federal Government

The Department most involved in the indirect purchase of pharmaceuticals is the Department of Health, Education and Welfare. Through matching grants to the states the Federal Government pays from 50 to 83 per cent of the costs

of medical care, including pharmaceuticals, under Title XIX of the Social Security Act.

In an effort to reduce the expenditure for pharmaceuticals, in part due to the influence of a study published in February 1966 by the U.S. General Accounting Office,[19] the Department of Health, Education and Welfare promulgated on December 20, 1965, a memo, HEW 50-1. It instructs all H-E-W agencies to "take appropriate steps" to ensure that: "(1) Drugs procured for agency use are purchased under their non-proprietary or generic name whether it is practicable and economical, and (2) grantees (including state welfare agencies) are encouraged to prescribe and purchase drugs under their non-proprietary names whenever practicable and economical."[20] Some possible pitfalls were noted by George Archambault, Public Health Service Pharmacy Liaison Officer, who recommended that consideration be given to the quality aspects of drug procurement, that patients not be shifted from one brand to another due to the difference of therapeutic response obtained from

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19. The Comptroller General of the United States, Review of Federal Participation in the Cost of Prescribed Drugs for Welfare Recipients in the State of Pennsylvania (United States General Accounting Office, Washington, D.C., 1966).

20. "H-E-W Topsiders Warned that Generic-Procurement Could Lead to Bidding Advantage for 'Marginal Producers', Without Quality Control," FDC Reports, Vol. 28, No. 14 (April 4, 1966), pp. 34-35.

medication prepared by different manufacturers and that the policy remain flexible so that training and research programs would not be handicapped.[21]

These qualifications, however, miss the point of the argument. The recommendations of the GAO do not mention quality directly but simply urge that savings be obtained. The use of a price range may be indicative of a quality range. If this is indeed the case, and there is reason to believe that it is, who is to determine the price or quality to be selected? If it is left to the pharmacist and physician to decide, they must make their choice from "less expensive nonproprietary name drugs".[22] If they do not believe the quality of these nonproprietary name drugs is satisfactory and use tradename products then the potential saving is lost, whereas if they are forced to dispense the nonproprietary product, quality may be lost. In this situation the proviso ". . . whenever practicable, and consistent with the recipients' welfare"[23] would come into effect.

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21. Ibid., pp. 34-35.

22. The Comptroller General of the United States, Review of Federal Participation in the Costs of Prescribed Drugs for Welfare Recipients in the State of Pennsylvania (United States General Accounting Office, Washington, D.C., 1966), p. 3.

23. Ibid., p. 3.

To enable significant economics, however, the "less expensive nonproprietary name drugs" would have to be used in a large percentage of the cases. If they were not used because it was not believed consistent with the recipients' welfare, then the costs of the policies and procedures in administering the program likely would exceed any possible savings. Care must be used in applying theoretically possible savings to an actual situation. In this case no attempt was made to determine how practicable this policy was likely to be, nor in what percentage of the cases it would be "consistent with the recipients' welfare." Instead, the emphasis was placed on the maximum possible saving.

In response to HEW 50-1, Commissioner Winston of the Welfare Department replied that the savings from the use of generics were not as great as reported and that prices for generic drugs were rising faster than those for branded products thus decreasing the price gap. Her conclusions were that the Department of Health, Education and Welfare should not try to impose generics or formularies on state welfare programs using vendor systems for dispensing welfare prescriptions through community pharmacies, and that States should encourage welfare patients to purchase over-the-counter (nonprescription) medication. By excluding over-the-counter medication as a benefit there is a saving both in the expenditure for the medication and also the

cost of processing the vendor claims.[24]

The policy finally adopted by the Department of Health, Education and Welfare was that the grantees should attempt to minimize the cost of medication through various mechanisms but should not sacrifice quality or the prerogatives of either physicians or pharmacists. The guidelines are as follows:

> Medications purchased or prescribed and dispensed shall meet acceptable standards of identity, strength, safety, quality, purity and effectiveness and shall be purchased at the lowest cost available. Consistent with this principle, grantees should be encouraged to purchase drugs under their nonproprietary or generic name, consistent with such acceptable standards and with due regard for the professional prerogatives of physicians and pharmacists.
>
> Grantees should be encouraged to develop and disseminate information, such as formularies and other compendia, which will be of assistance to physicians and pharmacists in prescribing and dispensing the lowest cost medications that meet acceptable standards of identity, strength, quality, purity, safety and effectiveness.
>
> Whenever contracting officers of grantee organizations which administer grant funds purchase medications in bulk, they should include in invitations for bid and proposal solicitations provisions that all Food and Drug Administration quality control requirements must be met, and that medications

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24. "Average Cost of Generics Going Up, Probably Reflecting FDA Quality Control Enforcement, H-E-W Undersecty. Cohen Told in Com. Winston's Position Paper," Weekly Pharmacy Reports, Vol. 15, No. 40 (October 3, 1966). The term over-the-counter medication as used in this report probably refers to both over-the-counter and proprietary medication.

> should be purchased on a competitive basis wherever possible. The professional prerogative of the prescriber to determine the medication required in the best interest of the patient will be recognized.
>
> Grantees should establish utilization review processes in order to determine that actual practices are in accordance with Department of Health, Education and Welfare guidelines and standards. Scientific investigators should have the latitude to acquire drugs having those and product characteristics necessary for the conduct of sound research.[25]

These guidelines allow the individual states to exert initiative in controlling expenditures and also avoid ill will from physicians and pharmacists by shifting responsibility to the states and fiscal intermediaries for any unpopular control measures.

The Department of Health, Education and Welfare will be responsible for about 65 per cent of Federal health expenditures by 1968. Only 2 per cent of this expenditure will be used for direct patient care and treatment, primarily through Public Health Service hospitals.[26] Federal funds used for indirect purchases of health services through states will become increasingly important and grow at a greater rate than the provision of direct patient care. This is due primarily to Titles XVIII and XIX of the Social

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25. "H E W Directives Places Final Decision for Welfare Dispensing Upon Pharmacist," NARD Journal, Vol. 89, No. 1 (January 2, 1967), pp. 37-38.

26. Special Analyses, Budget of the United States, Fiscal Year 1968 (U. S. Government Printing Office, Washington, D.C., 1967), pp. 113-114.

Security Act.

Federal Health Care Expenditures
(in millions of dollars)[27]

	1966	1967 est.	1968 est.
Hosp. & medical care in Federal facilities	2,199.0	2,504.6	2,614.7
Federal grants and payments	1,321.8	5,273.4	6,237.5

The responsibility for determining the emphasis on generic drugs, therefore, now lies with the states. Their response may vary from that of Rhode Island to that of California. In Rhode Island the Division of Public Assistance examined 10,000 prescription orders for welfare recipients and concluded that the savings from the use of generic drugs would have reduced the cost less than five per cent.[28] The five per cent saving would not be realized, however, as administrative costs to implement and maintain this program would be incurred. For this reason there is no insistence on generic products. In California, in contrast, pharmacists must dispense generic drugs regardless of the tradename product prescribed.[29]

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27. Ibid., p. 115.

28. "Chemical and Generic vs. Trade Names," Rhode Island Medical Journal, Vol. 44, No. 1 (January, 1961), pp. 39-40.

29. "Promotion of Generics in Welfare Programs Established in California by Ruling of State Attorney General, Who Implies Payment for Lowest Cost Drugs," Weekly Pharmacy Reports, Vol. 15, No. 4, (January 24, 1966).

The actual instruction to the pharmacist is ". . . the pharmacist shall dispense the lowest cost item he has in stock, including generic equivalent, meeting the requirements of the practitioner as shown on the Prescription Form (MC165)."[30]

Pharmaceutical Industry and Generic Drugs

The Pharmaceutical Manufacturers Association (PMA), by representing firms that produce drugs accounting for the major part of the ethical pharmaceutical sales, can claim to represent the pharmaceutical industry. The Association of 140 firms represented produce over 90 per cent of the prescription drugs sold in this country.

Representatives of the PMA and individual firms have constantly attacked the concept of generic equivalency which maintains that if each of two dosage forms contains the same amount of a chemical compound, then they are identical in all respects. Their basis for attacking this concept is that the formulation of the particular dosage form plays an extremely important role in the therapeutic activity of a product. In doing this they differentiate between the drug, or active chemical or biological constituent, and the drug product which is the drug in combination with other materials in the appropriate dosage

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30. California Medical Assistance Program, Drug Formulary (State of California, April 1, 1966), Instructions.

form.[31] Unless a drug product is properly formulated it may not give consistent clinical effectiveness. The formulation must be rigorously tested, and when proven, applied to production in such a way that its characteristics remain uniform. This quality aspect of the product is maintained by quality control.

The Quality Control Section of the PMA has prepared some general principles of quality control. In these one can see the meaning of quality control in the pharmaceutical industry.

> Control of quality in the formulation, manufacture, and distribution of pharmaceutical, biological, and other medicinal products is the organized effort employed by a company to provide and maintain in the final product the desired features, properties and characteristics of identity, purity, uniformity, potency, and stability within established levels so that all merchandise shall meet professional requirements, legal standards, and also such additional standards as the management of a firm may adopt.[32]

By law each firm must have a quality control system. The firms that have staked their reputation on their products have developed manufacturer capability that enables them to develop new products and dosage forms, to

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31. A. E. Slesser, "Myth of Drug-product 'Equivalency'," Hospital Pharmacy, Vol. 1, No. 3 (1966), pp. 11-15. Slesser was one of the first persons to emphasize and describe in detail the difference between these two terms and their significance.

32. "General Principles of Control of Quality in the Drug Industry," Yearbook 1963-64 (Pharmaceutical Manufacturers Association, Washington, 1963), p. 551.

test them, produce them, and have them approved by the Food and Drug Administration. It requires money, equipment and highly trained personnel. Firms that sell at very low prices cannot develop this capability. Yet this ability to produce successive batches of a drug product with each batch exactly ". . . like the clinically tested and clinically proven prototype lot - the lot that was established at the very outset as being clinically effective,"[33] takes considerable manufacturer capability.

If two products meet U.S.P. or N.F. standards, one might think that both would be clinically effective. This is not always the case. To be clinically effective the drug product must be properly formulated and this criterion is not included in the official compendia. Edward G. Feldmann, Director of Revision, National Formulary, has described this limitation of the compendia in some detail.

> . . . . there is a second natural limitation (the first being unconventional impurities) of the compendia which precludes the development of monographs which guarantee complete suitability of a drug as long as it meets all the specifications provided. This second limitation stems from the fact that we can never know all the factors which influence the drugs properties or its <u>in vivo</u> action.[34]

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33. Slesser, <u>op. cit.</u>, p. 13.

34. Edward G. Feldmann, "The Relationship of Control Procedures to Drug Standards," <u>American Journal of Hospital Pharmacy</u>, Vol. 21, No. 9 (September 1964), p. 396.

> In the case of physiological availability, for instance, Firm X has run clinical studies with their formulation of a certain drug. They obtain certain average results and by carefully maintaining their condition of manufacture, and with their in-process controls and house standards they can expect to prepare subsequent batches of a drug which will duplicate the original batches and provide subsequent therapeutic results which correspond to the clinical findings. Let us assume now that this drug is admitted to the U.S.P. or N.F. It now becomes an extremely difficult proposition to devise generally applicable tests or specifications which will ensure that if the drug is processed or manufactured by Firm Y, the properties of drug release and absorption will be exactly the same as that of Firm X's brand. Yet such tests should be provided if comparable therapeutic results are to be expected from the two preparations of this drug.[35]

With this authoritative pronouncement on the potential differences between drug products containing the same drug, even though they conform to official standards, there can be no doubt that drugs are not therapeutically equivalent because they contain the same chemical compound. Furthermore, it is evident that the manufacturer's capability is an important consideration in evaluating pharmaceutical products. This is borne out by the purchasing practices of the Defense Personnel Support Center and the Veterans

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35. Ibid., p. 397.

Administration. Both insist on inspection of the manufacturer's facilities, quality control system and assay procedures. The Food and Drug Administration (FDA) also take this into account in their analysis of drug products.[36]

To illustrate the contention that there are a number of factors that influence therapeutic effectiveness the National Pharmaceutical Council has published a booklet describing 24 such factors.[37] Many of these claims are verified by the literature as well as by observations of physicians.[38] Some general discussions on the role of formulations on clinical effect provide additional information on the importance of formulation.[39] Thus, proper formulation, combined with stringent quality control, enable the manufacture of consistent, effective products despite their great complexity.

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36. "No Proof on Therapeutic Equivalency, Goddard Says," P.M.A. Newsletter, Vol. 9, No. 13 (March 31, 1967), p. 2.

37. 24 Reasons Why Rx Brand Names Are Important to You (National Pharmaceutical Council, New York, 1957),

38. M. S. Sadove, Ronald Rosenberg, Floyd Heller, and Mortan Shulman, "What Is a Generic Equivalent?," American Professional Pharmacist, Vol. 31, No. 2 (February 1965), pp. 23-29.

39. Gerhard Levy, "Effect of Dosage Form Properties on Therapeutic Efficacy of Tolbutamide Tablets," Canadian Medical Journal, Vol. 90 (April 18, 1964), pp. 978-979. As a result of this study he recommends that patients taking tolbutamide not be shifted from one brand to another and that manufacturers must assure lot-to-lot reproducibility. Thomas J. Macek, "Formulation," Eric W. Martin, editor, Remington's Pharmaceutical Sciences, thirteenth edition (Mack, Easton, Pa., 1965), pp. 413-433; and Gerhard Levy and Eino Nelson, "Pharmaceutical Formulation and Therapeutic Efficacy," Journal of the American Medical Association, Vol. 177, No. 10 (September 9, 1961), pp. 689-691.

Pharmacists and Generic Drugs

The pharmacist has a moral and ethical responsibility to provide drugs of a suitable quality. Where a brand name product is specified by the physician it must be provided by the pharmacist. He cannot substitute another product. When a drug is prescribed by generic name, however, there is no legal guide and the pharmacist must base his choice of product on professional knowledge.

Confusing the issue is the connotation that generic named drugs are less expensive.[40] The pharmacist must decide whether the physician by prescribing a drug by its generic name does in fact want a less expensive product than the popular brand, or whether his use of the generic name implies faith in the pharmacist to dispense a high quality product. One report of a physician who wrote prescription orders for 28 drugs by generic name, showed that in 22 cases the patient received the same product at the same price as patients who had received prescription orders for the tradename products.[41] The extent to which this choice must be made by the pharmacist has been

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40. A recent study by the AMA has shown that prescribing by generic name does not assure a lower price. "Generic Prescriptions Not Lowest-Cost, Study Finds," AMA News, (May 29, 1967), pp. 1, 12. See also: "Survey Probes Drug Price Range," AMA News (June 5, 1967), pp. 1, 6.

41. "Medical Care Prices," The Voice of the Pharmacist, Vol. 10, No. 22 (March 14, 1967).

reported at 8.7 per cent by Abrams and Donahue.[42] They also showed that for 68.8 per cent of the new prescription orders studied (2,008 out of 2,917), a trade name product was specified for which there were no comparable generic drugs. Increased prescribing by generic name could increase the proportion of prescriptions where the pharmacist made the choice of product, from the present level of 8.7 per cent up to a maximum of 31.2 per cent. The proportion of new prescription orders in which the pharmacist makes the choice of product is confirmed by a national prescription audit. These percentages for 1965 and 1966 are 6.38 and 6.36 per cent, respectively.[43] Undoubtedly for some of these prescription orders for generic drugs, a popular brand name product was dispensed.

In order to increase significantly the use of inexpensive products, two procedures must be implemented. First, the physician must relegate his choice of product to the pharmacist and second, the pharmacist must select a low priced medication for dispensing. For these two actions to occur strong coercive methods will have to be

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42. Robert E. Abrams and J. F. Donahue, "Prescription Orders in Community Practice . . . Brand Specification," Journal of the American Pharmaceutical Association, Vol. NS5, No. 12 (December 1965), pp. 632-634.

43. Richard A. Burr, "Market Recap '66," Pharmaceutical Marketing and Media, Vol. 2, No. 3 (March 1967), pp. 9-11.

applied since neither profession is likely to shed lightly its professional prerogatives.

Pharmacists prefer to use brand name drugs because they have come to rely on the reputation of the manufacturer in respect to the quality of their products and for the services which they provide. These manufacturers guarantee that their products meet all legal standards and thus protect the pharmacist from many liability claims.[44] They also provide price adjustments for products in stock, take back goods that are not sold, provide information, films on drug therapy, advertising mats, house organs, plant tours, and also subsidize pharmaceutical meetings and journals. These services are not and cannot be provided by firms that sell drugs at the lowest possible price.

The faith of the pharmacists in brand name drugs often transcends economic interests. Rather than take part in a welfare program that would insist on the dispensing of generic drugs the pharmacists in Louisiana agreed to provide medication to the elderly welfare patients at prices ten per cent lower than their normal price.[45] Controls other than the use of generic drugs

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44. Rodney R. Munsey, "Product Liability Problems," Food Drug Cosmetic Law Journal, Vol. 20, No. 6 (June 1965), pp. 308-316.

45. "La. Pharmacists Kill Generics Plan of Welfare Dept.," Drug Topics, Vol. 109, No. 7 (April 5, 1965), p. 8.

also have been advocated by pharmacists so that the most effective products can be used despite the economic status of the patient.[46]

Another aspect of generic dispensing is that the patient may get the drugs of different firms when their prescription is renewed. This can pose a considerable health hazard to the patient and several authorities have decried this practice.[47] The best guarantee of the patient getting medication made by one firm is for the

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46. Israel C. Schulman, "Drugs in Public Assistance Medical Programs," The Apothecary, Vol. 78, No. 2 (February 1966), pp. 28,30; and "Urges Welfare Body to Drop Generics," American Druggist, Vol. 152, No. 2 (July 19, 1965), p. 26. Nicholas S. Gescalde, executive secretary of the New York State Pharmaceutical Society gave reasons for removing the rule that bases reimbursement for welfare prescriptions for 17 drugs on the cost of a low priced generic product. He stated that these 17 products account for only six per cent of all welfare prescriptions and that the ruling did not take into account the physician's right to prescribe or the pharmacist's responsibility in dispensing prescriptions.

47. N. Brudney, D. J. Stewart and B. T. Eustace, "Rates of Dissolution of Tolbutamide Tablets," Canadian Medical Association Journal, Vol. 90 (April 18, 1964), pp. 980-981. The authors conclude that extreme caution be taken in substituting one brand of tolbutamide for another and that the pharmacist ensure the same brand is used for the patient every time. Arnold K. Carter, "Substitution for Brand-Named Drugs," a letter to the editor, Canadian Medical Association Journal, Vol. 88 (January 12, 1963), p. 98. Frances Bach, "Dangers of 'Cheap' Cortisone Tablets," a letter to the editor, Lancet, Vol. 1 (January 3, 1959), p. 50. Gerhard Levy, "Effect of Dosage Form Properties on Therapeutic Efficacy of Tolbutamide Tablets," Canadian Medical Association Journal, Vol. 90 (April 18, 1964), pp. 978-979. F. C. Lu, W. B. Rice, and C. W. Mainville, "A Comparative Study of Some Brands of Tolbutamide Available in Canada," Canadian Medical Association Journal, Vol. 92, No. 22 (May 29, 1965), pp. 1166-1169.

physician to prescribe by brand. This rule was also recommended by Prof. Lemberger as a general rule in dispensing. The first rule is:

> As a first general rule for brand selection I suggest that in short term therapy product cost not be considered. With the exception of certain antibiotic containing products this generalization can hold because the net potential savings to the patron is so modest as to be of little consequence when considered relative to the possibility of inadvertently selecting a product of inferior quality if too much emphasis is placed upon cost.[48]

Physicians and Generic Drugs

Physicians wish no compulsion or interference with their freedom to prescribe what they consider to be best for the patient.[49] While they oppose compulsion there is apparently no objection to efforts by various government units to elicit their voluntary co-operation. In fact, the medical profession has recognized its responsibility in the economical use of public funds. "With particular respect to prescriptions, the individual physician should

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48. August P. Lemberger, "The Pharmacists Role in Dispensing Generic Products. Part II. Guidelines for Product Selection," Wisconsin Pharmacist, Vol. 54, No. 3 (March 1965), p. 90.

49. The American Medical Association House of Delegates stated their opposition to generic prescribing in a resolution as follows: "Resolved that the House of Delegates continue to oppose the compulsory regulation of any single method of the prescribing of drugs." The quotation is from: "A.M.A. Again Opposes Govt. Imposition of Generic Prescribing, FDA Blasted," FDC Reports, Vol. 28, No. 27 (July 4, 1966), p. 8.

examine his own prescribing habits to determine whether he can treat welfare patients as effectively at less cost to the welfare agency."[50] One suggested method for accomplishing this is the use of U.S.P., N.F., and N.N.D. drugs of "equal therapeutic effectiveness when available, when the quality of the product is assured, and when a price differential exists."[51]

How can the physician be assured of the quality of the product prescribed? To date the most effective way of providing a product of optimal quality is to prescribe by trade name. Having been closely associated with reputable firms over a period of years, physicians have come to rely on the quality and efficacy of their products. An editorial in a state medical journal succinctly summed up this dependence on quality as follows:

> The carefully controlled and precisely stated characteristics of the drug is something that the prescribing physician relies on when he specifies it for his patient. The patients' response to a prescribed drug can be scientifically evaluated because the physician knows exactly what it was that he prescribed. If the doctor is forced to prescribe a

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50. Guides for Drug Expenditures for Welfare Recipients (American Public Welfare Association and the American Medical Association, Chicago, December, 1960), pp. 5-6.

51. Ibid., p. 6.

> generic drug, he may lose an important element of control over the treatment of his patient.[52]

The author also states that generic prescribing would injure the pharmaceutical industry and that generic prescribing does not assure generic dispensing.[53]

Another state medical journal editorial has also stated similar views.

> Drugs are a physician's tools. They should be of the best materials, but not necessarily of the cheapest. The physician has to depend on the integrity of the drug manufacturer to assure that his drug is of high quality and that it is of the same quality which has given satisfaction in the past. Few physicians are willing to prescribe drugs simply because they are cheap; they believe that welfare patients should have medical care equal in quality to that received by other patients. If they are sure that a non-brand name drug can meet the test of quality and efficacy, they would have no hesitation in prescribing it.
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> But how is a physician, without the necessary time or facilities, to investigate claims that so called generic equivalents are really equivalent?[54]

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52. D. N. Goldstein, "Generic VS Brand," (Editorial) Wisconsin Medical Journal, Vol. 65, No. 12 (December 1966), p. 493.

53. Ibid., pp. 493-494.

54. "Chemical and Generic vs. Trade Names," (Editorial) Rhode Island Medical Journal, Vol. 44, No. 1 (January 1961), pp. 39-40.

> Even though a small saving might accrue to the state if the prescribing of drugs by their generic names should become established, in the final analysis a drug program should not be designed solely to induce economy. It must also assure that quality medical care is being given.[55]

Another facet of the physician's willingness to prescribe generic drugs may be termed the confidence factor. While the question of technical superiority of brand name products of reputable firms over unbranded products is discussed frequently, the confidence factor is not sufficiently appreciated. The attitude of the physician towards a product or his faith in the product can produce a favorable response in the patient regardless of the actual composition of the product. Similarly, patients taking medication may be influenced by subtle factors that are not readily identifiable. This has been commented on by at least one physician.

> There is a multitude of factors that affect the action of drugs: pharmacology, the patient's needs, and these include the presentation of the drug, its colour, taste, smell, and side effects, the doctor's views about the effectiveness of the drug, the natural history of the illness, and the 'placebo' effect, a particularly ill-chosen term for that influence of the doctor upon the patient of which so little is known.

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55. Ibid., p. 40.

> Prescribing and the choice of different drugs must therefore be governed by all these factors, each of which may influence the cost of prescribing. Although one drug or presentation may be pharmacologically as effective as another that perhaps is more expensive, yet in its effect upon the patient in practice it may well be less useful and appropriate than the more expensive drug or presentation, on account of taste, solubility, consistency, or perhaps of factors of which we really are not aware.[56]

In determining what products to prescribe the physician has an overwhelming amount of information of great complexity potentially available to him. Unable to examine this material himself he must obtain it in digestible form from some other source. In this context the credibility of the source of information on drugs becomes important to him. This leads to a preference or trust in individual firms and their representatives. When a firm is reliable, has a well qualified staff and is engaged in research, it is more likely to be accorded this trust. Company preference does influence physician prescribing and has been shown to be especially important when there is greater risk associated with the use of the drugs.[57]

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56. Max B. Clyne, "Favourite Prescriptions in General Practice," The Practitioner, Vol. 198, No. 1183 (January 1967), p. 26.

57. Raymond Baur, "Risk Handling in Drug Adoption: The Role of Company Preference," Understanding Consumer Behavior, Martin M. Grossack, editor (Christopher Publishing House, Boston, 1964), especially pages 247-249.

Effectiveness of Generic Drugs as a Control

Savings can be made in drug programs by the use of generic products. These savings, however, should be weighed carefully against the possible variation in drug quality and therapeutic effectiveness. The extent to which the cost of prescribed medication can be reduced by generic prescribing is not significant, especially if pharmacists retain the choice of product to be dispensed since in many cases they will choose branded products. If legislation is passed which forces the pharmacists to dispense the "lowest cost product," based on the state's reimbursement policy, some estimation of the potential savings can be made.

In 1965 the average prescription price for all original and renewed prescriptions was $3.47. The average price for generic drugs, which represented 6.38 per cent of the total new prescriptions, was $2.53. By removing the generic drugs from the total number of prescriptions dispensed the average prescription price rises to $3.53. This price represents the average price paid for branded products. Assuming that these prices for generic drugs and branded products remains constant the relationship in Table 4.1 can be constructed.

Table 4.1

CHANGE IN AVERAGE PRESCRIPTION PRICE FROM CHANGE IN PROPORTION OF GENERICS

% Generic[58]	% Branded	Average Prescription Price	% Change from 3.47 (base)
6.4	93.6	3.47	0.0
12.0	88.0	3.41	- 1.73
18.0	82.0	3.35	- 3.46
24.0	76.0	3.29	- 5.19
30.0	70.0	3.23	- 6.92

: Based on generic drugs at $2.53 and branded products at $3.53.

The maximum saving that can be achieved by insisting that a generic drug is used whenever possible is about seven per cent, and this can be accomplished only by coercion. It remains doubtful, however, that even this saving could be achieved since the average price of branded products and generic drugs would both rise as the proportion of generics rose. One reason for this is that those products which have not customarily been dispensed by generic name would probably have a higher price than products which have been marketed by generic name over a period of time. The average price of branded drugs would rise as they would increasingly consist of new patented products for which there was only one manufacturer.

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58. A maximum of 31.2 per cent of the new prescription orders could be dispensed with a generic product. Robert E. Abrams and J. F. Donahue, "Prescription Orders in Community Practice . . . Brand Specification," Journal of the American Pharmaceutical Association, Vol. NS5, No. 12 (December 1965), pp. 632-634.

Another reason, is that the price of a prescription is based on two costs, not one. These two costs are the cost of the ingredients and the dispensing cost. If there is a change in the ingredient cost of 10 per cent there will be a change of less than 10 per cent in the prescription cost. This was shown in Dr. Apple's reply to the GAO claim that substantial savings could result from the use of generic drugs.[59]

The state had paid $1,861.54 for 500 prescriptions. Although this is not divided into the ingredient costs and dispensing cost, Dr. Apple assumed that $1.723 was the dispensing cost and $2.00 was the ingredient cost, thus giving the average cost of $3.723. If this fee is kept constant and is applied to each prescription the projections by Dr. Apple and the GAO show a marked disparity since the GAO use a 50 per cent mark up as a dispensing cost. The disparity between the prices calculated by each method is shown in Table 4.2.

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59. William S. Apple, an open letter to the Honorable John W. Gardner, Secretary, Department of Health, Education and Welfare, APhA Newsletter, Vol. 5, No. 5 (March 5, 1966), pp. 2-3. Report of the Comptroller General, Review of Federal Financial Participation in the Costs of Prescribed Drugs for Welfare Recipients in the State of Pennsylvania (Washington, D.C., February 3, 1966).

Table 4.2

CHANGES IN PRESCRIPTION PRICE FOLLOWING CHANGES IN INGREDIENT COST

Cost Component	Fee	Ingredient Cost	Total Cost	Per cent Change from $3.723
Actual Charge			$3.723	0.00
GAO Estimate				
Lowest cost generic	$0.503	$1.006	$1.509	-59.47
Highest cost generic	0.799	1.597	2.396	-35.64
Apple Estimate				
Lowest cost generic	1.723	1.006	2.729	-26.70
Highest cost generic	1.723	1.597	3.320	-10.82
Actual cost	1.723	2.000	3.723	0.00

The savings in this program are not exceptional since the maximum saving of 26.7 per cent could only be reached using the lowest cost product without any consideration of quality. It should also be noted that this sample of prescriptions represents only a small portion of the total prescriptions dispensed and if the saving was calculated as a percentage of the total drug bill it would be small indeed.

The extent of the savings to be obtained from prescribing by generic name are in agreement with experience in Britain. A scholarly analysis recently has confirmed that the saving in the total drug bill resulting from the use of generic drugs are small and that there are only a few drugs on which substantial savings could be obtained.[60]

60. Michael H. Cooper, Prices and Profits in the Pharmaceutical Industry (Pergamon Press, Oxford, 1966), pp. 87-118.

There is also an estimate of the offsetting costs incurred in implementing such a program and a discussion of some of the other problems associated with the compulsory use of generic drugs.

The Rhode Island Department of Public Welfare has estimated a possible saving of about five per cent if generic drugs were prescribed and dispensed.[61] It can, therefore, be concluded that significant savings, although available on individual products, are not available for the prescription mix usually prescribed.

Two factors, dispensing costs, and the proportion of prescribed drugs available from only one firm, combine to restrict the savings obtained from the use of generic drugs. Changing either of these factors would be difficult and for all practical purposes they represent the constraints in possible savings.

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61. "Chemical and Generic vs Trade Names," (Editorial) Rhode Island Medical Journal, Vol. 44, No. 1 (January 1961), pp. 39-40.

CHAPTER V

FORMULARIES

State and City Formularies

Formularies, more accurately described as drug lists, are now being used by states and cities to limit the use of drugs in their welfare programs. Their use was stimulated by Federal legislation, under the Social Security Act, which provided matching grants to the states for public assistance. In order to make use of these and subsequent grants, the states developed programs on a state wide basis which included drugs as a component of medical care. To exercise some control over the costs of these programs a number of procedures were followed, one of which was the use of a formulary.

In order to study the characteristics of formularies used by states and cities, requests were sent to nine state welfare departments and two city welfare departments for copies of their formularies. Seven state formularies and one city formulary were received as a result of the requests. One of the formularies obtained was from a state that no longer uses a formulary (Utah). The formularies obtained were:

Formulary - Baltimore City Health Department (October 1, 1964)

Drug Formulary - State of California (April 1, 1966)

Medical Assistance Drug List - Commonwealth of Kentucky (July 1, 1966)

Drug Manual for Pharmacies - State of Illinois (September 1965)

Basic Drug List and Maximum Prices - State of Oregon (July 1, 1965, Revised April 25, 1966)

Drug Formulary - Tennessee Department of Public Welfare, Revised (April 1, 1966)

Drug Formulary - State of Utah, Revised (April, 1965) discontinued July 1, 1966

Drug Formulary - State of Washington (October 1, 1965)

In only one of the formularies is there a general policy statement regarding the establishment, content and use of the formulary. Excerpts from this formulary state:

> The principal criteria for admission of substances are therapeutic efficacy, simplicity and economy. The official drug compendia of the United States Pharmacopoeia and the National Formulary are recommended to physicians as basic reference sources for drugs approved for use in this program.... By using these medicines in preference to untried, very new and usually highly expensive ones, the physician can provide his patient excellent care at reasonable cost.[1]
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> . . . . . .
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> It is essential that the formulary be followed in order to reduce the drug costs of this tax supported medical care program to the lowest point consistent with the effective treatment of the patient.[2]

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1. Formulary (Baltimore City Health Department, 1964), p. iii.

2. Ibid., p. iv.

The amount of restriction imposed on a physician's prescribing can be inferred from the number of drugs listed in the formulary. This is only a crude measure, however, since the popular products used by a physician may be omitted irrespective of the number of drugs contained. In practice, determining the number of drugs included can be difficult. The number will depend on whether various dosage forms are included, if combinations are to be counted, if similar preparations are included and whether there are any "open end groups" of drugs. The term "open end group" refers to a group of drugs such as ophthalmic solutions, which does not specify any specific solutions.

Formularies can be either restricted or open. Restricted formularies are those that do not allow payment for drugs other than those specifically listed. The formularies of Kentucky, Oregon and Tennessee are of this type. Open formularies, like Baltimore's, are suggested guides to prescribing and the city will pay for all prescribed medication, whether the drug is included in the formulary or not. The remainder of the formularies, although of a restricted type, permit payment for drugs other than those specifically listed. These exemptions, however, are usually narrow and apply only to products similar to listed drugs in efficacy and cost.

The restricted formulary with a limited selection of drugs has the greatest potential for reducing drug costs.

This is clearly shown by the results obtained in California. In 1958 and early 1959 there were no restrictions on prescribing medication for public assistance patients. A formulary of 58 drugs, plus 7 other drugs that were restricted to specific diagnosis, was established in April 1959. The result of this change, plus an educational campaign to encourage physicians to prescribe by generic name, reduced costs from $17,257,256 during the period July 1958 to June 1959 to $7,895,686 during July 1959 to June 1960.[3] The report from which this was taken then goes on to state, "Drugs not in the formulary but prescribed by the attending physician were paid for by the recipient, a relative, or supplied from county resources."[4] While savings can be achieved in this way there is some doubt that the same standard of medical care can be maintained.

Comparison of Formularies

Since the formularies studied included both restricted and open end types, a direct comparison of the number of drugs was not attempted. Rather, a comparison of the drugs listed in selected groups was used for purposes of comparison (Table 5.1). The groups selected were: systemic antibiotics, psychotherapeutic agents, oral hypoglycemics,

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3. John E. Preston, History of Public Assistance Medical Care Drug Program As of February 1965 (Mimeographed report, Department of Social Welfare, State of California, no date), p. 3.

4. Ibid., p. 3.

Table 5.1

NUMBER OF DRUGS LISTED IN EACH FORMULARY BY SELECTED THERAPEUTIC GROUP

Therapeutic Groups	Balt	Cal	Ill	Ky	Ore	Tenn	Utah	Wash	Total
Antibiotics	7	16	17	10	6	6	10	2	74
Psychotherapeutic Agents	2	7	16	3	0	7	9	0	44
Oral Hypoglycemics	2	4	5	3	4	5	5	5	33
Cardiotonics	3	7	6	4	4	6	5	5	40
Laxatives	7	0	14	1	0	0	0	0	22
Vitamins	9	4	15	1	0	1	1	1	32
Total	30	38	73	22	14	25	30	13	245

cardiotonics, vitamins and laxatives. Antibiotics and psychotherapeutic agents were selected because they had the highest average prices of the various therapeutic categories and one would expect savings to be attempted by especially limiting these drugs. Oral hypoglycemics and cardiotonics were selected because of their high usage by welfare recipients, particularly the elderly, and the nature of the disease for which each is used is such that they must be obtained. It was expected that these would be available in all the formularies despite their cost. The last two groups, laxatives and vitamins, generally are over-the-counter preparations and one would not expect them to be included in the formularies since nonprescription medication is one of the first groups to be restricted.

An analysis of the selected therapeutic groups shows a wide variation in the number of drugs from formulary to formulary. Of the 22 antibiotics listed in the formularies only eight appeared in half (4) or more of the formularies and only two, penicillin G and tetracycline, appeared in all the formularies. The drugs listed are presented in Appendix A, Table 1.

Five of 16 psychotherapeutic drugs were listed in half or more of the formularies, none were listed in all of them. The average number of psychotherapeutic drugs per formulary was 5.5.[5]

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5. See Appendix A, Table 2.

All hypoglycemics were listed in over half the formularies but only tolbutamide was listed in all the formularies. The average number listed was 4.125, a high proportion for the five drugs.[6]

Five cardiotonics were listed in half or more of the formularies. The average number listed was five and the number listed was seven.[7]

None of the laxatives are listed in more than two of the formularies. Those listed, with the exception of one drug, are listed in one or both of two formularies. The total number listed was 13.[8]

Sixteen vitamin drugs or groups were listed, but only two of these, cyanocobalamin and vitamin K, were listed in half the formularies. Multiple vitamin preparations were listed in two formularies and one additional formulary allowed infant vitamin drops for children under five.[9]

The essential drugs, oral hypoglycemics and cardiotonics, that are commonly used in older patients are listed in a high percentage of the formularies and the average number was a high proportion of the total number of drugs in that group. The number of antibiotics listed in the formularies ranged from two to 17 with a mean of 9.25 (Table 5.2). While this average number is high it is only

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6. See Appendix A, Table 3.
7. See Appendix A, Table 4.
8. See Appendix A, Table 5.
9. See Appendix A, Table 6.

Table 5.2

AVERAGE AND TOTAL NUMBER OF DRUGS IN EACH THERAPEUTIC GROUP LISTED IN EIGHT FORMULARIES

	Average Number	Total Number	Average as Percent of Total
Antibiotics	9.25	21	44.05%
Psychotherapeutics	5.50	16	54.38
Oral Hypoglycemics	4.125	5	82.50
Cardiotonics	5.00	7	71.42
Laxatives	2.75	13	21.15
Vitamins	4.00	16	25.00

about 44 per cent of the total number of antibiotics listed. Similarly psychotherapeutic drugs, while averaging 5.5 drugs per formulary, were restricted so that this number was only 34.38 per cent of the total psychotherapeutic drugs listed. The laxatives and vitamins were concentrated primarily in two formularies, and the average number per formulary should be interpreted in this light.

It appears that there is little restriction of oral hypoglycemics and cardiotonics, a greater amount of restriction on antibiotics and psychotherapeutic agents and greatest restriction on laxatives and vitamins. While these restraints can be understood in terms of price for antibiotics and psychotherapeutic agents it does not explain why the laxatives and vitamins are excluded since their price is usually low. Other factors which may account for their exemption is the belief that nonprescription products should be purchased by the patient or that the low cost of the items plus many claims for them present a formidable administrative problem.

Restricted Formularies

The effect of a restricted formulary is pernicious. It forces the physician to prescribe what is available rather than what he considers to be best in a specific condition; on the other hand, if he prescribes a drug which is not listed there is some possibility the patient will not obtain the medication and a good part of the already provided diagnosis and treatment will be wasted. The pharmacist also is placed in an embarassing position. He must inform the patient, when a nonformulary drug is prescribed, that the drug is not covered by the program and attempt to collect payment from the patient.

If the medication is not paid for by the welfare department, the patient is faced with a financial problem. The patient either will not obtain the medication or obtain it from the pharmacist despite the financial difficulty. Another alternative, in some cases, would be for the patient to go to the emergency clinic at one of the hospitals and attempt to obtain treatment or medication.

Restricted formularies are also unfair to pharmaceutical firms. If there are drugs similar to a listed drug in efficacy and cost it is clearly unjust to insist on the product of one manufacturer in preference to another. To overcome this, open-end drug or product groups may be employed so that the physician is less constrained and competing pharmaceutical firms have an equal chance at getting their products prescribed.

Formularies as Vehicles for Other Controls

In addition to restricting the number of drugs available to the practitioner, formularies also serve as a means of exercising more rigid financial controls. The listing of maximum reimbursement rates for certain drugs was a feature of seven of the nine formularies tabulated (Table 5.3). This added dimension gives the formularies a characteristic not usually associated with formularies, but rather, one more akin to a price list or, to use the British term, a drug tariff. This listing of reimbursable prices regulates both the dispensing fee of the pharmacist and the price at which the cost of the ingredient will be reimbursed.

One awkward feature of this arrangement from the pharmacist's view is that prescribed brand name products often exceed the allowable ingredient cost, thus placing him in the position of either substituting a lower priced product, which is unlawful in most states, or accepting a lower dispensing fee and dispensing the brand name product. Even when generic prescribing is practiced, the pharmacist still has the dilemma of providing a quality product but having only low priced products from which to base his selection if there is a cost constraint. Ironically it is the conscientious pharmacist who is most likely to be penalized financially through his insistence on dispensing only products which he believes to be of high quality.

Table 5.3

RESTRICTIONS APPLIED TO THE USE OF SELECTED FORMULARIES

	Balt	Cal	Ill	Ky	Ore	Pa*	Tenn	Utah	Wash	Total
1. Maximum reimbursement prices		x	x	x	x	x	x		x	7
2. Renewal limitations	x		x		x	x	x	x		6
3. Recipients monthly ceiling								x		1
4. Prior approval for certain expenditures						x		x	x	3
5. Patient's signature on prescription									x	1
6. Manufacturer's name on prescription					x	x				2
7. No timed release dosage forms		x			x					2
8. No medicine cabinet preparations					x	x				2
9. No combinations other than those listed		x				x				2
10. Drugs restricted to certain diagnosis		x								1
11. Duration of therapy limited						x		x		2
12. Maximum amount limited							x			1
13. Ineligible therapeutic groups						x				1
Total	1	4	2	1	5	8	3	4	3	31

*While a copy of this formulary was not available, partial information, including a description of the policies and procedures to be followed in using the formulary, was obtained.

Renewal limitations are also prevalent, appearing in six of the nine formularies. These limitations ranged in severity from an outright ban on renewals to a statement that renewals must be specifically authorized on the original prescription order. Other related restrictions were those dealing with the maximum quantity that could be dispensed or the duration of therapy.

The remaining restrictions listed were not specifically included in most of the formularies but may be implicitly included. For example, although only one formulary specifically excludes a group of drugs (anorexiants) they are, in fact, excluded from several formularies because they are not listed as a benefit.

Formularies, therefore, are used as a vehicle for imposing a number of restrictions in addition to limiting the number of drugs. Looked at in this light formularies are not guides to therapy, in the sense of providing good drug therapy, but rather a tangled skein of restrictions attempting to stem the outflow of public funds.

> The physician can help a recipient financially if he will prescribe from this list. Otherwise, the recipient will be required to pay for the drug from his personal income. The main purpose of the formulary is to restrict expenditures by the department in order to conserve tax dollars and overall expenditures of tax money.[10]

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10. Department of Public Welfare, Drug Formulary (State of Utah, Salt Lake City, April 1965), p. 1. This formulary was discontinued, July 1, 1966.

By attempting to limit benefits to inexpensive products, formularies create an ironic situation. The poor are supplied with inexpensive maintenance preparations, such as digitalis, that they could purchase themselves but are required to pay for an expensive new antibiotic because it is not listed in the formulary. Similarly, patients with uncommon diseases requiring extensive drug therapy with expensive drugs not commonly used, and hence not listed, would benefit less than persons having a more common ailment. While exceptions can be made for these cases, the amount of effort spent in obtaining exemptions may be considerable.

The effectiveness of the listed formularies cannot be compared directly with methods used in other states as there is a paucity of comparable data. Results from within each area, however, show that in some cases the use of a formulary has provided the intended effect. California, through the use of a limited formulary, reduced the expenditures under their drug program by over a half in less than a year. These restrictions proved to be too severe and subsequently were modified by adding drugs to the formulary as needed.[11]

In Illinois, the introduction of a formulary has lowered drug expenditures by about 20 per cent and is considered to be an effective method of controlling these expenditures.[12] Part of the reason for adopting the

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11. John E. Preston, op. cit., p. 3.

12. Personal communication, Dr. Henry A. Holle, Medical Director, Illinois Department of Public Aid, September 8, 1966.

formulary was to adapt the drug control procedures to mechanical processing. This would appear to be an excellent method of implementing administrative control and appears to be working satisfactorily even though the Illinois program has been described as very liberal.[13]

The formulary used by the City of Baltimore serves more as an educational prescribing guide than as a rigid financial control. Despite the lack of compulsion, 56.8 per cent of the drugs prescribed in January, 1965 were listed in the formulary, another 25.8 per cent were not included in the formulary, but were of an "acceptable price". The remaining 17.4 per cent were not included in the formulary and were more expensive than the corresponding drug in the formulary.[14] The average prescription price was only $2.37. In Oregon a survey of 208 pharmacies showed that the use of a formulary enabled the welfare department to purchase 18 products at an average cost 8.1 per cent lower than was available to other patients.[15]

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13. "Illinois' Plan for Expansion of Its Welfare Program Is Informally Approved By HEW," American Druggist, Vol. 152, No. 13 (December 20, 1965), p. 21.

14. Personal communication, Dr. H. W. D. Holljes, Consultant in Clinical Services, Baltimore City Health Department, The figures cited were from a five per cent sample of the January 1965 prescriptions.

15. Drug Survey by Oregon State Pharmaceutical Association Charitable Medical Committee as described in an open letter from T. H. Hammond, Medical Fiscal Supervisor, Division of Medical Care, State of Oregon, November 9, 1966.

CHAPTER VI

PATIENT PARTICIPATION IN PAYMENT

In order to place a constraint on excessive utilization and to lighten the financial burden some fee or payment for service may be required of the beneficiary. This financial participation by the patient may be by either or both of the commonly used insurance mechanisms of co-insurance and deductibles.

Co-insurance refers to a sharing of an insurable cost by both the insuring firm and the insured. Applied to prescription insurance it means that the person obtaining the medication would pay a fixed proportion of the cost and the insuring firm the remainder. A common procedure used in providing coverage is to have the insuring firm pay 80 per cent and the insured 20 per cent.

A deductible feature consists of the insured person paying all of the initial cost up to the deductible amount. For example, a $50 deductible means that $50 must be paid by the beneficiary before any insurance benefits are paid. These two mechanisms, co-insurance and a deductible are usually combined and have a period of one year as their fiscal period.[1]

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1. The effect of co-insurance and a deductible on premiums for prescription insurance has been reported by Danian. See: Michael Danian, "The Feasibility of Insuring Families Against the Cost of Prescribed Drugs," Unpublished Ph.D. dissertation, University of Wisconsin, 1964, p. 174.

Contributory Payment for Each Prescription

Another method of patient prescription procedure is to have a fixed fee levied on each prescription dispensed to a beneficiary. An advantage of this system is that it does not place as heavy a financial burden on the patient as would a deductible which forced them to pay the full amount of the deductible. It also spreads their payment according to their use of medication. This method of obtaining a contribution from the patient is known as a utilization fee, deterrent fee, or participation fee.

In tax supported programs where the recipients are financially disadvantaged the use of a participation fee is preferable to either a deductible or co-insurance system. Having the patient pay a fixed proportion of the prescription price, a form of co-insurance, is similar to a participation fee but is less suitable for use in programs established for those in financial need. It forces a higher payment for more expensive medication, the very medication which the participant is least able to afford. Persons that require substantial pharmaceutical services are thereby most constrained from using the service. For this reason a fixed fee is preferable to a variable one.

Use of a participation fee is effective because it restores the use of a price system. The imposition of a price no longer allows the excessive use of pharmaceutical services at no charge. Even a small fee if applied to a large number of transactions can exert a moderating influence.

The actual fee may be determined to achieve one of two purposes. First, it may be imposed on a basis of therapeutic need so that persons needing pharmaceutical services are not deterred yet be high enough to inhibit unnecessary or excessive use of the pharmaceutical services. This method is particularly suitable for populations with similar family incomes. Where incomes are more widely distributed the fee necessary to prevent excessive utilization by low income families may not inhibit sufficiently higher income families, thus making the system inequitable.

The second way the fee can be set is to determine the total cost of providing pharmaceutical services and subtract from this the budgeted amount available to pay for the services. The remaining amount must be covered by fees and they will be set accordingly.

By using the price system to control the demand for services an advantage is gained in that the allocation of pharmaceutical services is not distorted. Use of control mechanisms which restrict the drugs that are covered, however, may increase the use of certain drugs, not because they are the drug of choice in a certain condition but because the patient is not required to pay for them.

Another argument for the use of patient contribution is that it enables the patient to participate in the cost of the pharmaceutical services. By contributing to the cost, the stigma of charity is lessened and the more socially acceptable concept of government subsidization is

substituted. The validity of this reasoning has not been demonstrated adequately but it remains a popular concept.

Effect of Controls on Prescriptions Dispensed

Two reports illustrate the effectiveness of having patients pay a portion of the prescription charge. In Saskatchewan, public assistance recipients were required to pay 20 per cent of the price of each prescription they received during the period 1948-1959. In 1959 the proportion that the patient contributed was increased to 50 per cent. The other published report deals with the removal of the one shilling prescription charge for prescriptions under the British National Health Service.

Saskatchewan

The number of prescriptions dispensed to long-term public assistance beneficiaries rose between 1953 and 1959 from 4,655 to 7,336 per 1,000 beneficiaries. In an attempt to reduce the use of drugs by these persons the charge per prescription was increased from 20 to 50 per cent.[2] While the result of this change is difficult to assess accurately, a definite reduction in the rate of increase of prescriptions per beneficiary was noted (Table 6.1).

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2. The data in this section are taken almost wholly from Royal Commission on Health Services, Provision, Distribution, and Cost of Drugs in Canada (Queen's Printer, Ottawa, 1964), pp. 76-98.

Table 6.1

NUMBER OF PRESCRIPTIONS ISSUED PER 1,000 LONG-TERM PUBLIC ASSISTANCE BENEFICIARIES

Year Ending	Prescriptions per 1,000 Beneficiaries	Per cent Change From Prev. Year
1953	4,655	--
1954	5,013	7.69
1955	5,406	7.84
1956	5,796	7.21
1957	6,121	5.61
1958	6,843	11.80
1959	7,336	7.20
1960	6,733	- 8.22
1961	6,784	0.76

Source: Royal Commission on Health Services, Provision, Distribution and Cost of Drugs in Canada (Queen's Printer, Ottawa, 1964), p. 90.

The age group, 70 and over, which constitutes over half the beneficiaries, exhibited the least change in number of prescriptions per 1,000 beneficiaries. This group, therefore, bore the brunt of the deterrent levy. Only the age group, 1-4, showed a sharp decrease in utilization. The remainder decreased only moderately.

In an attempt to determine whether the sudden slowing in the rate of increase was due to factors which affected the utilization of medication in the population as a whole rather than just public assistance recipients, data on the dispensing of medication through pharmacies during this period were examined. These data are from the Canadian Pharmaceutical Association's annual surveys of Pharmacy

operations published in the Canadian Pharmaceutical Journal.[3] Each survey compares the changes in operation that have occurred in the same pharmacies between the two periods. These pharmacies are termed identical pharmacies. Since pharmacists often fail to submit data for consecutive years the number and specific pharmacies compared each year vary. Despite this, since they constitute a substantial number, about 30-50 of the roughly 325 pharmacies, their data reflect the changes in drug expenditures for consecutive years.

During the period 1959-1960 there was a marked reduction in prescription receipts (Table 6.2). Since this period corresponds with the timing of the change in benefits to welfare recipients, it may be that the rate of increase of drug expenditures would have slowed even if the patients were not required to pay a larger proportion of the prescription expense.

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3. H. J. Fuller, "Canadian Pharmaceutical Association, 13th Annual Survey of Retail Pharmacy Operations," Canadian Pharmaceutical Journal, Vol. 88, No. 15 (August 1, 1955), p. 479. See also: loc. cit., Vol. 89, No. 15 (August 1, 1956), p. 535; Vol. 90, No. 8 (August, 1957), p. 473; Vol. 91, No. 9 (September, 1958), p. 501; Vol. 92, No. 9 (September, 1959), p. 422; Vol. 93, No. 9 (September, 1960), p. v, supplement; Vol. 94, No. 9 (September, 1961), p. vii, supplement; Vol. 95, No. 9 (September, 1962), p. vii, supplement.

Table 6.2

EXPENDITURES FOR PHARMACEUTICAL SERVICES PER LONG-TERM PUBLIC ASSISTANCE BENEFICIARY, PER CENT CHANGE, AND PER CENT CHANGE IN PRESCRIPTION RECEIPTS IN CONSECUTIVE YEARS BY SOME SASKATCHEWAN PHARMACIES

Year Ending	Pharmaceutical Expenditures Per Beneficiary Per Year[a]	Per cent Change Per Beneficiary	Per Cent Change in Prescription Receipts Surveyed Pharmacies[b]
1953	$ 9.41	-- %	-- %
1954	10.94	16.26	7.35
1955	12.73	16.36	0.37
1956	14.48	13.75	8.40
1957	15.80	9.12	11.46
1958	18.24	15.44	0.14
1959	20.78	13.93	- 4.15
1960	20.86	0.38	- 2.85
1961	21.14	1.73	15.90

a. These expenditures consist of expenditures by both the government and recipient.

b. The change from the previous year was based on identical pharmacies submitting data to the C.Ph.A. Pharmacy Survey for two consecutive years. The survey results are calculated on a calendar year while the public assistance expenditures are based on a fiscal year ending March 31.

Source: Royal Commission on Health Services, Provision, Distribution, and Cost of Drugs in Canada (Queen's Printer, Ottawa, 1964), p. 94; and Canadian Pharmaceutical Association Pharmacy Surveys 1955-1962.

While there was a decrease in the number of prescriptions dispensed per 1,000 beneficiaries this was accompanied by a sharp increase in price so that the resulting total expenditure for medication remained fairly constant. The drop in the number of prescriptions and increase in price likely reflects an increase in the amount of medication dispensed per prescription since the expenditure per beneficiary changed only slightly and there is no reason to believe that there was a significant shift to more expensive medication (Table 6.3).

Table 6.3

PER CENT CHANGE IN THE AVERAGE PRICE PER PRESCRIPTION FOR PRESCRIPTIONS DISPENSED TO LONG-TERM PUBLIC ASSISTANCE RECIPIENTS AND FOR SASKATCHEWAN PHARMACIES PARTICIPATING IN C.Ph.A. PRICE SURVEY FOR TWO CONSECUTIVE YEARS

Year Ending	Long-Term Public Assistance Beneficiaries	Saskatchewan Pharmacies in C.Ph.A. Survey
1953	-- %	-- %
1954	7.88	-2.03
1955	7.31	5.05
1956	6.38	5.78
1957	3.20	4.46
1958	1.93	7.63
1959	7.98	5.41
1960	9.15	3.68
1961	0.65	0.36

Source: Royal Commission on Health Services, Provision, Distribution, and Cost of Drugs in Canada (Queen's Printers, Ottawa, 1964), p. 94. Canadian Pharmaceutical Association Annual Pharmacy Surveys, by H. J. Fuller, 1954 through to 1961, appearing in the Canadian Pharmaceutical Journal, 1955 through 1962.

With the total expenditure remaining constant, the government's share dropped markedly since the patient's share increased from 20 per cent to 50 per cent of the total. Rather than having a significant impact on the utilization of drugs the program has simply shifted some of the cost of the program to the beneficiaries.

From an expenditure of $466,410, by the government in 1959 for long-term public assistance beneficiaries, the cost dropped to $285,026 in 1960. During this period the number of beneficiaries declined only slightly from 28,055 to 27,321 and probably contributed little to the decline in expenditures.

Great Britain

Under the National Health Service in Great Britain prescribed medication was initially dispensed to the patient at no charge. The rapid rise in pharmaceutical expenditures, however, led to the imposition of a charge of one shilling per prescription order form (E.C.10) on June 1, 1952. In response to this charge there was an increased average number of prescriptions ordered per form, a slight increase in the number of prescriptions and practically no increase in the price per prescription[4] (Table 6.4).

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4. Final Report of the Committee on Cost of Prescribing (Her Majesty's Stationery Office, London, 1959), pp. 24-30; and J. P. Martin and Sheila Williams, "The Effects of Imposing Prescription Charges," Lancet, Vol. 1 (January 3, 1959), pp. 36-39.

Table 6.4

PRESCRIPTION STATISTICS FOR ENGLAND 1949-1957

Year	Average No. Prescriptions per Patient	Average No. Prescriptions per Form	Average Cost per Prescription (pence)	Per Cent Change in Cost
1949	5.17	1.54	36.00	--
1950	5.43	1.57	38.25	6.25
1951	5.60	1.58	43.74	14.35
1952	5.34	1.66	48.42	10.70
1953	5.50	1.72	48.66	0.50
1954	5.41	1.74	50.36	3.49
1955	5.51	1.73	52.11	3.47
1956	5.51	1.71	57.08	9.54
1957	4.93	1.53	70.31	23.18

Source: J. P. Martin and Sheila Williams, "The Effects of Imposing Prescription Charges," Lancet, Vol. 1 (January 3, 1959), p. 36.

The charge was changed by one shilling per prescription on December 1, 1956 and a more significant effect on expenditures was obtained. There was a drop in the number of prescriptions and the number of prescriptions per form but this was more than compensated for by a sharp rise in the price per prescription resulting in a higher expenditure for drugs by both the government and patient. About 40 per cent of the increase in prescription prices was estimated to have come from the prescribing of increased quantities of medication.[5]

The contribution by the patient toward the cost of the medication accounted for about 13.5 per cent of the

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5. Ibid., p. 38.

total expenditures for prescribed medication in England between 1952 and 1956. The higher contribution imposed by the shilling per prescription charge will increase this percentage to about 20 per cent assuming an average cost per prescription of 60 pence.

Removal of the patient charge in February 1963, which had by this time risen to 2 shillings, produced a 16.7 per cent increase in the number of prescriptions and a 19.3 per cent increase in total drug expenditures. This increase was less than expected because removal of the charge resulted in physicians prescribing smaller quantities.[6]

Summary

The patient's contribution toward some of the drug cost has been shown to be a feasible method of reducing budgetary expenses with the added advantage of not placing any restraints on the prescriber. Imposition of these charges likely will result in greater quantities being prescribed with a concomitant increase in the price per prescription. There is also a built-in flexibility in that the charge may be either raised or lowered or the charges varied for different groups. These changes can be made with little change in administrative procedures.

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6. Ministry of Health, "National Health Service in 1965," The Pharmaceutical Journal, Vol. 197, No. 5359 (July 16, 1966), p. 75.

On the other hand, the barrier of a charge will be greatest for those with the least money. Similarly, persons who require maintenance medication for prolonged periods, primarily the aged, may bear the brunt of the costs since their use of medication is considerably higher than the remainder of the population. The extent to which this will occur depends on the degree of prescribing of larger quantities.

CHAPTER VII

OUTPATIENT PHARMACIES

Outpatient departments grew slowly during the nineteenth century so that by 1900 there were only about 150 outpatient pharmacies and dispensaries. They then multiplied rapidly so that there were about 1,000 in 1921 and nearly 1,800 in 1926.[1] Davis estimates outpatient visits increasing from about 10 million in 1921 to about 35.5 million in 1935.[2] Concurrent with this growth was an improvement in the quality of care.

The persons seeking care in the outpatient clinics were provided with a full array of health services including prescribed medication. Thus at an early date pharmacy service to outpatients became an established feature of hospital pharmacy with medication being provided primarily to indigent or medically needy persons. More comprehensive provision of health care for economically disadvantaged persons, and increasing specialization in pharmacy requires that a re-evaluation of the continuation of outpatient pharmaceutical services be made. This is supported by the

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1. Michael M. Davis, "Out-Patient Service in the United States," in Administrative Medicine, edited by Haven Emerson (Thomas Nelson and Sons, New York, 1961), pp. 121-133.

2. Ibid., p. 122.

recent study sponsored by the Commission on Pharmaceutical Services to Ambulant Patients by Hospitals and Related Facilities.[3]

Factors Increasing Outpatient Services

Outpatient pharmaceutical services are provided by a major proportion of the large nonfederal, nondenominational hospitals. Turnbull and Bowles reported that in their survey of 98 hospitals with 300 to 600 beds, 87 hospitals provided outpatient prescription service (88.78 per cent).[4] Surprisingly, this service was provided beyond the normal work-day hours in about half of these hospitals. From this we can assume that a considerable number of pharmacist man hours in hospitals are spent dispensing outpatient prescriptions. It has been predicted that an ever increasing

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3. Donald C. Brodie, The Challenge to Pharmacy in Times of Change (American Pharmaceutical Association and American Society of Hospital Pharmacists, Washington, 1966).

4. Ronald T. Turnbull and Grover C. Bowles, "Current Trends in the Utilization of Hospital Pharmacy Personnel," American Journal of Hospital Pharmacy, Vol. 22, No. 11(November, 1963), pp. 597-605. The per cent of respondent hospitals with pharmacists dispensing beyond normal daylight hours is as follows: (See p. 601)

No. Beds	Per cent
300-399	50.00
400-499	26.31
500-600	52.63

proportion of the total medication dispensed in the U.S. will be flowing through these outpatient departments.[5]

The three main reasons for the trend toward increased outpatient pharmaceutical services are: (1) an increased number of physicians have their offices in or near hospitals, (2) the increased treatment of patients in hospitals as inpatients, outpatients, and emergency cases, and (3) governments at all levels have obtained control of a greater portion of hospital facilities.[6] It appears that governmental units at all levels prefer to use facilities owned by them rather than incur expenditures outside the governmental organization. Reasons for this may be: (1) to amortize more rapidly the fixed costs of the hospitals, (2) to avoid setting up the administrative machinery for controlling a vendor program, (3) lack of financial and quality controls through a vendor program, (4) lower costs, or, (5) simply a pride in their hospitals. Whatever the reason, either by legislation or administrative fiat an increasing amount of medication paid for by governmental units is being dispensed through government hospitals.

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5. "Hospitals Fastest-Growing Drug Channel," Weekly Pharmacy Reports, Vol. 14, No. 40 (October 4, 1965), Charles V. Owen of the Ames Company is quoted as saying, "outpatient loads on all services will be dramatically increased and medicines and supplies will be consumed in undreamed of quantities."

6. "Expenditures for Health and Medical Care," Progress in Health Services, Vol. 12, No. 1 (January-February, 1963), p. 3. Government, at all levels, owned 34.1 per cent of all hospitals in 1961, but this accounted for 67.6 per cent of all hospital beds.

While apparent fiscal savings from outpatient dispensing has been recommended, some other important aspects of this procedure have not been studied or even mentioned in the literature. The hospital pharmacist is a specialist in a highly technical, complex field which requires extensive knowledge in addition to that obtained in formal academic programs and community pharmacies. While much of this knowledge is acquired by working in a hospital, extensive educational programs are sponsored by societies of hospital pharmacists. Some of these training programs consist of general institutes, specialized institutes, lecture programs, regular meetings, journals, and other publications. In addition, there are formal training programs and graduate degree programs in hospital pharmacy.

Specialized training for a hospital environment is a necessity. Hospital pharmacists with this training are needed to fulfill the task of providing patients with a high quality of pharmaceutical service. These high standards must keep abreast of the rapid rate of change in the health field. New techniques, ideas and procedures must be developed, tested and implemented continually.

Advances in Hospital Pharmacy

Some areas of innovation and improvement which recently have contributed to raising the standards of patient care are noted below. It behooves hospitals to implement these advances in the interest of the patient.

While not all of the advances can be immediately translated into working procedures, some attempt should be made to implement them. The listing below is not intended to be a complete one but rather to emphasize some of the main trends. Likewise, the cited references are illustrative rather than complete bibliographies.

Hospital Technician Training

The increasing number of technical responsibilities of the hospital pharmacist has placed a strain on the amount of time the hospital pharmacist has available for routine duties. It has, therefore, been recommended that more nonprofessional help be utilized. To do this and maintain high standards it is necessary to implement a formal training program. The organization and planning of these programs is an essential procedure for larger hospitals.[7]

Pharmacists Interpreting Physicians' Orders for Drugs

The interpretation of physicians' orders is the responsibility of the pharmacist. This procedure should

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7. Ronald T. Turnbull and Grover C. Bowles, "Current Trends in the Utilization of Hospital Pharmacy Personnel," American Journal of Hospital Pharmacy, Vol. 22, No. 11 (November, 1965), pp. 596-605; and M. Pike, "A Hospital Technician Training Program," American Journal of Hospital Pharmacy, Vol. 23, No. 8 (August, 1966), pp. 402-403.

be established in every hospital.[8]

Unit Dose Dispensing

This procedure has been shown to reduce medication errors significantly and reduce the amount of nursing time spent on ordering, preparing and administering medication. The unit dose concept fosters increased patient safety and increases the amount of time available for nursing duties. In one hospital implementation of the unit dose system reduced the number of medication errors from 211 during the control period to 8 during the experimental period. During the control period the wrong dose was given 27 times while during the experimental period the wrong dose was given only 4 times.[9]

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8. Sister Mary Virginia, "Transmitting Physicians' Orders With an Automated Writing Device," American Journal of Hospital Pharmacy, Vol. 22, No. 8 (August 1965), pp. 464-467. Robert B. Williams and Kurt Keinmann, "Developing a Physicians' Order Form," American Journal of Hospital Pharmacy, Vol. 22, No. 9 (September 1965), pp. 508-511. David K. Trites and Neal Schwartau, "The Physicians' Order: Where, What and How," American Journal of Hospital Pharmacy, Vol. 24, No. 2 (February 1967), pp. 66-71. Albert B. Ripley, "Filling Prescriptions from the Patients' Chart," American Journal of Hospital Pharmacy, Vol. 22, No. 2 (February 1965), pp. 100-101.

9. Harold J. Black and William W. Tester, "Decentralized Pharmacy Operations Utilizing the Unit Dose Concept," American Journal of Hospital Pharmacy, Vol. 21, No. 8 (August 1964), pp. 344-350. Kenneth N. Barker and William M. Heller, "The Development of a Centralized Unit-Dose Dispensing System. Part I," American Journal of Hospital Pharmacy, Vol. 20, No. 11 (November, 1963), pp. 568-579; Part II, same journal, Vol. 20, No. 12 (December, 1963), pp. 612-623; Part III, Vol. 21, No. 5 (May, 1964), pp. 230-237; and Part IV, Vol. 21, No. 12 (December, 1964), pp. 609-625.

Electronic Data Processing

This has widespread application in hospital pharmacy. The specific uses of EDP in a hospital will depend upon the particular operation but hospitals of over 300 beds that have not begun to use this useful tool are lagging technologically. The overall use of computers in hospital pharmacy is described by John W. Webb.[10] More specialized uses are listed in the cited references.[11]

Drug Information Service

A drug information center is an organized method of dealing with the flood of new information, to make it available and useful to nurses, physicians, pharmacists and other health personnel. Various aspects of the problem and methods of dealing with it are presented in 9 papers published in the January, 1965 issue of the American Journal of Hospital Pharmacy, which includes extensive bibliographies.

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10. John W. Webb, "Costs, Care and the Computer," American Journal of Hospital Pharmacy, Vol. 22, No. 9 (September, 1963), pp. 516-518.

11. Fred M. Eckel and Clifton J. Latiolais, "An Effective Narcotic Control System Using Electronic Data Processing," American Journal of Hospital Pharmacy, Vol. 22, No. 9 (September, 1965), pp. 519-523; Louis J. Motta, "Integrated Drug Purchasing and Pharmaceutical Communications, Part II - Daily Perpetual Inventory Control," American Journal of Hospital Pharmacy, Vol. 22, No. 6 (June, 1965), pp. 338-339; and Herbert L. Flack, George E. Downs and Lawrence E. Lanning, "Electronic Data Processing and the Hospital Formulary," American Journal of Hospital Pharmacy, Vol. 24, No. 1 (January, 1967), pp. 4-17.

Incompatibilities

The potential danger from incompatibilities especially in intravenous solutions, has been the subject of many published reports. To overcome this danger hospital pharmacists have recommended that drugs be added to intravenous solutions only by pharmacists.[12]

Research and Education

Hospital pharmacists should take an active role in educating nurses and student nurses, medical students and interns, and the pharmacy staff. For a discussion of hospital pharmacy internship (now residency) see the April 1963 issue of the American Journal of Hospital Pharmacy. Another aspect of education is reported by John Gorrell and Dell Olszewski.[13] Research should be maintained in

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12. Charles Riffkin, "Incompatibility of Manufacturered Parenteral Products," American Journal of Hospital Pharmacy, Vol. 20, No. 1 (January, 1963), pp. 19-22; Sophann Im and Clifton J. Latiolais, "Physicochemical Incompatibilities of Parenteral Admixtures - Penicillin and Tetracyclines," American Journal of Hospital Pharmacy, Vol. 23, No. 7 (July, 1966), pp. 332-343; Jan N. Bair, "A Brief Review of Drug Compatibility and Stability Literature," American Journal of Hospital Pharmacy, Vol. 23, No. 7 (July, 1966), pp. 344-348; and Jules M. Meisler and Milton Skolaut, "Extemporaneous Sterile Compounding of Intravenous Additives," American Journal of Hospital Pharmacy, Vol. 23, No. 10 (October, 1966), pp. 557-563.

13. John Gorrell and Dell Olszewski, "The Role of the Hospital Pharmacist in the Education of Medical Interns and Residents," American Journal of Hospital Pharmacy, Vol. 23, No. 3 (March, 1966), pp. 151-155.

hospital pharmacies in the areas of administration, dispensing, bulk compounding and pharmaceutical sciences. Over the past decade the American Journal of Hospital Pharmacy has published a wide variety of research results and reflects the changes in the dynamic field of hospital pharmacy. In the Mirror to Hospital Pharmacy, a comprehensive survey of the practice of hospital pharmacy, it is recommended that hospital pharmacists expand their teaching and research role in the hospital.[14]

Factors Inhibiting Progress in Hospital Pharmacy

To ensure a high and continuing standard of pharmaceutical services for inpatients, the procedures and tasks of the pharmacy department must be upgraded continuously. Advantage should be taken of medical, technological and administrative advances in the health field in order to improve patient care. This seems evident but in fact is observed more in the breach than in the practice. What accounts for this tardy response?

Constraints other than inertia which inhibit the adoption of these procedures are finances, staff and space. Financial restraint would not appear to be a major obstacle as hospital costs have increased rapidly and money has been

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14. Don E. Francke, Clifton Latiolais, Gloria N. Francke, and Norman F. Ho, Mirror to Hospital Pharmacy (American Society of Hospital Pharmacists, Washington, D.C., 1964), pp. 133, 134.

found to pay for costs that improve service. Many procedures such as the use of EDP and technician training may actually reduce pharmacy operating costs.

More important factors are the shortage of hospital pharmacists and the lack of space in hospitals for enlarging the physical area of the hospital pharmacy. Many hospitals, particularly those with less than 300 beds, have no pharmacist. The number with an inadequate pharmacy staff is not known, but there is a serious shortage of hospital pharmacists.[15] A recent editorial reported:

> The most persistent complaint that we hear from supervising pharmacists from all sections of our country is that they do not have enough good interested registered pharmacists to carry on the day-to-day routine activities required in a modern hospital pharmacy. By necessity these people have become preoccupied with just hiring enough pharmacists to dispense the drugs on time. They have little hope of finding sufficient personnel to complete their staff requirements of disseminating adequate drug information, developing and maintaining more elaborate dispensing methods or providing the more elegant services of the pharmacy such as an IV program. These services are in many instances a pipe dream of a Utopia few of our colleagues doubt will ever be realized.[16]

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15. Joseph A. Oddis, "Institutional Pharmaceutical Service - What It Is and What It Is Not," Wisconsin Pharmacist, Vol. 35, No. 10 (October, 1966), pp. 420-422. Mr. Oddis estimates that 45 per cent of the hospitals have no pharmacist.

16. "Where Are the Boys?" (Editorial), Hospital Pharmacy, Vol. 1, No. 11 (November, 1966), p. 9.

As for lack of space, there has been a continual expansion of service areas in hospitals at the expense of patient care areas. As hospitals increase in bed capacity their proportion of space allocated to patient care diminishes. This is due to the provision of many services in large hospitals that are not available in smaller hospitals. Also contributing to the dearth of space is the expansion of some services with increasing technological change. Hence there is an inherent growth to departments like the clinical laboratory and X-ray, while new services also develop and vie for space. Therapeutic radiation, metabolic research units and hyperbaric chambers are services which have come into widespread use only in the past five years. In this competition for adequate space to expand programs, pharmacy must be able to justify its claims by proof of improved patient care.

If this is indeed the case, how does pharmacy justify the provision of outpatient prescription service? Two reasons advanced are that outpatient prescriptions are an additional source of revenue and that hospitals have an obligation to provide medication to indigent patients at reduced prices. With the advent of legislation providing medical care for the needy, hospitals are no longer required to subsidize medication for these persons. With many of the former clinic patients now able to obtain medical care that is paid for by the government one area of financial loss to hospitals can be eliminated.

Providing an outpatient service for additional revenue is now a less urgent reason than in the past with a more equitable reimbursement system in operation. This practice has been a source of irritation to community pharmacists who view it as unfair competition. Their charges of discriminatory pricing on the cost of the medication from suppliers has resulted in Congressional hearings and may cause long run financial loss through hospital prices for drugs being raised to a level approaching that of community pharmacists, or legal sanctions taken against hospitals that provide this service.[17]

Effect of Outpatient Prescription Service on Inpatient Service

In a hypothetical hospital with two employed pharmacists providing inpatient services and two providing outpatient services, the procedures of outpatient services is readily apparent. With outpatients waiting for their medication there is a greater urgency to dispense their prescriptions than to supply medication to an inanimate nursing station somewhere in the hospital. Should one of the outpatient pharmacists become ill or the number of prescriptions suddenly increase it would be logical to assume that one of the inpatient pharmacists would spend

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17. "Dingell Hearings on Mfr. Discriminations in Drug Prices to Hospitals Open "Pandora Box": Role of Whsls. Distribution, Chain Competition, et al.," Weekly Pharmacy Reports, Vol. 16, No. 15 (April 10, 1967).

part of his time helping in outpatient duties. The reverse is less likely to happen since the outpatient pharmacists must be available to dispense prescriptions immediately while many inpatient duties can be postponed. This is due to pharmacy activities consisting of two categories; direct work where there is some measurable output, and indirect work where no quantitative measure of output can be related to the amount of time needed to accomplish the task.[18] Outpatient services consist almost entirely of direct work, that of dispensing prescriptions; inpatient services are largely of the indirect category.

The cost of operating an outpatient prescription service is not wholly an economic one. Patient care is not as effective as it might otherwise have been since the hospital pharmacists may be diverted from providing care to institutional patients in order to provide a service to outpatients or to persons not associated in any way with the hospital.

Can this cost be balanced by outpatient pharmacy providing a higher standard of service to outpatients than they could receive elsewhere? Here again, there are no firm data, but inferences can be drawn from current knowledge. Some determinants might include: availability of pharmaceuticals, availability of special or experimental

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18. Karl G. Bartscht, Manuel A. Estrella and Ervin F. Rothenbuhler, "Pharmacy Staffing Methodology - A Management Tool," American Journal of Hospital Pharmacy, Vol. 22, No. 10 (October, 1965), pp. 564-569, especially p. 566.

drugs, willingness and ability to compound medication, and the social and economic cost to the patient of waiting time and transportation.

Comparison of Hospital and Community Pharmacy Services

Hospitals, in general, have an incomplete stock of pharmaceuticals for the treatment of outpatients compared to community pharmacies. Hospital pharmacies attempt to prevent duplication of branded products, and do not stock all the available dosage forms or combinations. Community pharmacists on the other hand, despite complaints of excessive inventory, do maintain these items in their pharmacies.

Hospitals do, however, stock some new and experimental drugs since these are often under investigation in the hospital. In many cases this is the sole source of the medication for the patient. While this advantage is valid these drugs account for only a very small fraction of total outpatient prescriptions.

Through use of their bulk compounding facilities hospital pharmacists are better able to prepare many complex preparations that community pharmacists do not have the material, equipment, and in some cases, skill to prepare. The decrease in the importance of these prescriptions in community pharmacy has led to a decreasing interest on the part of community pharmacists to provide them. This change has not been as marked in hospitals

and most hospitals still have an active bulk compounding program. In relation to total outpatient medication provided, again, these preparations are not significant.

Outpatient clinics are notorious for their lines of waiting patients. Unfortunately in many hospitals this is still the case and pharmacy services are no exception.[19] Community pharmacies generally provide more rapid service. In any case the patient has a choice of pharmacies and may obtain the medication from the one which provides the fastest service.

Similar to the above, is the readiness of the community pharmacist to deliver the medication to the patient. This service is not provided by the hospital and in many cases the patient is forced to travel to the hospital, thereby incurring expenses and loss of time to obtain medication. Other, even less tangible factors like pharmacist-patient relationship, also are involved.

Conclusion

There are few offsets to the threat of patient care decreasing, relatively if not actually, by hospitals emphasizing outpatient prescription services unless they first demonstrate a vigorous, continual ability to increase

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19. Direct observation and discussion with the staff at the Milwaukee County Hospital affirm that patients often wait for over an hour for their medication. Some medication is not called for by the patient after it has been prepared and this may be due, in part, to the long waiting period.

the standard of patient service through adopting new techniques and systems.

After an exhaustive examination of outpatient pharmacy services Dr. Brodie expressed the opinion that community pharmacy would not be superceded by hospital pharmacy. He was quoted as follows:

> Although the pharmacy department of the hospital has an undeniable advantage over the community pharmacy in competing for outpatient prescription patronage, it does not seem equipped to provide the level of outpatient service which the public should have.
>
> Divided windows and doors, long lines of patients, limited inventories of home use accessories, the steadily increasing demands of inpatient services, and inadequate facilities mitigate against the development of a personalized pharmaceutical service to ambulant patients by the hospital.[20]

These conclusions appear to have come from his reported findings to the Commission on Pharmaceutical Services to Ambulant Patients by Hospitals and Related Facilities where he states:

> The hospital pharmacist is burdened with the care of hospital patients and has little time to develop a personal consumer loyalty with private patients. The community pharmacist, on the other hand,

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20. "Donald Brodie Wants All Rx Men Taught To Be Patient Oriented," American Druggist, Vol. 155, No. 7 (March 27, 1967), p. 26.

> can develop a personal relationship through a high level of professional and individualized service . . .[21]

Increasing emphasis on outpatient dispensing also will inhibit the development of skills by hospital pharmacists. If they are required to spend a large part of their time dispensing outpatient medication they will lose the chance to take part in patient care in the patient treatment areas. Commissioner Goddard of the Food and Drug Administration envisions them in the following role:

> There is a clear need, it seems to me, to give some kind of official recognition to the hospital pharmacist as a special aide to the physician. For example, I could see the logic of having the pharmacist as a regular member of the team making the hospital rounds with the doctors and interns. First, such an arrangement would offer each physician a broader range of drug choice right at the elbow, in the person of the drug specialist. Second, it would give the pharmacist a better understanding of the different drugs and especially their effects . . .[22]

Outpatient prescription service, then, does not provide the patient with the best service, may contribute to decreased pharmaceutical service for the inpatient, and interferes with the professional development of the hospital pharmacist.

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21. Donald C. Brodie, The Challenge to Pharmacy in Times of Change (American Pharmaceutical Association and the American Society of Hospital Pharmacists, Washington, D.C., 1966), p. 3.

22. "ASHP Clinical Midyear Meeting," American Journal of Hospital Pharmacy, Vol. 24, No. 2 (February 1967), p. 83.

CHAPTER VIII

VENDOR PROGRAMS

The alternative of providing drugs through community pharmacies rather than institutions is not a recent one. In describing the experience of cities coping with the problem of drug costs during the 1930's one authority presented a description that sounds distinctly contemporary.

> There is also some difference of opinion between pharmacists and administrators . . . as to whether drugs should be secured from the "corner drug store" or bought in bulk and distributed by the administration. It is claimed that the latter method is cheaper but that the former "distributes tax funds more equably." Many methods have been developed to control the cost of drugs under "free choice of pharmacy" such as:
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> (1) Limiting prescriptions to the U.S. Pharmacopoeia and the National Formulary;
>
> (2) Agreement between pharmaceutical societies and administrators to payment on a "cost plus" basis;
>
> (3) Limiting the cost of a single prescription (to, for example, 50 cents).
>
> The latter method is said to defeat its purpose in some instances "because the doctor has to see the patient again just to prescribe more medicine and the doctor's extra visit costs more than it would to have prescribed more medicine in the first place." In some cities all drug orders are

> reviewed by salaried drug clerks to check the nature and amount of prescription in relation to the bill.[1]

Decisions on the method of providing medication have been made in many local communities over the past thirty years but there is little literature available on the factors actually considered in establishing the plans which eventually evolved. One may suspect that many programs simply stumbled into the world in response to a need and that no formal analysis of the various alternatives was employed.

For example, in Ontario, during the 1930's pharmacists had their claims severely prorated to the extent that they withdrew from the welfare program in 1940. Physicians then supplied welfare patients with medication from a limited list set forth by the Welfare Department.[2] In the City of Toronto up to 1961, one community pharmacist daily collected "all welfare prescription orders that had been screened by the Medical Officer of Health and proceeded to fill and deliver them."[3] In 1961 a more satisfactory plan

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1. Gertrude Sturges, "Home Medical Care," in Administrative Medicine, edited by Haven Emerson (Thomas Nelson and Sons, New York, 1941), pp. 156-157.
2. Harold Smith (letter to the editor), Canadian Pharmaceutical Journal, Vol. 85, No. 20 (October 15, 1952), p. 795.
3. Metropolitan Toronto Welfare Prescription Plan, mimeographed, no date, p. 109.

was presented by the Toronto Retail Pharmacists Association and quickly approved. It is important to note that where the choices are clearly presented among various alternatives a more rational choice can be made. This means that pharmacists and pharmaceutical organizations must carefully consider their role in the provision of medication to various segments of the population and to society as a whole.

Expenditures rose rapidly in the decade following the inception of the National Health Service in Britain. A Committee was formed in 1957 to investigate the factors contributing to this cost and to make recommendations. One part of this investigation dealt with community pharmacists and the distribution of medicines and it is worth noting their conclusions after seriously weighing the alternatives.

> A second proposal was that medicines should be distributed to patients through dispensaries at Health Centres or similar institutions. This proposal we also rejected after careful examination. The primary consideration should be to ensure a pharmaceutical service which is efficient and reliable and convenient for patients and their relatives and friends who collect the medicines. The service provided by chemist-contractors has met these requirements. The retail pharmacies belonging to chemist-contractors are, by force of ordinary economics, situated in localities convenient to the great majority of the public. If Health Centres were to take over N.H.S. dispensing, the patients or those who fetch their medicines would, in many

> instances, have to travel long distances. The alternative of small dispensaries as widely scattered as retail pharmacies would be hopelessly expensive. Furthermore, there would not be enough pharmacists available to provide an adequate pharmaceutical service. The large number of retail pharmacies is only economically possible because two thirds of their turnover is obtained from ordinary business and only one third from the National Health Service.[4]

Factors Favoring the Community Pharmacy

One reason given for hospitals maintaining outpatient prescription services is the demand for the services as a result of physicians' offices being in or near a hospital.[5] This argument appears tenuous at best. A policy of not dispensing outpatient prescriptions should be readily understood by a patient. If this demand is solely one of convenience it should be considered in both spatial and temporal dimensions.[6] Although the pharmacy is readily accessible when the patient leaves the physician's office it may not be when an additional supply of medication is required. Further, delivery of the medication is precluded.

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4. Final Report of the Committee on Cost of Prescribing (Her Majesty's Stationery Office, London, 1959), p. 85.

5. Leonard W. Kraisel, "The Changing Role of Hospital Pharmacy, Part II," Hospital Management, Vol. 103, No. 2 (February 1967), pp. 66, 69, 70, 72.

6. Robert W. Hammel and Maven J. Myers, "Patterns of Prescription Patronage," Wisconsin Pharmacist, Vol. 34, No. 6 (June 1965), pp. 224-229.

Delivery is an important service in the distribution of medication. Many patients are old or invalid and have considerable difficulty in walking. Having their medication delivered is of considerable value to them. In organized programs such as the Home Health Care Service in Minnesota, where patients are treated in their homes by physicians, nurses, physical and occupational therapists as well as receiving mobile dental care, laboratory and X-ray services, community pharmacy can play a major role since it is organized to provide this type of service.[7]

The cost of delivery service was estimated at about $0.45 in 1964 from data for a sample of 194 pharmacies.[8] These pharmacies averaged 49,926 prescriptions per year and had an average of 31 deliveries daily. Dividing the annual number of prescriptions by 365 gives an average daily count of prescriptions dispensed as 136.78. Assuming one prescription per delivery, roughly 23 per cent of the prescriptions dispensed are delivered.[9] If the daily average number of prescriptions dispensed is based on the number of working

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7. Morris Hursh and John W. Poor, "Pharmacys' Role in Implementing the Kerr-Mills Law," Minnesota Pharmacist, Vol. 19, No. 3 (December, 1964), pp. 14-15, 27-33.

8. "Delivery Service," Facts on the Operation of Prescription Pharmacies (American College of Apothecaries, Philadelphia, 1964).

9. Personal communication with community pharmacists indicates that the average number of prescriptions per delivery is in the range of one to two prescriptions.

days the proportion of delivered prescriptions would fall, in the case of a six-day work week, to about 18 per cent. Delivery expense as a per cent of operating costs averaged 3.4 per cent. This is considerably above the 0.4 per cent reported in the Lilly Digest but the percentage increases as the proportion of prescriptions to total sales increases.[10]

Assuming that 20 per cent of the prescriptions dispensed in community pharmacies are delivered to patients at a cost per delivery of $0.50, then delivery costs would average $0.10 per prescription. In any comparison of hospital and community pharmacy costs this expense should be taken into account by calculating the delivery expense for the pharmacies and removing it.

The widespread distribution of pharmacies enables medication to be readily accessible to practically all patients. This availability of medication is a service and has a cost. If the patient is required to travel by public or private conveyance just to obtain medication, this cost would be readily apparent. Recognition of this factor is clearly stated in Britain where supplementary payments, or subsidies, are paid to pharmacies dispensing less than 750 prescriptions per year and are more than 3 miles from the nearest pharmacy. The purpose of these payments is to

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10. The Lilly Digest 1965 (Eli Lilly and Company, Indianapolis, 1966), p. 5.

maintain pharmaceutical services for people in sparsely populated areas.[11]

Personal service is the keystone of community pharmacy operation. While factors like placebo effect and pharmacist-patient relationship are difficult to quantify, they do exert an effect. One psychiatrist expressed the opinion: "If the druggist conveys positive feelings . . . a person of competence, warmth and trust" the patient would be more apt to benefit from the drugs.[12] A more measurable service is the use of a patient record system.

Patient records can play an important part in ensuring the proper use of medication. Recent studies have shown that many drugs are not being used according to the directions.[13] One author recommends that the pharmacist should provide the following information to the patient:

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11. "Supplementary Payments," The Chemist and Druggist, Vol. 185, No. 4488 (February 19, 1966), pp. 167-168.

12. Don Giesy, "'Warm' Pharmacist Rx Asset," Drug News Weekly, Vol. 7, No. 13 (March 27, 1967), p. 12. The psychiatrist quoted is Dr. Karl Rickels, associate professor of psychiatry at the University of Pennsylvania and director of the psycho-pharmacology clinic at the Philadelphia General Hospital.

13. "Drug Misuse Seen Rampant Among Clinics Outpatients," Hospital Life, Vol. 1, No. 6 (January-February, 1967), p. 1; and Allen J. Brands, "Complete Directions for Prescriptions," National Capital Pharmacist, Vol. 26, No. 8 (April, 1965), pp. 8, 24-28.

1. Who the medicine is for.
2. What the medication is to be used for and its general classification.
3. The name of the medicine.
4. How to use the medicine.
5. When to use the medicine.
6. How long to use the medicine.
7. Maximum amount that may be safely taken in one day.
8. The side reactions he might expect.
9. What to avoid in activities, such as driving, working machinery, eating, drinking and other drugs.
10. Special storage and special handling of the medicine.[14]

Providing this information is time consuming and decreases the number of prescriptions that may be dispensed in a given period of time. However, it is essential that some of the above information be provided.[15] Some

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14. Ibid., p. 24.

15. There is increasing evidence that patients do not complete a full course of therapy of prescribed medication. Emphasis on the proper use of medication should be provided by the pharmacist and he should also confirm the rate of use from patient records so that discrepancies may be followed up immediately. Most of the citations listed below refer to medication dispensed to outpatients. Daniel N. Mohler, David G. Wallin, and Edward G. Dreyfus, "Studies in the Home Treatment of Streptococcal Disease," New England Journal of Medicine, Vol. 252, No. 26 (June 30, 1955), pp. 1116-1118; George R. W. N. Luntz and Raymond Austin, "New Stick Test for P.A.S. in Urine," British Medical Journal, Vol. 1 (June 4, 1960), pp. 1679-1684; Abraham B. Bergman and Richard Werner, "Failure of Children to Receive Penicillin by Mouth," New England Journal of Medicine, Vol. 268, No. 24 (June 13, 1963), pp. 1334-1338. The authors state that: "The majority of the medication prescribed did not find its way into the children's stomachs. Over half the patients for whom penicillin was prescribed for a full ten days had stopped taking the drug by the third day." D. R. C. Wilcox, R. Gillan and E. H. Hare, "Do Psychiatric Outpatients Take Their Drugs?," British Medical Journal, Vol. 2 (October 2, 1965), pp. 770-792; and Robert K. Maddock, Jr., "Patient Cooperation in Taking Medication," Journal of the American Medical Association, Vol. 199, No. 3 (January 16, 1967), pp. 137-140.

community pharmacists have implemented a patient record system and take time to check the patient's previous medication. In contrast hospital pharmacies do not appear, at least in the literature, to have any interest in establishing a patient record system. This may be due to outpatient pharmacy services being an incidental operation of the hospital pharmacy rather than the full focus of their practice as is the case in community pharmacy. To implement such a system in a hospital pharmacy would strain the remaining amount of time hospital pharmacists have to provide inpatient services.

While hospital pharmacists and their department tend to be rather homogeneous in function, attitude and ability, community pharmacists exhibit a wide range of ability, capability and quality of pharmaceutical service. The quality of service ranges from excellent in some cases to unsatisfactory in others with most between these two extremes. As a result there always will be some problems with a few pharmacists providing a low standard of service. Despite this, there appears to be a steady increase in the quality of the service rendered. One manifestation of this is the development of the American College of Apothecaries, and another is the widespread interest in maintaining a patient record system. State boards of pharmacy also are attempting to improve standards. In one state this is being accomplished by rating pharmacists that provide

services.[16] To obtain a favorable rating they must provide the following services:

1. Have a pharmacist on duty at all times the establishment is open.
2. Procedure for providing emergency pharmaceutical service when pharmacy is closed.
3. Have a waiting area with seating for prescription patrons.
4. Providing delivery service on prescriptions.
5. Providing full prescription compounding service.
6. Providing credit service on prescriptions.

Rebates to Welfare Departments for Drugs

In order to maintain the viability of the vendor system some pharmaceutical firms are providing a rebate on the cost of their products which are dispensed to welfare patients. Although the plans vary from firm to firm, Lederle Laboratories' plan is typical. They will remit to the state the price difference between the company's published price direct to the pharmacist and its published city, county, or state price.[17] Other professed advantages

16. "Ark. Board Grades Stores On Basis of 'Extra' Prescription Service," American Druggist, Vol. 155, No. 3 (January 30, 1967), pp. 22-23.

17. "3 More States Join Welfare Plan," Drug Topics, Vol. 110, No. 12 (June 13, 1966), p. 39.

to this program are that the plan " . . . places no additional administrative burden on the pharmacist, further supports the physician's all-important freedom of choice in prescribing and bolsters normal channels of distribution."[18] Some firms that have implemented similar plans are Merck, Sharp and Dohme; E. R. Squibb and Sons; Eli Lilly and Company; and Smith Kline and French; and Roche Laboratories.

These rebates can be significant in a welfare program. In California, rebates totaling about half a million dollars were received from pharmaceutical firms during the period 1960-1964.[19]

Cost of Administrative Controls

The vendor system incurs a substantial administrative cost due to the extremely large number of claims for small amounts. In any vendor program for medical services the number of claims for drugs far outnumber claims for other services. Blue Shield in California reports processing 1.5 million claims, "many for physicians fees, but the vast

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18. "Lederle's Welfare Drug Equalization Plan Offers Reimbursement to States for Differential Between Price to Direct-Buying Pharmacist and CCS List," Weekly Pharmacy Reports, Vol. 15, No. 13 (March 28, 1966). The person quoted is Dr. Robert Parker, general manager of Lederle Laboratory.

19. John E. Preston, History of Public Assistance Medical Care Drug Program As of February 1965 (Mimeographed report, Department of Social Welfare, State of California, no date).

majority of the claims were pharmacists' bills for drugs."[20] Computers are being used to handle these claims efficiently.

The experience of one fiscal intermediary with drug claims is illustrative. In July 1964, Wisconsin's Health Assistance Payments Act became effective. Claims submitted by vendors were to be handled by a fiscal intermediary who was to be paid on a work unit count. The firm that submitted the lowest bid and was accepted was the Continental Casualty Company. Their bid was $1.14 per unit of service, the unit consisting of a claim for one patient for one month submitted by one vendor.[21]

For the period January to December, 1965, inclusive, 84,794 claims for payment for drugs were submitted. These claims totalled 157,458 units of service for drug benefits of $698,557.49. The cost of the administrative controls was $1.14 for each unit of service, or $179,502.14. This is 25.70 per cent of the drug benefits.[22] The Social Security Administration estimates administrative cost as $0.25 for each $1.50 of benefits.[23] This, as a percentage, is 16.67

20. "30 States Launch Medical Assistance Laws," Medical World News, Vol. 7, No. 24 (June 24, 1966), p. 68.

21. Frank C. Zepeda, "A Report on Continental Casualty Company's Experience With the Kerr-Mills Program of Medical Assistance for the Aged in the State of Wisconsin Known Officially as the Health Assistance Payments Act," Unpublished report, January 15, 1965.

22. H.A.P. Vendor Payments Listing, August 1964-December 1965, State of Wisconsin, Department of Public Assistance, 1966.

23. Robert J. Myers, Chief Actuary, Social Security Administration, Personal communication, April 26, 1966.

per cent.

These figures also represent some claims for payment to physicians for drugs and should not be interpreted as referring solely to pharmacists' claims. Of the 1184 vendors in Wisconsin submitting claims for drugs, 14 were physicians. The number of units of service from the vendors ranged from 1 to a high of 206. This means that one vendor submitted claims for prescriptions dispensed to 206 patients during one month.

The unit of service is based on the cost of processing claims for physicians, hospitals, nursing homes, dentists, and other health practitioners. Many of these claims are complex and time consuming and tend to increase the cost of a unit of service. For a vendor plan based solely on pharmaceuticals, the administrative controls probably would be less than $1.14.

In addition to these costs for processing and paying claims, additional costs are incurred by the government in certifying eligibility and supervising the overall program. These costs for FY 64-65 were $326,865 and $11,174.39, respectively. Since they would be incurred irrespective of the benefits provided under any program they are not considered further as an administrative cost.

Intangible Benefits from Vendor System

Under the new Social Security legislation of 1966 the financially disadvantaged are to receive the same standard

of medical care as the rest of the community. No longer will minimum adequate care, with emphasis on the "minimum", be satisfactory. Dr. George F. Archambault in describing the pharmacists' responsibility stated:

> Title 18 states in no uncertain language that beneficiaries under the act are not to receive sub-standard medical care. They are to be brought onto the 'main line' or 'main track' of medical care whereby free choice of physician, hospital, nursing home and pharmacy, as now prevails in the private sector (not welfare sector) of medicine will be their right.[24]

The concept of free choice of practitioner by public assistance recipients is of recent origin and only recently has it become a legal right rather than an administrative policy.[25] It is now an established progressive social view, however, that public assistance recipients be assured the relative freedom of choice in securing medical care that is enjoyed by the self-supporting segment of society. This is clearly reflected in the Wisconsin Medical Assistance Act of 1966. Section 49.45(9) states: "Free Choice.

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24. George F. Archambault, "Health Insurance for the Aged - New Responsibilities for the Community and Hospital Pharmacists Under Title 18," a paper presented at Pharmacy Seminar Program, School of Pharmacy, University of Florida, May 3, 1966, p. 2.

25. Previous to 1966 freedom of choice was not a legal right. See Reissman v. Jelinske, 238 Wis. 462 (1941).

Any person eligible for medical assistance under ss. 49.46 and 49.47 may be entitled to use the physician, dentist, pharmacist, hospital, skilled nursing home or other provider of care which he has designated as his choice, . . ."[26] The Office for Dependents' Medical Care of the U.S. Army has adopted this concept.[27]

The community pharmacist plays a greater role in community health than simply dispensing medication. This role is recognized by the schools of pharmacy and Public Health Service as exemplified by the recent seminar on Public Health in the Curricula of Colleges of Pharmacy.[28] An attempt has been made to receive compensation for these services by the California Pharmaceutical Association. Their statement reads:

> Therefore, any reimbursement for pharmaceutical services should include many non measurable factors such as:
>
> 1. The Pharmacists' relationship with public health;
> 2. Directing of patients to other health services which many times discourages the patient from self-diagnosing and self-medication;

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26. Senate Bill 621 (State of Wisconsin), passed as the Wisconsin Medical Assistance Act in June 1966.

27. "A Guide to Pharmaceutical Services under Dependents' Medical Care Program," Illinois Pharmacist, Vol. 30, No. 11 (November 1966), pp. 616-618.

28. American Association of Colleges of Pharmacy and Public Health Service, Public Health in the Curricula of Colleges of Pharmacy (American Association of Colleges of Pharmacy, Washington, D.C., 1965), Seminar held in Washington, D.C., Feb. 28-March 3, 1965.

> 3. Traditionally, the Pharmacist is the first source for medical advice outside the home. The Pharmacy is the only place you may go without an appointment and without being charged a fee to consult with a licensed and educated person on health matters.[29]

Without becoming enmeshed in an idealogical debate, it can be said that maximum advances and services in the health field can be made by an effective co-operation of private and public sectors. Considerable gains can be made by having the government augment and improve the services provided through the private sector. The impressive record of co-operation in the past has been due to making effective use of the private sector.[30] McNerney summarized the situation by saying:

> The best fit to our culture appears to involve the participation of many institutions. In fashioning a publicly accountable, pluralistically financed mechanism for health care, we should be honest enough to get on with reform where performance is weak and practical enough to preserve what works well.[31]

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29. "California Pharmaceutical Association Statement Presented By Morris Wolfred, Ph.D. Before the Assembly Interim Committee On Ways and Means, Subcommittee on Health, Education and Welfare Services," California Pharmacy, Vol. 13, No. 7 (January, 1967), p. 16.

30. Eli Ginzberg, Dale L. Hiestand and Beatrice G. Reubens, The Pluralistic Economy (McGraw-Hill, New York, 1965), especially pp. 167-192.

31. W. J. McNerney, "The Future of Voluntary Prepayment for Health Services," New England Journal of Medicine, Vol. 273 (October 21, 1965), p. 914.

It should be kept in mind that customs, habits and traditions are also values in an economic sense and that individuality, dignity, and the individual's sense of worth are considerations which must be considered in implementing a program.

Real costs, comprising economic and social costs, should be used to measure and compare health systems as economic costs and values are but one part of the value system employed in evaluating health care.[32] Likewise, the situation of the provider of the service should be thought of from the point of view of equity. It does not seem either logical or fair for the federal government to legislate against discriminatory prices, to inform large companies that size is an earmark of monopoly power and should not be abused, and to regulate unfair competition, and at the same time use its considerable powers to compete against others. This is particularly apropos in the case of the VA Hometown program where there is price discrimination, and the influence of the government is used to force veterans' prescription orders into VA pharmacies.

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32. Alfred Marshall, Principles of Economics, eighth edition (Macmillan, London, 1964), p. 27; William K. Kapp, The Social Costs of Private Enterprise (Harvard University Press, Cambridge, 1950), pp. 8-11; and Talcott Parsons and Neil J. Smelser, Economy and Society (The Free Press, Glencoe, 1956), pp. 29-30.

CHAPTER IX

METHODOLOGY

Two important aspects of drug distribution systems are the cost of the medication and the cost of distributing the medication. These two aspects were studied to compare costs among hospitals and community pharmacies that distribute drugs financed by tax supported systems.

Introduction

The first phase of the study was a prescription survey to obtain data on selected characteristics of dispensed medication. The drugs selected for the sample were representative of all drugs prescribed and had the advantage that the use of identical drugs allowed cost comparisons.

The second phase was a cost analysis of the Veterans Administration Hospital, Wood, Wisconsin and the Milwaukee County General Hospital to determine the average cost of dispensing a prescription. This cost analysis included both direct and indirect costs. These costs could then be compared with the cost to third parties of having drugs dispensed through community pharmacies.

Selection of Drugs for the Prescription Audit

To compare the cost of drugs among the hospitals and community pharmacies, it was necessary to select drugs for

the prescription audit that were dispensed frequently from each of these sources. This restricted the number of drugs since medication dispensed from the hospitals was prescribed primarily by physicians that were associated with the hospitals and who were accustomed to dispensing from formularies which traditionally contain few drug combinations and a much more restricted number of drugs than is available to physicians in private practice.

The therapeutic classes of drugs listed in the American Druggist's Fortnightly Prescription Survey were used to obtain a representative list of drugs from the various therapeutic groups. These groups are ranked in decreasing order based on the number of prescriptions in each group during the survey period. The first 12 of these, based on the ranking as of June 25, 1965, were selected for the prescription survey.[1] The remaining 12 groups were classified as "other" because they constituted only a small proportion of the total prescriptions, 13.4 per cent, and limiting the number of sample drugs was considered more important than obtaining representative drugs from these less often prescribed groups (Table 9.1).

Individual drugs were selected for these groups from the National Prescription Audit Leading 200 Drug Products.[2]

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1. "Prescription Trends . . .," American Druggist, Vol. 152, No. 2 (July 19, 1965), p. 31.
2. Paul de Haen, "National Prescription Audit Leading 200 Drug Products Special Tabulation," Supplement - Part II, National Prescription Audit, College Edition Report (R. A. Gosselin and Company, Dedham, Mass., July 1965), pp. 1-8.

Table 9.1

COMPARISON OF SAMPLES BY THERAPEUTIC CLASS AND AMERICAN DRUGGIST SURVEY RESULTS

Rank	Therapeutic Class	Percent of Total Survey (June 25,1965)	No. of Sample Drugs	Percent of Sample Drugs
1	Anti-infections (Internal)	16.4	6	15.0
2	Sedatives, Tranquilizers	16.3	7	17.5
3	Analgesics (Internal)	7.3	4	10.0
4	Cardiovasculars	7.1	6	15.0
5	Antispasmodics	7.1	2	5.0
6	Metabolics	6.1	3	7.5
7	Dermatologics	5.4	0	0.0
8	Antiallergics	5.0	1	2.5
9	Sex Hormones	4.9	0	0.0
10	Anti-arthritics	4.2	3	7.5
11	Diuretics	4.0	3	7.5
12	Stimulants	2.8	2	5.0
	Other	13.4	3	7.5
	Total	100.0	40	100.0

Source: "Prescription Trends," op. cit., p. 31.

The selection for each group was arbitrary and was based on a knowledge of the drugs that are customarily used in hospitals as well as dispensed in community pharmacies. Consideration also was given to the fact that the medication dispensed through VA pharmacies was primarily for adult males. The specific dosage form and strength were selected in the same way and a list of 50 drugs was prepared.

In each therapeutic group two subgroups was formed. One listed drugs available from only one firm, while the

other listed drugs available from more than one firm. An attempt was made to include comparable drugs from each therapeutic group in each of the subgroups. Only oral solid dosage forms were included in the sample to help ensure uniformity in accounting for individual doses and number of days of therapy. The groups were weighted in the approximate ratio in which each therapeutic group was prescribed. Antibiotics and sedatives-tranquilizers were the most widely prescribed so more drugs of these groups were placed in each of the subgroups.

The list of 50 drugs was eventually reduced to 40 due to two causes. First the list of drugs was sent to the Milwaukee County General Hospital and the Chief Pharmacist was requested to delete any of the drugs he did not carry in stock. Six were deleted. The second cause was the results of an audit of welfare prescriptions dispensed in Dane County. A very low number of prescriptions (0-2) were recorded for some drugs in the sample so that their use in the survey was not practical. Four additional drugs were removed. The following list of 40 drugs was used in all three prescription audits.

Group I

Drugs available from one firm

Acetazolamide 250 mg. capsules (Diamox)

Chloramphenicol 250 mg. capsules U.S.P. (Chloromycetin)

Chlordiazepoxide 10 mg. capsules N.F. (Librium)

Chlorothiazide 500 mg. tablets N.F. (Diuril)

Chlorpromazine HCl 25mg. tablets U.S.P. (Thorazine)

Chlorpropamide 250 mg. tablets U.S.P. (Diabenese)

Darvon Compound[a]

Dextropropoxyphene HCl 32 mg. capsules U.S.P. (Darvon)

Guanethidine sulphate 10 mg. tablets (Ismelin)

Imipramine 25 mg. tablets N.F. (Tofranil)

Indomethacin 25 mg. capsules (Indocin)

Phenylbutazone 100 mg. tablets N.F. (Butazolidin)

Prochlorperazine 5 mg. tablets U.S.P. (Compazine)

Propantheline HBr 15 mg. tablets U.S.P. (Pro-Banthine)

Sodium Liothyronine 25 mcgm. U.S.P. (Cytomel)

Sulfamethoxazole 500 mg. tablets (Gantanol)

Thioridazine HCl 25 mg. tablets (Mellaril)

Tolbutamide 500 mg. tablets U.S.P. (Orinase)

Triamterene 100 mg. capsules (Dyrenium)

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a. Darvon Compound is the registered tradename of Eli Lilly and Company for a product containing dextropropoxyphene hydrochloride 32 mg., aspirin 227 mg., phenacetin 162 mg., and caffeine 32.4 mg.

Note: The names in parentheses are tradenames.

Group II

Drugs available from more than one firm

Aspirin 325 mg. tablets U.S.P.

Butabarbital 32 mg. tablets

Chlorpheniramine Maleate 4 mg. U.S.P.

Desipramine HCl 25 mg. tablets

Dexamethasone 0.75 mg. tablets N.F.

Digitoxin 0.1 mg. tablets U.S.P.

Digoxin 0.25 mg. tablets U.S.P.

Diphenylhydantoin sodium 100 mg. capsules U.S.P.

Donnatal[a] tablets

Erythromycin 250 mg. U.S.P.

Hydrochlorothiazide 50 mg. tablets U.S.P.

Meprobamate 400 mg. tablets N.F.

Nitroglycerin 0.4 mg. tablets U.S.P.

Penicillin G Potassium 400,000 U. tablets U.S.P.

Pentaerythritol tetranitrate 10 mg. tablets

Phenobarbital 32 mg. tablets U.S.P.

Prednisone 5 mg. U.S.P.

Reserpine 0.25 mg. tablets U.S.P.

Sulfisoxazole 500 mg. tablets U.S.P.

Tetracycline 250 mg. capsules U.S.P.

Thyroid 60 mg. tablets U.S.P.

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a. Donnatal is the registered tradename of A. H. Robins Co., Inc. for a product containing hyoscine sulfate 0.1037 mg., atropine sulfate 0.0194 mg., hyoscine hydrobromide 0.0065 mg., and phenobarbital 16 mg. While this product is produced by only one firm there are many similar products on the market. Rather than designate this combination by formula, this brand name was employed.

The selected list of drug products included 44 of the 200 most frequently prescribed drugs and drug products. Because the "top 200 drugs" consisted primarily of tradename products, 34 drug entities were represented by these 44

drugs and products.[3] In comparing the composition of the top 200 with the selected sample the main difference is in the proportion of drug combinations. These are under represented in the sample group because combinations are not customarily dispensed through outpatient facilities (Table 9.2).

Table 9.2

COMPARISON OF 200 MOST PRESCRIBED DRUGS AND SELECTED SAMPLE

	Top 200	Sample
Single entity	120	38
Combination product	80	2
Generic	10	8
Total number	200	40

The selected sample also was compared with a list of 170 basic drugs included in at least 87 per cent of the formularies of 23 hospitals.[4] The formularies were from hospitals ranging in size from 200 to 1,400 beds, with an average of 602.2 beds. If only these basic drugs which are available in oral, solid dosage form are listed, then

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3. "The 200 Most Prescribed Drugs in 1965; Mfr., Year First Marketed, Therapeutic Class," Weekly Pharmacy Reports, Vol. 15, No. 42 (October 17, 1966).

4. David Burkholder, Charles Kluesner and S. Patrick Reister, "Twenty-three Hospitals Select Core Drugs," Hospitals, Vol. 44, No. 6 (June 1966), pp. 113-116.

the sample contained 24 or about one-quarter of the 92 basic drugs.

In another comparison, the sample contained 16 of the 64 drugs administered on a given day in a convalescent center. More important, the data from the convalescent center presented the number of doses of each medication given on a particular day.[5] Of the 397 doses tabulated, sample drugs represented 129 doses. Although the sample consisted of only 25 per cent of the number of drugs, they represent 32.49, or about one-third of the administered medication.

These comparisons indicate that the sample drugs are prescribed widely for both institutionalized and non-institution patients and constitute a significant proportion of dispensed medication. An inference of representation can be made, by representing various therapeutic categories and attempting to weight these groups.

Prescription Audit

A prescription audit for the months of February, April and June 1965 was completed for Dane County (Public

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5. Bernard Mehl and Jerome Stevens, "Pharmaceutical Services for Convalescent Centers," Journal of the American Pharmaceutical Association, Vol. NS6, No. 5 (May 1966), pp. 262-265. The table from which the data were obtained contains an omission. The number of units of pentaerythritol tetranitrate 10 mg. in Table II should be 9. This figure was obtained through personal communication with Mr. Bernard Mehl, November 17, 1966.

Assistance), Milwaukee County General Hospital (Outpatient) and the Veterans Administration Regional Office, Milwaukee, Wisconsin. These months were selected because the period January through June is the only common fiscal year period for the hospitals. Since cost studies for these fiscal periods were to be done an attempt was made to select prescription data from this same period. Some data on the sample size relative to the total number of prescriptions dispensed are given in Appendix B.

Instead of using prescriptions from each of the months it was decided that using alternate months would provide suitable data and still allow for some seasonal variation. Consequently data from all the new and renewed prescription orders were recorded for these months. In the case of the Milwaukee County General Hospital (MCGH) only data from the prescription orders dispensed during the first seven days of each month were taken as a sample.

Dane County

Payments to individual vendors were examined for the period March 1965 through September 1965. No accurate estimate of the number of prescriptions dispensed under this plan is available. Copies of the original prescription orders were included with each claim for payment. It was from these copies and the recorded price that the necessary information was obtained.

Information was recorded only for the sample drugs dispensed during the test periods. The number of tablets or capsules and the total price were obtained from the copy of the order. The number of days therapy was calculated whenever possible and in the event that partial days resulted, they were increased to a full day.

Renewals were indistinguishable from original orders, hence they were included.

The prices which had been charged by pharmacists were determined from a pricing schedule which, for every ingredient* cost, gives the full price at which the pharmacist may claim reimbursement. Since the full price was known it was possible to separate the total price into two components, the ingredient cost and the dispensing cost. In Dane County the pricing schedule used was Drug Pricing Schedule I, adopted by the Dane County Department of Public Assistance in 1962.[6]

For prescriptions priced at $1.00 or lower the ingredient cost could not be ascertained by use of the pricing schedule. Ingredient costs were determined for

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*Ingredient cost and drug cost are used synonymously. The term ingredient cost is the one used in Wisconsin in claiming reimbursement for drugs provided to welfare patients.

6. Working Agreement With Pharmacies or Other Stores Providing Drugs, Medical Supplies, Equipment or Prosthetic Appliances, Dane County Department of Public Assistance (Mimeo, no date), p. 5.

these products using the wholesale prices for these products during the test period. The wholesale prices used were those listed in the Bluebook.[7] Two firms whose products were not listed in the Bluebook were Walgreen Drug Stores and the Rexall Drug Company. The appropriate prices for their products during the test period were obtained from representatives of these firms.

Milwaukee County General Hospital

Prescriptions were dispensed primarily to recipients of public assistance at MCGH's outpatient department. All persons receiving categorical aid and general assistance are eligible for medical care through Milwaukee County Institutions. Pharmaceutical services being one component of this medical care, the medication was obtained through the MCGH for all recipients, with the exception of children in foster homes.

A large number of prescriptions were dispensed daily through the outpatient pharmacy. An average of about 1,000 prescriptions are dispensed each week day. For this reason the sample selected from the months of February, April and June was taken from the first seven days of each month rather than the full month. This would give a comparable number of prescriptions to the other two audits

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7. American Druggist 1964-65 Blue Book (American Druggist, New York, 1964).

and there was no reason to believe that the prescriptions dispensed during this period were significantly different than for the rest of the month.[8]

Data for every prescription dispensed during the sample period of one week were recorded in coded form from the prescription order. Prices were not on these orders, however, and the ingredient cost had to be obtained from purchase records. The purchase price for each product was obtained on the purchase made immediately prior to the month sampled. For example, prescriptions audited for June were priced according to the May purchase prices. The dispensing cost was determined independently through a cost analysis of the pharmacy department. The information from the prescription order plus the ingredient cost, dispensing cost and total cost were entered on punched cards for processing.

Veterans Administration

The records of prescriptions dispensed in 1965 in the Veterans Administration Regional Office (VARO), Milwaukee, were filed, and when the VARO was moved in 1966 to the VA Hospital, Wood, Wisconsin, they were placed in the Outpatient Department. An attempt was made to include all prescription orders for the sample drugs originating in

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8. For the characteristics of the sample, see Appendix B, Table 1.

the months of February, April and June 1965 in the sample. Renewals were recorded on the back of some prescription orders.

In recording the data this renewal information was included if the prescription which had been renewed was dispensed during one of the test periods. This meant that no renewals, or at least very few, would be recorded for June, since the original order was in June.[9]

Information on the original ingredient cost was not available.[10] An attempt was made therefore to obtain the 1965 VA cost prices for the medication in the study and to approximate the prices eventually used.

Data for the ingredient costs used for the VA were obtained in part from the VA Hospital, Wood, Wisconsin; the VA Hospital, Madison, Wisconsin; and the Veterans Administration Marketing Center, Hines, Illinois. An attempt was made to use data from the period immediately following the test period. Some of the prices used were the prices in effect during July 1965 while others were as late as March 1966. The persons supplying the data, however, expressed confidence that there were few price changes in the intervening period and that the data were sufficiently reliable for purposes of a price comparison.

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9. See Appendix B, Table 2 for characteristics of the sample.

10. The original price lists were discarded when superseded.

For some drugs, primarily meprobamate and tetracycline, there were two prices. One for a generic drug distributed through the VA depot and the other for a popular tradename product. Drugs mailed, primarily under the Hometown Program, were primarily tradename products. The generic prices were used for the drugs issued in the hospital. This method was used as private physicians use tradename products to a greater extent and the prescription orders did not disclose the brand dispensed.

The dispensing costs for 1965 could not be determined, however, since the VA Regional Office was now transferred to the VA hospital pharmacy and records of the operating costs were not available. In order to obtain a dispensing cost, a cost analysis of the hospital was completed and the resultant data used.

One other difference in recording VA prescription information was that the zip code number was recorded for prescriptions mailed to patients. This was done to estimate mailing costs. Fourth class mail postal rates vary according to the zone to which the parcel is sent and these zones could be distinguished by the zip number.

The information from the prescription surveys was placed on punched cards. These cards were then processed for the required analyses.

Mailing Costs

A sample of 151 consecutive parcels prepared for mailing were weighed and the weight and the number of

prescriptions contained in each parcel were recorded. This sample constituted practically all the prescriptions dispensed for mailing on Wednesday, December 7, 1966, in the VA Hospital.

The postal rates were applied to these parcels and the postal charge determined. This was later adjusted to take into account the loss the Federal government sustains in distributing mail and the calculated cost of the enclosed self-addressed mailing envelope.[11] The resulting data were used to calculate the average cost to the Federal government for mailing a parcel and mailing a prescription.

These mailing costs were applied to the prescriptions that were mailed during the test period in 1965. It was assumed that the sampled weights were representative of the prescriptions mailed during the test period.

Cost Analysis

To determine the cost of dispensing medication to outpatients through outpatient pharmacies it is necessary to analyze not only the records of the Pharmacy Department, but the financial records of the whole hospital. The cost of dispensing reflects not only the direct cost of salaries and containers, but also a portion of the indirect

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11. The data used for these calculations are presented in Appendix E.

or overhead costs associated with the administration and physical environment of the Pharmacy Department.

Procedures for accomplishing this cost analysis are known as "cost finding" and have been widely used and recommended for hospitals in order to determine the cost of providing service. The Canadian Hospital Council explicitly state in their Hospital Accounting Manual, "The main reason for cost analysis is to determine the cost of supplying each unit of service as a basis for substantiating the charge made for the unit."[12] Other uses also have been claimed for cost finding procedures but these have been challenged by Hinderer and he concludes that: "The primary, and possibly, the only significant purpose of general cost-finding is to aid management in establishing rates for the services rendered by the hospital."[13]

Historical Background of Cost Analysis in Hospitals

Cost finding techniques are not new. As early as 1938, Dawson described essentially the same procedure as was used in this study.[14] The methodology used is

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12. Harold Hinderer, "Why General Cost Finding," Hospital Progress, Vol. 42 (April 1961), p. 85.

13. Ibid., p. 85.

14. William A. Dawson, "Cost Accounting in Small Hospitals," Hospitals, Vol. 12 (July 1938), pp. 95-102.

particularly apt and is as follows:

> In a hospital each department is related to all other departments. To properly allocate the cost of services rendered it is necessary to apportion the direct departmental expenses. Each department must be treated as a separate entity. That is as if operating as a separate company performing all the services itself which are performed for it by other departments. The requirement necessary to accomplish this is the application of indirect expense to the direct expense.
>
> To produce departmental and service costs two steps are necessary. We have entitled them Preliminary Apportionment and Final Apportionment. Apportionment means the allocation of the expense of each department or operating unit by the use of a related statistical base. Preliminary Apportionment is the distribution of all departmental expense. Final Apportionment is the distribution of departmental costs to patient services.
>
> Our first step is to determine the indirect expenses of each department. This is called 'Preliminary apportionment' wherein the base percentages for the apportionment of the direct expenses are established. For instance, the direct expense of the administrative offices. The base for the distribution of administrative expense is payroll. It is the employees who are supervised therefore it would seem that the payroll is the logical base. For housekeeping an areas base is used. For ordinary repairs and replacement of equipment an area or analysis base is used. For operation of plant-area; laundry and linen - pounds or pieces; stewards, dietary and foods - number of meals. All expenses incurred by other departments applies to patients.[15]

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15. Ibid., p. 96.

A few years later, in 1941, a more detailed description was presented by Dunks who stated how indirect costs should be apportioned for outpatient services.[16] After pointing out that these indirect costs comprise about one-quarter of the total operating cost and should, therefore, be carefully calculated she states:

> The bases generally used for the spreading of these indirect costs are usually square or cubic feet of occupancy for housekeeping, plant operation and general maintenance, with weighting or direct charge for special repair work; number of individuals housed, for cost of personnel quarters; relative number of pounds used, for laundry; and finally ratio of all other direct and indirect out-patient costs to total hospital costs, exclusive of administration and purchasing, for the distribution of these two overhead items.
>
> The sum of all direct and indirect expenses divided by total visits gives the cost per visit. At the Boston Dispensary last year the figure, on a volume of 165,120 visits, showed: clinics, $1.19 per visit; laboratory 13 cents; pharmacy 8 cents; X-ray department, 8 cents; and operating room, 3 cents; a total of $1.51.[17]

All costs at the Boston Free Dispensary were based on the number of outpatient visits.

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16. Abbie E. Dunks, "Out-Patient Costs and Rates," Hospitals, Vol. 15 (November 1941), pp. 30-32.

17. Ibid., p. 30.

Dispensing Costs

In order to establish a sliding scale of charges for patients at an outpatient clinic, based on their ability to pay, Clarke, in 1946, recommended as a first step, a cost analysis of the operation.[18] The costs would cover: materials, including labels and containers; labor costs; and indirect costs, including administrative costs, licenses, bondage, and breakage or loss. He also advocated taking a monthly inventory and assessing a handling cost to the medications obtained from the main pharmacy. These concepts, much in advance of their time, are only now coming into practice.

At this time there was a movement by the American Hospital Association Committee on Government Purchase of Medical Care to obtain payments for hospitals for services furnished "at 100 per cent of actual average cost."[19] The difference between the cost of providing patient care and the reimbursement rate was apparently sufficiently wide at this time that the Michigan Hospital Service (Blue Cross) was threatened by the hospitals withdrawing from the plan.[20]

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18. Donald A. Clarke, "Medications for Outpatients: II - Accounting and Legal Requirements," Hospitals, Vol. 20, No. 10 (October 1946), pp. 60-66.

19. "New Cost Formula Proposals," Hospitals, Vol. 20, No. 10 (October 1946), p. 108.

20. "Michigan Hospital Services Faces Withdrawal Threat," Hospitals, Vol. 20, No. 2 (February 1946), p. 108.

In the 1960's, there was a revival of attempts to measure dispensing costs in order to rationalize and justify charges for medication. A study of pricing procedures in Indiana hospitals in 1965 showed a definite lack of uniformity in pricing procedures and the prices varied widely despite the fairly constant cost of the medication.[21] The trend toward pricing based on a professional fee has meant that hospital pharmacists must now determine what it costs them to dispense medication in order to establish a fee. Methods of carrying out these costing procedures and the need for them have been reported with increasing frequency in the literature.[22]

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21. Thomas Frederick Dennison, "A Survey of Pricing Procedures in Indiana Hospital Pharmacies," Unpublished M.S. thesis, Purdue University, 1965.

22. S. B. Jeffries, "A New Approach to Costing and Pricing Prescriptions in the Hospital Pharmacy," Bulletin of the American Society of Hospital Pharmacists, Vol. 11 (November-December 1954), pp. 455-459; Charles J. Hartlieb, Herbert L. Flack and Robert E. Abrams, "A Rational Method of Prescription Pricing . . . the Professional Fee Concept," Journal of the American Pharmaceutical Association (Practical Pharmacy Edition), Vol. 21, No. 11 (November 1960), pp. 696-699; Kenneth N. Barker and Warren E. McConnell, "A Cost Accounting System and Pricing Schedule for Hospital Pharmacy," American Journal of Hospital Pharmacy, Vol. 18, No. 5 (May 1961), pp. 283-293; Joseph A. Oddis, "Hospital Pharmacy and the Professional Fee," Journal of the American Pharmaceutical Association, Vol. NS2, No. 9 (September 1962), p. 529; H. F. Kabat and F. C. Hammerness, "Prescription Charges in Colorado Hospitals," American Journal of Hospital Pharmacy, Vol. 20, No. 5 (May 1963), pp. 247-252; John A. Oliver and Lowell W. Smith, "An Equitable System of Charging for Medication and Supplies," Hospitals, Vol. 37 (December 16, 1963), pp. 92-96; Don E. Francke, Editorial: "Professional Fees for

The "break-even" cost is the sum of the ingredient costs plus the dispensing cost, including both direct and indirect costs, divided by the number of units of service.[23] To this, a profit is sometimes added.[24] For

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22. (Cont.)
Pharmaceutical Services," American Journal of Hospital Pharmacy, Vol. 23, No. 4 (April 1966), p. 171; George F. Archambault, "Application of the Professional Fee Concept to Government Insurance and Funding Programs," American Journal of Hospital Pharmacy, Vol. 23, No. 9 (September 1966), pp. 496-497; Donald C. Brodie, "A Review of the Philosophy and Methodology of the Professional Fee Concept," loc. cit., pp. 488-492; John L. Butler and Paul F. Parker, "Experiences with the Professional Fee System in Hospital Pharmacy Practice at the University of Kentucky Medical Center," loc. cit., pp. 516-518; William M. Heller, "Experiences with the Professional Fee System in Hospital Pharmacy Practice at the University of Arkansas Medical Center," loc. cit., pp. 513-516; Minoru Kashio, "Experiences with the Professional Fee System in Hospital Pharmacy Practice at the Palo Alto-Sanford Hospital Center," loc. cit., pp. 518-519; Clifton J. Latiolais, "Experiences with the Professional Fee System in Hospital Pharmacy Practice at the Ohio State University Hospitals," loc. cit., pp. 511-513; George H. Pennebaker, "Experiences with the Professional Fee System in Hospital Pharmacy Practice at Alta Bates Community Hospital, Berkeley, California," loc. cit., pp. 524-525; Robert J. Petrick and Clifton J. Latiolais, "Applicability of the Professional Fee Concept to Hospital Pharmacy," loc. cit., pp. 500-509; Sister Mary Vera Rourke, "Experiences with the Professional Fee System in Hospital Pharmacy Practice at Mercy Hospital, Buffalo," loc. cit., pp. 520-522; and Martin S. Ulan, "Experiences with the Professional Fee System in Hospital Pharmacy Practice at the Hackensack Hospital," loc. cit., pp. 522-524.

23. Sister M. Berenice, "What Governs Pharmacy Charges?," Hospital Progress, Vol. 41, No. 4 (April 1960), pp. 100-101.

24. George P. Provost and William M. Heller, "How Break-Even Pricing of Drugs Works," Modern Hospital, Vol. 94, No. 5 (May 1960), pp. 122-126.

purposes of this study the cost of dispensing, aside from any profit, was the amount calculated.

The current need for determining the costs of dispensing is due to third parties insisting that they will pay only the costs incurred in providing individual patient treatment. The main factor in this reappraisal of costing methods was the implementation of the Medicare Act, Title XVIII of the Social Security Act. The costing procedure demanded by the Federal government takes into account both the direct and indirect costs of providing services to the beneficiary but specifically rejects the use of average per diem charges.[25] The suggested cost procedures are in keeping with those recommended by the American Hospital Association.[26]

Drug charges under Medicare are discussed by Hinderer and Nelson.[27] Nelson's statement that the unit of service for pharmacy should be dollar sales rather than

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25. Thomas E. Riggs, "Will Smaller Hospital Accounting Adequately Account to Medicare?," Hospitals, Vol. 40, No. 11 (June 1, 1966), pp. 80-92; and "Medicare Principles of Reimbursement Don't Apply to Drugs," P.M.A. Newsletter, Vol. 8, No. 18 (May 6, 1966), p. 1.

26. Cost Finding for Hospitals (American Hospital Association, Chicago, 1957).

27. Harold Hinderer, "Medicare and the Crystal Ball," Hospital Accounting, Vol. 20, No. 6 (June 1966), pp. 3-4; and Benjamin O. Nelson, "Medicare and Statistics," Hospital Accounting, Vol. 20, No. 6 (June 1966), p. 20.

number of prescriptions, is untenable and shows a misunderstanding of hospital pharmacy terminology. He states:

"Some hospitals count prescriptions. This is not reliable since a doctor may order several drugs on one prescription and the next doctor may write a separate prescription for each drug."[28] Thus he defines the term prescription as a prescription order rather than the medication dispensed pursuant to a prescription order.

Detailed descriptions of cost accounting or, more properly, cost finding for hospital pharmacy are provided by Gottschalk, Kabat, Jeffries, Petrick, and Barker and McConnell.[29] Of these, however, only Petrick establishes

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28. Ibid., p. 20.

29. Carl A. Gottschalk, "California's New Cost Analysis Program," Hospital Forum, Vol. 6, No. 12 (March 1964), pp. 17-19; Francis Hugh Kabat, A Study of Prescription Charges in Colorado Hospitals, Unpublished Ph.D. dissertation, University of Colorado, 1961; S. B. Jeffries, "A New Approach to Costing and Pricing Prescriptions in the Hospital Pharmacy," Bulletin of the American Society of Hospital Pharmacists, Vol. 11 (November-December 1954), pp. 455-459; Robert Joseph Petrick, Applicability of the Professional Fee Concept to Hospital Pharmacy, Unpublished M.Sc. thesis, The Ohio State University, 1965; and Kenneth N. Barker and Warren E. McConnell, "A Cost Accounting System and Pricing Schedule for Hospital Pharmacy," American Journal of Hospital Pharmacy, Vol. 18, No. 5 (May 1961), pp. 283-293.

a cost for dispensing an outpatient prescription.

The procedure employed in this study follows the general guide recommended by the American Hospital Association although modifications are employed due to the specialized nature of the cost finding problem. This is in keeping with the admonition of Stine that, ". . . cost finding can be difficult and deceiving. Recognizing, isolating and defining many of the so-called 'hidden costs' usually requires more knowledge of the activity than of accounting."[30]

Hospital Criteria for the Cost Analysis

Accurate cost finding procedures can be accomplished only where the cost center to which costs are allocated is clearly defined and the accounts for the cost center are sufficiently detailed. In terms of hospital pharmacy this meant that the outpatient dispensing would have to be sufficiently large that pharmacists were employed in it on a full time basis, and that there would be a separate account for outpatient pharmacy expenses. Both the Milwaukee County General Hospital and the Veterans Administration Hospital, Wood, Wisconsin, meet these criteria.

Milwaukee County General Hospital is one component of Milwaukee County Institutions. It was built in 1954 and

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30. H. I. Stine, "How to Compute Outpatient Department Costs," Hospitals, Vol. 32 (March 1, 1958), p. 102.

has a capacity of 650 patients. There is an active Outpatient Department which provides care to about 45,000 persons. Those outpatients require about 300,000 prescriptions a year almost all of which were dispensed through the outpatient pharmacy.

The Veterans Administration Hospital at Wood, in Milwaukee County, is a 1264 bed hospital. This hospital was completed in 1966 and has a large Outpatient Department, During FY 1966, 63,511 outpatient visits were made and about 175,000 outpatient prescriptions were dispensed. The Veterans Administration Regional Office is located in the hospital and medication is provided through the hospital, by mail, to recipients of aid and assistance (about 2000 veterans in 1967) and to veterans receiving benefits under the Hometown Program (about 3600 veterans in 1966 and 1967). The Regional Office provides services primarily to veterans residing in Wisconsin.

Background of Hypotheses

Both in Britain and the United States, claims have been made that dispensing medication through an outpatient pharmacy is less costly than having it dispensed through community pharmacies under the vendor system.[31] In addition

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31. "Rx Men Offered 22¢ Fee for Welfare Rxs," American Druggist, Vol. 154, No. 13 (December 19, 1966), p. 23. This article is subtitled "Arizona County Officials tell state assn that's all it costs county hospital to fill them," and "The Cost of Pharmaceutical Services - Auditor-General Comments on 1962-1963 Accounts," The Pharmaceutical Journal, Vol. 192, No. 5232 (February 8, 1964), p. 121.

the General Accounting Office (GAO) has recommended on two separate occasions that hospitals (or outpatient clinics) be used rather than community pharmacies.[32] These recommendations were directed toward dispensing under the VA Hometown Program in the first instance and to welfare patients in the second. In regard to welfare patients the report states: "On the basis of our review, we believe it possible to effect savings in such costs for the Federal Government and the State of Pennsylvania through increased use of hospital pharmacies in the dispensing of the drugs."[33] Only in the case of Veterans Administration pharmacies, however, was an attempt made to determine the cost of dispensing and the study examined only the variable costs (those resulting from imposing additional prescriptions on the previous workload) associated with dispensing medication.

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32. The Comptroller General of the United States, Need for More Effective Management Action to Reduce Costs by Filling Private Physicians' Prescriptions in Veterans Administration Pharmacies, a Report to the Congress of the United States (August 1963). Hereafter referred to as Comptroller General's VA Report; and United States General Accounting Office, Report on Review of Federal Financial Participation in the Costs of Drugs Dispensed to Hospital Outpatient Welfare Recipients in the State of Pennsylvania (June 1966).

33. U.S. GAO, Report or Review of Federal Financial Participation in the Costs of Drugs Dispensed to Hospital Outpatient Welfare Recipients in the State of Pennsylvania, p. 1.

Petrick calculated the average cost of dispensing at $0.59 per outpatient prescription. The components of this cost were: overhead, $0.26; labor, $0.30; and container, $0.03.[34] The University of Pennsylvania Hospital has established the cost of dispensing an outpatient prescription as $0.75.[35] Salary cost is reported as $0.54, containers and supplies $0.06, and other variable costs $0.15. No provision was made for fixed costs. The results of the VA study for 15 hospitals, averaged $0.55 for labor costs and $0.24 for other costs, such as administrative, packaging, and mailing costs.[36] It should be noted here, however, that the VA costs were calculated on the basis of additional prescriptions dispensed from existing facilities and include only additional direct costs. In economic terms the calculated costs are marginal costs while Petrick has calculated average costs. The marginal costs will be lower than the calculated average costs since an outpatient pharmacy can be considered a declining cost operation.

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34. Robert Joseph Petrick, "Applicability of the Professional Fee Concept to Hospital Pharmacy," Unpublished M.Sc. thesis, Ohio State University, 1965, p. 24.

35. Anthony Sorrentino, Pharmacist Supervisor, Pharmacy-Supply Service, University of Pennsylvania Hospital. Personal communication, March 29, 1967.

36. A. T. Samuelson, United States General Accounting Office, Washington, D.C. Personal communication, January 19, 1967.

One can consider it to be a declining cost operation because with more prescriptions dispensed there can be greater division of labor, more efficiency can be obtained through the use of equipment, the ratio of nonprofessional persons can be increased since more jobs can be made routine and supplies can be obtained at a lower price through purchasing larger quantities. While the availability of physical space is a constraint on these economies the lowest dispensing costs would be expected in hospitals which dispense a large number of outpatient prescriptions. The use of this type of hospital in a study would provide a measure of the efficiency of dispensing outpatient prescriptions.

The decline in the mean cost of dispensing a prescription as the number of prescriptions increase also has been shown by Kabat.[37] He further showed that the ratio of direct to overhead costs changes with the bed size of the hospital (Table 9.3). His findings, although for inpatient prescriptions, are pertinent. Unfortunately both Petrick and Kabat use overhead costs supplied by hospital administrators without discussing their composition or analyzing their validity. This makes direct comparisons with other hospital data more difficult and reduces the reliability of the estimates.

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37. Hugh Francis Kabat, "A Study of Prescription Charges in Colorado Hospitals," Unpublished Ph.D. dissertation, University of Colorado, 1961, p. 93.

Table 9.3

DIRECT AND OVERHEAD DISPENSING COSTS FOR VARIOUS HOSPITAL BED CAPACITIES

Bed Capacity	Direct Costs	Overhead	Total Dispensing Cost
90	$0.54	$0.53	$1.03
210	0.42	0.57	0.99
450	0.18	0.61	0.79

It can be shown that the overhead costs per bed will increase as the hospital size increases.[38] High overhead costs in large hospitals are due in part to a proliferation of auxiliary services which accompany increasing bed size. This is particularly true where research and educational facilities are established in the hospital. Even with allocating a full share of overhead costs to the pharmacy, however, the cost of dispensing per prescription should decline.

There is some controversy whether drugs can be distributed at a lower cost through hospitals than through community pharmacies. In London, Ontario, community pharmacists convinced the city that they could provide

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38. The overhead costs components: Administration and General, Housekeeping, and Operation and Maintenance of Plant, all increase on a per bed basis. Hospital Administrative Services, Special Comparison National Size Groups Special Six Month Comparative Report - 767 Hospitals for Period Ending June 30, 1965 (American Hospital Association, Chicago, 1965), p. 1.

prescribed drugs to welfare patients at a lower cost than they could be provided through a hospital.[39] More recently, members of a county pharmaceutical association in Florida have implemented an experimental welfare drug program that is to last six months in order to determine if it is less expensive to provide drugs at the pharmacists' cost plus a dispensing fee of $1.10, or to dispense them through a government-owned pharmacy.[40] Community pharmacists in Brooklyn have convinced the City of New York that they can supply nursing home patients with pharmaceuticals more satisfactorily than they can be provided through a Brooklyn hospital.[41] Another factor which might be considered in reference to hospitals is that: "Every hospital is uneconomical as viewed from the industrial stand point in terms of utilization of personnel, plant, equipment and supplies."[42]

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39. "Ontario Rx Men Win Fight To Fill Welfare Rxs," American Druggist, Vol. 152, No. 2 (July 19, 1965), p. 18.

40. "County PhA Plan Aims At Welfare Rx Takeover," Drug News Weekly, Vol. 7, No. 3 (January 16, 1967), p. 7.

41. "N.Y.C. Drops Hospital - To - Homes Rx Plan," American Druggist, Vol. 153, No. 4 (February 14, 1966), p. 29.

42. Sidney S. Lee and Lawrence E. Martin, "Medical Care: Its Social and Organizational Aspects: The Voluntary Teaching Hospital - Some Problems of Administration and Finance," New England Journal of Medicine, Vol. 269, No. 7 (August 15, 1963), p. 345.

Another important factor in dispensing medication to welfare and medically indigent patients through hospitals is that these hospitals often have an organized Outpatient Department through which medical services are provided to these persons at little or no cost. Some counties operate a large hospital, such as the Milwaukee County General Hospital, where Outpatient Department provides full medical services to persons on welfare, medication being only one facet of this care. Data submitted to the American Hospital Association annual survey on hospitals of 400 beds and over, owned by state and local governments showed that all the hospitals had organized outpatient departments and pharmacy departments with pharmacists.[43] While there is no information on whether prescriptions are dispensed to outpatients it would seem likely that this is done in a majority of the cases. Of the Federal hospitals included in the study, 94.33 per cent had outpatient departments. The Veterans Administration had outpatient departments in 86.84 per cent of its hospitals.

There is a dearth of information on the economic status of patients obtaining outpatient prescriptions although a 1957 study reported that 48 per cent of the

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43. "The Nation's Hospitals: A Statistical Profile," Hospitals, Vol. 40, No. 15 (August 1, 1966), p. 428.

prescriptions dispensed were for indigent or partially indigent patients and another 20 per cent of the prescriptions were for "others", a category which consisted primarily of federal government-supported patients.[44] Hence, about two-thirds of the prescriptions were paid for in whole or part by third parties.

Trends in dispensing to outpatients also are significant. During the period 1962-1965 outpatient prescriptions increased 52.8 per cent, while the number of prescriptions dispensed through community pharmacies increased only 18.6 per cent. During the same period the percentage of federal, state and local government hospitals at which outpatient prescriptions were dispensed, increased from 56.3 per cent to 59.1 per cent.[45]

Hypotheses

The hypotheses use the terms drug cost and distribution cost. These were the two costs measured in the study. The drug cost was the price paid for the drug by the Milwaukee County General Hospital and, for community pharmacists, the price obtained from the pricing schedule.

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44. Don E. Francke, Clifton Latiolais, Gloria N. Francke and Norman F. Ho, Mirror to Hospital Pharmacy (American Society of Hospital Pharmacists, Washington, 1964), p. 118.

45. "Hospital Outpatients Rxs Up 16% in Year, Vs A 6% Gain for Retail Pharmacies," American Druggist, Vol. 152, No. 12 (June 6, 1966), p. 11.

For drugs obtained through the VA system, the marketing costs are calculated, added to the drug cost, and charged to the VA hospitals.

Distribution cost for community pharmacies was obtained from the pricing schedule. It is the cost paid by the third party and is not a direct measure of the actual cost of distributing drugs. For the hospitals, distribution cost was the average cost of dispensing a prescription as calculated by the cost finding procedure. This average cost included both direct costs, including salaries and supplies, and indirect costs, including overhead, administration and inventory holding costs.

The hypotheses are:

1. The cost of distributing drugs through outpatient pharmacies of large* hospitals is less than one-half the cost of distributing drugs through community pharmacies. This distribution cost does not include the cost of the medication or any adjustment for the quantity dispensed.
2. The cost of the drugs distributed through the county hospital is less than one-half the cost of the same drugs distributed through community pharmacies. Quantity dispensed and prescription mix are made identical for this comparison.

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*Large hospitals refers to hospitals of 500 beds and over.

Reasons for Selecting the Hypotheses

The cost of distributing drugs through community pharmacies, considering all costs other than the cost of the ingredients, is reflected in the professional fee. A study of 21 Rhode Island pharmacies in 1962 showed that the prices currently charged would be comparable to fees ranging from $0.87 to $1.73.[46] The professional fee for dispensing prescriptions to welfare patients, through community pharmacies, in North Carolina is $1.75 and pharmacists in Georgia are seeking the same remuneration.[47] A comprehensive study by Colonel Ralph D. Arnold of the Office for Dependents' Medical Care, U.S. Army, resulted in establishing a series of dispensing fees. These fees ranged from $1.65 to $2.30 for the various states and Puerto Rico.[48] They are higher than the fees received in some states for welfare prescriptions in August 1966.[49] A

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46. Michael D. Jacoff, "Professional Fee Evaluation," Journal of the American Pharmaceutical Association, Vol. NS3, No. 11 (November, 1963), p. 565.

47. "Adoption of Professional Fee for Welfare Patients Could Spread to All Rxs," Weekly Pharmacy Reports, Vol. 14, No. 42 (October 18, 1965); and "Welfare Rx Plan Not Tied to Generics," American Druggist, Vol. 153, No. 13 (June 20, 1966), p. 18.

48. "Military Medicare Professional Fee Schedule," Weekly Pharmacy Reports, Vol. 16, No. 6 (February 6, 1967).

49. George F. Archambault, "Application of the Professional Fee Concept to Government Insurance and Funding Programs," American Journal of Hospital Pharmacy, Vol. 23, No. 9 (September 1966), p. 497.

comparison for those states that had a professional fee with no additional markup is shown in Table 9.4.

Table 9.4

COMPARISON OF PROFESSIONAL FEES IN WELFARE PROGRAMS AND MILITARY MEDICARE

State	Welfare Fee	Military Fee
Colorado	$1.40	$1.75
Delaware	1.50	1.65
Georgia	1.65	1.65
Illinois	1.00	1.75
Kentucky	1.20	1.65
Massachusetts	1.00	1.70
Mississippi	1.00	1.65
New Jersey	1.50	1.70
North Carolina	1.75	1.75
Oregon	0.85	2.00
Rhode Island	1.30	1.70
Tennessee	1.20	1.65

The hospital's dispensing cost as shown by Petrick of $0.59,[50] and the University of Pennsylvania's cost of $0.75[51] are low in comparison to the community pharmacy fees. From these data one may conclude that the hospital cost is likely to be lower and an estimate of less than half the community pharmacies' cost appears reasonable.

The cost of drugs supplied to hospitals including city, county and state hospitals, traditionally has been lower than their cost to community pharmacists. Some of the

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50. Robert Petrick, op. cit., p. 24.

51. Anthony Sorrentino, op. cit.

reasons given for this favorable difference in the price to hospitals are that: purchases are for greater quantities, often in bulk containers; the bid system of purchasing is often used; manufacturers consider hospitals to be charitable, non-profit organizations; and use of their products in hospitals has prestige and educational value.[52] Five business reasons given are: (1) high volume per account and one point shipping; (2) fast utilization of special package priced at a discount; (3) competition with other companies; (4) protection from hospital manufacturing of certain items; and (5) impact of hospital formularies.[53]

The price differential between pharmaceuticals supplied to hospitals and community pharmacies is a source of increasing irritation to community pharmacists.[54] Their

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52. Donald C. Brodie, The Challenge to Pharmacy in Times of Change (American Pharmaceutical Association and American Society of Hospital Pharmacists, Washington, D.C., 1966), p. 21.

53. "Drug Chains Received Better Discounts," Weekly Pharmacy Reports, Vol. 14, No. 44 (November 1, 1965).

54. See, for example, "Preferential Drug Prices to Hospitals and Professional-fee Rx Pricing Raised as Sharp Issues Before PMA Convention by APhA President Bowles," Weekly Pharmacy Reports, Vol. 15, No. 15 (April 11, 1966); "89% Voice Concern Over Drug Manufacturers' Pricing Procedures," Drug Topics, Vol. 111, No. 5 (March 6, 1967), pp. 18, 20; "We Get Letters," The Voice of the Pharmacist, Vol. 10, No. 14 (January 3, 1967); "Policy Consensus . . . Resolutions 1966," Journal of the American Pharmaceutical Association, Vol. NS6, No. 6 (June 1966), p. 293; especially the Committee on Professional Relations which recommended ". . . that manufacturers whose pricing structures are discriminatory study these structures with reference to the continuing problem of drug diversion"; "C.Ph.A. Resolutions," Canadian Pharmaceutical Journal, Vol. 98, No. 9 (September 1965), p. 344. The resolution states in part, ". . . to continue to impress upon the pharmaceutical manufacturers the urgency of an end to this highly discriminatory practice."

irritation arises primarily from the drugs being sold at a lower price to hospitals and the hospitals dispensing them through outpatient facilities in competition with the community pharmacies. It has been alleged that this practice violates the Robinson-Patman Act and this is currently (April, 1967) being investigated by the Small Business Subcommittee of the House of Representatives. One member of the Committee was quoted as stating:

> Complaints have been received from independent druggists from a number of areas throughout the country. These small businessmen inform us that the R-P Act is being violated, that other antitrust violations are occurring, and that below cost sales used as price leaders are causing them serious damage.[55]

In California, an antitrust suit has been brought against Ciba in the name of Alamedo County and the Contra Costa Pharmaceutical Associations and 18 independent pharmacies for triple damages resulting from discriminatory pricing.[56] An extension of hospital prices on Esidrix to dispensing physicians, clinics and profit hospitals apparently triggered this action. This suit will be an important test case for pharmacists and manufacturers.

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55. "R-P Hearings on Drug Pricing by House Subcmte," Weekly Pharmacy Reports, Vol. 16, No. 13 (March 27, 1967).

56. "Triple Damages of $1.5 Mil. Sought by Calif. Pharmacists in Suit Against Ciba Based on Esidrix Free Goods Deal to Profit Making Hospitals, Clinics, MDs," Weekly Pharmacy Reports, Vol. 16, No. 1 (January 1, 1967).

Discriminatory pricing of drugs has resulted in drug diversion.[57] Goods shipped to hospitals at hospital prices are being diverted to community pharmacies. While this may be done to increase revenue for the hospital, it also may be practiced by pharmacists for personal gain.[58] Abuses of this type are difficult to regulate and will continue to exist as long as the wide differences in prices prevail. There are some changes occurring, however, which may portend an alleviation of this problem. A significant development is the move by Roche Laboratories to reduce the price spread between the prices paid by hospitals and community pharmacists.[59]

Discriminatory pricing to government agencies also has been attacked by pharmacists. The Executive Secretary of the New Jersey Pharmaceutical Association, Alvin N. Geser, claims that:

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57. "Asks National Conference on 'Diversion'," American Druggist, Vol. 147, No. 7 (April 1, 1963), p. 20.

58. "Private Detection and Police Figure in Ohio 'Diversion' Case," American Druggist, Vol. 152, No. 10 (November 8, 1965), p. 16.

59. "Roche Moves to close gap between community and hospital pharmacies; puts both on same prices, except for 5,000 - quantity to non-profit hospitals," FDC Reports, Vol. 28, No. 27 (July 4, 1966), p. 9.

> The pharmacist and his patron are being forced to pay prices for drugs which has led to the belief of profiteering on the part of the investigators and the public. The hometown V.A. program was in part lost to pharmacy because of the enormous price differential which the government paid for our drugs at our price versus the same drugs at their price.
>
> Now with the coming of Medicare and generally expanded semi-welfare programs the pharmacist will again find himself being compared on a price basis with government suppliers at government prices.[60]

Much of the argument for dispensing prescriptions through hospitals' outpatient pharmacies has been based on the fact that those hospitals are able to obtain their medication at a lower cost. The extent to which these costs are lower, although known for individual products, is not known for a typical product mix. This research attempts to provide some estimate of this price difference. Since some of the drugs are obtained at prices less than one-half the price that a community pharmacist would have to pay and others are obtained at special hospital prices, it was hypothesized that the price for the entire product mix would be less than one-half the community pharmacist's price. This price difference would be compared for the same quantities and prescription mix.

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60. Alvin N. Geser, "Manufacturer Price Policies," in From the Secretary's Desk, New Jersey Journal of Pharmacy, Vol. 38, No. 10 (October 1965), p. 22.

Limitations

The methodological limitations of the study are described below. It is necessary to weigh these factors before evaluating the results or applying them to a similar fact situation.

Prescription Survey

The basic assumption underlying the prescription survey is that the drugs sampled are representative of the drugs dispensed during the test period. While an attempt was made to make the sample representative, it emphasizes popular products and has a lower proportion of combination products than would be dispensed through community pharmacies. The sample is probably more representative of institutions, therefore, than of community practice. This problem would appear to be insurmountable in the comparison of identical products for institutions and community pharmacies. The advantage of being able to compare directly the cost of identical drugs in each system outweighs the lack of representation of combination products and infrequently prescribed drugs.

The cost of the drugs dispensed by the VA during the test period were not the actual prices paid by the Regional Office but were the costs for the immediately following months. Since there were few price changes during this period, and the changes were small, the accuracy was not considered to be affected significantly.

The costs of distribution imputed to the community pharmacies were not the actual costs of distributing the drugs, but the cost to the third party of having the drugs dispensed through the participating pharmacies. This cost was determined from the pricing schedule used to calculate claims for reimbursement.

Cost Analyses

The cost analysis of the VA Hospital has two main limitations. First, the analysis was based on the direct costs allocated to departments and does not include indirect costs of a contractual nature, and second, the cost calculated is for a time period other than the test period and an institution other than the place where the prescriptions actually were dispensed. The first limitation seriously underestimates the indirect costs of the pharmacy but these costs do not comprise a major portion of the expense and the final effect on the accuracy of the calculated dispensing cost, is unlikely to be large.

The second limitation is more serious. With the transfer of the VA Regional Office dispensing function to the VA Hospital the original cost data were unavailable. To determine a dispensing cost for the VA it was necessary to perform a cost analysis on the VA Hospital. This was accomplished for the fiscal year (FY) 1966. Since this time period was unrepresentative due to changes in the location and functions of the pharmacy, the analysis was

repeated for the immediately following period, the first six months of FY 1967. The cost determined for the latter period provides a quantification of VA dispensing costs. While the VA and MCGH results are not directly comparable due to the time discrepancy, the use of a closely similar methodology allow some general conclusions to be made.

No attempt was made to include any of the costs of the VA system outside the hospital in the administrative overhead cost. The reason for this was that the proportion of the expenditures allocated to pharmacy would be small and that allocable to each prescription miniscule.

The final major limitation is the fact that the dispensing costs for the two hospitals and the community pharmacies cannot be compared since they represent differing services. Some consequences of this limitation are discussed in Chapter XIV.

CHAPTER X

COST ANALYSIS - MILWAUKEE COUNTY GENERAL HOSPITAL

Milwaukee County Institutions follow the Uniform Chart of Accounts and Definitions[1] recommended and published by the American Hospital Association and allocate costs to departments and hospital units using the "step-down" method described in Cost Finding for Hospitals.[2] These data are published annually and provide the basis of this cost analysis.[3] It was necessary to supplement this, however, as the salary allocations to the various components of the Pharmacy Department were no longer an accurate reflection of the staffing pattern of these areas. The salaries were obtained for each job classification[4] and then placed in the proper account. The operating statement for December

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1. Uniform Chart of Accounts and Definitions for Hospitals (American Hospital Association, Chicago, 1959).

2. Cost Finding for Hospitals (American Hospital Association, Chicago, 1957).

3. Annual Report of Milwaukee County Institutions and Departments for the Year Ending December 31, 1965 (Board of Public Welfare, Milwaukee, 1966).

4. County of Milwaukee, Civil Service Law, Civil Service Rules, Salary and Classification Standardization Ordinance, December 26, 1965 (County Board of Supervisors and the County Civil Service Commission, Milwaukee, 1965).

was used to obtain the cost of benefits other than salaries.[5]

The step-down cost accounting[6] procedure, allocates to the Pharmacy Department the direct costs of Salaries and Wages, Drugs and Pharmaceuticals, Purchased Services, and Miscellaneous Supplies and Expense, plus a portion of the Central Pharmacy costs.

Central Pharmacy is responsible for the ordering, inventory control, and issuance of pharmaceuticals to the following pharmacy divisions: Inpatient, Outpatient, Muirdale Sanatorium, Mental Health Center - South Division, and Mental Health Center - North Division. The accumulated direct costs of Central Pharmacy are divided among these divisions proportionately to the value of the issues to each division.

This method of recording costs is based on traditional accounting practice and is useful in routine

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5. Departmental Operating Statement II, December 1965 (Milwaukee County Institutions, Milwaukee, 1965).

6. The terms cost accounting and cost analysis will be used according to the definition in Leon E. Hay, Budgeting and Cost Analysis for Hospital Management (University Publications, Bloomington, Ind. 1958), p. 5. "Cost accounting and cost analysis are quite different. Cost accounting involves the routine collection of data concerning the costs of departments, processes, products or other desired breakdowns, through the mechanism of a double entry bookkeeping system. Cost analysis, on the other hand, is a term used to describe the process of recosting the data derived from the accounts ordinarily kept by the hospital to obtain the costs of the services rendered."

budgeting and administration. For some purposes, however, such as reimbursement, it is necessary to consider the total cost of an activity including all costs of any service received whether from within or outside the hospital.[7] This is accomplished through cost finding procedures.

In addition to the direct costs, interdepartmental costs must be analyzed and allocated on appropriate bases to the various cost centers. This means that those departments rendering a direct personal service must eventually accumulate all the costs of the departments not providing a direct service. Departments providing patient service such as Nursing, Laboratory, Radiology and Pharmacy, are provided the physical environment and auxiliary services by the Housekeeping and Linen Services, Operation and Maintenance of Plant, Central Laundry, and Medical Records Departments. These in turn are directed and controlled by Administration, which includes the executive officers and their clerical staff, the Personnel Department, Data Processing and Accounting, and other similar areas of responsibility.[8]

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7. Cost Finding for Hospitals (American Hospital Association, Chicago, 1957), p. 10.

8. Leon E. Hay, Budgeting and Cost Analysis for Hospital Management (University Publications, Bloomington, Ind., 1958), p. 11.

Administration and General

Administrative costs are spread over each subordinate department based on the Personal Service* expense of that department. Service departments such as Housekeeping, which now include a component of the administrative expense, are then distributed on some base, in this case, by cost per square foot of area occupied. Since each department renders a different service the basis for allocation will vary from department to department.

The procedures followed in this study differ from those described in Cost Finding for Hospitals in that only one cost center, the Pharmacy Department, is analyzed. Thus there is an allocation of costs only to those departments which have a measurable interrelationship with pharmacy.

The description of the general procedure followed is applicable to Inpatient, Outpatient, and First Aid as these three areas occupy Unit I, which is the General Hospital of Milwaukee County Institutions. These areas were treated individually in the cost allocation except for allocations based on floor area where the figures

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*Personal Service - these are costs incurred for services provided by employed personnel and include salary cost plus the cost of additional benefits associated with their employment which must be paid by the County, such as Social Security and sick leave.

were aggregated due to lack of data on the specific floor area occupied by each of these divisions.

The costs from the Administration and General account were allocated to the following departments in proportion to their personal service expense: Operation and Maintenance of Plant, Housekeeping and Linen Service and Pharmacy Department. The Administration and General costs are those listed in the Annual Report plus some depreciation from Central Administration and Forms Departments.[9]

Total Administration and General costs for Inpatient was $427,616.53. Since Pharmacy had 0.4031 per cent of the total Inpatient Personal Service cost it was allocated 0.4031 per cent of the $427,616.53. This amounted to $1,723.72. Similarly, for Outpatient, Pharmacy was allocated $13,156.76 of the total Outpatient Personal Service of $137,463.24 (Table 10.1). Using the same methodology,

Table 10.1

ADMINISTRATION AND GENERAL COSTS ALLOCATED TO INPATIENT AND OUTPATIENT PHARMACY

Service	Cost Allocation
Inpatient Pharmacy	$ 1,723.72
Outpatient Pharmacy	13,156.76
Total	$14,880.48

9. Depreciation allocation is described in Appendix C, Table 1.

Housekeeping, and Operation and Maintenance of Plant accounts in the Inpatient, Outpatient, and First Aid Departments were allocated a portion of the Administration and General costs.[10]

Housekeeping

Each departmental account, such as Housekeeping and Linen Service, has three components: (1) Personal Service, (2) Contractual Service, and (3) Commodities. In order to determine the Housekeeping cost the Housekeeping and Linen Service account was divided into two accounts. Seventy per cent of Personal Service was allocated to Housekeeping and 30 per cent to Linen Service based on the estimate of costs of each by the head of the Department. The individual items in Contractual Services and Commodities were divided between Housekeeping and Linen Service by classifying them according to the Uniform Chart of Accounts and Definitions for Hospitals.[11] Those items which could not be classified were allocated in the ratio of 70:30.[12]

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10. See Appendix C, Tables 2, 3, and 4.

11. American Hospital Association, Uniform Chart of Accounts and Definitions for Hospitals (American Hospital Association, Chicago, 1959), pp. 135-156.

12. See Appendix C, Table 5.

The total Housekeeping costs, including a portion of Administration and General, were found to be as follows:[13]

Inpatient	$624,642.48
Outpatient	59,686.48
First Aid	8,022.01
Total	$692,350.97

To determine the cost per square foot the effective operating floor area of 700,503 square feet[14] was used and a cost of $0.988 determined.

Operation and Maintenance of Plant

These expenditures constitute the costs of physical operation of the plant. They include the costs for heating, supplying utilities, repairs, maintenance of grounds and depreciation. The costs for Unit I were grouped (Inpatient, Outpatient, and First Aid) to determine the cost per square foot, then allocated to departments on the basis of square feet of floor area.

The total cost for each department, including a portion of Administration and General, was as follows:[15]

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13. The derivation of these figures can be obtained from Appendix C, Tables 6, 7, 8, 9 and 10.

14. Personal communication, Mr. Erwin H. Weber, Assistant Hospital Administrator, Milwaukee County General Hospital.

15. The derivation of these results is presented in Appendix C, Tables 11, 12 and 13.

Inpatient	$ 927,447.86
Outpatient	106,689.91
First Aid	14,954.82
Total	$1,049,092.59

Dividing this figure by the floor area of 700,503 square feet shows a cost of $1.498 per square foot.

Depreciation is included in this account, hence the figure of $1.498 per square foot represents both Operation and Maintenance of Plant and Depreciation.[16] These two accounts plus Housekeeping are the overhead costs determined in this study.

Pharmacy Overhead Costs

The overhead costs depend upon the floor area occupied by the department and assumes that each uses a representative portion of services.

Pharmacy overhead costs were calculated by multiplying the overhead cost per square foot ($2.486) times the area of the Inpatient and Outpatient Pharmacy Services. These costs were found to be $6,588.90 for the Inpatient Pharmacy and $9,592.90 for the Outpatient Pharmacy.[17]

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16. For a listing of depreciated assets and allocation of depreciation expense by departments, see Appendix C, Tables 21 and 22.

17. See Appendix C, Tables 15 and 16.

Pharmacy Direct Costs

The direct costs were those which had been charged to the Pharmacy Department under the present accounting system. These costs were itemized under the categories of Personal Service, Contractual Services, and Commodities (Table 10.2). The totals of these categories will be used in the cost analysis. For a detailed listing of the accounts, see Appendix C, Tables 17, 18, 19 and 20.

Table 10.2

PHARMACY DIRECT COSTS-INPATIENT AND OUTPATIENT

Cost Component	Inpatient	Outpatient	Total
Personal Service	$32,590.14	$137,463.24	$170,053.38
Contractual Services[18]	13,300.87	23,360.30	36,661.17
Commodities (less drugs)	89.41	241.66	331.07
Total	$45,980.42	$161,065.20	$207,045.62

Inventory Holding Cost - Pharmacy Department

Inventory Holding Cost, also known as inventory carrying costs, are the costs incurred through holding and issuing inventory. Some components of this cost are: taking physical inventory; preparing and processing inventory adjustments; storage space (if applicable); interest on average annual inventory investment; annual inventory

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18. Contractual Service includes Central Pharmacy costs. See Appendix E.

losses from obsolescence, deterioration, loss, theft, damage; and other holding costs.[19] Lytle, in a study on inventory control in community pharmacies found the obsolescence rate for six pharmacies, in 1957, to range from 15.4 to 29.7 per cent for the items in stock.[20] Hospitals, however, are not required to stock as wide a range of products and probably have a lower incidence of obsolescent items.

The costs of holding the inventory at the Milwaukee County General Hospital were estimated conservatively at five per cent. The main cost is interest. Interest on municipal bonds the previous year averaged about 3.15 per cent.[21] The remaining 1.85 per cent is probably a low estimate of obsolescence, breakage, and theft.

The inventory at the end of 1965 was as follows:

Central Pharmacy	$343,056.17
Inpatient	49,000.00 (approx.)
Outpatient	89,000.00 (approx.)
Total	$481,056.17 (approx.)

19. General Services Administration, The Economic Order Quantity Principle and Applications (U.S. Government Printing Office, Washington, D.C., 1966), Appendix A2.

20. Arthur C. Lytle, "The Effects of Using Inventory Control in the Prescription Department of the Retail Pharmacy," Unpublished Ph.D. dissertation, The Ohio State University, 1958, p. 134.

21. Federal Reserve Chart Book (Board of Governors of the Federal Reserve System, Washington, D.C., August 1965), p. 26.

The cost of holding Central Pharmacy Inventory was distributed in the same way that the Central Pharmacy costs were allocated; to each department in proportion to the value of medication they received. This means that Inpatient would receive 27.92 per cent and Outpatient 46.06 per cent of the inventory and, hence, cost (Table 10.3).

Table 10.3

ALLOCATION OF CENTRAL PHARMACY INVENTORY HOLDING COST

Department	Share of Goods Received	Total Central Pharmacy Inventory	Departmental Share of Inventory
Inpatient	27.92	$343,056.17	$ 95,781.28
Outpatient	46.06	343,056.17	157,997.95

The holding cost allocable to Inpatient Pharmacy was the sum of its inventory plus its share of the Central Pharmacy inventory at a cost rate of five per cent. This amounted to $7,250.00.

Inpatient Inventory	$ 49,000.00 (approx.)
Share of Central Pharmacy Inventory	95,781.28
Total	$144,781.28 (approx.)

Holding cost rate = 5.0 per cent

Holding cost = $144,781.28 x 0.05 = $7,250.00*
(7,239.06)

*Based on calculations using 3 significant figures.

The inventory holding cost for Outpatient Pharmacy was calculated in the same way and a cost of $12,350.00 was obtained.

Outpatient Inventory	$ 89,000.00 (approx.)
Share of Central Pharmacy Inventory	137,997.95
Total	$246,997.95 (approx.)

Holding Cost Rate = 5.0 per cent

Holding Cost = $246,997.95 x 0.05 = $12,350.00*
(12,349.90)

Total Pharmacy Cost

The total cost of each component for Inpatient and Outpatient Pharmacy was totalled to give the total pharmacy cost (Table 10.4).

Table 10.4

TOTAL PHARMACY COSTS
INPATIENT AND OUTPATIENT

Cost	Inpatient	Outpatient
Pharmacy Direct Costs	$45,980.42	$161,065.20
Overhead Costs	6,588.90	9,592.90
Administration	1,723.72	13,156.76
Inventory Holding Cost	7,250.00	12,350.00
Total	$61,543.04	$196,164.86

*Based on calculations using 3 significant figures.

Cost Per Prescription (Outpatient)

The total Pharmacy cost and each component of the cost was divided by the total number of outpatient prescriptions dispensed to obtain the cost per prescription (Table 10.5).

Table 10.5

COST PER PRESCRIPTION (OUTPATIENT)

Cost Component	Cost	Number of Prescriptions	Cost per Prescription (cents)
Direct Costs	$161,065.20	310,376	51.8936¢
Overhead Costs	9,592.90	310,376	3.0907
Administration	13,156.76	310,376	4.2390
Inventory Holding Costs	12,350.00	310,376	3.9790
Total	$196,164.86	310,376	63.2023¢

The cost of dispensing an outpatient prescription, excluding the cost of the drug was 63.20 cents per prescription. For use in the prescription audit this figure was raised to the next highest cent, 64.0.

CHAPTER XI

COST ANALYSIS - VETERANS ADMINISTRATION HOSPITAL

The cost analysis procedure used for the Veterans Administration is based on direct costs rather than the "step-down" method. Only direct costs are allocated to departments so no records of interdepartmental service flows were available. The cost centers and accounting methods used do not correspond to those recommended by the American Hospital Association. Results from this cost analysis, therefore, will not be directly comparable to Milwaukee County General Hospital.

Fiscal Year 1966

Data are primarily from Annual Cost Accounting Report - Part I - Schedule A, Medical Care Appropriations for Fiscal Year Ending 30 June 1966, RCS 10-191, VAH Wood, Wisconsin, Station 6015, and Quarterly Cost Accounting Report - Part I - Schedule A, Medical Care Appropriations for Period Ending 31 December 1966, RS MPO-12B, Region 4, VAH Wood, Wisconsin, Station 6015.

Administration

As with the Milwaukee County Hospital, the cost of Administration was allocated among subordinate departments. Instead of being based on the cost of Personal Service, however, it was based on the number of employees in each department.

The cost accounting data from the VA divide the costs from each cost center into several sub-sections: Inpatient, Outpatient, Domiciliary, VA Nursing Home, and Miscellaneous. The Inpatient and Outpatient Departments occupy the new hospital and the cost analysis was based predominantly on their cost data.

Although Supply Division is considered a part of Administration in the VA accounts, for purposes of the cost analysis it was treated separately. This was done for two reasons: first, an allocation of cost based on the value of supplies dispensed is a more accurate method of allocating supply costs, and second, because of the relationship between Pharmacy and Supply. All Pharmacy supplies must come through the Supply Division. This means that they are ordered, stored, inventoried, maintained and issued by Supply rather than by Pharmacy. Having taken over this task which is normally a Pharmacy cost, it is necessary to estimate as closely as possible the cost of providing this service and allocate the cost to Pharmacy.

Allocation of Administration Costs

The Administration costs in the Office of Director, Automatic Data Processing, Professional Service Clerks, Fiscal Division and Personnel Division accounts were totalled for Inpatient and Outpatient.[1] This total cost was distributed among the total employees of Inpatient

1. See Appendix D, Table 1.

and Outpatient (1449.4) after those employed in Administration (98.8) had been subtracted.

Total Administration cost $775,044.59
Total Employees (less Administration) 1449.4

Administrative cost per employee = $\frac{\$775,044.59}{1449.4}$ = \$534.735

For each full-time employee in a department an allocation of \$534.735 was made for Administrative cost.[2]

Overhead Costs

Overhead costs are those associated with occupancy of the building and are allocated on the basis of area. The three components of this cost are Housekeeping, Operation and Maintenance of Plant and Depreciation.

Housekeeping

Housekeeping maintains an area of 690,072 square feet in the new VA hospital. This serves the Inpatient and Outpatient areas. The total cost of Housekeeping, including a portion of the administrative cost, was \$642,503.12. Thus the cost per square feet was \$0.931.[3]

Operation and Maintenance of Plant

This aggregate term encompasses many individual cost centers. It includes both recurring and nonrecurring

2. See Appendix D, Table 2.
3. See Appendix D, Table 3.

maintenance such as the cost of utilities and a portion of the cost of the incinerator and air-conditioning plant. It does not include the purchase of equipment or the replacement of facilities, nor does it include the cost of maintenance of equipment for departments which require sufficient maintenance to maintain a separate cost center. This is the case with Dietary Equipment and Laundry and Dry Cleaning Equipment which are established as cost centers.

The hospital area to be maintained is about 790,000 square feet. This excludes the boiler plant which is a separate building and differs from the 690,072 square feet maintained by the Housekeeping Division by almost 100,000 square feet.

The total cost of operating and maintaining the plant, including fuel and an Administration allocation, was $1,300,162.65. The cost per square foot was $1.646.[4]

Depreciation

Depreciation is not recorded as a cost in the Veterans Administration. It is a cost, however, which must be included in a cost analysis, particularly if the results are to be used for purposes of comparison. The rates of depreciation and the methodology are described in Appendix D.

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4. See Appendix D, Tables 4 and 5.

Value of Assets - VA Center, Wood, Wisconsin

Land	$1,145,711.00
Buildings	8,056,221.76
Other Facilities	3,840,938.05
Equipment	5,286,363.83
New Hospital	22,712,563.09

The Depreciation costs charged to the hospital (Inpatient and Outpatient) comprise the asset value of the new hospital plus 80 per cent of the value of Other Facilities and Equipment at a suitable rate.[8] No depreciation from Buildings or Land are included since Land is not a depreciable asset and Buildings consist of many old structures which would have little or no depreciation value and in any case the amount which would be allocable to the hospital, if any, could not be determined (Table 11.1).

Table 11.1

DEPRECIATION COST - FY 1966

Asset	Value	Per Cent Charged to Hospital	Depreciation (per cent) Rate	Depreciation Cost
New Hospital	$22,712,563.09	100	2.5	$567,814.07
Other Facilities	3,840,938.05	80	5.0	153,637.52
Equipment	5,286,363.83	80	5.88	248,670.55
Total	$31,839,864.97			$970,122.14

8. Eighty per cent of the Depreciation expense from Other Facilities and Equipment were allocated to the new hospital because eighty per cent of the employees were employed in the new building.

A depreciation cost of $1.228 per square foot was calculated as follows:

$$\frac{\text{Depreciation Cost}}{\text{Area of Hospital in Square Feet}} = \text{Depreciation Cost per Square Foot}$$

$$\frac{\$970,122.14}{790,000} = \$1.2280$$

To determine the overhead cost per square foot, the cost per square foot is determined by dividing the total cost of each cost center by the appropriate area (Table 11.2).

Table 11.2

TOTAL OVERHEAD COST PER SQUARE FOOT - FY 1966

Cost Center	Cost per Square Foot
Housekeeping	$0.9311
Operation and Maintenance	1.6458
Depreciation	1.2280
Total	$3.8049

For the hospital an overhead cost for each square foot of area was calculated to be $3.8049. This figure was used to determine the overhead cost component of Pharmacy Service and Supply Division costs.

Supply Costs

All drugs are provided to the Pharmacy Service from the Supply Division. Requisitions for drugs are sent from the pharmacy to the Supply Division daily and the

requests issued or, if not in stock, ordered from some suitable source. This arrangement frees the pharmacy from placing orders for drugs, receiving them, placing them in inventory, and constantly checking prices. These functions could absorb a great deal of the pharmacist's time and the allocation of this task to Supply Division relieves the pharmacists of an onerous burden. It also means that costs of storing and handling drugs are no longer a part of pharmacy expense. In order to include the cost of these services, part of the costs of Supply Service must be allocated to Pharmacy Service. Before this can be accomplished, however, the costs of the Supply Division must be determined.[6]

The total supply cost of $500,434.93 was allocated to other departments based on the value of the goods issued (Table 11.3). For this cost analysis only the pharmacy's portion of the cost was determined and allocated.

Table 11.3

TOTAL SUPPLY DIVISION COST - FY 1966

Cost Component	Cost
Direct Costs	$329,348.47
Administration Allocation	24,597.81
Overhead Cost	146,488.65
Total	$500,434.93

6. For the compilation of Supply Division cost see Appendix D, Tables 6 and 7.

Direct Pharmacy Costs

The Pharmacy Service accumulated total costs of $651,558.65 of which $517,590.10 was for drugs and medical supplies leaving $133,968.55 as total direct costs. This direct cost was apportioned between the services in Pharmacy, using the VA cost allocation which is based on Veterans Administration Manual MP-4.[7] These cost allocations are closely dependent on the time spent by personnel in each cost area (Table 11.4).

Table 11.4

ALLOCATION OF DIRECT COSTS IN PHARMACY SERVICE - FY 1966

Service	Number of Employees	Per cent of Total Cost	Cost	Cost Allocated
Inpatient	6.6	44.5	$133,968.55	$ 59,616.00
Outpatient	5.5	37.2	133,968.55	49,836.30
Domiciliary	2.6	17.7	133,968.55	23,712.43
Nursing Home	0.1	0.6	133,968.55	803.81
Total	14.8	100.0	$133,968.55	$133,968.54

Pharmacy Allocation of Administration Cost

As previously described, each department was allocated $534.735 for each employee working in Inpatient or Outpatient. This amount per employee was added to the Pharmacy Service (Inpatient and Outpatient) cost as a component of total Pharmacy Service cost (Table 11.5).

7. Veterans Administration Manual MP-4 (DM&S Appendix B, Second Revision, Part V) (Supplement to VA Controller Policy) Appendix B - Cost Accounting, no date.

Table 11.5

ALLOCATION OF ADMINISTRATION COSTS IN PHARMACY SERVICE
FY 1966

Service	Number of Employees	Cost per Employee	Administration Allocation
Inpatient	6.6	$534.735	$3,529.25
Outpatient	5.5	534.735	2,941.04

Pharmacy Overhead Costs

An overhead cost of $3.805 per square foot was calculated for departments operating in the hospital. The area of Pharmacy Service in the hospital, as reported by the Chief of Pharmacy Service, is about 3,100 square feet. Since only Inpatient and Outpatient services are located in the hospital this area will be divided between them in proportion to their share of direct expenses (Table 11.6).

Table 11.6

ALLOCATION OF OVERHEAD COSTS IN PHARMACY SERVICE - FY 1966

Service	Number of Employees	Percent	Area	Allocated Area	Allocated Overhead Cost
Inpatient	6.6	54.545	3,100	1,690.9	$6,433.87
Outpatient	5.5	45.455	3,100	1,409.1	5,361.63
Total	12.1	100.000	3,100	3,100.0	$11,795.50

This is necessary since there is no clear physical separation of the two and both services may be performed

in the same area during a normal day. A similar method of allocation was used by Petrick who justified its use by stating: ". . . the number of man-hours spent in each service area was used to allocate overhead costs since these are closely related to the amount of service rendered."[8] The overhead cost is composed of Housekeeping, Depreciation, and Operation and Maintenance of Plant.

Allocation of Supply Cost
to Pharmacy Service

Supply costs are allocated to other departments in proportion to the value of goods issued to the department. The cost of fuel was subtracted before the allocation was made, because fuel costs were included as a component of Operation and Maintenance of Plant. Further, the role of Supply in providing fuel consists solely of infrequent ordering and payment. If a portion of supply cost proportionate to the value of the fuel were allocated to Operation and Maintenance of Plant, the allocation of Supply costs would be markedly distorted.

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8. Robert J. Petrick, "Applicability of the Professional Fee Concept to Hospital Pharmacy," Unpublished M.Sc. thesis, Ohio State University, 1965, p. 13.

Supply Issue

Posted Stock Issues*	$1,067,325
Unposted Purchases	579,478
Equipment Acquired	1,190,970
Total	$2,837,773
Supply Issues to Pharmacy	$ 517,696.39

Supply issues to pharmacy as a proportion of total supply issues is calculated as follows:

$$\frac{\$517,696}{\$2,837,773} = .18243$$

Since pharmacy receives 18.24 per cent of the value of supply issues it was allocated -18.24 per cent of the total supply cost.

Total Supply Cost x Pharmacy Proportion = Pharmacy Allocation

$$\$500,434.93 \times 0.18243 = \$91,294.34$$

This means that the Supply Division has provided the Pharmacy Service with services costing about $91,294.34. While this amount appears high it is a conservative estimate since Pharmacy accounts for 43.5 per cent of the inventory value and 33.4 per cent of the line items issued. Further, Pharmacy places orders at least once a day and many of the items requested are nonposted and require orders to suppliers outside the VA. Not infrequently these items are backordered, which involves additional processing of orders.

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*Posted stock refers to supplies maintained in the Supply Division inventory on a regular basis. Issues to departments are therefore made from their inventory. Unposted items must be ordered from outside the hospital.

The Supply Division maintains a stock of posted pharmacy items which it replenishes primarily from the VA Depot at Hines, Illinois. This relieves the Pharmacy Service from forecasting and ordering goods needed in the future. It also transfers cost for the storage of the inventory along with the attendant inventory records, the taking of physical inventory and checking for physical deterioration.

The allocation of supply costs was taken one step further and the cost was divided between the various pharmacy services, on the same basis as the allocation of direct costs (Table 11.7). It would have been preferable to allocate these costs according to the value of medication received and issued by each pharmacy service but these figures were not available.

Table 11.7

ALLOCATION OF SUPPLY COSTS TO PHARMACY SERVICE - FY 1966

Service	Percent	Supply Cost to Pharmacy	Allocation to Pharmacy Services
Inpatient	44.5	$91,294.39	$40,626.00
Outpatient	37.2	91,294.39	33,961.51

This allocation may overstate supply costs compared to a value obtained using the value of the items issued as the distribution base. This may not be the limitation it would appear to be, however, since Outpatient services

incur most requests for nonposted items and thereby increase the use and costs of the Supply Division.

Inventory Holding Costs

The cost of holding inventory was set conservatively at 5 per cent. The main component of this cost is interest which should be 4.5 per cent.[9] Obsolescence, theft, and breakage account for the remaining 0.5 per cent of the holding cost.

The supply of Pharmacy items held by the Supply Division on 30 June 1966 was $81,846.50. Inpatient and Outpatient are allocated a portion of the inventory holding cost in the same proportion as they received the other supply costs (Table 11.8).

Table 11.8

ALLOCATION OF INVENTORY HOLDING COSTS TO PHARMACY SERVICES - FY 1966

Service	Per Cent of Cost	Inventory	Holding Cost Rate	Cost Allocated
Inpatient	41.7%	$81,846.50	5%	$1,706.50
Outpatient	37.3	81,846.50	5%	1,526.44
Domiciliary	18.6	81,846.50	5%	761.17
Nursing Home	2.4	81,846.50	5%	98.22
Total	100.0			$4,092.33

The inventory held in the pharmacy for Inpatient and Outpatient use is $50,961. This is divided between

9. General Services Administration, The Economic Order Quantity Principle and Applications (U.S. Government Printing Office, Washington, D.C., 1966), Appendix A2.

Inpatient and Outpatient in the same ratio as the Supply Division Inventory was divided between them.

$$\frac{\text{Inpatient}}{\text{Outpatient}} = \frac{1,706.50}{1,526.44} = \frac{1.1179}{1.0}$$

The inpatient share of the inventory and the inventory cost using the calculated ratio were as follows:

$$\frac{1.1179}{2.1179} \times \$50,961 = \$26,898.74 \text{ Inventory}$$

$$\$26,898.74 \times 5\% = \$1,344.94 \text{ Inventory Holding Cost}$$

Outpatient Pharmacy was allocated a portion of the inventory and the inventory holding cost calculated for the inventory in the same way as inpatient. The results are tabulated in Table 11.9.

$$\frac{1.0}{2.1179} \times \$50,961 = \$24,061.75 \text{ Inventory}$$

$$\$24,061.75 \times 5\% = \$1,203.09 \text{ Inventory Holding Cost}$$

Table 11.9

INVENTORY HOLDING COST ALLOCATED TO INPATIENT AND OUTPATIENT PHARMACY - FY 1966

Service	Share of Pharmacy Inventory Holding Cost	Share of Supply Inventory Holding Cost	Total Inventory Holding Cost
Inpatient	$1,344.94	$1,706.50	$3,051.44
Outpatient	1,203.09	1,526.44	2,729.53
Total	$2,548.03	$3,232.94	$5,780.97

Total Pharmacy Costs

The direct pharmacy costs plus the costs allocated to Pharmacy Service, when combined, give the total cost of operating the pharmacy (Table 11.10). This figure divided by the number of prescriptions, in the case of outpatient, shows the average cost of dispensing each prescription.

Table 11.10

TOTAL PHARMACY COSTS (INPATIENT AND OUTPATIENT) - FY 1966

Cost Component	Inpatient	Outpatient
Direct Costs	$ 59,616.00	$49,836.30
Administration Allocation	3,529.23	2,941.04
Overhead Allocation	6,433.87	5,361.63
Supply Allocation	40,626.00	33,961.51
Inventory Holding Cost	3,051.44	2,729.53
Total	$113,256.56	$94,830.01

Cost Per Prescription (Outpatient)

The total Outpatient Pharmacy cost divided by the total number of outpatient prescriptions dispensed was used to calculate the dispensing cost per prescription.

$$\text{Number of Outpatient Prescriptions Dispensed} = 32{,}694$$

$$\frac{\$94{,}830.01}{32{,}694} = \$2.901 \text{ per prescription}$$

The average cost of dispensing a prescription is higher than expected. This may be due to the movement of the pharmacy into the new hospital and the relatively

small number of prescriptions dispensed. Since the VA Regional Office moved into the new hospital immediately prior to the next fiscal year beginning it was considered appropriate to test the significance of the findings by using data for the first six months of FY 1967 (1 July 1966 - 31 December 1966). This would provide a stable base and also a larger prescription volume. The same cost finding procedures were used.

Fiscal Year 1967 (6 months ending 31 December 1966)

This analysis of VA costs is a continuation of the analysis for FY 1966. Since some major changes occurred during FY 1966, the cost figures obtained for that period may not reflect the costs under a stable system. Therefore, the next consecutive six months period was analyzed, during which the cost centers studied were settled in the new hospital and the VA Center established in the hospital was in operation.

Administration

The Administration costs again were allocated by the number of employees in each department. The number of employees remained fairly constant between the two test periods, with 102.1 Administration employees and 1460.7 other Inpatient and Outpatient employees. Total Administration cost was $124,510.60 for Outpatient and

$287,898.64 for Inpatient.[10]

Allocation of Administration Cost

The Administration cost per employee was calculated as $282.337. Each department was allocated a portion of the administrative cost based on the number of full-time employees in the department.[11]

Overhead Costs

The overhead costs were allocated on the basis of area occupied and consists of Housekeeping, Operation and Maintenance of Plant, and Depreciation.

Housekeeping

Using the same procedure as that used to obtain the Housekeeping costs for FY 1966, a total cost of $368,348.29 was obtained.[12] This figure divided by the area maintained (690,072 square feet) showed a cost of $0.534 per square foot.

Operation and Maintenance of Plant

The total cost for Operation and Maintenance of Plant, including fuel and administration, was $839,726.60.[13] When

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10. See Appendix D, Table 8.
11. See Appendix D, Table 9.
12. See Appendix D, Table 10.
13. See Appendix D, Tables 11 and 12.

related to the total floor area of 790,000 a cost of $1.063 per square foot was obtained.

Depreciation

The previous year's depreciation cost plus the depreciation cost of the added assets calculated at the appropriate rate were combined to give a total depreciation cost. Since the analysis is for a six month basis rather than a year, the total cost was then divided by two. This gave a depreciation cost of $487,675.61, and a cost per square foot of $0.617.[14]

Supply Division

The total cost of the Supply Division was $275,050.53.[15] This was allocated to the various departments on the basis of the value of the supplies issued. Pharmacy Service received 17.74 per cent of the total Supply Division issues (less fuel) and was allocated $48,793.96 of the total cost of $275,050.53.[16]

Pharmacy Overhead Allocation

The pharmacy area of 3,100 in the hospital again was divided between Inpatient and Outpatient in proportion to the number of full-time employees in each Service. The

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14. See Appendix D, Tables 13 and 14.

15. See Appendix D, Table 16.

16. See Appendix D, Table 19 and Pharmacy Supply Cost Allocation.

cost of each square foot occupied was $2.214. Inpatient Pharmacy was allocated $3,618.87 and Outpatient Pharmacy $5,244.53.[17]

Prescription Clerks - Costs Allocated to Pharmacy

The Outpatient Department employs three full-time prescription clerks to maintain prescription records, ensure the eligibility of the person requesting medication which includes checking to see if a renewal is authorized, typing a label for the prescription, and when necessary, a mailing label.

The actual cost of maintaining these clerks is buried in the costs of the Registrar Division, so representative costs were constructed and used. The following assumptions were used: that they were drawing GS3 pay; that one-half of them (one-half of the total cost) purchased health insurance as a voluntary fringe benefit; and that all of them purchased group life insurance.

The overhead costs and administrative costs were based on three employees occupying an area of approximately 315 square feet.* No cost was estimated for supplies used or for direct supervision. The total cost for the six-month period was found to be $8,641.44.[18]

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17. See Appendix D, Table 18.
18. See Appendix D, Table 20.
*This area was measured.

Inventory Holding Costs

Since the inventory holding costs are based on the inventory on 30 June 1966 it will be used for both FY 1966 and FY 1967. The inventory is probably understated for 1967 as prescription volume increased substantially after June 1966.

The inventory held in Supply for hospital use and the amounts held in the hospital are the same as were used for the FY 1966 analysis and the costs are, therefore, the same except that only 6 months holding cost are used (Table 11.11).

Table 11.11

ALLOCATION OF INVENTORY HOLDING COSTS - FY 1967

Service	Inventory Holding Cost	Inventory Holding Cost (6 months period)
Inpatient	$3,051.44	$1,525.72
Outpatient	2,729.53	1,364.77

Total Pharmacy Cost

The direct pharmacy costs were combined with the costs allocated to Pharmacy Service from other departments to give the total pharmacy cost for inpatient and outpatient pharmacy service. The total for outpatient divided by the number of outpatient prescriptions dispensed gives the average cost of dispensing a prescription (Table 11.12).

Table 11.12

TOTAL PHARMACY COST (INPATIENT AND OUTPATIENT) - FY 1967

Cost Component	Inpatient	Outpatient
Direct Costs	$27,265.54	$24,388.60
Administration Allocation	1,643.35	1,473.35
Overhead Allocation	3,618.87	3,244.53
Supply Allocation	20,347.08	18,200.15
Prescription Clerks	---	8,686.34
Inventory Holding Cost	1,525.72	1,364.77
Total	$54,400.56	$57,357.74

Cost Per Prescription (Outpatient)

By dividing the cost components by the number of prescriptions dispensed the average cost per prescription can be calculated for each component and for the prescription (Table 11.13).

Table 11.13

AVERAGE COST PER PRESCRIPTION BY COST COMPONENT (OUTPATIENT) - FY 1967

Cost Component	Cost in Cents
Direct Costs	39.77
Administration Allocation	2.40
Overhead Allocation	5.29
Supply Allocation	29.68
Prescription Clerks	14.16
Inventory Holding Costs	2.23
Total	93.53

Although there are slight changes, the costs for FY 1966 and FY 1967 are similar, taking into account that FY 1967 consists only of the first six months. The large

increase in the number of prescriptions dispensed, while costs remained substantially the same, drastically reduced the average cost of dispensing a prescription. It also demonstrates that the pharmacy is a decreasing cost operation. The limit to the benefits of decreasing costs is the constraint on physical area. This constraint has now been reached in the VA hospital and a large increase in prescription volume could only be accomplished by an increase in the working area, or by extending the hours of operation thereby making more working area available.

CHAPTER XII

RESULTS

The following results were obtained from the comparison of drug and distribution costs of the two hospitals and those related to community pharmacies in Dane County.

Cost Analyses of Hospitals

The cost of dispensing medication through hospitals has been determined for the Milwaukee County General Hospital and the VA Hospital, Wood, Wisconsin. The costs and their components are shown in Table 12.1.

Table 12.1

VA AND MCGH AVERAGE COST OF DISPENSING OUTPATIENT PRESCRIPTIONS BY COST COMPONENT IN CENTS

Cost Component	MCGH Cost (1965)	VA Cost (FY 1967)
Direct costs	51.89¢	39.77¢
Overhead costs	3.09	5.29
Administration	4.24	2.40
Inventory Holding costs	3.98	2.23
Supply Allocation	-	29.68
Prescription Clerks	-	14.16
Total	63.20¢	93.53¢

It should be noted that many of the activities that are performed in the pharmacy at the MCGH are delegated to persons outside the control of the pharmacy in the VA. The proper allocation of costs for these activities

outside the pharmacy are difficult to allocate and may cause some distortion of the actual dispensing cost.

Prescription Surveys

The average total cost for the sample prescriptions was determined from the data from Dane County, Milwaukee County General Hospital (MCGH) and the Veterans Administration Hospital, Wood, Wisconsin (VA).[1] These data were adjusted so that the amount of each product prescribed was identical. This adjustment was based on the average quantity of each product dispensed in Dane County. Dane County data were used as a base since the dispensing cost and ingredient cost for these prescriptions increased with increases in the quantity dispensed. In contrast, the average dispensing costs for the MCGH and VA were constant because an average was used and changes in the quantity dispensed affected only the drug cost, and through this the total cost.

A similar comparison was made of the costs after adjusting for the average number of days' therapy. This adjustment could be made only where the number of days' therapy was determinable from the prescription order. Hence, the comparison adjusted for just the number of days'

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1. For details of the survey results and prescription mix see Appendices F, G, H and I.

therapy does not reflect data from all the sample prescription orders. It also neglects the differences in daily dosage but this can be determined by comparing the data adjusted for quantity of medication with the data adjusted for the number of days' therapy.

The number of prescription orders in each survey was as follows:

Dane County	2141
MCG Hospital	3186
VA Hospital	2011

The data in Table 12.2 represent the costs that were incurred and the costs that would have been incurred had the two hospitals dispensed the same amount of medication (Table 12.3) or the same number of days of therapy (Table 12.4) as was dispensed in Dane County. One vital difference is still unaccounted for, however, and that is the difference in the prescription mix, the proportion of each product dispensed relative to the total number dispensed.

Table 12.2

COMPARISON OF AVERAGE INGREDIENT COST, DISPENSING COST AND TOTAL COST FOR PRESCRIPTION SURVEYS: UNADJUSTED DATA

Cost Component	Dane County	MCG Hospital	VA Hospital
Ingredient Cost	$2.029	$3.048	$1.894
Dispensing Cost	1.883	0.632	0.935
Total	$3.912	$3.680	$2.829

Table 12.3

COMPARISON OF AVERAGE INGREDIENT COST, DISPENSING COST AND TOTAL COST FOR PRESCRIPTION SURVEYS: DATA ADJUSTED FOR QUANTITY DISPENSED

Cost Component	Dane County	MCG Hospital	VA Hospital
Ingredient Cost	$2.029	$1.215	$1.255
Dispensing Cost	1.883	0.632	0.935
Total	$3.912	$1.847	$2.190

Table 12.4

COMPARISON OF AVERAGE INGREDIENT COST, DISPENSING COST AND TOTAL COST FOR PRESCRIPTION SURVEYS: DATA ADJUSTED FOR NUMBER OF DAYS' THERAPY

Cost Component	Dane County	MCG Hospital	VA Hospital
Ingredient Cost	$2.029	$1.597	$1.374
Dispensing Cost	1.883	0.632	0.935
Total	$3.912	$2.229	$2.309

In adjusting the prescription mix, Dane County was once again used as the base. The resultant comparison presents the average cost of dispensing the same prescription mix as was dispensed in Dane County. Comparisons also are made after adjusting for quantity and duration of therapy. The comparison made after adjusting for quantity and prescription mix is the most significant (Table 12.5). It in effect shows the cost of dispensing prescriptions identical to those sampled in Dane County through the hospitals, assuming that dispensing costs remained the same.

Table 12.5

COMPARISON OF AVERAGE INGREDIENT COST, DISPENSING COST AND TOTAL COST FOR PRESCRIPTION SURVEYS: DATA ADJUSTED FOR QUANTITY DISPENSED AND PRESCRIPTION MIX

Cost Component	Dane County	MCG Hospital	VA Hospital
Ingredient Cost	$2.029	$1.235	$0.966
Dispensing Cost	1.883	0.632	0.935
Total	$3.912	$1.867	$1.901

There is a difference in policy between the VA and MCGH in respect to the amount of medication provided for therapy. While the VA normally provides a one-month supply of maintenance medication, MCGH follows a policy of providing a three-month supply. Although there is no definite policy statement for Dane County, maintenance medication usually is provided in a one-month quantity.[2]

One other significant factor is revealed by adjusting the MCGH and VA data for quantity dispensed and days' therapy (Table 12.6). For both institutions, adjusting for the number of days' therapy gave a larger ingredient cost than the adjustment for quantity. This clearly shows that the daily dosages prescribed for the patients were higher than for the medication dispensed through community pharmacies.

In order to compare the cost difference at which hospitals and community pharmacists obtain drugs, the

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2. See Appendix F.

Table 12.6

COMPARISON OF AVERAGE INGREDIENT COST, DISPENSING COST AND TOTAL COST FOR PRESCRIPTION SURVEYS: DATA ADJUSTED FOR DAYS OF THERAPY AND PRESCRIPTION MIX

Cost Component	Dane County	MCG Hospital	VA Hospital
Ingredient Cost	$2.029	$1.451	$1.126
Dispensing Cost	1.883	0.632	0.935
Total	$3.912	$2.083	$2.061

sample drugs were divided into two groups. Group I consisted of products marketed by only one firm while the drugs in Group II were marketed by more than one firm. This enabled the analysis, not only of the hospital's advantages through purchasing large quantities, but also the market power available to hospitals through buying some drugs by competitive bids. The use of bids is made possible by hospitals being less tightly bound to the use of trade names. Prescribing by nonproprietary, or generic, name is encouraged. This, plus the use of the formulary system combine to reduce the physician's insistence on a particular product. It should be recognized at this point that although hospitals are referred to it is really the governmental units owning the hospitals that exert the market power.

While the hospital could be expected to purchase both Group I and Group II drugs at a lower rate than community pharmacists, there is no reason to assume that Group II prices should be comparatively lower than Group I prices solely through quantity purchases. Any resultant price

difference would be due primarily to the hospitals' ability to introduce more price competition into their purchasing of Group II drugs.

Tables 12.7, 12.8 and 12.9 show these price differences for Group I and Group II drugs. Table 12.8 is especially significant as it compares the same quantities and the same prescription mix. Milwaukee County General Hospital was able to obtain Group I products at prices almost one quarter lower than community pharmacists. For Group II drugs there was an even greater difference of 54.83 per cent.

Interestingly, data adjusted for days' therapy show a less marked difference in the cost of medication, especially for Group I products (Table 12.9). Data adjusted for quantity of medication was 23.60 per cent lower for MCGH and 44.12 per cent lower for VA (Group I products) whereas when adjusted for days' therapy the differences are only -2.91 per cent and -31.44. The heavier dosage regimen from the MCGH practically eliminates the cost difference based on quantity.

The Veterans Administration, through buying on an even larger scale and extensively using a bid system was able to obtain prices that were still lower. Group I products were 44.12 per cent lower and Group II drugs 62.20 per cent lower than community pharmacy prices (Table 12.8). While the lower prices are understandable for the Group II drugs in terms of competitive prices, the large price difference

Table 12.7

COMPARISON OF AVERAGE INGREDIENT COST, DISPENSING COST AND TOTAL COST FOR GROUP I AND GROUP II DRUGS AND THE PER CENT DIFFERENCE FROM DANE COUNTY

Cost Component	Dane County Average Cost	MCG Hospital Average Cost	MCG Hospital % Diff.*	VA Hospital Average Cost	VA Hospital % Diff.
Group I					
Ingredient Cost	$2.987	$3.358	12.42	$2.571	-13.93
Dispensing Cost	2.361	0.632	-73.23	0.935	-60.40
Total Cost and difference	$5.348	$3.990	-25.39	$3.506	-34.44
Group II					
Ingredient Cost	$1.492	$1.068	-28.42	$1.166	-21.85
Dispensing Cost	1.590	0.632	-60.25	0.935	-41.19
Total Cost and difference	$3.082	$1.700	-44.84	$2.101	-31.83

*The per cent difference is based on the Dane County figures. This means that the numerical difference is divided by the Dane County base to show the percentage difference.

Table 12.8

COMPARISON OF AVERAGE INGREDIENT COST, DISPENSING COST AND TOTAL COST FOR GROUP I AND GROUP II DRUGS AND THE PER CENT DIFFERENCE FROM DANE COUNTY: DATA ADJUSTED FOR QUANTITY DISPENSED AND PRESCRIPTION MIX

Cost Component	Dane County Average Cost	MCG Hospital Average Cost	MCG Hospital % Diff.*	VA Hospital Average Cost	VA Hospital % Diff.
Group I					
Ingredient Cost	$2.987	$2.282	-23.60	$1.669	-44.12
Dispensing Cost	2.361	0.632	-73.23	0.935	-60.40
Total Cost and difference	$5.348	$2.914	-45.51	$2.604	-51.31
Group II					
Ingredient Cost	$1.492	$0.674	-54.83	$0.564	-62.20
Dispensing Cost	1.590	0.632	-60.25	0.935	-41.19
Total Cost and difference	$3.082	$1.306	-57.62	$1.499	-51.36

*Percentages are based on Dane County costs.

Table 12.9

COMPARISON OF AVERAGE INGREDIENT COST, DISPENSING COST AND TOTAL COST FOR GROUP I AND GROUP II DRUGS AND THE PER CENT DIFFERENCE FROM DANE COUNTY: DATA ADJUSTED FOR NUMBER OF DAYS' THERAPY AND PRESCRIPTION MIX

Cost Component	Dane County Average Cost	MCG Hospital Average Cost	MCG Hospital % Diff.*	VA Hospital Average Cost	VA Hospital % Diff.
Group I					
Ingredient Cost	$2.987	$2.900	-2.91	$2.048	-31.44
Dispensing Cost	2.361	0.632	-73.23	0.935	-60.40
Total Cost and difference	$5.348	$3.532	-33.96	$2.983	-44.22
Group II					
Ingredient Cost	$1.492	$0.677	-54.62	$0.595	-60.12
Dispensing Cost	1.590	0.632	-60.25	0.935	-41.19
Total Cost and difference	$3.082	$1.309	-57.53	$1.530	-50.36

*Percentages are based on Dane County costs.

in Group I products, not only between the VA and community pharmacies but also between VA and MCGH prices, is noteworthy. Possible explanations may be that their costs for supplying such large quantities through the VA depots is considerably less than distributing drugs directly to hospitals and pharmacies and that they traditionally have given a larger discount to the Federal government for ill defined reasons.

Analysis of Differences in Drug Cost

Hospitals owned by cities, counties and states traditionally have been granted discounts in addition to those received by community pharmacists. This preferential treatment explains part of the discrepancy in the costs revealed by this study. The remainder of the difference requires additional analysis.

Since discounts traditionally are based on the list price, this was selected as the base for purposes of comparison. The actual discount from list price obtained by community pharmacists will vary, however, for purposes of illustration, a 40 per cent discount can be used. City, county and state institutions are usually granted discounts of 40 per cent plus 16 2/3 per cent totalling 50 per cent

as a cumulative discount.[3] The Federal government obtains an additional discount of five per cent and results in a cumulative discount of 52.5 per cent.

The average list price for the prescriptions dispensed through Dane County pharmacies was calculated by adding 66 2/3 per cent to the average cost of the drugs. This gave a list price of $3.382.[4] The cost of the drugs dispensed through hospitals was then used to calculate the actual discount received by the hospitals. These actual discounts are compared to the expected traditional discounts (Table 12.10).

Both the Milwaukee County General Hospital and the VA Hospital showed larger discounts from the list price than could be expected from their traditional discount structure. This additional discount is probably due to quantity purchases and the use of a bid system.

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3. While it is generally known that hospitals and governmental institutions receive an additional discount of 16 2/3 per cent, this figure is often not apparent because hospital price lists are used which give the net price to hospitals. The Wm. S. Merrell Company product catalog (October, 1966) states that hospitals will receive an additional discount of 15 per cent, while that of McNeil Laboratories lists a discount of 16 2/3 per cent (January, 1965). A study by a community pharmacist, Merritt L. Skinner, reports ". . .most of the firms gave discounts of 10 per cent to 20 per cent to tax-supported institutions over and beyond the discounts given to any other category." "Drug Claims Received Better Discounts," Weekly Pharmacy Reports, Vol. 14, No. 44 (November 1, 1965).

4. The drug cost plus 66 2/3 per cent is equal to a discount of list price less 40 per cent. This discount structure was used rather than the actual discounts because the price in Dane County is based on a combination of graduated declining markup plus a fee.

Table 12.10

COMPARISON OF DISCOUNTS FROM LIST PRICE, DANE COUNTY, MCGH AND VA

	Calculated List Price	Drug Cost	Traditional Discount	Actual Discount from Calculated List Price	Difference in Discounts
Dane County	$3.382	$2.029	40.00%	40.00%	0.00%
MCGH	3.382	1.235	50.00	63.48	13.48
VA Hospital	3.382	0.966	52.50	71.44	18.94

To determine the possible savings attendant in having more than one supplier of a drug, the discounts on Group I and Group II drugs were compared (Table 12.11). Once again the list prices were calculated by adding 66 2/3 per cent to the cost of drugs dispensed through Dane County pharmacies. The resulting list prices were $4.987 for the Group I drugs and $2.487 for the Group II drugs. Differences between actual and traditional discounts were again obtained.

By obtaining bids from competing firms, price competition is introduced and hospitals are able to obtain a better price. It is logical to assume that drugs marketed by more than one firm would be subject to price competition to a greater extent than products marketed by only one firm. The ability of hospitals and governmental agencies to obtain bids on drugs marketed by more than one firm should result in a lower price for these drugs in comparison to the prices paid by community pharmacists.[5]

The differences in discounts for Group I drugs were markedly lower than for Group II drugs. It can be assumed

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5. Patrick H. Callahan and Hugh F. Kabat, "Experiences with a Bid System of Purchasing in a Private Hospital," American Journal of Hospital Pharmacy, Vol. 22, No. 8 (August 1965), pp. 471-475. The use of a bidding procedure enabled price savings of 26 per cent to be made on 36 items bid by nonproprietary name. Savings also were secured on 61 of 162 products requested by proprietary name.

Table 12.11

DISCOUNTS FROM LIST PRICE - GROUP I AND GROUP II DRUGS

	Calculated List Price	Drug Cost	Traditional Discount	Actual Discount from Calculated List Price	Difference in Discounts
Group I					
Dane County	$4.978	$2.987	40.00%	40.00%	0.00%
MCGH	4.978	2.282	50.00	54.16	4.16
VA Hospital	4.978	1.669	52.50	66.45	13.95
Group II					
Dane County	$2.487	$1.492	40.00%	40.00%	0.00%
MCGH	2.487	0.674	50.00	72.90	22.90
VA Hospital	2.487	0.564	52.50	77.32	24.82

that the quantity of drugs purchased and the quantity discounts for these purchases, were comparable. The greater differences in Group II drugs is, therefore, primarily due to the ability of hospitals and governmental units to employ competitive bidding techniques. The effectiveness of bidding procedures can be determined by subtracting the Group I difference in discounts from the Group II difference in discounts, the remaining difference is the discount obtained through competitive bidding (Table 12.12). The sum of the traditional discount, quantity discount, and the discount obtained through competitive bidding is the actual discount from the calculated list price.

Table 12.12

COMPONENTS OF ACTUAL DISCOUNTS FROM CALCULATED LIST PRICE

	Traditional Discount	Competitive Bidding Discount	Quantity Discount	Actual Discount
Group I				
Dane County	40.00%	0.00%	0.00%	40.00%
MCGH	50.00	0.00	4.16	54.16
VA Hospital	52.50	0.00	13.95	66.45
Group II				
Dane County	40.00%	0.00%	0.00%	40.00%
MCGH	50.00	18.74	4.16	72.90
VA Hospital	52.50	10.87	13.95	77.32

In comparing the discount structure in Table 12.12 it can be seen that Group I products can be obtained for the MCGH at a lower cost than for community pharmacists,

primarily because of the difference in traditional discount. For Group II drugs, however, the major reason for the lower prices is price competition between firms. The VA, despite a large traditional discount are given greater additional discounts for Group I products because of the quantity purchased. Additional savings are made where firms are placed in price competition.

Results of Mailing Cost Survey

The postal rates for third and fourth class mail were applied to the prescription parcels mailed.[6] The rate for third class mail is based solely on weight and is used for sending parcels, containing prescriptions, up to a weight of one pound. For parcels one pound and over, fourth class mail must be used. The rates for fourth class mail are based on both weight and distance, the charge for distance is determined by the use of postal zones. Zones one and two comprise most of the southern part of Wisconsin. Zone three consists of the rest of Wisconsin with the exception of Superior which is in Zone four (see Figure 1).

Of the 151 parcels, 123 were sent third class and 28 fourth class. This mix was assumed to remain constant and rates per parcel and per prescription were developed for each zone using this distribution.

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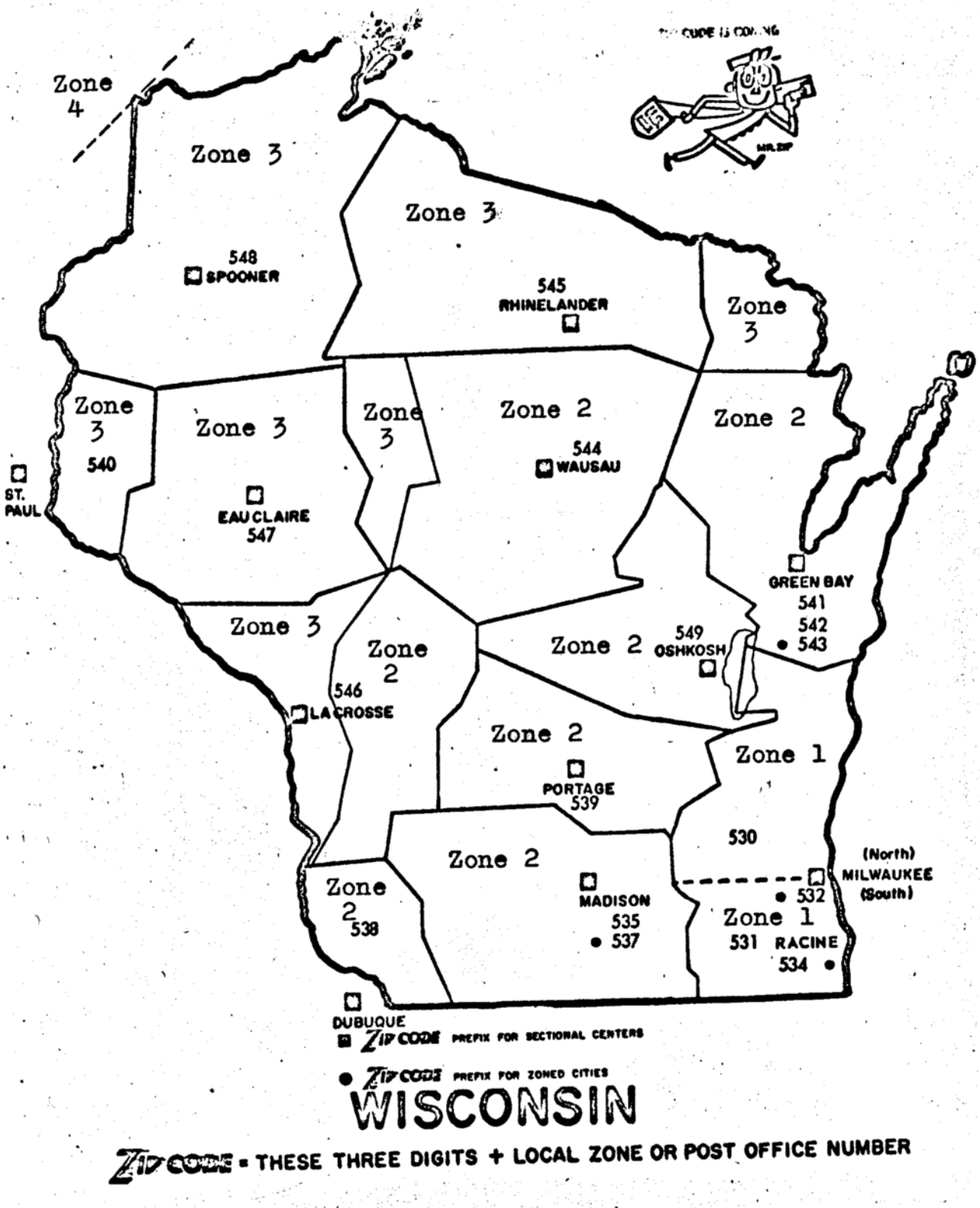
6. Postal rates for third and fourth class mail as well as the number of parcels sent at each rate are presented in Appendix E.

Figure 1

POSTAL ZONES FROM MILWAUKEE



ZIP CODE = THESE THREE DIGITS + LOCAL ZONE OR POST OFFICE NUMBER

Since the postal rate does not cover the full cost of mailing, the cost to the Federal government of distributing parcels through the VA is the combined cost of the postal rate plus the accrued cost not covered by this revenue. Both third and fourth class mails incur costs exceeding the revenue produced. Third class revenue covers only 66.48 per cent of the accrued cost while fourth class revenue covers 86.62 per cent. This additional cost, being a direct cost of the third party, the Federal government, was incorporated into the adjusted mailing cost.

The final adjustment of mailing costs was made to compensate for the enclosure of the postage free envelope in the parcel containing the prescriptions. The rate used by the Post Office was adopted to cover both the cost of the envelope and the cost to deliver it. Stamped envelopes are sold by the post office at a price that supposedly covers these costs and neither incurs a loss nor a profit.[7]

Having made these adjustments in the cost of mailing the parcels, the average cost of mailing a parcel, or a prescription, to each zone was determined. These results are shown in Table 12.13. The average (weighted) cost of mailing a prescription was about 11 cents.

The costs incurred in preparing the parcel for delivery and the correspondence handled by the prescription

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7. See Appendix E.

clerks are included in the calculated dispensing costs and not as a mailing cost.

Table 12.13

AVERAGE ADJUSTED MAILING COST PER PARCEL AND PER PRESCRIPTION

Zone	Average Adjusted Cost per Parcel	Average Number of Prescriptions per Parcel	Average Adjusted Cost per Prescription
1 & 2	$0.3570	2.046	$0.174
3	0.3649	2.046	0.178
4	0.3850	2.046	0.188

In incorporating the mailing costs into the VA data it was assumed that the same composition of prescriptions was mailed to each zone and that this composition was the same as medication that was not mailed. In other words, a constant prescription mix for each group was assumed so that the cost, except for mailing, would be the same. Also, it should be noted, that the mailing rates are based on the parcels being of the same weight distribution as those sampled, hence the mailing costs vary according to zone rates.

The number of prescriptions mailed was 1,274. These were distributed to zones as follows:

Zones 1 and 2	1,010
Zone 3	226
Zone 4	19
Not classified	19

In calculating the average total prescription cost for the VA, including mailing costs, the mailing cost for each zone was multiplied by the number of prescriptions sent to the zone and a weighted average obtained. The 19 prescriptions that were mailed but were not classified by zone were included in the Zone 1 and 2 classification. Their lack of zone classification was due to the lack of an address on the prescription order although there was a notation that it had been mailed. Since the prescription orders for outpatients receiving care at the hospital were often without an address it is likely that the unclassified prescriptions were for residents of Milwaukee and environs which are in Zone 1. The prescriptions mailed comprised 63.35 per cent of all prescriptions dispensed (Table 12.14).

Table 12.14

AVERAGE TOTAL COST FOR PRESCRIPTION SURVEYS: DATA ADJUSTED FOR QUANTITY DISPENSED, PRESCRIPTION MIX AND MAILING COST

Prescription Data	Average Total Cost
Dane County	$3.912
MCG Hospital	1.875
VA Hospital	
Nonmailed prescriptions (737)	1.901
Prescriptions mailed to Zones 1 & 2 (1029)	2.075
Prescriptions mailed to Zone 3 (226)	2.079
Prescriptions mailed to Zone 4 (19)	2.089
Combined mailed and nonmailed (weighted average) (2011)	2.012

CHAPTER XIII

SUMMARY AND EVALUATION

The summary presents the major findings of the dissertation which then are interpreted and evaluated in context so that they are more meaningful and less subject to misunderstanding.

Summary

Formulary

The effectiveness of a formulary depends to a large extent on the number of drugs or groups of drugs it makes available to the physician. There appears to be a direct relationship between the degree of restriction and the resultant reduction in expenditures.

Restrictive formularies, although an effective medium for controlling costs, do not provide any assurance of the quality of care received. As the number of available products is decreased there will be a concomitant decrease in quality, particularly when the number of available products is small.

To employ a formulary usefully and still maintain the quality of pharmaceutical service, a formulary must serve as a vehicle for controls rather than exert its effect through a drastic reduction in the number of products for which payment will be made.

Generic Drugs

Savings resulting from the use of generic drugs must be preceded by inducing most of the physicians to prescribe and most pharmacists to dispense them. With these two conditions satisfied and low cost products supplied, savings of up to six per cent may be obtained. Still there is no assurance of an adequate product quality under these conditions.

Patient Participation

Expenditures can be reduced by having the patient contribute to the price of the prescription. The reduction in expenditure results from the patient paying a part of the cost and also from a decreased utilization of pharmaceutical services by the beneficiary. The amount of the reduction depends on the amount contributed by the patient.

This method will increase the quantity prescribed and dispensed per prescription. The number of prescriptions will decrease and the price per prescription will increase due to the larger quantity.

Outpatient Prescriptions

Medication can be provided at a lower cost through a hospital pharmacy in a large county hospital than through a community pharmacy. This is due to the lower price paid for drugs by the hospital and also a lower dispensing cost.

Adjusting the quantities and prescription mix in order to standardize the prescriptions for purposes of comparison, the price of medication was lowest for the VA hospital and highest for community pharmacies. The lower cost of the drugs to MCGH and the VA is due to these institutions receiving preferential discounts, buying in large quantities and through the use of bids or other procedures that stimulate price competition. The elimination of the preferential discount to hospitals, and city, county and state institutions would reduce the difference in cost of these products by approximately one-half. The average cost of medication from each source was as follows:

Dane County	$2.029
MCG Hospital	1.235
VA Hospital	0.966

The cost of dispensing for the MCGH and the VA Hospital were $0.64 and $0.94, respectively. The addition of mailing costs increases the average VA cost per prescription by about 11 cents, or a total average dispensing cost of $1.05. These costs cannot be compared to these under the vendor program in Dane County since they consist of a different array of services. In order to be compared, a criteria of performance would be required.

Validation of Hypotheses

1. The first hypothesis, that the cost of distributing drugs through outpatient pharmacies of large

hospitals is less than one-half the cost of distributing the same drugs through community pharmacies, was supported. The cost of distributing the drugs through the MCGH was $0.640 which is less than half the $1.883 which was the average cost for community pharmacies. The value for the VA of $0.94 is half the cost but is calculated for a different time period. Inclusion of the mailing cost increased this cost to $1.05.

2. The second hypothesis was not supported. The price of drugs to large county hospitals was over half the price paid by community pharmacists. The VA price was only slightly less than half the price paid by community pharmacists.

Evaluation

Rapidly increasing expenditures for pharmaceutical services has placed considerable emphasis on methods of controlling costs. Unfortunately, the difficulty and perseverance of the problem is such that there is much less emphasis placed on the establishment and maintenance of standards for service. There is an extensive literature on methods of control and some general estimates of their usefulness; there is little material on the objectives of the program in terms of health care. What statements there are on health standards are usually platitudes appended to a list of regulations or instructions, with more form than substance.

The absence of health care standards results in comparisons of various control techniques only in monetary terms. These comparisons then, are not of equal services at different prices, but rather of different services at different prices. Evaluation of such systems can yield tenuous results at best.

This limitation must be recognized in evaluating the major findings. The services provided under the three systems examined vary considerably. It would, therefore, be incorrect to construe the findings as being a direct comparison of the efficiency of each system. Some aspects of the difference in service and costs, however, are of value and should be discussed.

Milwaukee County General Hospital

The Milwaukee County General Hospital was able to dispense medication at a cost of $0.64 per prescription. An examination of some factors underlying this low dispensing cost may be instructive in the devising of efficient distributive systems. The first major difference between the MCGH and that of community practice is environment. Physicians treating outpatients are members of the hospital staff, conversant with the available drugs and their prepackaged quantities. As a result, the pharmacy needs to stock fewer items and these can be prepackaged into standard quantities. An added advantage is that there are relatively few physicians. Since

physicians normally have a small group of drugs that they prefer to use routinely there is little variation in the particular products prescribed. One last advantage in terms of the environment is the close working relationship of the physicians and pharmacists. If a product is prescribed but not carried in stock the pharmacist is able to discuss the matter with the physician and usually obtain permission to use an alternate drug.

Efficiency is obtained in the pharmacy by having drugs prepackaged, having a clerk type labels, using the addressographed part of one prescription order form as a label (the prescription order forms are in triplicate), and by having clerks distribute the medication to the patients. These methods while efficient, prevent any communication between the patient and pharmacist regarding the proper use, storage and renewal of the medication. While this consideration does not have any direct bearing on the proper medication supplied, it may well have an effect on the patient's attitude and expectations toward the medication. The considerable power of a placebo effect is lost in this situation.

As viewed by the patient, the MCGH is at some distance from the center of the city and is difficult to reach. From the center of the city the patient must take a 45 minute bus ride at a cost of a quarter each way. Unless the visit to the hospital is in conjunction with some purpose other than receiving medication, the

transportation charges should properly be considered as part of the cost of the medication. It serves in effect as a contribution by the patient. There may be recognition of this difficulty inherent in the hospital policy of providing a three-month supply of medication. Concurrently it means that a large amount of medication need only be dispensed once instead of in three smaller quantities if a policy of supplying a one-month supply was followed.

Dispensing large quantities of medication to patients can lead to abuse. The Wisconsin State Board of Pharmacy has reported drug abuse resulting directly from this policy plus the fact that the pharmacists were overworked.[1] Dispensing a large number of prescriptions each day and being unable to complete the day's work without several hours of overtime does not leave time for the pharmacist to review the patient's use of drugs or the frequency of dispensing.

Inpatient service is dwarfed by the huge work load imposed by the dispensing of outpatient prescriptions. Consequently, inpatient service has remained rudimentary with bulk containers of drugs sent to the nursing stations when requested. Further services are difficult to implement due to the shortage of staff despite the immediate proximity of six pharmacists in the outpatient department. This incomplete pharmaceutical service places a heavy

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1. "Raps Institutions for Drug Selling," Drug Topics, Vol. 107 (November 4, 1963), p. 6.

burden on the nursing staff and impedes the patient's receipt of the highest quality of medical care. The acutely ill hospitalized patient is thus deprived of a higher standard of pharmaceutical services because of outpatient services. This is a social cost that cannot be measured economically.

The inadequate provision of inpatient service may be reflected in more than pharmaceutical services. Hospital treatment is becoming increasingly complex and more services are required. Each of the services or departments added requires a certain allotment of space relative to the area for beds and active treatment, and as the number of beds increases the proportion of space needed for these other services increases. It is in this continual press for more space that floor area becomes valuable. As a result the pharmacy rarely has as much room as it wants and often less than it needs to function efficiently. It is in this context, that the addition of a heavy outpatient prescription load should be considered since more prescriptions, particularly outpatient prescriptions, will increase the required storage area for medication and records as well as the amount of working area needed. Allocation of scarce floor area to this use is not dependent upon which service is more vital to the hospital patient, but is rather, an allocation that only can decrease the use of facilities in the treatment of inpatients in favor of outpatient services.

Is the outpatient receiving optimal pharmaceutical service? This only can be answered in the negative if the location of the pharmacy is inconvenient, there is a long waiting period to obtain medication, the pharmacy has restricted hours, and the directions for use of the medication are not explained adequately to the patient. Several studies, referred to previously, have shown that a large percentage of outpatient medication is used incorrectly by patients because proper instructions were not received. The best way for patients to obtain this information is from the pharmacist when the prescription is dispensed. Until this is done the service must be considered inadequate. Other services such as delivery and extended hours, are not available and make a direct comparison with community pharmacies invalid.

Veterans Administration Hospital

Veterans Administration outpatient prescription services parallel those of the MCGH in many ways. There are two groups of recipients of services, however, and they are sufficiently different to warrant separate discussion. The first group are those veterans residing in the Milwaukee area who receive outpatient treatment from the VA hospital. This group most closely shares the environment characteristics of the MCGH in terms of physician prescribing. The pharmacy is able to dispense prepackaged medication of standard items that constitute the bulk of

the dispensed prescriptions. Unlike the MCGH, however, the prescription order is received by a pharmacist who types a label, dispenses the medication and gives the medication to the patient.

Patients usually have only a short wait for medication and are free to discuss the medication with the pharmacist. Normally a one-month supply of maintenance medication is supplied and the patient calls for it at the hospital which is located in the center of Milwaukee County. An alternate option of having the medication mailed is sometimes used.

The second group of veterans that receive medication from the VA Hospital live outside Milwaukee County, receive medical care from a private physician and have their medication mailed to them. Services are provided in this way primarily for financial reasons. Medication is obtained by the VA at low prices, dispensed from existing facilities, and physicians are requested to prescribe by generic name or to authorize the VA to dispense a generic product. These measures reduce the costs of the program.

In distributing medication by mail, a time lag of about four days is usual from the time of mailing the prescription order to the receipt of the medication. This period is longer with the intervention of weekends, holidays and periods when heavy mail retards the handling of third and fourth class mail. Although medication provided in this way under the Hometown Program is

primarily for maintenance medication it is not unusual, however, for urgently required medication to be requested through this channel. More importantly, veterans receiving aid and assistance are required to receive all their medication benefits through the VA. This means that antibiotics and other urgently needed drugs are not immediately available. Drugs not in stock lead to further delays.

Under guidelines originally established for the Hometown Program, medication available at a low price from local sources, bulky parcels, and narcotics were not to be mailed. These restrictions have been abandoned. Special authorization was obtained to mail narcotics, and the other two constraints have been ignored since refusal to send these products would harm efforts to have a larger proportion of prescriptions for eligible veterans dispensed through the VA and also because it would be a difficult policy to administer efficiently.

Aside from the time lag, the mailing of medication has other disadvantages. The patient is not able to discuss the proper use of the medication with the pharmacist, there is no communication between the physician and the pharmacist, the prescription records are not immediately available to the pharmacist (they are maintained by a clerk in the Outpatient Department who also obtains authorization for renewals), and mail is sometimes lost or mislaid. These disadvantages have sufficient weight that both the

American Medical Association and the American Pharmaceutical Association have decried the practice.

The pharmacy department has been seriously handicapped by a shortage of pharmacists and many inpatient programs have not been implemented due to the heavy outpatient load.

Dane County

Dane County employs the vendor system. Patients have a free choice of pharmacy, and are entitled to receive the best pharmaceutical service available. The actual services received at the various pharmacies do vary. However, with free choice, patients can select a pharmacy based on the criteria they deem most important. In one case it may be the convenient location, in another delivery service, in another personal attention. The personal service of the pharmacist is assured, they are free to discuss the proper administration of the medication and usually both the pharmacist and physician are in the same community so that there is close communication between all three. The personal supervision of a pharmacist is also valuable in controlling the use of a drug. Discussion with the patient may reveal untoward reactions while the use of a patient record system can prevent therapeutic incompatibilities, drug abuse and allergic reactions. These considerations warrant careful study in any attempted comparison with other systems.

Diverting prescription orders to hospital pharmacists would appear to be a gross misallocation of vital health resources at a time when there is a severe shortage of hospital pharmacists and the demands made upon hospital pharmacists are rapidly increasing. Costs involved in outpatient dispensing, while not apparent in monetary terms, cannot be dismissed lightly.

Criteria for Pharmaceutical Services

Some criteria of performance must be established to help ensure an adequate standard of pharmaceutical service. The proposed criteria listed below are tentatively suggested. Criteria to be used in any program should be equitable to all persons involved in the program, including the beneficiary.

Proposed Criteria

1. Prescription directions explained to the patient by the pharmacist when the medication is provided. In the case of delivered prescriptions, the patient may be instructed by telephone on the proper use of the medication.
2. All legal requirements must be met.
3. A patient record system must be maintained.
4. (a) Maximum patient waiting time of one hour, or four hours for delivered prescriptions.
   (b) Not more than one prescription in 100 that cannot be dispensed within one hour limit.

5. The prescription must be delivered if delivery is requested. This delivery will be accomplished within four hours of receipt of the request for medication.
6. Provision will be made to ensure emergency service. This may be done in co-operation with other pharmacies.
7. Health information is to be available from the pharmacist.
8. The pharmacy is to be conveniently located. This requirement could be met by establishing one or more criteria, such as those listed below:
   (a) Within one mile of the patient's residence.
   (b) The pharmacy can be reached within 15 minutes by public transportation.
   (c) The pharmacy can be reached within five minutes by private transportation.

The need for the directions to be explained to the patient is readily apparent. A large proportion of the persons taking medication are elderly and receive more than one medication. Preventing the misuse of the drugs is becoming even more important as drugs continue to become more potent and potential therapeutic incompatibilities increase. Both to help ensure optimal therapeutic effect, and to prevent untoward effects, it is essential for the pharmacist to instruct the patient in

the use of the medication. A patient record system is necessary to assist the pharmacist in this function.

Legal requirements of the state and federal government are designed for the safety of the public. The stipulation that participating pharmacies conform to these requirements serves as a base upon which additional standards can be erected. The independence from state law enjoyed by federal facilities poses an interesting question. Should these pharmacies conform to state laws? Or should they operate with no reference to the laws of the state in which they operate? While national uniformity of procedures is laudable, it is incongruous for a state to legislate against mail order pharmacies and to require the patient's address on each prescription order only to have federal pharmacies, serving a portion of the state's population, openly operating outside these laws.

It would be presumptuous to assume that the patients' right to determine how their time is to be spent is not of value to them. Yet there has been little attempt to allow patients the maximum free use of their time by requiring that services be rendered with a minimum of delay. Economic value is only one subset of social values, and in the health field is not considered to be the dominant one, and should not, therefore, be the sole determinant of value. Other costs, including the social costs, or real costs, to the patient should be emphasized equally.

The high proportion of elderly patients receiving third party pharmaceutical benefits requires that special provision be made so that pharmaceutical services are readily accessible to them. Home care programs have been initiated in some areas to cope with the problem of non-ambulant patients. Where these programs are not in effect or where the recipients have difficulty in coming to the pharmacy, a delivery service is required. Another reason for including a requirement for delivery service is that this service is available to patients who pay for their own medication. To render the same level of pharmaceutical service, delivery is necessary. Although delivery service should be available it is preferable for the patient to deal personally with the pharmacist whenever possible. Through personal communication with the patient the pharmacist is able to provide health information, related health products, and also to discuss the use of the medication with the patient. To make this interaction feasible a criterion for convenience of location is included.

Emergency pharmaceutical service is a criterion that is obvious and requires no elaboration. Medications should be available for all emergency cases and arrangements must be made to ensure that they are readily available.

The interpretation of the criteria will depend on the program for which they are designed. Rural areas will have standards slightly different from urban regions.

Patterns of service, administrative preferences and beneficiary needs also will induce modifications. Despite these changes they should still fulfill the pharmaceutical precept of having the right drug, at the right place, at the right time.

It should not be construed that these criteria adequately define pharmaceutical service. The provision of a professional service involves interpersonal relationships that are complex and difficult to measure. For example, how is "trust" obtained and maintained by a pharmacist? Clearly this is an attribute that should be included in any definition, however, to list it as a criterion would be impractical. Only objective, measurable standards that reflect an acceptable level of professional service can be attempted. Beyond this, it should be the patient's prerogative to assess the quality of the care and, through a free choice, select his own pharmacist. There are two standards that pharmacists must meet; objective standards set by the third party, and both objective and subjective standards established by the patient through a free choice of pharmacy.

APPENDICES

APPENDIX A

DRUGS LISTED IN SELECTED FORMULARIES

The drugs listed for each of six therapeutic categories are tabulated for the selected formularies. In using the tables note that the drugs are listed alphabetically by generic name and that commonly used tradenames are presented in the enclosed brackets. The tradenames are not meant to be all inclusive, rather, they are provided to aid in the identification of the drugs by the reader.

Key to symbols used

x - unrestricted

xx - use restricted by diagnosis or dosage form

Table 1

SYSTEMIC ANTIBIOTICS LISTED IN SELECTED FORMULARIES

	Balt	Cal	Ill	Ky	Ore	Tenn	Utah	Wash	Total
Ampicillin (Penbritin, Polycillin)			x	x					2
Benzathine penicillin G (Bicillin)	x	xx	x						3
Chloramphenicol (Chloromycetin)	x	xx	x	x	x	x	x		7
Chlortetracycline (Aureomycin)	x	x	x	x			x		5
Demethylchlortetracycline (Declomycin)		x	x	x	x	x	x		6
Erythromycin (Ilosone, Erythrocin)	x	x	x	x	x	x	x		7
Lincomycin (Lincocin)		xx							
Naldixic Acid (NegGram)			x				x		2
Novobiocin (Albamycin, Cathomycin)			x						1
Nystatin (Mystatin)		x	x				x		3
Oxacillin (Prostaphlin, Resistopen)		xx	x						3
Oxytetracycline (Terramycin)	x	x	x	x	x	x	x		7
Panalba (Novobiocin and Tetracycline)			x						1
Paromomycin (Humatin)			x						1
Penicillin G	x	x	x	x	x	x	x	x	8
Penicillin V		xx	x	x			xx		4
Phenethicillin (Syncillin, Maxipen)		xx		x					2
Sodium Cephalothin (Keflin)		xx							1
Sodium Cloxacillin (Tegopen)		xx							
Tetracycline	x	x	x	x	x	x	x	x	8
Tetracycline plus antifungal		x	x						2
Total - unrestricted	7	8	17	10	6	6	9	1	64
Total - restricted and unrestricted	7	16	17	10	6	6	10	2	74

Note: Methacycline (Rondomycin) appears in the Oregon formulary but this drug was introduced after the other formularies had been issued so it was not included in this table.

Table 2

PSYCHOTHERAPEUTIC AGENTS LISTED IN SELECTED FORMULARIES

	Balt	Cal	Ill	Ky	Ore	Tenn	Utah	Wash	Total
Amitriptyline HCl (Elavil)		x	x			x			3
Chlordiazepoxide HCl (Librium)			x			x	x		3
Chlorpromazine (Thorazine)	x	x	x	x		x	x		6
Diazepam (Valium)			x						1
Fluphenazine (Permitil, Prolixin)			x						1
Hydroxyzine (Atarax, Vistaril)			x				x		2
Imipramine (Tofranil)		x	x			x	x		4
Isocarboxazid (Marplan)			x				x		2
Meprobamate (Equanil, Miltown)	x		x	x		x	x		5
Perphenazine (Trilafon)		x	x			x	x		4
Phenelzine sulphate (Nardil)			x						1
Prochlorperazine (Compazine)		x	x						2
Promazine (Sparine)			x						1
Thioridazine (Mellaril)		x	x	x		x	x		5
Trifluoperazine (Stelazine)		x	x				x		3
Triflupromazine (Vesprin)			x						1
Total	2	7	16	3	0	7	9	0	44

Table 3

ORAL HYPOGLYCEMICS LISTED IN SELECTED FORMULARIES

	Balt	Cal	Ill	Ky	Ore	Tenn	Utah	Wash	Total
Acetohexamide (Dymelor)		x	x	x	x	x	x	x	7
Chlorpropamide (Diabenese)		x	x	x	x	x	x	x	7
Phenformin (D.B.I.)	x	x	x		x	x	x	x	7
(D.B.I.-T.D.)			x			x	x	x	4
Tolbutamide (Orinase)	x	x	x	x	x	x	x	x	8
Total	2	4	5	3	4	5	5	5	33

Table 4

CARDIOTONICS LISTED IN SELECTED FORMULARIES

	Balt	Cal	Ill	Ky	Ore	Tenn	Utah	Wash	Total
Digitalis		x	x	x	x	x	x	x	7
Digitoxin (Purodigin)	x	x	x	x	x	x	x	x	8
Digoxin (Lanoxin)	x	x	x	x	x	x	x	x	8
Gitalin (Gitaligin)		x	x			x			3
Lanatosides ABC (Digilanid)		x							1
Procainamide (Pronestyl)		x	x			x	x	x	5
Quinidine Sulphate	x	x	x	x	x	x	x	x	8
Total	3	7	6	4	4	6	5	5	40

Table 5

LAXATIVES LISTED IN SELECTED FORMULARIES

	Balt	Cal	Ill	Ky	Ore	Tenn	Utah	Wash	Total
Bisacodyl (Dulcolax)			x						1
Cascara, Aromatic Fluid Extract	x		x						2
Cascara, Compound	x		x						2
Castor Oil	x		x						2
Citrate of Magnesia	x		x						2
Dioctyl sodium sulfosuccinate (Colace)			x	x					2
Epsom Salts	x		x						2
Glycerin Suppositories	x		x						2
Metamucil			x						1
Milk of Magnesia			x						1
Mineral Oil	x		x						2
Peri-Colace			x						1
Senna (Senokot)			x						1
Total	7	0	13	1	0	0	0	0	21

Table 6

VITAMINS LISTED IN SELECTED FORMULARIES

	Balt	Cal	Ill	Ky	Ore	Tenn	Utah	Wash	Total
Vitamin A	x		x						2
Vitamin B, Complex	x		x						2
Thiamine	x		x						2
Riboflavin	x		x						2
Pyridoxine	x	xx	x						3
Cyanocobalamin		x	x			x		x	4
Folic Acid			x						1
Ascorbic Acid	x		x						2
Vitamin D	x		x						2
Vitamin E			x						1
Vitamin K		x	x	x			x		4
Vitamins A and D	x								1
Multiple vitamins	x		x						2
Multiple vitamins with minerals			x						1
Prenatal vitamin preparations			x						1
Pediatric vitamin drops		x	x						2
Total	9	4	15	1	0	1	1	1	32

APPENDIX B

CHARACTERISTICS OF PRESCRIPTION SAMPLE SELECTED

Table 1

MCGH PRESCRIPTION ORDER SAMPLE AS PER CENT OF PRESCRIPTIONS DISPENSED

	Number of Sample Prescriptions	Total Number Dispensed 7 days	Sample as Per Cent of Total	Total Number Dispensed in Month
February	999	5099	19.59	23,889
April	1075	5324	20.19	25,834
June	1112	5332	20.86	25,258
Total and mean	3186	15755	20.22	74,981

The sample constitutes 3186/74,981 = 4.25% of the prescriptions dispensed during the 3 month period.

Table 2

VA PRESCRIPTION ORDER SAMPLE AS PER CENT OF PRESCRIPTIONS DISPENSED

	Number of Sample Prescriptions	New	Renewal	Total Number New Prescriptions Dispensed	Sample New Prescriptions As % of Total
February	779	700	79	4202	16.66
April	670	656	14	4083	16.07
June	524	524	0	3568	14.69
Total and mean	1973	1880	93	11853	15.86

APPENDIX C

MILWAUKEE COUNTY GENERAL HOSPITAL COST ANALYSIS

Table 1

TOTAL ADMINISTRATION AND GENERAL COSTS FOR INPATIENT, OUTPATIENT AND FIRST AID DEPARTMENTS

	Inpatient	Outpatient	First Aid
Personal Service	$187,422.48	$ 82,652.32	$ 2,617.68
Contractual Service	231,348.50	64,726.01	11,603.86
Commodities	2,470.01	765.14	---
Depreciation - Central Administration	6,106.81	1,565.91	258.41
Depreciation - Forms Department	268.73	---	---
Total	$427,616.53	$149,709.38	$14,479.95*

*Of this amount $1,548.73 is credited for services to other departments. This leaves $12,931.22 to be allocated amongst the departments.

Table 2

ALLOCATION OF ADMINISTRATION AND GENERAL COST BASED ON PERSONAL SERVICE BY DEPARTMENT (INPATIENT)

Department	Personal Service	Per cent of Total	Admin. Allocated
Operation and Maintenance of Plant	$ 202,912.37	2.5097	$ 10,731.89
Housekeeping*	650,373.74	8.0441	34,397.90
Pharmacy	32,590.14	.4031	1,723.72
Total Personal Service	8,085,137.90	100.0000	427,616.53

*The Housekeeping component of Housekeeping and Linen Service was split out as a separate cost unit. The procedure employed is described in Appendix I.

Table 3

ALLOCATION OF ADMINISTRATION AND GENERAL COST BASED ON PERSONAL SERVICE BY DEPARTMENT (OUTPATIENT)

Department	Personal Service	Per cent of Total	Admin. Allocated
Operation and Maintenance of Plant	$ 16,729.77	1.0696	$ 1,601.22
Housekeeping*	52,933.43	3.3841	5,066.32
Pharmacy	137,463.24	8.7882	13,156.76
Total Personal Service	1,564,180.82	100.0000	149,709.38

*The Housekeeping component of Housekeeping and Linen Service was split out as a separate cost unit. The procedure employed is described in Appendix I.

Table 4

ALLOCATION OF ADMINISTRATION AND GENERAL COST BASED ON PERSONAL SERVICE BY DEPARTMENT (FIRST AID)

Department	Personal Service	Per cent of Total	Admin. Allocated
Operation and Maintenance of Plant	$ 2,364.33	0.7558	$ 97.73
Housekeeping*	7,480.79	2.3419	302.84
Pharmacy	---	---	---
Total Personal Service	312,819.66	100.0000	12,931.22

*The Housekeeping component of Housekeeping and Linen Service was split out as a separate cost unit. The procedure employed is described in Appendix I.

Table 5

HOUSEKEEPING AND LINEN SERVICE (INPATIENT) DIVIDED INTO COMPONENT PARTS

	Housekeeping		Linen Service	
Personal Service[a]		$650,373.74		$278,731.60
Contractual Service				
Dry Cleaning			723.26	
Printing & Stationery[a]	60.90		26.10	
Repairs & Mtce. Mach. & Equip.[a]	1,243.69		533.01	
Central Garage[a]	279.20		119.66	
Central Stores[a]	1,328.19		569.23	
Central Laundry			199,182.88	
Sundry Contract. Services[a]	25.20		10.80	
Total Contract Service		2,927.18		201,164.94
Commodities				
Employees Uniforms[a]	284.98		122.13	
Patients and Inmates Clothing			18,131.33	
Bags and Paper			11,164.36	
Blankets			2,255.09	
Cleansers, Soaps & Starches			1,784.68	
Cleaning Supplies	4,950.94			
Kitchen & Dining Rm. Supp.	1,976.08			
Linens			14,067.89	
Misc. Household Items	8,594.51			
Nets and Sacks			154.00	
Yardage and Findings			8,975.10	
Other Personal Household Items	1,302.17			
Sundry Materials & Supplies[a]	678.50		290.78	
Total Commodities		17,787.18		56,945.36

Table 5 - Cont.

	Housekeeping	Linen Service
Total	$671,098.10	$536,841.90
% of Housekeeping and Linen Service Dept.	55.557%	44.443%

The accounts were classified into Housekeeping or Linen Service where possible using, Uniform Chart of Accounts and Definitions for Hospitals (American Hospital Association, Chicago, 1959), pp. 135-156.

[a]These items were divided between Housekeeping and Linen Service in the ratio 70:30.

Table 6

HOUSEKEEPING AND LINEN SERVICE (INPATIENT) - ALLOCATION OF COSTS BETWEEN HOUSEKEEPING AND LINEN SERVICE

	Hsk. & Linen Service	Housekeeping	Linen Service
Personal Service	$ 929,105.34	$ 650,373.74	$ 278,731.60
Contractual Services	204,102.12	2,937.18	201,164.94
Commodities	74,732.54	17,787.18	56,945.36
Total	$1,207,940.00	$ 671,098.10	$ 536,841.90

Table 7

HOUSEKEEPING (INPATIENT) - CREDIT FOR SERVICE TO OTHER DEPARTMENTS ($149,579.57)

	Housekeeping	Less-Credit to Other Depts.*	Hsk.(Inpatient)
Personal Service	$ 650,373.74	$ 78,356.66	$572,017.08
Contractual Service	2,937.18	353.87	2,584.31
Commodities	17,787.18	2,142.99	15,644.19
Total	$ 671,098.10	$ 80,853.52	$590,244.58

Total Housekeeping Cost (Inpatient)

Housekeeping	$590,244.58
Administrative allocation	34,397.90
Total	$624,642.48

*This assumes that the services credited were provided in the same ratio as the departmental costs as a whole.

Table 8

HOUSEKEEPING AND LINEN SERVICE (OUTPATIENT)
ALLOCATION BETWEEN HOUSEKEEPING AND LINEN SERVICE

Pro rata share of Housekeeping and Linen Service - $98,313.74

Housekeeping*	$54,620.16
Linen Service	43,693.58
Total	$98,313.74

Total Housekeeping Expense

Housekeeping	$54,620.16
Admin. Allocation	5,066.32
Total	$59,686.48

*The division into Housekeeping and Linen Service was based on the pro rata share consisting of identical proportions to that of the inpatient service from which it was credited, i.e., in the ratio of 55.557:44.443

Table 9

HOUSEKEEPING AND LINEN SERVICE (FIRST AID)
ALLOCATION BETWEEN HOUSEKEEPING AND LINEN SERVICE

Pro rata share of Housekeeping and Linen Service - $13,894.15

Housekeeping	$ 7,719.17
Linen Service	6,174.98
Total	$13,894.15

Total Housekeeping Expense

Housekeeping	$ 7,719.17
Admin. Allocation	302.84
Total	$ 8,022.01

Housekeeping and Linen Service were divided as in the case of Outpatient.

Table 10

TOTAL HOUSEKEEPING COSTS - UNIT I
(INPATIENT, OUTPATIENT, FIRST AID)

Housekeeping	Cost
Inpatient	$624,642.48
Outpatient	59,686.48
First Aid	8,022.01
Total	$692,350.97

Cost per Square Foot

The effective operating floor area of Unit I, as used by the Accounting Department is 700,503 square feet.

$$\frac{\text{Total Housekeeping Cost}}{\text{Hospital Floor Area}} = \frac{692,350.97}{700,503} = \$0.9884 \text{ per square foot}$$

Table 11

OPERATION AND MAINTENANCE OF PLANT (INPATIENT)

	Oper.& Maint. of Plant	Less Credits Other Depts.	Oper.& Maint. Plant (Inpatient)
Personal Service	$202,912.37	$ 54,754.89	$ 148,157.48
Contractual Service	452,678.14	122,152.86	330,525.28
Commodities	33,841.97	9,132.14	24,709.83
Total	$689,432.48	$186,039.89	$ 503,392.59

Total Cost - Operation and Maintenance of Plant (Inpatient)

Operation and Maint. of Plant	$503,392.59
Admin. Allocation	10,731.89
Depreciation on Assets*	413,323.38
Total	$927,447.86

*See Table 21 for a detailed listing of assets depreciated.

Table 12

OPERATION AND MAINTENANCE OF PLANT (OUTPATIENT)

Pro rata share of Operation and Maintenance of Plant - $56,842.51

Personal Service	$16,729.77
Contractual Services	37,322.51
Commodities	2,790.23
Total	$56,842.51

Total Operation and Maintenance of Plant (Outpatient)

Operation & Maint.	$56,842.51
Admin. Allocation	1,601.22
Depreciation of Assets*	48,246.18
Total	$106,689.91

Table 13

OPERATION AND MAINTENANCE OF PLANT (FIRST AID)

Personal Service	$ 2,364.33
Contractual Services	5,274.58
Commodities	394.33
Total	$ 8,033.24

Total Operation and Maintenance of Plant (First Aid)

Operation & Maint.	$ 8,033.24
Admin. Allocation	97.73
Depreciation*	6,823.85
Total	$14,954.82

*See Table 21 for a detailed listing of assets depreciated.

Table 14

TOTAL OPERATION AND MAINTENANCE OF PLANT - UNIT I
(INPATIENT, OUTPATIENT, FIRST AID)

Inpatient	$927,447.86
Outpatient	106,689.91
First Aid	14,954.82
Total	$1,049,092.59

Table 15

PHARMACY FLOOR AREA ALLOCATION BETWEEN INPATIENT AND OUTPATIENT

Pharmacy Areas	Outpatient	Inpatient	Other**
Outpatient Pharmacy	1464.0		
Outpatient Desk	208.4		
Inpatient Pharmacy		1512.0	
Manufacturing & Prepack[a]	816.9	495.1	
Central Pharmacy[b]	823.6	499.2	465.2
Conference Room, Offices, etc.[c]	545.0	144.1	
Total	3858.8	2650.4	465.2

*Some areas which were neither Inpatient or Outpatient, were allocated between these two areas using a suitable base.

a. Allocated on amount of goods issued to Inpatient and Outpatient.
b. Allocated on the value of goods issued to Inpatient and Outpatient.
c. Allocated on the number of personnel in Inpatient and Outpatient.

**Central Pharmacy issues drugs to pharmacists in buildings other than Unit I, hence a portion of the overhead cost is allocated to them.

The floor area of Pharmacy divisions in Unit I was determined by actual measurement to be 6974.4 square feet.

Table 16

ALLOCATION OF OVERHEAD COSTS IN PHARMACY

	Pharmacy Area	Housekeeping	Oper.& Maint. of Plant	Total
Inpatient	2650.4 sq.ft.	$2,618.60	$3,970.30	$6,588.90
Outpatient	3858.8 sq.ft.	3,814.01	$5,778.80	9,592.90
Total	6509.2 sq.ft.	$6,432.61	$9,749.19	$16,181.80

Housekeeping cost per square foot = $0.988.

Operation and Maintenance of Plant cost per square foot = $1.498.

Total overhead costs per square foot = $2.486.

Table 17

CENTRAL PHARMACY COSTS

Personal Service	$45,808.11
Contractual Services	767.64
Commodities	1,030.33
Depreciation	1,045.65
	48,651.73
Less Abatements	1,184.84
Total Central Pharmacy	$47,466.89

Central Pharmacy costs were allocated in proportion to the amounts issued to each department. The proportion of issues to Inpatient and Outpatient Pharmacy were as follows:

IP = 27.92%
OP = 46.06%

Table 18

ALLOCATION OF CENTRAL PHARMACY COSTS TO INPATIENT AND OUTPATIENT PHARMACY

Department	Share of Goods Received	Total Central Pharmacy Costs	Share of Total Costs
Inpatient	27.92%	$47,466.89	$13,252.76
Outpatient	46.06%	47,466.89	21,863.25

Table 19

INPATIENT PHARMACY DIRECT COSTS

Personal Service		$ 32,590.14
Contractual Services		
Repair & Mtce. Mach. & Eqpt.	$ 33.82	
Duplication and Reproduction	14.29	
Central Pharmacy Charges	13,252.76	
Total Contractual Services		13,300.87
Commodities		
Drugs	352,269.07	
Sundry Materials & Supplies	89.41	
Total Commodities		352,358.48
Total Pharmacy Direct Costs		398,249.49
Less Cost of Drugs and Medical Supplies		352,269.07
Total Direct Costs (Inpatient)		$ 45,980.42

Note: These costs are as they appear in the Annual Report with the exception of Personal Service and Central Pharmacy Charges which have been adjusted by a correction in salaries. In the Annual Report the value for Personal Service was $27,522.78 and for Central Pharmacy Charges, $12,697.05.

Table 20

OUTPATIENT PHARMACY DIRECT COSTS

Personal Service		$137,463.24
Contractual Services		
Printing and Stationery	$ 1,476.05	
Rep. & Mtce. Mach. & Equip.	21.00	
Central Pharmacy Charges	21,863.25	
Total Contractual Services		23,360.30
Commodities		
Drugs	677,459.00	
Household Supplies	61.39	
Medical Supplies	7,882.98	
Office Supplies	138.27	
Sundry Materials and Supplies	42.00	
Total Commodities		685,583.64
Total Pharmacy Direct Costs		846,407.18
Less Cost of Drugs and Medical Supplies		685,341.98
Total Direct Costs (Outpatient)		$161,065.20

Note: These costs are as they appear in the Annual Report with the exception of Personal Service and Central Pharmacy Charges which have been adjusted by a correction in salaries. In the Annual Report the value for Personal Service was $104,347.53 and for Central Pharmacy Charges, $23,788.28.

Table 21

DEPRECIATION ON OTHER THAN DEPARTMENTAL ASSETS

Assets	Inpatient	Outpatient	First Aid
Institutional Assets[a]	$356,703.86	$42,484.31	$5,910.58
Service Department Assets			
Electrical Dept.[a]	322.17	39.71	5.77
Bldg. Mtce. & Repair Dept.[a]	517.55	58.44	9.27
Central Power Plant[a]	49,176.47	5,104.99	809.63
Water Pumping[a]	3,030.14	342.16	54.26
Central Laundry[b]	33,596.11	2,603.31	412.87
Central Garage[a]	194.03	---	---
Central Stores[a]	1,357.02	---	---
Maintenance of Grounds[a]	1,680.42	189.75	30.09
Fire and Police Dept.[a]	341.72	26.82	4.25
Central Pharmacy[c]	291.95	481.63	---
Forms Dept.[d]	268.73	27.05	---
Central Bakery[c]	2,087.35	---	---
Central Administration[d]	6,106.81	1,565.91	258.41

a. Operation and Maintenance of Plant
b. Linen Service (Housekeeping and Linen Service)
c. Pharmacy Department
d. Administration and General

Table 22

DEPRECIATION ALLOCATED BY DEPARTMENT

	Inpatient	Outpatient	First Aid
Operation and Maintenance of Plant	$413,323.38	$48,246.18	$6,823.85
Linen Service	33,596.11	2,603.31	412.87
Pharmacy Department	291.95	481.63	---
Administration and General	6,375.54	1,592.96	258.41

APPENDIX D

VETERANS ADMINISTRATION HOSPITAL COST ANALYSIS

Table 1

ADMINISTRATION COSTS - FY 1966

Department	Inpatient FTEE *	Inpatient Cost	Outpatient FTEE	Outpatient Cost	Total Cost
Office of Director	13.3	$152,625.05	5.9	$ 67,155.02	$219,780.07
Auto Data Proc.	0.5	2,649.60	0.2	1,165.82	3,815.42
Prof. SUC Ser. Sup.	25.3	149,571.01	16.1	95,453.50	245,024.51
Fiscal Division	16.6	129,060.84	6.6	51,409.23	180,470.07
Personnel Div.	12.6	110,839.98	1.7	15,114.54	125,954.52
	68.3	$544,746.48	30.5	$230,298.11	$775,044.59

*FTEE = Full time employee.

Table 2

ALLOCATION OF ADMINISTRATION COSTS TO DEPARTMENTS - FY 1966

Department	No. of Employees	Allocated Cost*
Housekeeping	97.0	$ 51,869.30
Operation and Maintenance of Plant[a]	106.7	57,056.23
Pharmacy[b]		
Inpatient	6.6	3,529.25
Outpatient	5.5	2,941.04
Supply	46.0	24,597.81

*Each department was allocated $534.735 of Administration Cost for each full time employee.

a. There is no department or cost center Operation and Maintenance of Plant. This term is used to refer to a collection of cost centers listed in Appendix D, Table

b. Total pharmacy staff also includes 2.6 persons in Domiciliary and 0.1 in VA Nursing home. These plus Inpatient and Outpatient staff give a total of 14.8 persons at a total cost of $7,914.08. Persons working for less than one full fiscal year result in the number of persons being listed in fractions.

Table 3

HOUSEKEEPING COSTS - FY 1966

Housekeeping Department	No. of Employees	Cost
Inpatient	88.9	$541,200.34
Outpatient	8.1	49,433.48
Total	97.0	$590,633.82

Total Housekeeping Cost

Direct Cost	$590,633.82
Admin. Allocation	51,869.30
Total	$642,503.12

Area Maintained by Housekeeping = 690,072 square feet.

Housekeeping Cost per Square Foot

$$\frac{\text{Total Housekeeping Cost}}{\text{Floor Area Maintained}} = \text{Cost per square foot}$$

$$\frac{\$642,503.12}{690,072} = \$0.9311$$

Table 4

OPERATION AND MAINTENANCE OF PLANT - FY 1966

Cost Center	Inpatient FTEE*	Inpatient Cost	Outpatient FTEE	Outpatient Cost
Engr. Super.	11.2	$103,375.10	0.3	$ 2,584.38
Boiler Plant	9.1	142,411.15	0.7	10,954.70
Incinerator Plant	3.3	24,639.90	0.3	1,895.38
Air Condit. Plant	3.3	32,904.55	0.3	2,531.12
Other Mtr. Veh. Eq.	18.0	140,341.45	2.6	20,048.78
Guard & Fire Service	11.8	73,674.00	0.2	1,270.24
Service Units	6.0	38,744.77	0.1	668.01
Rec. M. & R. Bldgs.	10.1	87,178.79	0.2	1,477.61
Nonrec. M. & R. Bldgs.	--	2,872.01	---	205.14
Rec. M. & R. Bldgs.SVC	13.8	124,832.28	---	---
Nonrec. M. & R. Bldgs. SVC	--	12,490.93	---	892.21
Rec. M. & R. Util. Sys.	2.7	25,644.31	0.2	2,331.30
Rec. M. & R. Other Fac.	4.1	34,957.92	---	---
Nonrec. M. & R. Other	--	12,069.00	---	---
Other Oper. Equip.	7.0	92,694.60	1.4	18,538.92
Util. Opers.	--	100,444.07	---	7,726.47
Elevators	---	310,88	---	5.36
Total	100.4	1,049,585.80	6.3	71,129.62

*FTEE = Full time employee.

Excludes Dietary Equipment, and Laundry and Dry Cleaning Equipment accounts.

Table 5

DIRECT COST - OPERATION AND MAINTENANCE OF PLANT - FY 1966

Department	No. of Employees	Direct Cost
Inpatient	100.4	$1,049,585.80
Outpatient	6.3	71,129.62
Total	106.7	$1,120.715.42

Total Cost - Operation and Maintenance of Plant

Total Direct Cost	$1,120,715.42
Fuel	122,582.00
Administration Allocation	57,065.23
Total	$1,300,162.65

Cost per Square Foot - Operation and Maintenance of Plant

$$\frac{\text{Total Cost-Operation and Maintenance of Plant}}{\text{Total floor area maintained}} = \text{Cost per square foot}$$

$$\frac{\$1,300,162.65}{790,000} = \$1.6458$$

Depreciation - VA Hospital

Depreciation rates for various classes of assets were obtained and applied to the VA assets.[1] The new hospital of reinforced concrete construction was depreciated at 2.5 per cent as it has a predicted useful life of 40 years.[2] Other Facilities consist of fences, parking facilities, retaining walls, shrubs and trees, signs, storage buildings, garages, yard lighting, and underground sewer and water lines. Since these assets do not all have the same useful life they were ranked by useful life and the median value of 20 years was used for this group of assets. The ranking was as follows:

Asset	Useful Life
Shrubs, lawns and trees	10 years
Signs	10
Paving, concrete	15
Underground sewer and water line	20
Yard lighting	20*
Storage buildings	20
Garages	25
Fences	25
Retaining walls	25

For a useful life of 20 years a five per cent depreciation rate was employed for Other Facilities.

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1. American Hospital Association, Chart of Accounts for Hospitals (American Hospital Association, Chicago, 1966).

2. Ibid., p. 121.

Composite depreciation for major movable equipment was based on the useful life of assets by departmental category.[1] The departments were ranked by their composite depreciation rates and the median obtained. This procedure was necessary as there was no record of the depreciable assets in each department. The departments ranked were as follows:

Department	Useful asset life
Housekeeping	10 years
Physical therapy	10
Dietary	12
Laboratories	12
Retail shops	12
General services	14
Central services and supply	15
Clinics	15
Fiscal Services	15
Laundry and linen	15
Maintenance of plant	15
Occupational therapy	15
Recreational therapy	15
Anesthesiology	16
Emergency service	17*
Employee health service	17
Physicians offices	17
Radiology	17
Recovery room	17
Administration	18
House staff, quarters	18
Medical records	18
Patient care units	18
Personnel quarters	18
Pharmacy	18
Medical library	20
Operating room	20
Operation of plant	20
Social services	20

The median useful life resulted in a depreciation rate of 5.88 per cent for Equipment.

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1. Ibid., p. 120.

Table 6

DIRECT COSTS - SUPPLY DIVISION - FY 1966

Department	No. of Employees	Direct Costs
Inpatient	32.8	$234,984.58
Outpatient	8.0	57,358.44
Misc.	5.2	37,005.45
Total	46.0	$329,348.47

Table 7

SUPPLY DIVISION OVERHEAD COST* - FY 1966

Cost Component	Cost per Square Foot	Number of Square Feet	Supply Overhead Cost
Housekeeping	$0.9311	38,500	$ 35,847.35
Operation and Maintenance of Plant	1.6458	38,500	63,363.30
Depreciation	1.2280	38,500	47,278.00
Total	$3.8049	38,500	$146,488.65

*Based on the Supply Division having an area of approximately 38,500 square feet.

Table 8

ADMINISTRATION COSTS - FY 1967

Department	Inpatient FTEE	Inpatient Cost	Outpatient FTEE	Outpatient Cost	Total Cost
Office of Director	14.4	$ 85,362.75	6.2	$ 36,812.69	$122,175.44
Auto Data Proc.	1.1	3,103.11	0.4	1,169.63	4,272.74
Prof. SVC Ctr. Sup.	26.5	80,922.21	17.3	52,762.47	133,684.68
Fiscal Division	16.6	66,531.03	6.5	26,062.57	92,593.60
Personnel Division	11.4	51,979.54	1.7	7,703.24	59,682.78
Total	70.0	$287,898.64	32.1	$124,510.60	$412,409.24

Total Administration Cost = $412,409.24

Total number of employees = 1460.7

Cost per Employee

$$\frac{\$412,409.24}{1460.7} = \$282.337$$

Note: These and succeeding figures are based on a six month period.

Table 9

ALLOCATION OF ADMINISTRATION COST* - FY 1967

Department	No. of Employees	Allocated Cost*
Housekeeping	103.8	$ 29,410.38
Operation and Maintenance of Plant[a]	116.8	33,093.76
Pharmacy[b]		
Inpatient	5.8	1,643.35
Outpatient	5.2	1,473.35
Prescription Clerks[c]	3.0	830.01
Supply	41.0	11,616.82

*Each department was allocated $283.337 of Administration cost for each full-time employee.

a. There is no department or cost center Operation and Maintenance of Plant. This term is used to refer to a collection of cost centers listed in Table 11.

b. Total Pharmacy staff also includes 2.6 persons in Domiciliary and 0.3 in VA Nursing Home. These plus Inpatient and Outpatient total 13.9.

c. Prescription Clerk costs are charged to the Registrar Department and not as a separate cost center. They are treated as a separate unit in this study since their duties are those normally associated with the Pharmacy Service. These costs are included as a Pharmacy cost.

The Prescription Clerks process only Outpatient prescriptions. Their cost is part of the VA Regional Office cost and as such were not part of the hospital expense in FY 1966 since the VA Regional Office did not move into the hospital until June 20, ten days before the fiscal year ended.

Table 10

DIRECT HOUSEKEEPING COSTS - FY 1967

Housekeeping Department	No. of Employees	Direct Cost
Inpatient	95.6	$312,245.91
Outpatient	8.2	26,795.83
Total	103.8	$339,041.74

Total Housekeeping Cost

Direct Cost	$339,041.74
Administration Allocation	29,306.55
Total	$368,348.29

Housekeeping Cost per Square Foot

$$\frac{\text{Total Housekeeping Cost}}{\text{Floor Area Maintained}} = \text{Cost per square foot}$$

$$\frac{\$368,348.29}{690,072} = \$0.5338$$

Table 11

OPERATION AND MAINTENANCE OF PLANT - FY 1967

Cost Center	Inpatient FTEE	Inpatient Cost	Outpatient FTEE	Outpatient Cost
Engr. Super.	11.2	$ 58,024.34	0.3	$ 1,450.61
Boiler Plant	10.6	78,346.26	0.8	6,120.80
Incinerator Plant	3.8	14,347.28	0.3	1,120.88
Air Condit. Plant	3.3	15,499.17	0.3	1,210.87
Other Mtr. Veh. Eq.	17.8	70,405.59	2.6	10,203.71
Guard & Fire Service	11.8	40,076.59	---	---
Service Units	7.4	30,298.07	---	---
Rec. M. & R. Bldgs.	8.6	41,651.35	0.3	1,423.98
Nonrec. M. & R. Bldgs.	--	2,873.66	---	98.24
Rec. M. & R. Bldgs. SVC	18.8	89,804.13	---	---
Nonrec. M. & R. Bldgs. SVC	--	24,165.70	---	---
Rec. M. & R. Util. Sys.	3.0	15,427.26	0.3	1,682.97
Rec. M. & R. Other Fac.	4.5	20,043.46	---	---
Nonrec. M. & R. Other	--	16,353.22	---	---
Other Oper. Equip.	9.3	59,779.34	1.8	11,787.48
Util. Opers.	--	137,654.32	---	10,428.36
Elevators	--	338.80	---	---
Total	110.1	$715,088.54	6.7	$ 45,527.90

Excludes Dietetic Equipment, and Laundry and Dry Cleaning Equipment accounts.

Table 12

DIRECT COST - OPERATION AND MAINTENANCE OF PLANT - FY 1967

Department	No. of Employees	Direct Cost
Inpatient	110.1	$715,088.54
Outpatient	6.7	45,527.90
Total	116.8	$760,616.44

Total Cost - Operation and Maintenance of Plant

Total Direct Cost	$760,616.44
Fuel	46,016.40
Administration Allocation	33,093.76
Total	$839,726.60

Cost per Square Foot - Operation and Maintenance of Plant

$$\frac{\text{Total Cost Operation and Maintenance}}{\text{Total floor area}} = \text{Cost per square foot}$$

$$\frac{\$839,726.60}{790,000} = \$1.0629$$

Depreciation

During the first six months of FY 1967 additional assets were added to VA Hospital, Wood, Wisconsin. The additional depreciation costs were added to the depreciation on previously recorded assets.

The cost centers in which these costs were incurred are listed below. They are treated by the government as current costs in accordance with traditional government accounting procedures. To use them in a cost analysis it was necessary to depreciate them at the appropriate rate so that an unusually high cost would not be recorded in the year of purchase. This would have distorted the analysis and reduced the accuracy of the cost allocation.

Table 13

ASSETS ADDED FY 1967 (FIRST 6 MONTHS) AND THEIR DEPRECIATION COST

Cost Center	Inpatient Cost	Outpatient Cost	Depreciation Rate	Depreciation Cost (Inpatient & Outpatient)
Equip.RPL-Oper.[a]	$55,833.10	$20,648.34	2.50	$ 1,912.04
Equip.RPL-Bl SVC[b]	154.48		5.88	9.09
Equip.Add-Oper.[a]	89,303.78	14,023.84	2.50	2,583.19
Equip.Add-Bl SVC[b]	8,142.83		5.88	478.80
Other Imp. Add.[c]	4,919.00		5.00	245.95

a. These assets were classed as an addition to the building and were depreciated at the same rate as the hospital.

b. These assets were classed as Equipment and depreciated at the median value for departmental equipment.

c. Other improvements were classed with Other Facilities and depreciated at 5 per cent.

Table 14

TOTAL DEPRECIATION COST - FY 1967

Asset	Depreciation Cost FY 1966	Added Depreciation Cost FY 1967	Total Depreciation Cost	Depreciation Cost 6 months
New Hospital	$567,814.07	$ 4,495.23	$572,309.30	$286,154.65
Other Facilities	153,637.52	245.95	153,883.47	76,941.74
Equipment	248,670.55	487.89	249,158.44	124,579.22
Total	$970,122.14	$ 5,229.07	$975,351.21	$487,675.61

Depreciation Cost Per Square Foot

$$\frac{\text{Total Depreciation Cost}}{\text{Total Floor Area}} = \text{Cost per square foot}$$

$$\frac{\$487,675.61}{790,000} = \$0.6173$$

Total Overhead Costs per Square Foot

Table 15

OVERHEAD COSTS PER SQUARE FOOT - FY 1967

Cost Center	Cost per Square Foot
Housekeeping	$0.5338
Operation and Maintenance	1.0629
Depreciation	0.6173
Total	$2.2140

Table 16

TOTAL COST - SUPPLY DIVISION - FY 1967

Cost Component	Cost
Direct Costs	$178,194.71
Administration Allocation	11,616.82
Overhead ($2.214 x 38,500 sq. ft.)	85,239.00
Total Cost - Supply Division	$275,050.53

Direct Pharmacy Costs

The Pharmacy Service accumulated total costs of $336,978.91 of which $65,384.98 was the direct cost exclusive of drugs and supplies. The total direct cost again was allocated using the VA cost accounting percentages.

Table 17

ALLOCATION OF DIRECT COSTS, PHARMACY SERVICE - FY 1967

Service	Percent of Total Cost	Total Cost	Cost Allocated
Inpatient	41.7	$65,384.98	$27,265.54
Outpatient	37.3	65,384.98	24,388.60
Domiciliary	18.6	65,384.98	12,161.61
Nursing Home	2.4	65,384.98	1,569.24
Total	100.0	$65,384.98	$65,384.99

Table 18

ALLOCATION OF OVERHEAD COSTS, PHARMACY SERVICE - FY 1967

Service	No. of Employees	Percent	Area	Allocated Area	Allocated Cost
Inpatient	5.8	52.727	3,100	1,634.54	$3,618.87
Outpatient	5.2	47.273	3,100	1,465.46	3,244.53
Total	11.0	100.000	3,100	3,100.00	$6,863.40

Pharmacy Supply Cost Allocation

Pharmacy Service was allocated a portion of Supply cost proportional to the value of the supplies it received relative to total supplies issued by the Supply Division.

Supplies issued	Sales	Per Cent
Pharmacy Service	$ 271,593.93	17.74
Total (less Fuel)	1,530,781.83	100.00

Supply Cost Allocated to Pharmacy

Total Supply Cost x 17.74 per cent = Allocated Cost

$275,050.53 x 17.74% = $48,793.96

Supply costs were distributed among the Pharmacy services in the same proportion as were the direct expenses.

Table 19

PHARMACY ALLOCATION OF SUPPLY COSTS - FY 1967

Service	Per Cent	Supply Cost to Pharmacy	Allocation to Pharmacy Services
Inpatient	41.7	$48,793.96	$20,347.08
Outpatient	37.3	48,793.96	18,200.15
Domiciliary	18.6	48,793.96	9,075.68
Nursing Home	2.4	48,793.96	1,171.06
Total	100.0	$48,793.96	$48,793.97

Table 20

PRESCRIPTION CLERK TOTAL COST - FY 1967

Cost Component	Cost (6 months)
Wages and Benefits (GS III, Steps 1,2,3)	$ 7,141.92
Administration Allocation (282.337)	847.01
Overhead Cost (315 sq. ft. x 2.214)	697.41
Total	$ 8,686.34

APPENDIX E

CHARACTERISTICS OF MAIL SAMPLE

Table 1

SAMPLE OF MAILED PRESCRIPTIONS - WEIGHT DISTRIBUTION AND AVERAGE MAILING COST THIRD CLASS MAIL

Weight (oz.)	Postage Rate	Number
3.0 - 3.99	$ .08	8
4.0 - 4.99	.10	15
5.0 - 5.99	.12	30
6.0 - 6.99	.14	16
7.0 - 7.99	.16	14
8.0 - 8.99	.18	9
9.0 - 9.99	.20	10
10.0 - 10.99	.22	5
11.0 - 11.99	.24	4
12.0 - 12.99	.26	3
13.0 - 13.99	.28	3
14.0 - 14.99	.30	4
15.0 - 15.99	.32	2
	Total	123

Average (weighted) cost per parcel = $0.1572

Table 2

SAMPLE OF MAILED PRESCRIPTIONS - WEIGHT DISTRIBUTION AND AVERAGE MAILING COST BY ZONE

	Postage Rates - Fourth Class Mail			
Weight (lbs.)	Zones 1 & 2	Zone 3	Zone 4	Number
1.0-1.99	$ .40	$ .42	$ .46	13
2.0-2.99	.46	.49	.55	3
3.00-3.99	.51	.55	.64	4
4.0-4.99	.57	.62	.72	4
5.0-5.99	.62	.68	.80	1
6.0-6.99	.68	.75	.88	1
7.0-7.99	.73	.81	.95	
8.0-8.99	.78	.87	1.03	1
9.0-9.99	.83	.93	1.10	1
Average Cost (weighted)	$ .4932	$ .5300	$0.6029	Total 28

Table 3

TOTAL COST AND AVERAGE COST PER PARCEL
ZONES 1 & 2

Class	Number of Packages	Total Cost	Average Cost
Third	123	$19.38	
Fourth	28	13.81	
Total	151	$33.15	$0.2195

Table 4

TOTAL COST AND AVERAGE COST PER PARCEL
ZONE 3

Class	Number of Packages	Total Cost	Average Cost
Third	123	$19.38	
Fourth	28	14.84	
Total	151	$34.18	$0.2264

Table 5

TOTAL COST AND AVERAGE COST PER PARCEL
ZONE 4

Class	Number of Packages	Total Cost	Average Cost
Third	123	$19.34	
Fourth	28	16.88	
Total	151	$36.22	$0.2399

Table 6

AVERAGE COST PER PARCEL AND PRESCRIPTION BY ZONE

Zone	Average Cost per Parcel	Average No. Presc. per Parcel	Average Cost per Prescription
1 & 2	$0.2195	2.046	$0.107
3	0.2264	2.046	0.111
4	0.2399	2.046	0.117

Table 7

GOVERNMENT EXPENDITURE PER MAILED PARCEL

Class & Zone	Total Cost	Mail Rate as % Accrued Cost[1]	Adjusted Total Cost	No. Packages	Adjusted Cost per Package
Third	$19.38	66.48	$29.15	123	$0.2370
Fourth (Zone 1 & 2)	13.81	86.62	15.94	28	0.5693
Fourth (Zone 3)	14.84	86.62	17.13	28	0.6117
Fourth (Zone 4)	16.88	86.62	19.49	28	0.6961

1. United States Post Office Department, Cost Ascertainment Report, 1965 (U.S. Government Printing Office, Washington, D.C., 1965), p. 18. The figures used are the percent of adjusted costs covered by adjusted revenue.

Table 8

AVERAGE COST PER PARCEL, ADJUSTED, PLUS COST OF ENCLOSED ENVELOPE

ZONES 1 & 2

Class	Average Cost Adjusted	Envelope Cost[1]	Total Average Cost	Combined Average Cost
Third	$0.2370	$0.0584	$0.2954	
Fourth	0.5693	0.0584	0.6277	
Total				$0.3570

1. The cost of envelopes used was the price charged by the Post Office for 1000 plain stamped envelopes, 5 cents, 10 inches long. These envelopes are sold at cost. Postal Manual, Post Office Department, Sec. 141.21, Plain stamped envelopes. The price of 1000 is $58.40. This is the lowest quantity price.

Table 9

AVERAGE COST PER PARCEL, ADJUSTED, PLUS COST OF ENCLOSED ENVELOPE

ZONE 3

Class	Average Cost Adjusted	Envelope Cost	Total Average Cost	Combined Average Cost
Third	$0.2370	$0.0584	$0.2954	
Fourth	0.6117	0.0584	0.6701	
Total				$0.3649

Table 10

AVERAGE COST PER PARCEL, ADJUSTED, PLUS COST OF ENCLOSED ENVELOPE

ZONE 4

Class	Average Cost Adjusted	Envelope Cost	Total Average Cost	Combined Average Cost
Third	$0.2370	$0.0584	$0.2954	
Fourth	0.6961	0.0584	0.7545	
Total				$0.3805

APPENDIX F

PRESCRIPTION SURVEY RESULTS

DANE COUNTY

Table 1

PRESCRIPTION SURVEY RESULTS

DANE COUNTY, GROUP I

Item	Product	Average Values for Each Product					Total Number Dispensed
		No. Doses	No. Days	Ingred. Cost	Dispensing Cost	Total Cost	
1	Chloramphenicol 250 mg.	18.00	4.6	3.32	5.38	8.70	27
2	Sulfamethoxazole 500 mg.	37.75	8.6	2.16	2.27	4.44	16
3	Thioridazine 25 mg.	66.15	24.0	3.12	4.69	7.82	13
4	Prochlorperazine 5 mg.	26.64	15.4	2.06	2.37	4.15	14
5	Imipramine 25 mg.	59.91	20.3	2.98	4.39	7.33	80
6	Chlordiazepoxide 10 mg.	41.75	13.6	2.35	2.79	5.06	93
7	Dextropropoxyphene 32 mg.	25.20	5.5	1.36	0.95	2.31	10
8	Phenylbutazone 100 mg.	40.40	14.3	2.11	2.28	4.40	37
9	Tolbutamide 500 mg.	71.48	37.6	3.22	5.02	8.28	105
10	Chlorpropamide 250 mg.	45.50	32.7	2.70	3.59	6.30	20
11	Liothyronine 25 megm.	89.83	44.6	2.02	1.95	3.81	24
12	Propantheline 15 mg.	84.84	32.3	2.60	3.25	5.85	19
13	Indomethacin 25 mg.	24.00	8.0	1.80	1.55	3.35	1
14	Guanethidine 10 mg.	53.00	30.3	2.00	2.16	4.17	6
15	Triamterene 100 mg.	42.74	31.5	2.28	2.57	4.85	35
16	Acetazolamide 250 mg.	63.27	36.5	2.85	4.30	7.16	11
17	Chlorothiazide 500 mg.	30.06	27.4	1.83	1.77	3.60	104
18	Darvon Compound[a]	30.98	5.2	1.55	1.28	2.84	112
19	Chlorpromazine 25 mg.	51.83	19.8	2.48	3.08	5.57	53

a. Tradename, Eli Lilly and Company.

Table 2

PRESCRIPTION SURVEY RESULTS

DANE COUNTY, GROUP II

Item	Product	Average Values for Each Product					Total Number Dispensed
		No. Doses	No. Days	Ingred. Cost	Dispensing Cost	Total Cost	
20	Tetracycline 250 mg.	16.31	4.1	2.93	2.45	5.40	80
21	Erythromycin 250 mg.	16.34	4.8	3.65	2.75	6.40	29
22	Sulfasoxazole 500 mg.	63.24	13.0	1.73	1.84	3.58	82
23	Meprobamate 400 mg.	50.22	18.4	2.92	2.44	5.51	165
24	Phenobarbital 32 mg.	68.67	25.8	0.26	0.92	1.19	162
25	Diphenylhydantoin 100 mg.	65.84	20.7	1.13	1.47	2.60	39
26	Desipramine 25 mg.	40.00	10.0	2.65	2.40	5.05	1
27	Butabarbital 32 mg.	75.39	25.6	0.98	1.38	2.37	66
28	Aspirin 325 mg.	157.91	27.2	0.48	0.61	1.09	122
29	Thyroid 60 mg.	75.24	56.2	0.36	0.91	1.28	29
30	Donnatal[a] tablets	64.94	21.0	0.77	1.23	2.00	75
31	Chlorpheniramine 4 mg.	30.66	5.0	0.65	1.13	1.78	3
32	Dexamethasone 0.75 mg.	41.77	27.2	5.19	3.17	8.37	9
33	Prednisone 5 mg.	40.18	16.3	2.77	2.17	4.95	11
34	Digoxin 0.25 mg.	64.21	51.1	0.71	1.20	1.90	93
35	Pentaerythritol tetranitrate 10mg	93.00	23.6	2.20	2.09	4.30	78
36	Digitoxin 0.1 mg.	52.24	51.3	0.42	0.96	1.39	123
37	Reserpine 0.25 mg.	64.28	32.1	2.69	2.39	4.98	59
38	Nitroglycerin 0.4 mg.	39.76	0.0	0.42	0.97	1.40	17
39	Hydrochlorothiazide 50 mg.	36.75	36.7	2.14	2.04	4.20	95
40	Penicillin G, 400,000 U.	18.04	5.7	2.14	2.11	4.26	22

a. Tradename - A. H. Robins Co., Inc.

APPENDIX G

PRESCRIPTION SURVEY RESULTS

MILWAUKEE COUNTY GENERAL HOSPITAL

Table 1

PRESCRIPTION SURVEY RESULTS

MCG HOSPITAL, GROUP I

Item	Product	Average Values for Each Product					Total Number Dispensed
		No. Doses	No. Days	Ingred. Cost	Dispensing Cost	Total Cost	
1	Chloramphenicol 250 mg.	51.50	9.2	13.13	0.64	13.77	28
2	Sulfamethoxazole 500 mg.	98.12	30.3	3.00	0.64	3.64	39
3	Thioridazine 25 mg.	160.25	63.1	5.65	0.64	6.29	16
4	Prochlorperazine 5 mg.	72.80	36.3	2.55	0.64	3.19	20
5	Imipramine 25 mg.	182.01	63.5	8.41	0.64	9.05	67
6	Chlordiazepoxide 10 mg.	119.70	43.3	4.92	0.64	5.55	248
7	Dextropropoxyphene 32 mg.	62.02	12.5	1.65	0.64	2.29	39
8	Phenylbutazone 100 mg.	77.50	31.7	3.05	0.64	3.68	8
9	Tolbutamide 500 mg.	192.34	73.0	14.07	0.64	14.71	150
10	Chlorpropamide 250 mg.	167.55	84.5	11.69	0.64	12.33	59
11	Liothyronine 25 megm.	10.00	10.0	0.21	0.64	0.85	1
12	Propantheline 15 mg.	129.77	36.6	3.81	0.64	4.45	18
13	Indomethacin 25 mg.	0.00	0.0	0.00	0.00	0.00	0
14	Guanethidine 10 mg.	78.87	46.8	2.82	0.64	3.46	8
15	Triamterene 100 mg.	0.00	0.0	0.00	0.00	0.00	0
16	Acetazolamide 250 mg.	70.00	64.0	3.58	0.64	4.22	5
17	Chlorothiazide 500 mg.	85.84	68.1	3.43	0.64	4.07	512
18	Darvon Compound[a]	97.15	52.2	2.39	0.64	2.99	122
19	Chlorpromazine 25 mg.	132.08	48.0	4.63	0.64	5.23	84

a. Tradename, Eli Lilly and Company.

Table 2

PRESCRIPTION SURVEY RESULTS

MCG HOSPITAL, GROUP II

Item	Product	Average Values for Each Product					Total Number Dispensed
		No. Doses	No. Days	Ingred. Cost	Dispensing Cost	Total Cost	
20	Tetracycline 250 mg.	32.62	9.6	1.51	0.64	2.15	79
21	Erythromycin 250 mg.	36.30	8.9	3.59	0.64	4.23	49
22	Sulfasoxazole 500 mg.	117.28	29.9	1.54	0.64	2.18	183
23	Meprobamate 400 mg.	131.11	52.3	5.27	0.64	3.29	228
24	Phenobarbital 32 mg.	155.93	53.8	0.08	0.64	0.72	161
25	Diphenylhydantoin 100 mg.	218.75	88.2	3.28	0.64	3.92	4
26	Desipramine 25 mg.	138.25	40.1	6.63	0.64	7.27	8
27	Butabarbital 32 mg.	192.28	65.3	0.76	0.64	1.45	95
28	Aspirin 325 mg.	168.72	29.4	0.27	0.64	0.91	230
29	Thyroid 60 mg.	115.29	65.7	0.66	0.64	1.30	17
30	Donnatala tablets	122.88	34.7	1.00	0.64	1.64	87
31	Chlorpheniramine 4 mg.	62.17	21.5	0.91	0.64	1.55	29
32	Dexamethasone 0.75 mg.	36.42	12.3	0.52	0.64	1.16	7
33	Prednisone 5 mg.	65.09	27.1	0.36	0.64	1.00	42
34	Digoxin 0.25 mg.	84.32	72.2	0.23	0.64	0.87	220
35	Pentaerythritol tetranitrate 10mg	210.38	59.5	2.85	0.64	3.49	13
36	Digitoxin 0.1 mg.	69.30	69.3	0.08	0.64	0.72	36
37	Reserpine 0.25 mg.	120.26	64.2	0.08	0.64	0.72	111
38	Nitroglycerin 0.4 mg.	113.52	0.0	0.12	0.64	0.77	65
39	Hydrochlorothiazide 50 mg.	79.86	71.0	2.75	0.64	3.39	76
40	Penicillin G, 400,000 U.	32.36	9.1	0.37	0.64	1.01	22

a. Tradename - A. H. Robins Co., Inc.

APPENDIX H

PRESCRIPTION SURVEY RESULTS

VETERANS ADMINISTRATION HOSPITAL

Table 1

PRESCRIPTION SURVEY RESULTS

VA HOSPITAL, GROUP I

Item	Product	Average Values for Each Product					Total Number Dispensed
		No. Doses	No. Days	Ingred. Cost	Dispensing Cost	Total Cost	
1	Chloramphenicol 250 mg.	21.25	5.5	2.41	0.94	3.35	4
2	Sulfamethoxazole 500 mg.	37.50	22.5	1.85	0.94	2.79	2
3	Thioridazine 25 mg.	83.20	30.6	2.77	0.94	3.68	180
4	Prochlorperazine 5 mg.	70.41	29.2	2.33	0.94	3.27	12
5	Imipramine 25 mg.	81.92	31.3	3.87	0.94	4.76	154
6	Chlordiazepoxide 10 mg.	93.69	30.1	3.94	0.94	3.71	353
7	Dextropropoxyphene 32 mg.	55.72	5.5	0.87	0.94	1.81	18
8	Phenylbutazone 100 mg.	73.73	24.5	2.92	0.94	3.81	23
9	Tolbutamide 500 mg.	82.63	30.8	2.46	0.94	3.40	19
10	Chlorpropamide 250 mg.	52.50	35.0	3.63	0.94	4.57	6
11	Liothyronine 25 megm.	96.66	39.3	2.09	0.94	3.03	3
12	Propantheline 15 mg.	105.82	29.7	1.55	0.94	2.47	79
13	Indomethacin 25 mg.	120.00	30.0	7.58	0.94	8.52	1
14	Guanethidine 10 mg.	90.00	30.0	2.77	0.94	3.71	6
15	Triamterene 100 mg.	30.00	30.0	1.80	0.94	2.74	2
16	Acetazolamide 250 mg.	62.20	30.2	3.58	0.94	4.52	5
17	Chlorothiazide 500 mg.	45.74	31.4	1.10	0.94	2.04	51
18	Darvon Compound[a]	48.19	16.1	0.76	0.94	1.70	84
19	Chlorpromazine 25 mg.	98.33	29.1	3.22	0.94	4.16	42

a. Tradename, Eli Lilly and Company.

Table 2

PRESCRIPTION SURVEY RESULTS

VA HOSPITAL, GROUP II

Item	Product	Average Values for Each Drug					Total Number Dispensed
		No. Doses	No. Days	Ingred. Cost	Dispensing Cost	Total Cost	
20	Tetracycline 250 mg.	52.21	23.2	5.11	0.94	6.05	19
21	Erythromycin 250 mg.	40.46	18.0	5.10	0.94	5.90	13
22	Sulfasoxazole 500 mg.	88.88	24.4	0.97	0.94	1.91	9
23	Meprobamate 400 mg.	81.88	29.8	2.70	0.94	3.63	264
24	Phenobarbital 32 mg.	97.28	30.8	0.04	0.94	0.97	107
25	Diphenylhydantoin 100 mg.	47.50	30.0	0.49	0.94	1.43	4
26	Desipramine 25 mg.	96.25	26.1	4.43	0.94	5.37	12
27	Butabarbital 32 mg.	94.57	30.5	0.40	0.94	1.35	177
28	Aspirin 325 mg.	215.27	25.0	0.15	0.94	1.09	36
29	Thyroid 60 mg.	92.57	31.0	0.29	0.94	1.23	14
30	Donnatal[a] tablets	97.39	28.6	0.72	0.94	1.66	48
31	Chlorpheniramine 4 mg.	82.50	20.7	0.08	0.94	1.02	4
32	Dexamethasone 0.75 mg.	30.00	30.0	0.96	0.94	1.90	1
33	Prednisone 5 mg.	85.63	23.3	1.05	0.94	1.99	11
34	Digoxin 0.25 mg.	39.79	30.7	0.10	0.94	1.06	39
35	Pentaerythritol tetranitrate 10mg.	92.87	28.7	0.95	0.94	1.91	16
36	Digitoxin 0.1 mg.	35.61	31.2	0.12	0.94	1.08	44
37	Reserpine 0.25 mg.	67.30	30.8	0.14	0.94	1.08	78
38	Nitroglycerin 0.4 mg.	71.96	0.0	0.05	0.94	0.99	28
39	Hydrochlorothiazide 50 mg.	46.09	32.6	0.43	0.94	1.31	43
40	Penicillin G, 400,000 U.	0.00	0.0	0.00	0.00	0.00	0

a. Tradename - A. H. Robins Co., Inc.

APPENDIX I

COMPARISON OF PRESCRIPTION MIX

DANE COUNTY, MCGH, VA

Table 1

COMPARISON OF PRESCRIPTION MIX, IN PER CENT
DANE COUNTY, MCG HOSPITAL, AND VA HOSPITAL, GROUP I

Item	Product	Dane County	MCG Hospital	VA Hospital
1	Chloramphenicol 250 mg.	1.262	0.879	0.199
2	Sulfamethoxazole 500 mg.	0.748	1.224	0.099
3	Thioridazine 25 mg.	0.607	0.502	8.951
4	Prochlorperazine 5 mg.	0.654	0.628	0.597
5	Imipramine 25 mg.	3.738	2.102	7.658
6	Chlordiazepoxide 10 mg.	4.346	7.782	17.553
7	Dextropropoxyphene 32 mg.	0.467	1.224	0.895
8	Phenylbutazone 100 mg.	1.729	0.251	1.144
9	Tolbutamide 500 mg.	4.907	4.707	0.945
10	Chlorpropamide 250 mg.	0.935	1.851	0.298
11	Liothyromine 25 megm.	1.122	0.031	0.149
12	Propantheline 15 mg.	0.888	0.565	3.928
13	Indomethacin 25 mg.	0.047	0.000	0.050
14	Guanethidine 10 mg.	0.280	0.251	0.298
15	Triamterene 100 mg.	1.636	0.000	0.099
16	Acetazolamide 250 mg.	0.514	0.157	0.249
17	Chlorothiazide 500 mg.	4.860	16.065	2.536
18	Darvon Compound[a]	5.234	3.828	4.177
19	Chlorpromazine 25 mg.	2.477	2.636	2.089

a. Tradename, Eli Lilly and Company.

Table 2

COMPARISON OF PRESCRIPTION MIX, IN PER CENT
DANE COUNTY, MCG HOSPITAL, AND VA HOSPITAL, GROUP II

Item	Product	Dane County	MCG Hospital	VA Hospital
20	Tetracycline 250 mg.	3.738	2.479	0.945
21	Erythromycin 250 mg.	1.355	1.538	0.646
22	Sulfasoxazole 500 mg.	3.832	5.742	0.448
23	Meprobamate 400 mg.	7.710	7.154	13.128
24	Phenobarbital 32 mg.	7.570	5.052	5.321
25	Diphenylhydantoin 100 mg.	1.822	0.126	0.199
26	Desipramine 25 mg.	0.047	0.251	0.597
27	Butabarbital 32 mg.	3.084	2.981	8.802
28	Aspirin 325 mg.	5.701	7.217	1.790
29	Thyroid 60 mg.	1.355	0.533	0.696
30	Donnatal[a] tablets	3.505	2.730	2.387
31	Chlorpheniramine 4 mg.	0.140	0.910	0.199
32	Dexamethasone 0.75 mg.	0.421	0.220	0.050
33	Prednisone 5 mg.	0.514	1.318	0.547
34	Digoxin 0.25 mg.	4.346	6.903	1.939
35	Pentaerythritol tetranitrate 10 mg.	3.645	0.408	0.796
36	Digitoxin 0.1 mg.	5.748	1.130	2.188
37	Reserpine 0.25 mg.	2.757	3.483	3.879
38	Nitroglycerin 0.4 mg.	0.794	2.040	1.392
39	Hydrochlorothiazide 50 mg.	4.439	2.385	2.138
40	Penicillin G, 400,000 U.	1.028	0.690	0.000

a. Tradename - A. H. Robins Co., Inc.

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