

AN EVALUATION OF FOUR METHODS OF
PHARMACIST-CONDUCTED PATIENT EDUCATION

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ABSTRACT

The purpose of this study was to implement four methods of patient education in an ambulatory care setting and to evaluate their relative effectiveness in improving patients' knowledge of and compliance with prescribed medical regimens. The four methods of patient education evaluated in this study are: 1) written information only; 2) written and verbal information presented in a non-private area; 3) written and verbal information presented in a private area; and 4) written information with verbal information presented by telephone. The effectiveness of these four methods was evaluated against two control groups who received no information on their medication.

One hundred and fifty-five patients with chronic disorders were randomly assigned to one of the six study groups when they received a prescription from Medical Arts Pharmacy in Saskatoon, Saskatchewan. All patients were 40 years of age or older and approximately one-half of each study group was 65 years or older.

The study follow-up consisted of two patient interviews conducted over a three-week period from the College of Pharmacy in Saskatoon. A telephone interview one to three days after the prescription was received tested patients' short-term knowledge of their medication and assessed the number of side effects patients attributed to their medication. A home interview three weeks after patients received their medication tested their retention of knowledge and their compliance (by pill count) with the medication regimen. A number of attitude and satisfaction questions were asked at this home interview. Patients were unaware these interviews

were related to the patient education services they received at Medical Arts Pharmacy.

One hundred and fourteen patients completed the follow-up period. The demographic characteristics measured were evenly distributed across the study groups with the exception of the number of years of education. This variable is not known to influence any of the dependent variables measured in this study.

The results indicated that private patient education is the most effective method of informing patients about their medication while they are in the pharmacy. The patients in this study group had a mean short-term knowledge score of 63 percent and a mean compliance score of 80 percent at the time of the home interview. Both of these scores were significantly ($p < .05$) higher than those obtained by the two control groups who demonstrated mean short-term knowledge scores of 34 percent and 38 percent and compliance scores of 60 percent and 64 percent. Neither written information alone nor written and verbal information presented in the non-private area caused this alteration in compliance and all study groups had a lower level of knowledge than patients who received private patient education.

Patients educated with written and verbal information in the non-private area had a mean short-term knowledge score of 53 percent and were significantly more knowledgeable than patients who received no information. However, because a similar increase in compliance did not occur (group mean = 70 percent), this method of patient education cannot be regarded as effective as private patient education.

Patients receiving only written information as a method of patient education had a mean short-term knowledge score of 46 percent and a mean compliance score of 69 percent. Neither of these scores were significantly different from those found with the control groups. These results have important implications for the appropriate utilization of written information sheets such as those presently being prepared by the Canadian Pharmaceutical Association. If pharmacists were to use these sheets without verbally reinforcing the information, the cost of producing and distributing the written information would not be justified. The findings of this study support the recommendations that pharmacists should provide private consultation areas for their patients. This method of patient education was the most time-consuming of the interventions tested in this study. It will be necessary for pharmacists to make an effort to alter existing work patterns so adequate time will be available for a complete discussion with the patient.

Education of patients by telephone appears to offer the pharmacist an effective means of reaching patients who do not come to the pharmacy for their prescription. Patients in this study group had a mean short-term knowledge score of 58 percent and a mean compliance score of 85 percent. This study is the first known evaluation of this method of patient education and further research exploring the effectiveness of telephone education would be valuable. This intervention required three-quarters of the amount of time required for private patient education. Pharmacists may find patient education by telephone is easier than private patient education to incorporate into a busy dispensary.

Whenever possible, factors known to influence patients' compliance were measured and compared by study group to determine if they were similarly distributed. Group distribution of complexity of the medication regimen, duration of therapy, agreement with the physician's diagnosis, and the degree of family support did not account for the differences in compliance found in this study.

Although the difference was not statistically significant, more patients who received private patient education reported that they had experienced a side effect from their medication. This may have been due to the increased awareness of this study group of the association between symptoms present before they received patient education and their medication. No negative effects were noted in this regard. These observations support the need to inform patients about side effects possibly associated with their medication.

The majority of patients felt pharmacists should be offering patient education services when these services were discussed at the home interview. As well, patients were receptive to the availability of a private area in pharmacies and indicated a willingness to go out of their way and to pay a nominal fee for this service. On the other hand, most patients reported they had been satisfied with the pharmacy services three weeks prior to the home interview even when they had received only the traditional dispensing service. Most patients indicated also that they would contact a physician before they would contact a pharmacist when they had a question about prescription drugs. Approximately one-half of the study population chose the physician as a primary source of non-prescription drug information.

There were no significant differences between the study groups' attitudes toward the role of the pharmacist. These findings suggest education of the public is needed with regard to what to expect from a pharmacist when a prescription is dispensed and to the potential value of the pharmacist as a source of drug information.

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CHAPTER I
INTRODUCTION

The overall function of the profession of pharmacy is the promotion of patients' health and safety through effective drug-use control (1). Drug-use control, a concept which covers a number of individual and specific pharmaceutical activities, was defined by Brodie in 1966 as "that system of knowledge, understanding, judgments, procedures, skills, controls and ethics that assures optimal safety in the distribution and use of medication." (2) In 1975, the Report of the Study Commission on Pharmacy described the profession of pharmacy as encompassing not only the development, manufacturing and distribution of drug products, but also the development, organization and distribution of knowledge and information about drugs (3). It is this latter area of pharmacy practice, the transmission of knowledge and information about drugs which is the major focus of this thesis. More specifically, this thesis is concerned with an examination of the pharmacist's role in providing accurate and useful drug information to the patient so he may make more informed and rational decisions which will maintain and improve his health.

A. Increased Interest in Patient Education

Recently several groups in our society have expressed an increased interest in patient education.

Government interest stems from the realization that despite advancements in medical technology and vast expenditures on the care of those who are ill, there is little improvement in the overall health of

Canadians. In an attempt to reverse the growing concern for the apparent ineffectiveness of the health care system, the Government of Canada published a working document in 1974 entitled, "A New Perspective on the Health of Canadians" which emphasized the need for an improved approach to health care (4). The concept of health care presented in this document incorporates not only health care for those who are ill, but also emphasizes the preventative aspects of health maintenance with the recognition of each individual's responsibility for his health. Preventative medicine and the promotion of self care is dependent upon a well-informed public. The Canadian Government has become committed to patient education as one mechanism to both improve the quality of health and contain or reduce the rapidly escalating cost of health care.

Part of the cost of health care is dependent upon patients' performance in managing their drug therapy. Approximately 80 percent of patients receive their medications on an outpatient basis (5) and studies show only one-half of these patients can be expected to take their medications as intended by the physician (6). Because additional medical care may be needed when a patient does not comply with the prescribed medical regimen, there is often an unnecessary addition to the cost of health care.

Concern for outpatients' use of medication stems also from the fact most drugs used today are relatively potent and have the potential for inducing illness themselves. It is estimated that three percent to six percent of patients are admitted to hospital due to adverse drug reactions (7). Many of these reactions could have been prevented had someone

interacted with the patient to detect the adverse drug reaction before it became serious enough to require hospitalization.

The government has reviewed these facts and is pressing for greater involvement by pharmacists in educating the Canadian public. Speaking to the Annual Conference of the Canadian Pharmaceutical Association in May of 1974, the Honorable Marc Lalonde, then Minister of National Health and Welfare, stated:

"Every pharmacist in Canada must be enlisted for the difficult task of changing people's attitudes and behavior toward proper treatment. You are ideally situated between the physician and the individual to reinforce the importance of therapy, carefully and regularly taken, and the need to complete any prescribed series of medication. We need your assistance in this vital educational role if we are to bring this problem under control." (8)

Consumer groups have expressed an interest in patient education. These groups are becoming more involved in reforms that affect the cost and quality of health care and are speaking out on the present lack of drug-related information. Erma Angevine, past director of the Consumer Federation of America, in a 1973 presentation to the American Society of Hospital Pharmacists stated:

"Pharmacists have a unique opportunity to inform a vulnerable patient - to make him a healthier consumer ... [the pharmacist's] responsibility is to see that each patient gets the proper drug therapy; to see he knows how and when to take his medication; and to see he is warned and safe-guarded against contraindications." (9)

This group recommended written information, understandable to the consumer, be given to the recipients of all prescriptions. In 1975, they

petitioned the United States Food and Drug Administration to require that this written warning information be provided to all patients.

At their 1977 National meeting, the Consumers' Association of Canada expressed concerns about the lack of understanding by patients and the need for more consistent labelling and information from the pharmacist. These discussions resulted in the passing of a resolution which read:

"When additional information vital to the safety of the patient is necessary but cannot be included on the prescription label, due to the lack of space, this written information shall accompany the medication container." (10)

It is of particular significance to the profession of pharmacy that these recommendations are being heard and supported by government officials. In both countries, steps presently are being taken on a national scale to provide written drug information to patients and consumers (10, 11).

Coupled with consumers' expectations for information on their medication is an increased awareness by the public of their right to sue if these expectations are not met. The traditional role of the physician as the provider of information has now been extended to include the pharmacist in cases of negligence (12). Legal precedents are being established by patients who have sued the pharmacist as well as the physician for supplying insufficient drug information that subsequently resulted in patient injury (13). Thus, pharmacists can no longer ignore consumer demands for patient education.

The increased emphasis on patient education suggests that major attention be given to an examination of the role of the pharmacist as a provider of drug information to patients. Many methods of communicating information to patients have been proposed in pharmaceutical literature. The purpose of this study is to objectively evaluate the clinical impact of four methods of pharmacist-conducted patient education.

CHAPTER II

THE NEED FOR PATIENT EDUCATION

Patient non-compliance, or failure of a patient to adhere to a prescribed medical regimen, is recognized as one of the major unsolved therapeutic problems facing physicians, pharmacists and other health care professionals today (14, 15). A recognition of the extent of non-compliance and an appreciation of its consequences are essential if health care professionals are to play a role in solving this problem. An understanding of the nature of non-compliance is necessary when evaluating strategies designed to improve patients' compliance. The purpose of this chapter is to acquaint the reader with studies documenting the magnitude and determinants of non-compliance and to provide support for the need for patient education.

A. The Magnitude of Non-Compliance

Numerous studies have been conducted in an attempt to identify the extent of non-compliance. There exists no standardized methodology to assess non-compliance and studies vary widely in their individual estimates of the problem. Several in-depth literature reviews (16, 17) indicate up to 50 percent of ambulatory patients do not take their medication as prescribed by the physician. A recent review (6) of studies documenting patients' compliance with chronically prescribed medications revealed these patients take an average of 54 percent of their prescribed dosage.

In 1969, Latiolais and Berry (18) interviewed 180 indigent

outpatients of a university hospital who were taking a total of 403 prescription medications. These investigators found 42.8 percent of patients were making at least one pre-defined medication error. Further analysis revealed 10.2 percent of all patients were misusing their prescriptions in a manner which could be detrimental to their health. Overdosage occurred in 41 percent of cases while omission of one or more doses occurred in 23.6 percent of cases. The most common reasons for error stated by the patient were "he did not understand the instructions" or "he thought he needed an extra dose."

Five years later, Boyd et al. (19) duplicated this study and found 78 percent of 380 study prescriptions from a hospital outpatient pharmacy were being consumed improperly. Improper dosing intervals and premature discontinuation of the medication were the most frequently reported medication errors. The most significant finding in this study is 31 percent of the prescription medications were being used in a manner which posed a serious threat to the patient's health. The authors concluded a major contributing factor to the non-compliance problem was a lack of complete and comprehensible directions from either the physician or the pharmacist.

Geriatric patients are an important subset of the outpatient population and are subject to errors in self-administration of medications. Schwartz et al. (20) interviewed 178 chronically ill geriatric outpatients and found 59 percent made one or more medication errors and 26 percent made potentially serious errors.

The type of error encountered most frequently was omission of the medication (47 percent). Forty percent of the patients were found to be confused or wrong about the general purpose of at least one of their medications. Patients' responses indicated they were not taking their medications as intended because of this lack of knowledge.

Similar results were obtained by Neely (21) who found 59 percent of elderly outpatients made at least one medication error. Thirty-two percent of this population made errors which had the potential for serious repercussions to their health.

In addition to documenting non-compliance does exist, these studies also demonstrate that without knowledge of how to take medication, patients may be expected to make serious errors.

A recent study by McKenny and Harrison (1976) (22) examined a possible consequence of these errors. These investigators found 18.4 percent of 216 hospitalized patients interviewed were admitted to hospital either as a direct result of an adverse drug reaction (7.9 percent) or due to patient's non-compliance with their medical regimens (10.5 percent). All drugs implicated in non-compliance related hospital admissions were prescribed as maintenance therapy for chronic diseases. Examples of the complications resulting from non-compliance included an increased number of seizures in patients taking anticonvulsants and a loss of control of blood pressure in patients taking antihypertensive medication. These authors point out the improper use of medications which were associated with hospital admissions were largely preventable and

a significant portion of the hospital days could have been avoided if the patient had been properly educated.

Documentation and confirmation of the magnitude of non-compliance in the ambulatory patient population has not resulted in a decrease in its incidence over the past several years. Studies conducted in 1978 have reported a high rate of non-compliance in congestive heart failure patients (23), hypertensive patients (24), asthmatics (25), epileptics (26), diabetics (27), and the geriatric patient (28, 29). These studies stress non-compliance is a present day problem which must be examined in greater depth by all health professionals.

B. The Determinants of Non-Compliance

Efforts to solve the non-compliance problem have centered primarily on the identification of factors influencing non-compliance, with the hope non-compliant patients could be identified and steps then could be taken to alter their behavior. The extent of research devoted to this search for the predictors of non-compliance is reflected in a recent review by Haynes (30) of 185 original compliance studies which have examined over 200 separate variables. Few associations have been found between these variables and non-compliance, with much of the work yielding either inconclusive or conflicting results.

Only those variables necessary for an understanding of the nature of non-compliance are discussed in this chapter. These variables are discussed as they relate to: 1) sociodemographic features of the patient;

2) features of the disease state; 3) features of the source of therapy; 4) features of the therapeutic regimen; 5) patients' knowledge of the therapeutic regimen; and 6) sociobehavioral features of the patient.

1. Sociodemographic Features of the Patient

Investigators have studied the relationship of social and demographic characteristics of the patient to non-compliance in great detail. Latiolais and Berry (18) and Boyd et al. (19) studied a randomly selected cross section of the outpatient population. Their efforts to isolate common factors in non-compliant patients were unsuccessful. These authors were forced to conclude the tendency to make errors in self-administration does not correlate with any one factor, with the possible exception of age. Both studies found greater non-compliance with increased age, indicating patients over 65 years may be more prone to non-compliance. This finding is not consistent with the results of other studies (31, 32, 33) and it is likely the effects of aging on compliance are multiple in nature.

While geriatric patients may not necessarily be more prone to non-compliance than younger patients, they deserve special consideration. Studies indicate up to 80 percent of patients over the age of 65 suffer from one or more chronic diseases compared to 40 percent under the age of 65 (34). Consequently, geriatric patients use more medication than any other age group (35, 36) and because of alterations in physiologic function are at increased risk for adverse effects from drugs (37, 38).

Other attempts have been made to relate non-compliance to sex, race, religion, marital status, education and socio-economic status of patients (30). Few studies have found any association between these variables and non-compliance. This suggests it is impossible to identify which patients do not take their medication correctly on the basis of their social and demographic characteristics.

2. Features of the Disease State

Contrary to what one might expect, few associations exist between the features of a patient's disease, such as the severity or duration of that disease, and non-compliant behavior (30). The one exception to this general finding is the lower compliance rate among patients with a psychiatric diagnosis than among those with an organic diagnosis. This may be explained on the basis that the psychiatric illness itself may erode the patient's capacity to cooperate (39). The patient often lacks insight into the fact he is sick and as he relapses, ceases medication at the time it is needed most.

Other features of the disease state which have been examined and found not to be related to non-compliance include previous bouts of the disease, the time elapsed between attacks, degree of disability and number of previous hospitalizations (30).

3. Features of the Source of Therapy

A number of variables related to the source of the therapy have been examined.

Most evidence suggests that while some continuity of care is desirable for individual patients (30), compliance is no different among patients of different physicians (40, 41). On the other hand, compliance tends to be reduced when individual patients are highly dissatisfied with their therapist and when their expectations have not been met by their therapist (42).

There appears to be no association between a physician's prediction of the degree of compliance in his patients and the patient's actual behavior (43, 44). It is not surprising health professionals are unable to distinguish between compliers and non-compliers as evidence has been presented to show a lack of distinguishing demographic or disease features among non-compliers. However, even with adequate documentation of the magnitude of non-compliance, physicians often assume this is not a problem with their patients (45).

The efficiency and convenience of clinics may play a part in compliant behavior (30). One study found waiting times at pharmacies had a negative effect on compliance (46). It is not known whether having a prescription delivered or picked up by a second party influences compliance.

The setting in which a medication is prescribed and the extent to which it is supervised will influence compliance (47). Thus, hospitalized patients are more compliant than day-patients, who are in turn more compliant than outpatients. The extent to which a patient is supervised at home also influences his compliance. The influence of the

of the family appears to be considerable, with higher compliance among patients with supportive and stable families (48, 49).

4. Features of the Therapeutic Regimen

Several features directly associated with the therapeutic regimen have been identified as playing a contributory role in non-compliance.

The degree of behavioral modification, or that change which a patient must make in his lifestyle in order to follow a prescribed medical regimen, is one of the few variables about which there are no dissenting reports. Any therapeutic regimen necessitates some behavioral change on the part of the patient as he must learn to acquire new habits (50). It is understandable that patients would be most likely to comply with those therapies which are most compatible with their normal daily routine.

Closely associated with this is the complexity of the medication regimen. It is accepted that the simplest drug regimen is likely to be followed most closely. In 1977, Haynes and his associates (51) reviewed a number of alternative regimen studies. These authors concluded a once-daily drug regimen results in greater compliance than multiple daily dose regimens, regardless of the number of pills taken on each occasion.

Several studies provide empirical support for a negative relationship between duration of drug therapy and compliance (40, 52, 53). In tuberculosis, non-compliance has been shown to increase from 18 percent of patients at the end of the first year of treatment to 61 percent of patients treated by the end of the fourth year (54). It is reasonable to

assume the longer a patient has remained well, the more he may be prepared to gamble on continued good health.

There is little information on the effect of the cost of drug therapy on compliance. Caldwell (55) found one-third of patients admitted to hospital with a hypertensive crisis had stopped taking their medications due to financial difficulties. It has been suggested more attention should be given to expense as a factor of non-compliance, particularly for patients with chronic diseases (30).

Although direct drug costs are clearly a barrier to some people (49), this should have much less impact in provinces like Saskatchewan which have adopted universal and/or comprehensive drug plans. The effect of indirect costs of non-compliant behavior such as loss of income and productive capacity have not been examined.

Few studies have assessed whether the development of unpleasant side effects from a drug acts as a deterrent to compliant behavior. Caldwell (55) found 7 percent of his population discontinued their anti-hypertensive treatment on the grounds of side effects. Latiolais and Berry (18) found 5 of 105 medications were underutilized because they "made the patient feel ill". Weintraub et al. (31) concluded side effects were not an important factor in determining compliance with digoxin regimens. It has been suggested recently an individual may consider side effects to be evidence the drug is working, especially when there is no prompt therapeutic response, and thus he may be more compliant with the regimen (56).

On the basis of a few studies such as those mentioned here, two reviewers (30, 57) have concluded side effects do not have an important effect on compliance. This conclusion should be interpreted with caution. The subject has not been studied extensively and the studies which do examine side effects as a variable affecting compliance have done so either in a narrow segment of the patient population (55) or with drugs known not to be associated with unpleasant side effects (31). McKelvey and Lamy (58) interviewed 602 ambulatory patients and found 32 percent altered their dose because of side effects and in most cases discontinued the medication.

Patients often do not know the side effects their drugs may cause and they may unconsciously decrease or discontinue their medications because of an unpleasantness associated with their use (59). The reason subsequently given for non-compliance may then be "constructed" if the patient is unaware of the association of the events. This may account in part for the underreporting of side effects and should be kept in mind when interpreting results based primarily on descriptive verbal patient reports. It also provides support for the need to inform patients of the side effects they may experience so if they occur measures may be taken to make medication taking more pleasant.

5. Patients' Knowledge

Numerous studies have shown ambulatory patients are not well informed about their medications (28, 58, 60, 61). One of the major reasons for non-compliance may be this lack of knowledge possessed by

the patient concerning his medication (18-20, 62).

Boyd et al. (19) conducted a formal inquiry into patients' comprehension of six elements of the prescription, which included the name, purpose, administration technique, amount of medication to be taken at a single dose, and scheduling of the medication throughout the day. The correlation between patients' comprehension of these elements and their subsequent compliant behavior was statistically significant in all cases, with the exception of administration technique. Only 31 percent of patients knew all six elements.

Marsh (63) found that significantly more patients who did not understand why digoxin had been prescribed for them reported non-compliance with that medication.

Further evidence that a lack of knowledge contributes to non-compliance is found in several recent studies (64-66). In 1976, Parkin (66) assessed the knowledge and compliance of elderly patients with chronic diseases 10 days after they were discharged from hospital. Thirty-four percent of the 130 patients interviewed did not take their drugs as prescribed because they did not have a clear understanding of the intended regimen. Most of these patients were unsure of the correct dosage or took their medications only when they felt it was necessary. Others had reverted to dosages they had taken before hospital admission, ignoring any modifications made during the hospital stay. Hoarding of prescriptions is known to be a common phenomenon (35) and a significant finding in Parkin's study is that over half of the patients had restarted drugs

which were not a part of the presently prescribed regimen.

In Parkin's study a pill count was used to objectively assess the compliance of the 84 patients who correctly described their drug regimen. Twenty-six percent of these patients actually took less than the prescribed dose. Statistically, no correlation was found between these patients' compliance and their understanding of their illness or the prescribed treatment.

Studies such as this have contributed to considerable controversy about the relationship between knowledge and compliance. Several investigators have reported no association between compliance and a patient's knowledge of the name of his medication (67), purpose of his medication (31, 68) and the recommended dosage (49). Haynes (30) has analyzed twelve studies which investigated patients' knowledge of their disease and its therapy as predictors of non-compliance and concluded:

"... it appears that the gap between the clinical prescription and the patients' subsequent compliance behavior is, at best, marginally narrowed by knowledge possessed by or indeed, imparted to the patient." (30)

This statement can be debated on several points. Haynes based his conclusion on the supposition that studies concluding no relationship existed between knowledge and compliance were of greater methodologic soundness than studies finding a positive relationship between the two variables. The author feels this fact alone does not rule out the suggestion of a major reason for patients' non-compliance is their lack of

knowledge about their drugs. Rather, it may simply reflect a lack of adequately designed studies examining this variable. The second point is that formal parameters to measure patients' knowledge do not exist. This makes it difficult to draw valid, general conclusions based on results of studies using a wide range of definitions for this variable.

Finally, Haynes suggests compliance is "at best marginally narrowed by knowledge ... imparted to the patient". None of the studies analyzed by Haynes tested a change in compliance after the patient was "educated" about his drugs and there are no known studies which formally examine this hypothesis.

In the view of the author, a more reasonable conclusion to be drawn from available studies would be that while knowledge of how and when to take a drug is a necessary pre-requisite for compliant behavior, such knowledge possessed by the patient does not guarantee compliant behavior.

6. Sociobehavioral Features

An interesting concept recently introduced by behavioral scientists to explain non-compliant behavior is the Health Belief Model (HBM)(69). This model examines the patient's role in non-compliance and may explain why conflicts exist in the literature examining medical and sociodemographic variables. The HBM suggests a patient's decision to comply with the recommended medication regimen is based on three elements (70):

- 1) the individual's perception of the threat of illness

(independent of factual knowledge or the actual truth of the matter), consisting of both personal susceptibility to the disease and the degree of severity of the consequences which might result from contracting the disease.

- 2) The individual's perception of the benefit of treatment in terms of its feasibility and potential value in reducing susceptibility and/or severity of the disease, weighed against any perceived or actual barriers to the proposed treatment (e.g. drug costs, side effects).
- 3) The presence of a "cue to action" which must occur to trigger the advocated health behavior (e.g. perception of bodily states such as pain or external stimuli such as a reminder to take medication).

The underlying theme in this model is that ultimately it is the patient who makes the decision whether or not to comply with prescribed medical regimens. This decision is based on the patient's perception of the consequences of each decision. This implies the patient requires sufficient information to persuade him the most rational decision is to continue with the full course of therapy.

One study has tested the predictive value of the HBM. In 1978, Becker (25) interviewed 111 mothers who brought their children to a pediatric emergency facility for the treatment of acute asthmatic episodes. Using blood levels of medication as the measurement of compliance, he found the mothers' perception that the illness did not

represent a threat to her child and the difficulties associated with administration of the medication were highly related to non-compliance.

C. Summary

It is apparent from research conducted thus far that non-compliance is a highly complex behavior. Although isolated variables are identified as being consistently associated with non-compliance, (Table I), it is likely no single factor determines non-compliance. Rather, the problem is one of highly interrelated variables and current research efforts into the determinants of non-compliance might better be spent on the experimental testing of strategies designed to improve compliance.

TABLE I

Variables Consistently Associated with Non-Compliance*

Category	Specific Variables
1. Disease	Psychiatric diagnosis
2. Therapeutic Source	Inefficient or inconvenient clinics Inadequate supervision Patient dissatisfaction Family instability and lack of support
3. Therapeutic Regimen	Degree of behavioral change Complexity Duration
4. Patient Knowledge	Inadequate instructions
5. Sociobehavioral Features	Inappropriate health beliefs

*adapted from Haynes (30)

There is sufficient evidence to suggest an initial step toward improving compliance might be to educate the patient about his medication. Identification of the non-compliant patient has not been successful and all patients therefore must be considered potentially at risk for this behavior. The pharmacist, by virtue of his relative accessibility to the patient is in an ideal position to ensure all patients are properly educated about the use of their medication.

CHAPTER III

PHARMACIST INVOLVEMENT IN PATIENT EDUCATION

Although isolated reports of pharmacist involvement in patient education have appeared in the literature (71, 72), there is evidence to suggest this is a role which has not been adopted by many practising pharmacists. The purpose of this chapter is to review studies documenting the apparent lack of patient-pharmacist communication in a community pharmacy setting and to examine selected barriers which may inhibit this interaction.

A. Lack of Pharmacist-Patient Communication

A lack of pharmacist-patient communication is documented in several studies. In 1970, Arnhold et al. (73) interviewed 177 parents of pediatric patients and found 5 percent had been instructed on the proper administration of the prescribed medication by a pharmacist. A study by Kotzan and Williams in 1972 (74) revealed 18 percent of patients receiving a prescription from a community pharmacy had professional communication from a pharmacist. In 1974, Rowles (75) visited 100 pharmacies posing as a patient. Fifty-four percent of the prescriptions were accompanied by the relevant auxiliary labels and 15 percent of pharmacists provided verbal instructions for the correct use of the product. In other reports by Hoff (76) and McKelvey (58), 88 percent (n = 415) and 39 percent (n = 602) of patients respectively, reported they did not receive information from a pharmacist when they received their prescription. Recently, Lundin (28) found 34 percent of 170 medications prescribed for geriatric patients had been accompanied by

instructions other than those found on the prescription label.

The report of the Study Commission on Pharmacy has stated a concern for the lack of pharmacist involvement in patient education (77). While recognizing some pharmacists attempt to inform the patient of expected effects from medication this Report concluded:

"[pharmacy] cannot be described as either effective or efficient in developing, organizing and distributing knowledge and information about drugs. [Pharmacy] must be judged only partially successful in delivering its full potential as a health service to members of society." (78)

The concern voiced by the Study Commission is not new. For the past two decades there has been active discussion in pharmacy literature concerning the need for the profession to expand its traditional dispensing role into more professionally-oriented functions.

As early as 1959, Griffenhagen stated in an editorial:

"In too many instances the public is being served by a phantom pharmacist ... we call not only for the complete elimination of the phantom pharmacist, but advocate a substantial investment in individual professional effort to create a better informed public." (79)

Twenty years later, in an address to the Ontario Pharmaceutical Association, Wm. Wensley, Registrar, echoed this message. He stated:

"The public is being frustrated in many instances in obtaining useful information about drugs from the pharmacist."

and

"The greatest opportunity, the greatest challenge that pharmacy has ever had is to become a credible source of [drug] information for the patient." (80)

Clearly, the similar nature of the content of these two messages indicates the "professional effort" exerted thus far has not been sufficient.

Evidence pharmacists are not fulfilling their patient education role voluntarily has led many regulatory bodies to consider legislation making pharmacist-conducted patient education mandatory. Pharmacy regulations mandating patient prescription counselling by pharmacists presently are in effect in seven states in the United States (81).

In 1975, legislation was passed in Ontario which required pharmacists to be involved in the sale of non-prescription medications "sufficiently potent or specialized in their use to warrant special consideration by pharmacists." (80)

Two studies conducted in states requiring patient education show pharmacists are ignoring mandatory patient education to a substantial degree. Campbell and Grisafe (82) surveyed 192 randomly selected pharmacies in the State of Washington and found 53 percent of the pharmacists did not explain even the prescription directions to patients. Puckett et al (83) visited 95 pharmacies in Kansas posing as patients and noted in 59 percent of cases information would not have been provided had the "patient" not requested it. These studies suggest mandating pharmacists to educate patients may not be a satisfactory solution to the problem. Before additional or alternate steps can be taken however,

possible barriers to effective pharmacist-patient communication will have to be examined.

B. Barriers to Pharmacist-Conducted Patient Education

Explanations for the lack of pharmacist-patient communication might include: 1) there is a lack of documentation showing the value of pharmacist-conducted patient education; 2) pharmacists lack the confidence or ability to educate patients; 3) pharmacists perceive an economic constraint to offering this service; and 4) patients have an unfavorable perception of the pharmacist's role in patient education.

Whether or not these account for the lack of pharmacist-conducted patient education has not been researched extensively and in some cases the suggestions are based on personal feelings of the author.

1. Lack of Documentation

The pharmacist's perception of his role in reducing medication errors may determine the emphasis he places on patient education in his practice. Few studies have objectively evaluated pharmacist-conducted patient education and it is possible inadequate documentation leaves many pharmacists unconvinced about the value of this service. As well, there are many unanswered questions as to how this role should be fulfilled most effectively. Studies examining how patient education should be conducted are discussed in the following chapter.

Another possibility is practising pharmacists may not perceive a need for patient education, despite the numerous studies showing otherwise.

Health professionals often assume patients know the correct procedures for handling and administering medication and may fail to supply the necessary information (60, 84). As pointed out in Chapter I, there seems to be an underlying assumption among physicians that patients follow their advice regarding compliance (45). This assumption is an error which may not be unique to physicians alone.

The author has noted a concern of some pharmacists is that patients will experience an increased number of side effects if they are informed of their possible occurrence. No known studies have examined this hypothesis.

2. Lack of Ability

Several studies have shown pharmacists in an unfavorable light regarding their ability to apply drug knowledge for the promotion of patients' welfare (83, 85-89). In 1975, Jang (87) evaluated the performance of 48 community pharmacists presented with 16 therapeutic problems. The majority of pharmacists performed sub-optimally in all categories of activity evaluated. This author concluded:

"pharmacists are not volunteering [drug use control] services and when asked, they do not provide the correct answers." (87)

Nelson (88) had a trained shopper visit 48 community pharmacies known to maintain patient profiles. The "patient" presented a prescription for warfarin on the first visit. One week later, 47 of the 48 pharmacists filled a prescription for phenobarbital for the same patient, even after looking at their profiles.

In the Puckett survey (83) cited previously, pharmacists were scored on their ability to counsel patients on their medications. The pharmacists' average score, expressed as a percentage of optimal scores, was 19 percent. While the method of evaluation may be criticized on the basis of its subjectivity, this survey questions the quality of patient education conducted by pharmacists.

3. Economic Constraints to Patient Education

Economic constraints appear to act as a major barrier to pharmacist-initiated patient education. Traditionally pharmacists are remunerated on the basis of the number of physical units dispensed and do not see direct compensation for the delivery of patient education. With this system, advice given to patients may be at the expense of a prospective sale and profit to the pharmacist. Pharmacists may not only perceive no economic incentive to communicate with the patient, but there may be the reverse incentive not to communicate (90).

By far the most common concern of community pharmacists is that additional revenue must be generated to cover the cost of providing patient education before this service is feasible. Consumer willingness to pay for patient education from pharmacists was examined in a 1976 study by Gagnon (91). The results suggested this could not be an expected source of revenue. Although one-half to three-quarters of the 934 consumers questioned in this study indicated they felt the various components of patient education were important, only 46.9 percent felt they would probably pay (35.8 percent) or definitely pay (11.1 percent) 25 or

50 cents more per prescription if they received the service.

Similar results are found in a study evaluating the public's acceptance of patient records (92). The respondents were predominantly in favor of patronizing a pharmacy which maintained a patient record system; however, less than one-half were willing to pay a "minimum fee" for this service.

These results are not surprising as studies cited earlier show the value of professional pharmaceutical services, particularly patient education, have not been adequately demonstrated to the public. It seems unreasonable to expect consumers to be willing to pay for a service they are not receiving at present.

This applies equally to third-party payment agencies. If these agencies do not see pharmacists incorporating patient education into their dispensing role, they are unlikely to respond favorably to requests for additional payment for this service.

Two specialized patient education programs in the United States have shown third-party payment agencies are likely to reimburse pharmacists for professional services once they are convinced of the cost-effectiveness of that service. Nordberg and King (93) obtained payment from Blue Cross for diabetic and cardiac patient education programs based on the number of hospital readmissions of those patients in the program compared to those who were not in the program. Fudge and Vlasses (94) demonstrated a significant cost saving when patients with hemophilia were instructed by pharmacists. Pharmacists of Ohio are now reimbursed by

third-party payment agencies for this service. Similar reports from the United States (95, 96) and Quebec (97) show third-party payment agencies are willing to compensate the pharmacist for various non-dispensing services if the value of those services have been demonstrated. Studies on the relative cost-effectiveness of patient education as an extension of the dispensing function of community pharmacists are not available (98). Until such studies are available, much of the cost of pharmacist-conducted patient education will have to be borne by the profession itself (80).

Research documenting the actual cost of patient education to the community pharmacist is scarce. Hospital based cost studies report patient education at discharge requires anywhere from 4.4 minutes to 16.5 minutes per consultation (99,100). On the basis of the pharmacists' hourly wage, the former study calculated patient education in a hospital costs \$0.62 per patient per day. These figures are difficult to extrapolate to community pharmacies where the work patterns are different.

Two studies have examined the time required for private consultation in an outpatient setting. Beardsley (101) estimated the average time required to talk with patients in a private consultation area was approximately 3 1/2 minutes per patient. McKenny (102) found he needed an average of 25 minutes for the first private consult with patients. The average time was reduced to 6 minutes per patient for each follow-up visit.

There are no known studies which document the time required

to conduct patient education using other methods of communication available to the pharmacist. Studies determining the most efficient method of incorporating patient education into community pharmacy work patterns would be valuable.

4. Patient Perception of the Role of the Pharmacist

A fourth barrier to patient-pharmacist communication may be the failure by patients to view the pharmacist as a source of drug information. In 1972, McKelvey (58) found 40 of 588 patients who desired information on their medications thought it should come from a pharmacist, while 285 patients felt the physician should provide it. Patients in this study cited the physician for information even in the case of drug storage requirements. In 1976, Knapp et al. (103) reported 33 percent of the patients interviewed contacted pharmacists for drug information while 67 percent sought out physicians. In another report (76) 63 percent of 415 people indicated they had not consulted a pharmacist within the past year regarding prescription medication and 73 percent never asked a pharmacist for information on non-prescription medication. The people least likely to ask a pharmacist for information in this survey were the elderly. Recently, Moore (104) found only 2.4 percent of 498 elderly patients saw the pharmacist as a source of drug information.

Failure to use the pharmacist as a source of drug information may be attributed partly to the image projected by pharmacists in a community setting. Typically, pharmacists stand behind one or two counters in an area crowded with other customers and staff. Consumers often feel intimidated by such barriers and efforts to communicate may

be non-productive (105). In a study by Spencer (106) pharmacists in this type of setting were perceived by most patients as unfriendly and either unwilling or too busy to give instructions or to answer questions about medication.

It is possible patients do not see the need for contact with a pharmacist beyond that required for the prescription to be processed. Knapp et al. (107) in an examination of the attitudes of 120 consumers toward the pharmacist, concluded the pharmacist generally is regarded by the public as a merchant or technician, as opposed to a health care professional. Evidence of this perception of the pharmacist's role is found in several studies which interviewed patients about the importance they placed on pharmaceutical services a pharmacist might provide (91, 108, 109). Most often, traditional services such as contacting the doctor for refills and staying open at night were rated high and there was little importance placed on professional services such as patient education. Gagnon found older patients considered professional pharmaceutical services less important than younger patients and concluded "the new roles for pharmacy would fare better if the attitudes of the elderly ... toward pharmaceutical services could be improved." (91)

It has been suggested the public's perception of the pharmacist's role may be attributed to the failure by the pharmacist to communicate the value of patient education to his patients (110). If patients are unaware the pharmacist has useful knowledge about drugs and drug use, it follows they will not place importance on this service and will be unwilling to invest their time talking with pharmacists.

C. Summary

In summary, it appears the situation may be circular in nature: Patients want information on their drugs but do not see pharmacists providing that information and therefore do not perceive the pharmacist as a source of drug information. Pharmacists, on the other hand, may not interact with patients if they perceive patients as not wanting or needing the information. If pharmacists are unconvinced of the value of patient education, they are unlikely to be motivated to implement this service which may initially add to their operating costs. Education of both the public and pharmacists on the value of pharmacist-conducted patient education is needed.

CHAPTER IV

METHODS OF PHARMACIST-CONDUCTED PATIENT EDUCATION

Many authors have speculated on how pharmacists might become more involved in patient education and the problems of non-compliance. However, the literature reveals relatively few objective studies evaluating the effectiveness of these suggestions. The purpose of this chapter is to review available studies evaluating pharmacist-conducted patient education.

Several studies suggest administration errors and non-compliance may occur because the directions on prescription labels are inadequate and subject to individual patient misinterpretation (111-113). In 1966, A.J. Brands, Chief of the Pharmacy Branch of the U.S. Public Health Service, Indian Service, questioned the adequacy of the prescription label as a sole source of information (114). He suggested one means of overcoming this problem might be to have pharmacists supplement those directions with verbal instructions.

Clinite and Kabat (32) tested this hypothesis in 1969. A pharmacist in a hospital outpatient department reviewed the directions for use on 61 prescriptions dispensed to 30 patients. Six to eight days later they found less than 75 percent of prescribed doses had been consumed for 22 prescriptions. These authors concluded:

"A more effective mechanism must be used to ensure that the patient has been impressed properly with the necessity to follow prescribed therapy." (32)

The use of special written instructions designed to inform the patient about his drugs has been promoted as a method of increasing patient compliance to therapy (115-117).

Fox (118) prepared 13 information sheets describing precautions to be followed when taking certain medications. He reported surveys before and after the sheets were issued to patients in a hospital outpatient department showed a 32 percent increase in the number of patients aware of these precautions. The absence of a description of the evaluation design prevents conclusion on the basis of the results reported.

In 1976, Hladik (119) evaluated the effectiveness of written supplements for cardiovascular drugs. Although 21 of 22 patients interviewed indicated they had read the material after leaving the hospital, patient responses to general and specific knowledge questions, one month after discharge were considered unacceptable or only partially acceptable by the investigators. This study has many limitations (small sample size, no control group) and made no measure of compliance.

A group of physicians recently reported the use of written supplements improved patients' understanding of their medications (120). No measure of compliance was made in this study and one can only assume that a better informed patient is more compliant with the prescribed regimen.

Patients' compliance with an antibiotic regimen was tested in a hospital out-patient setting by Sharpe and Mikael in 1974 (121). Patients in this study received either 1) the prescription label only; or 2) the

prescription label, an auxiliary label informing patients to finish all medication and a one page sheet explaining the rationale for consuming the medication at the proper times and for the full course of therapy. The information sheets were given to patients to read while waiting for the prescription to be filled. No verbal information was given by the pharmacist. The method of evaluating compliance was a physical count of the medication remaining 3 to 9 days after the prescription was received. This was compared to the count which should have been present if all medication had been consumed properly. Patients who received the higher information level had a mean compliance rate of 85% while those who received only the usual prescription label demonstrated a compliance rate of 63%. The difference between these groups was statistically significant. These authors concluded:

"the pharmacist can make a valuable contribution to the health of his patients through effective counselling with written information." (121)

In contrast to this study is one in 1976 by Clinite and Kabat (122). Using the same method of evaluating compliance, these investigators found the compliance rate decreased when written information sheets were used without verbal review from the pharmacist. This has important implications as it is suggested written information may be used to overcome the problem of educating patients who receive prescriptions by delivery service (123).

Clinite and Kabat reported the following mean compliance rates for four groups of patients: patients receiving only written information

- 69 percent compliant; patients receiving no instruction - 75 percent compliant; patients receiving only verbal instruction - 82 percent compliant; and patients receiving verbal and written instruction - 86 percent compliant. The authors concluded written information sheets improved compliance provided they were accompanied by verbal instruction.

This study can be criticized on the basis of its follow-up design. Compliance in this population was measured from 2 to 47 days after the prescription was received. As pointed out in Chapter I, compliance tends to decrease with the duration of therapy and there was no control for this variable by Clinite and Kabat.

When comparing the results of Sharpe and Mikael (121) and Clinite and Kabat (122) two points should be noted. First, different study populations were used: adult, low-income patients receiving an antibiotic in the former; and a cross-section of the patient population in the latter. Second, different written information sheets were used. Lacking any uniformity of content, it is difficult to assess the effectiveness of written information used alone. There are no other known studies which compare written information alone against that supplemented with verbal information.

One study (124) has attempted to compare the effect of verbal information alone against written and verbal information in a traditional outpatient setting. This study found a significant increase in patients' knowledge of their drugs (all categories except name of drug) when written instructions were used to supplement verbal information from the pharmacist.

Although of adequate sample size ($n = 950$), these results may be biased since patients' knowledge was evaluated using a mailed written questionnaire. Patients receiving the written information from the pharmacist had the opportunity to use this as a reference source when answering the questionnaire.

Recently, Crichton et al. (125) compared verbal information to verbal information supplemented with written information in a private area of a hospital-based ambulatory care setting. The dependant variable was patients' knowledge of the drug, tetracycline. Prior to receiving any information, patients' average knowledge score was 26.6 percent. Patients were tested again seven days following the educational procedure. All patients had a significant increase in their knowledge over the pre-test scores. However, there were no significant differences noted between patients who received verbal information only and those who received written and verbal information.

The effect of reinforcing the information by telephone one day after the prescription was received was examined in this study. Patients receiving written and verbal information with their prescription and reinforcement of this information by telephone had a statistically significant higher knowledge score than patients who received the same information without telephone reinforcement. This difference did not occur when patients had the follow-up telephone call and received only verbal information with their prescription.

Education of patients via the telephone as a primary intervention

has not been evaluated. Conceivably this would be one method of reaching those patients who have their prescription delivered or picked up by a second party.

It has been suggested changes need to be made in the pharmacy environment to maximize constructive communication with patients (126). Education of patients in a private area has been advocated by pharmaceutical leaders over the past 15 years (80, 114, 127, 128). Recently criticism for pharmacists' failure to have private consulting rooms came from physicians at a national symposium on drug misuse among the elderly (129). Several studies have evaluated patients' knowledge and compliance after they received private patient education.

Madden (33) provided private instruction and supplementary written information to 120 military personnel and their dependants who received an antibiotic prescription from an outpatient pharmacy. Six to eight days after the prescription was received, the patients' knowledge and compliance (pill count) were evaluated. The results were compared to those from patients who received no information on their medication. Analysis of the results indicated private patient education had a positive effect on patient compliance, with 20.8 percent of the control patients and 5.8 percent of the treatment patients taking less than 50 percent of their medication. Knowledge also increased significantly in patients who had received education in private from the pharmacist.

Twenty five hypertensive patients were counselled in a private area in their neighborhood pharmacy by McKenny et al. in 1976 (102).

Each patient was seen monthly for five consecutive months. A two-page handout describing drug therapy and several other pamphlets were used as counselling aids. Follow-up during the 5-month period revealed a significant increase in patients' knowledge of hypertension when compared to 25 hypertensives not receiving these services. An increase in patient compliance from 20 percent (by pill count) to 79 percent was also found. Furthermore, these maneuvers resulted in a reduction of mean blood pressures from 155/98 to 140/89. These treatment successes were generally lost after the pharmacist's involvement ceased. McKenny concluded the pharmacists' services must be continued indefinitely to be most effective.

In 1977, Ludy (130) studied a randomly selected cross section of the hospital outpatient population. Patients receiving a prescription in a traditional outpatient pharmacy setting acted as the control group and were compared with patients who visited a satellite pharmacy which offered a private consultation area. Compliance was measured 6 to 9 days after the patient received his prescription. Statistical analysis revealed the satellite pharmacy patients were significantly more compliant (89 percent mean compliance) than traditional pharmacy patients (70 percent mean compliance). This study has several limitations. The investigator had poor control over the content of patient instruction by pharmacists in each setting. The use of written information was not consistent, with a number of patients in each study group receiving a written information sheet. The statistical analysis of compliant behavior excluded patients who were not receiving a new prescription. These patients' compliance was assessed only by their verbal report of

the number of pills they had taken. For these reasons it is difficult to draw conclusions from this study on the effectiveness of private patient education.

A study by Beardsley in 1977 (101) compared written and verbal information in both a private and a non-private area to control groups receiving no information. Six percent of the patients educated in the private area were considered by the author to be non-compliant 7 to 10 days after the prescription was received. This was significantly lower than the number of non-compliant patients found in the study group counselled in the non-private area (25 percent non-compliant) and in the control group (28 percent non-compliant).

This study has two limitations which, in the view of the author, seriously threaten the validity of the results. Analysis of compliance used data obtained by both a pill count and a verbal report of pill-taking behavior by the patient. It is well-established this latter method of measuring compliance is less reliable than other methods of evaluation (23, 31, 131). It seems unreasonable, therefore, to assume compliance values from these different measurements can be combined to produce data on the variable "compliance". As well, Beardsley divides each study group according to whether they were considered "compliant" or "non-compliant", but offers no operational definition of a "compliant patient". Without these definitions, the value of counselling in a private versus a non-private area cannot adequately be evaluated. No other studies have compared private patient education to other methods of communication available to the pharmacist.

Other strategies designed to improve patients' compliance and knowledge have been described in the literature.

An activity carried out by some pharmacists is the issuing of a variety of memory aids or individual dose devices. Both positive (132-134) and negative (135, 136) results have been reported.

As a general approach to improving compliance, these devices are somewhat impractical and they do not communicate information to patients. Conceivably they would be useful as aids to individual patients known to be non-compliant.

Pharmacists have coordinated self-medication programs for the hospitalized patient (137-140), developed sophisticated patient education programs using audio-visual aids (141-143) and have become involved in outpatient clinics (144-146) and family practice settings (147). The most recent suggestions for involvement come from two authors who describe home health care pharmacy services (148) and hospital based compliance clinics (149). These programs have not received adequate evaluation and the full potential of the interventions remains to be realized.

In summary, the basic methods of patient education available to the pharmacist include:

- 1) written information only
- 2) verbal information only
- 3) written and verbal information.

In the community pharmacy setting, this information may be provided to patients in a non-private or a private area of the pharmacy or by telephone.

CHAPTER V

PURPOSE OF THE STUDY

A. The Problems

The studies discussed in the preceding chapter suggest some form of patient education conducted by pharmacists may have a favorable effect on patients' knowledge of and compliance with prescribed medication regimens. These studies varied widely with respect to their study populations, experimental conditions and methods of evaluation which defined compliance and knowledge. There are problems, therefore, in integrating the results and generalizing as to the method of patient education which is most effective. Pharmacists who wish to be involved in patient education have no guidelines with respect to how this process should be conducted.

Evidence was presented also to show the quality of the evaluation schemes in these studies was often less than optimal. This makes valid assessment of the efficacy of the proposed strategies difficult.

Interest in evaluation studies comes from the recognition that considerable expenditures of time and money are often devoted to planned interventions in health care; yet these expenditures are infrequently accompanied by evidence supporting the value of that intervention. Considerable emphasis is being placed on the need for private consultation areas in pharmacies. Studies to date have not adequately evaluated this intervention against other perhaps less costly methods of patient education. In this time of concern for the cost of health services, it

seems unwise to implement a service that involves additional costs without evidence of incremental improvement in the quality and effectiveness of health care.

The need for pharmacists to become more involved in patient education was emphasized in Chapter III and barriers to this involvement were discussed. An evaluation of the pharmacists' role in patient education and consideration of the problems accompanying patient education are necessary if this role is to be expanded in the future. Previous studies have evaluated patient education in a hospital setting in most cases. Conclusions drawn in these studies may not be relevant to pharmacists practicing in a community setting. Few studies have documented pharmacists' time required for patient education and no studies have determined the most efficient method of patient education. Telephone counselling has not been evaluated. Effective telephone counselling would provide one means of educating patients who do not receive a prescription in person from the pharmacist. As well, it may be an efficient alternative to the methods used to educate patients in the pharmacy.

B. Primary Objectives and Hypotheses

In an attempt to study some of these issues, this research was designed to evaluate and compare four methods of pharmacist-conducted patient education in a community pharmacy setting.

The four methods of patient education evaluated in this study were:

- 1) written information only

- 2) written and verbal information in a non-private setting in the pharmacy
- 3) written and verbal information in a private setting in the pharmacy
- 4) written information plus verbal information via the telephone.

These four methods were evaluated against control groups who received no information on their medication.

The primary objectives of this study were:

- 1) to determine the effectiveness of each method on patients' knowledge of their medication,
- 2) to determine the effectiveness of each method on patients' compliance with their medication regimen, and
- 3) to examine the relationship between the time and the effectiveness of each method.

To provide direction for the study, eight hypotheses were postulated on the basis of prior research, reports in pharmaceutical literature and the intuition of the author.

- 1) Patients who receive only written information from a pharmacist do not have significantly more knowledge about their drugs than patients who receive no information from a pharmacist.
- 2) Patients who receive only written information from a pharmacist are not significantly more compliant with their medication regimen than patients who receive no information from a

pharmacist.

- 3) Patients who receive written and verbal information from a pharmacist in a non-private setting in a pharmacy have significantly more knowledge about their medication than patients who receive no information from a pharmacist.
- 4) Patients who receive written and verbal information from a pharmacist in a non-private setting in a pharmacy are significantly more compliant with their medication regimen than patients who receive no information from a pharmacist.
- 5) Patients who receive written and verbal information from a pharmacist in a private setting in a pharmacy have significantly more knowledge of their medication than patients who receive no information from a pharmacist.
- 6) Patients who receive written and verbal information from a pharmacist in a private setting in a pharmacy are significantly more compliant with their medication regimen than patients who receive no information from a pharmacist.
- 7) Patients who receive written information from a pharmacy and verbal information by telephone from a pharmacist have significantly more knowledge of their medication than patients who receive no information from a pharmacist.
- 8) Patients who receive written information from a pharmacy and verbal information by telephone from a pharmacist are significantly more compliant with their medication regimen than patients who receive no information from a pharmacist.

C. Secondary Objectives

A possible negative outcome of patient education might be an increase in the number of side effects patients attribute to their drugs. The following secondary objective was designed to examine this possibility:

- 1) To determine the effect of patient education on a patient's perception of the occurrence of side effects.

It was suggested in Chapter III that consumers' perceptions of the pharmacists' role in patient education may not be conducive to effective patient-pharmacist communication. The remaining secondary objectives were developed to examine whether increased patient education from a pharmacist has a beneficial effect on consumers' attitudes toward the profession of pharmacy. These secondary objectives were:

- 2) To determine patients' attitudes to individual activities associated with patient education by pharmacists and to determine whether any differences existed between the study groups.
- 3) To determine how patients view pharmacists as a source of drug information and whether one or more study groups has a more favorable attitude.
- 4) To determine patients' satisfaction with pharmacy services and whether the level of satisfaction changes as a result of patient education offered by the pharmacist.
- 5) To determine patients' receptivity to a private consultation

area and their willingness to pay for this service and to determine whether patients' receiving private consultation are more receptive than other study groups.

CHAPTER VI
METHODOLOGY

This study is an evaluation of four methods pharmacists in a community setting may use to educate patients about the proper use of their medications. This chapter discusses in detail the methodology employed to effect that evaluation. The assumptions and limitations which accompany this study are presented at the end of the chapter.

A. Study Location

The study required a community pharmacy setting which had a high prescription volume and a patient population which had previously received little, if any, information from a pharmacist. The pharmacy located in the Medical Arts Building in Saskatoon, Saskatchewan provided such a setting. This building houses 80 physicians, both general practitioners and specialists. The major function of the pharmacy is the dispensing of medications to patients whose physician's office is located in or near the Medical Arts Building. The pharmacy is staffed by 2 full-time pharmacists, 2 part-time pharmacists, one clerk and one delivery person. The average daily prescription volume is 150 prescriptions. The pharmacy also offers a limited supply of non-prescription items for sale. Patient records are kept for most patients and a free delivery service is available for all patients.

The usual sequence of events for dispensing prescriptions at this pharmacy is described below. This procedure operationally defines "traditional dispensing services" for the purpose of this study.

A pharmacist or the clerk receives the prescription order from the patient and obtains any information required for third-party billing. The prescription order is filled by the pharmacist and passed to the clerk. After writing the receipt, the clerk gives the patient his medication. This is done at a counter near the dispensary, which is often congested and noisy. Patient profiles are not checked while the patient is in the pharmacy; rather, they are filled in at some later date by non-pharmacist personnel.

There is very little patient-pharmacist contact and no effort is made at this pharmacy to educate patients about their medications. This patient population was therefore ideal to evaluate the effect of patient education. Patients allocated to receive no information in the study provided the study with genuine control groups.

B. Saskatchewan Prescription Drug Plan

In 1975, the Saskatchewan Government introduced the Saskatchewan Prescription Drug Plan which was designed partially to reduce direct prescription drug costs to the consumer. Under this plan the government pays the cost of the drug plus a fixed portion of the pharmacist's professional fee. The remainder of the professional fee is paid by the patient. During the period of this study the maximum consumer fee was \$2.60 for each prescription.

The drug plan is not comprehensive and applies only to drugs which are approved by a Saskatchewan Formulary Committee and subsequently listed in the Saskatchewan Formulary. All drugs chosen for this study were listed in the Saskatchewan Formulary. It is a universal drug plan. All Saskatchewan residents holding a valid Saskatchewan Health Services Card are

eligible for these drug cost benefits, except for those who have prescription drug costs paid by another government agency. No patients in this study fell into the latter category and as a result, all patients paid \$2.60 for each study prescription.

C. Study Population

The study population was originally intended to be limited to patients 65 years of age and over who received medication for the treatment of a chronic disease. Criteria for inclusion was further defined by limiting the study population to patients receiving cardiovascular or anti-inflammatory medications or the drug cimetidine (Table II). These

TABLE II
LIST OF STUDY DRUGS

1. Acetylsalicylic Acid	18. Ibuprofen
2. Aldactazide®	19. Indomethacin
3. Aldoril®	20. Isordil® - sub-lingual
4. Allopurinol	21. Isordil® - Oral
5. Chlorothiazide	22. Ketoprofen
6. Chlorthalidone	23. Methyldopa
7. Cimetidine	24. Metoprolol
8. Clofibrate	25. Naproxen
9. Clonidine	26. Oxyphenbutazone
10. Combipres®	27. Phenylbutazone
11. Digoxin	28. Propranolol
12. Dyazide®	29. Quinidine
13. Fenoprofen	30. Reserpine
14. Furosemide	31. Ser-Ap-Es®
15. Guanethedine	32. Slow K®
16. Hydralazine	33. Spironolactone
17. Hydrochlorothiazide	34. Supres®
	35. Warfarin

drugs were selected by reviewing the patient records at Medical Arts Pharmacy. Most geriatric patients receiving a prescription for a chronic disorder at Medical Arts Pharmacy were taking at least one of the above mentioned drugs and could be approached to participate in the study.

During the early stages of the study it was discovered only 44 percent of 70 geriatric patients approached were willing to participate. It was necessary to lower the age limit to 40 years of age so a sample of adequate size for statistical analysis would be obtained within the time period of the study.

Additional criteria for inclusion in the study were:

- 1) participant must live within 60 miles of Saskatoon
- 2) participant must not be blind or deaf
- 3) participant must be able to speak English
- 4) participant must not be immediately related to another participant in the study

No effort was made to restrict the study population with regard to the physicians involved in the patients' care.

D. Study Materials

When the study drugs were identified, written information sheets were developed by the pharmacist-investigator (see Appendix A).

Authorities recommend it is essential for patients to receive the following information to be properly educated: (14, 15)

- 1) name of the medication

- 2) purpose of the medication
- 3) method of administration
- 4) specific times of administration
- 5) maximum amount of medication to be used in one day
- 6) how long to take the medication
- 7) pertinent side effects the patient can recognize and manage
- 8) pertinent side effects which should prompt the patient to notify his physician
- 9) activities, foods or other drugs to avoid
- 10) proper storage of the medication
- 11) the refill procedure

When applicable, this information was placed on the sheets developed for this study. The brand name and the refill procedure were left blank to be filled in when the written information sheet was given to the patient.

The readability level of these sheets was evaluated using a formula developed by Fry (150). Most sheets were found to be written at the grade 8 level.

Specialists in cardiology, rheumatology and gastroenterology reviewed the written information sheets prior to implementation of the study. Suggested revisions were made and the sheets were distributed to 30 physicians whose patients would be participating in the study. A description of the study accompanied the sheets. The pharmacist-investigator interviewed all physicians for their suggestions and physicians

were encouraged to indicate if there were patients they did not want to participate in the study.

E. Study Design

1. Patient Contact and Randomization

Patients eligible for inclusion in the study were approached when they ordered a prescription from Medical Arts Pharmacy. This was done by the pharmacist-investigator who was present at the pharmacy during the study period.

The approach taken was designed to minimize patients' awareness their knowledge and compliance would be tested. The patient was told the College of Pharmacy had requested Medical Arts Pharmacy to ask their customers if they would participate in a "consumer survey about drug stores". It was explained the "survey" was "to see how the public felt about drug store services" and that their participation would require two interviews with the College of Pharmacy within the next three weeks. If the patient was in the pharmacy at this time a letter with further explanation was left with him to read while the prescription was filled (Appendix B). This letter also was forwarded to eligible patients whose prescriptions were picked up by a second party or delivered.

A slightly different procedure for contacting patients was used for the first 46 patients approached. The original procedure and reasons for altering it are discussed in Appendix C.

When patients agreed to participate in the two interviews

they were randomly assigned to one of the six study groups summarized in Figure 1. Each study group was stratified according to age, with assignment dependent upon whether the patient was younger or older than 65 years. Pre-constructed lists of random numbers were used for the randomization process.

Patients coming to pharmacy	Group I	: Control (no information offered)
	Group II	: Written Information Only
	Group III	: Written Information supplemented with verbal counselling in a non- private area
	Group IV	: Written Information supplemented with verbal counselling in a private area

Patients having prescription delivered	Group V	: Control (no information offered)
	Group VI	: Written Information supplemented with verbal counselling by telephone

Figure 1: Summary of Experimental Groups

2. The Study Groups

The following is a detailed description of the procedures employed for each study group. The time required to conduct patient education for each treatment group was determined with a stop watch.

Group I: Control group (in Pharmacy): These patients received traditional dispensing services as previously outlined. Only specifically

requested information was given to these patients by the pharmacist-investigator.

Group II: Written Information Only: The time recorded was that necessary to complete the written information sheets. These were placed in the prescription bag and the patient was told "some information was enclosed with his prescription to read at home." No verbal information about the medication was offered.

Group III: Written and Verbal Information/Non-Private Area: Upon receipt of the prescription, the pharmacist-investigator reviewed the patient's profile to determine if there were any potential therapeutic problems with the study medication. The written information sheet was completed and presented to the patient, with the prescription, at the counter near the dispensary. The time required to discuss the material on the written information sheet was recorded. Patients were encouraged to ask questions regarding their medication.

Group IV: Written and Verbal Information/Private Area: These patients were given a written explanation of the private area (Appendix D) to read while waiting for the prescription to be filled. The patient's profile was checked for potential therapeutic problems and the written information sheet completed. The patient paid for the prescription and was taken to the private area. The time required to discuss the material presented on the written information sheets was recorded. Patients were encouraged to

ask questions about their medication.

Group V: Control Group (Home): These patients had their prescription delivered or had a second party pick up the prescription. No information was offered to these patients on their medication.

Group VI: Written Information with Verbal Information via the Telephone: These patients had their prescription delivered or picked up by a second party. The patient's profile was reviewed for potential therapeutic problems. A completed written information sheet and a note explaining a pharmacist would be calling later (Appendix D) were enclosed with the prescription. The pharmacist-investigator telephoned the patient later that day. The time from when the patient answered the telephone until completion of the discussion of the material on the written sheet was recorded.

A pill count was to be the measurement of compliance. It was necessary therefore to obtain a baseline pill quantity for each patient. All patients were told one part of the "survey" was designed "to see when patients reordered their prescription". They were asked how many "pills" were remaining from previous prescriptions. This explanation was accepted without question.

Information on each patient was recorded on a "Patient Data Form" and a "Patient Schedule" (Appendix E). Each patient received a study number which was placed on these forms as well as on the follow-up questionnaires. The patients' study group was placed only on the Patient

Data Form which was retained by the pharmacist-investigator. The Patient Schedule and the follow-up questionnaires were given to the study interviewers.

3. Study Follow-Up

Two interviews were conducted during the follow-up period to collect data for measurement of dependent variables. The questionnaires used during the interviews were constructed and pre-tested by the pharmacist-investigator prior to implementation of the study.

a) Telephone Interview

One to three days after the patient received his prescription from Medical Arts Pharmacy he was interviewed by telephone from the College of Pharmacy. These interviews were conducted by a trained student-interviewer or by the pharmacist-investigator. Variables assessed at this interview were the patients' short term knowledge of the study drug(s) and side effects the patient attributed to that drug (Appendix F). The explanation given to patients for the purpose of the interview was compatible with that presented in the initial explanation of the "survey". If patients asked any questions about the medication, they were told the answers would be provided to them at the second interview.

b) Home Interview

The second questionnaire (Appendix G) was administered during the course of a home interview 21 to 28 days after the patient received

the prescription from Medical Arts Pharmacy. The interview was conducted by student-interviewers who had contacted the patient to arrange for a mutually convenient appointment time. These student-interviewers had attended a series of sessions on interviewing techniques, how to handle patient concerns and how to standardize their approach to reduce interview bias.

Compliance was assessed during the home interview by conducting a pill count. Patients were told part of the "survey" was to evaluate the condition of the pills pharmacists dispensed. Their permission was requested to examine the study medication for any "chipped or broken tablets". When it was ascertained all the study medication had been made available, the interviewer counted the number of doses remaining and recorded this number on the interview form. The interviewer then assured the patient the medication was in good condition.

The patient was asked to complete a three page written questionnaire designed to assess his satisfaction with pharmacy services and his source of drug information. The remainder of the interview was conducted verbally and assessed the following variables: patient perception of the pharmacist; pharmaceutical services desired by patients; the patients' long term knowledge of the study drug(s) and the side effects attributed to that drug. Data on demographic variables and when possible, on factors known to influence compliance with medication regimens was collected toward the end of the interview.

Before leaving the patient's home, the interviewer answered

patient's questions about drugs or other concerns. If the interviewers could not answer a specific question, they referred the patient to Medical Arts Pharmacy.

F. Scoring Knowledge and Compliance

1. Knowledge Scores

The telephone interview and the home interview included measurement of the patient's knowledge of the study drug(s). On both occasions individual questions assessed patients' knowledge of the following:

- 1) the name of the drug
- 2) the purpose of the drug
- 3) how the drug worked
- 4) the number of daily doses to be taken
- 5) special administration instructions
- 6) whether the drug should be taken regularly and if so, why
- 7) side effects the drug might cause
- 8) foods to avoid when taking the medication
- 9) non-prescription drugs to avoid
- 10) whether alcoholic beverages may be consumed
- 11) the symptoms indicative of adverse drug reactions

Acceptable answers to these questions were decided on prior to implementation of the study (Appendix H). A "maximum knowledge score" was assigned to each study drug based on the number of answers possible for that drug. All patient responses were marked by a professor at the

College of Pharmacy who remained unaware of the study group to which each patient had been assigned.

Two knowledge scores were computed for each patient: one from responses given at the telephone interview (short-term knowledge) and one from responses given at the home interview (long-term knowledge). These scores were computed in the following manner. A "drug score" was calculated based on the number of "correct responses" over the "maximum knowledge score". The "drug score" was converted to a percentage to give a "knowledge score" for each patient. When a patient was tested on more than one study drug the "knowledge score" for that patient was an average of the "knowledge scores" for each study drug. An example of these calculations is found in Appendix I.

2. Compliance Scores

Patient medication compliance was defined as the number of doses consumed by the patient during the period between entry into the study and the home interview, divided by the number of doses prescribed for the patient during that time interval. A compliance score was calculated for each study drug the patient was taking, using the formula outlined in Appendix I.

When patients received more than one study drug, a weighted average of the compliance scores for each drug was calculated, based on the total number of doses intended for all study drugs.

G. Limitations

The limitations resulting from the methodology employed in this study should be recognized when evaluating the results and applying the findings to other settings.

- 1) A limitation common to all studies assessing knowledge and compliance is the effect of the research itself on patients' behavior. The degree to which measurement of variables or the patients' perception of the purpose of the study precipitated behavior which would not occur in a non-experimental setting is not known. The author subjectively believes this was not significant as participants in the study seemed at ease with the explanations given. No reference was made by them to the real nature of the study.
- 2) With the number of physicians involved in the study, there is bound to be variation in the quality and content of physician-patient instruction. No attempt was made to measure physicians planned medication instruction. It was assumed any real difference would be evenly distributed across the study groups by the randomization process. It was also assumed individual physicians did not alter their usual prescribing and advising patterns secondary to their awareness of the study.
- 3) The methods of collecting information on the dependent variables have a number of limitations and the results of this

study are generalizable only to the accuracy of the measuring tools employed.

The limited comparative data on the validity of the pill count as an indirect measure of compliance suggests its use may result in an underestimation of the problem (151). Although this may affect the absolute compliance scores, the data is used for comparative purposes only and this limitation will have minimal effect on the results.

The following assumptions are made with regard to the reliability of the pill count as a measure of compliance:

- a) the number of prescribed dosage units dispensed by the pharmacist were counted correctly;
- b) patients reported the number of dosage units remaining from previous prescriptions correctly;
- c) an accurate count was made by the student-interviewer at the patients' home; and
- d) all doses not counted at this time had been consumed by the patient.

A number of limitations are associated with the interviewing process. It is based upon respondent recall which may be poor. The answers given may be inaccurate because of misunderstanding by the patient or a wish to "cover up". The patients' response also may be influenced by his perception of how the interviewer wants him to respond. The ways in which

questions have been grouped may occasionally distort people's views. The results also must be interpreted with the understanding reported behavior is not necessarily actual behavior.

To reduce these limitations a significant amount of pre-testing of the questionnaires was conducted prior to this study to develop the phrasing of questions and responses to patient concerns or questions were standardized in writing.

- 4) Another possible source of bias is the opportunity the pharmacist-investigator had to influence the outcome according to any preconceived idea of desired results. It would have been ideal to have pharmacists with no working knowledge of the research providing the patient education and to have all follow-up interviews conducted by people unaware of the method of education the patients received. Although blinding was observed for the home interview, the limited number of research personnel did not allow such a procedure for the telephone interview. It should be noted every effort was made to assess fairly the variables measured during this interview.
- 5) The results of the knowledge questionnaire may be biased if patients read the prescription label or the written information sheets when the telephone interview was conducted. An attempt to overcome this limitation was made by initially assuring the patient it was not necessary for him to get either of

these for the purpose of the interview.

- 6) Since participation in the research was voluntary for patients they could withdraw at any time. If all patients leaving the study shared common characteristics, the results would be biased as data on these types of patients would be excluded.

CHAPTER VII

RESULTS

The study period was from July 1, 1978 until December 1, 1978. During this time 263 patients met the study criteria and were approached by the pharmacist-investigator to participate in the study. One hundred and fifty-five patients (58.9 percent) agreed to participate in the study and were randomly assigned to one of the six study groups. Forty-one of these patients (26 percent) were lost to follow-up and 114 patients (74 percent) completed the follow-up period (Table III).

TABLE III
STUDY GROUP DISTRIBUTION

	Study Group*						Total
	GR I	GR II	GR III	GR IV	GR V	GR VI	
Number of patients entering study	33	27	25	25	22	23	155
Number of patients lost to follow-up	15	8	5	6	3	4	41
Number of patients completing study	18	19	20	19	19	19	114

*The study group number as summarized in figure 1, page 55, is used to identify each study group.

Data on a number of independent variables was analyzed using the chi-square statistic to determine if patient groups were similar. A significance level of $p = .05$ or less was pre-defined as statistically significant for all variables analyzed in this study.

All study groups were predominantly female with similar age distributions and home situations (Table IV). The random assignment procedure divided the demographic variables evenly except by education, which is not known to be related to any of the dependent variables studied. Similarly, there was no difference between the class of drug each study group received or the number of drugs on which each treatment group was counselled (Table V). Most drugs in all study groups were prescribed by a general practitioner as opposed to a specialist.

TABLE IV
DEMOGRAPHIC CHARACTERISTICS OF STUDY POPULATION

Characteristic	Study Group (Percent)						Total n=114
	I n=18	II n=19	III n=20	IV n=19	V n=19	VI n=19	
Age ^a							
40 to 65	56	58	60	68	58	42	57
65 or older	44	42	40	32	42	58	43
Sex ^b							
Male	39	47	35	32	16	37	34
Female	61	53	65	68	84	63	66
Home Situation ^c							
Lives alone	22	32	30	16	21	26	25
Lives with someone	78	68	70	84	79	74	75
Education ^d							
Grade School	61	58	25	52	37	21	42
High School	22	11	70	32	37	63	40
Post High School	17	31	5	16	26	16	18

$$^a_x^2 = 2.83, df = 5, p > .05$$

$$^b_x^2 = 4.62, df = 5, p > .05$$

$$^c_x^2 = 1.82, df = 5, p > .05$$

$$^d_x^2 = 24.39, df = 10, p < .05$$

TABLE V
CHARACTERISTICS OF STUDY DRUGS

	Study Group (Percent)						Total n=114
	I n=18	II n=19	III n=20	IV n=19	V n=19	VI n=19	
Class of Study Drug ^a							
Cardiovascular	56	50	50	55	57	75	56
Anti-inflammatory	33	46	38	36	38	25	37
Cimetidine	11	4	12	9	5	0	7
Study Drug Prescribed by: ^b							
General practitioner	100	95	90	100	95	85	94
Specialist	0	5	10	0	5	15	6
Number of Drugs ^c Educated on							
One	N/A	74	80	79	N/A	95	N/A
More than one	N/A	26	20	21	N/A	5	N/A

^a $\chi^2 = 7.53$; $df = 10$; $p > .05$

^b>20% cells expected frequency <5 and some cells expected frequency <2.5

^c $\chi^2 = 3.13$; $df = 3$; $p > .05$

*Analysis included only the four treatment groups

A. Patients' Knowledge

One-way analysis of variance was used to analyze patients' short-term and long-term knowledge scores.

1. Short-Term Knowledge

Study groups I and V (control groups) had the lowest level of short-term knowledge, with mean scores of 34.1 percent and 38.2 percent respectively (Table VI). Study group II (written information only) had a slightly higher mean short-term knowledge score at 46.3 percent. There

were no statistical differences between these three groups ($F = 2.226$; $df = 113$; $p > .05$).

Patients receiving written and verbal information in the non-private area in the pharmacy (group III) or via the telephone (group VI) had significantly higher mean knowledge scores (52.6 percent and 57.7 percent respectively) than both control groups ($F = 7.226$; $df = 113$; $p < .0001$). The highest short-term knowledge score was obtained by patients receiving written and verbal information in the private area (group IV). The mean score of 63.4 percent of this group was significantly higher than that obtained by groups I, II and V (controls and written information only) ($F = 7.226$; $df = 113$; $p < .0001$). The relationship between the six study groups short-term knowledge scores is depicted in Figure 2.

TABLE VI
SHORT-TERM KNOWLEDGE SCORES

	Study Group					
	I (n=18)	II (n=19)	III (n=20)	IV (n=19)	V (n=19)	VI (n=19)
Group Mean (Percent)	34.1	46.3	52.6 ^a	63.4 ^{ab}	38.2	57.7 ^a
Standard Deviation	11.8	13.0	19.2	22.3	12.2	25.7

^aStatistically higher than study group I and V - $F = 7.226$; $df = 113$; $p < .0001$

^bStatistically higher than study group II - $F = 7.226$; $df = 113$; $p < .0001$

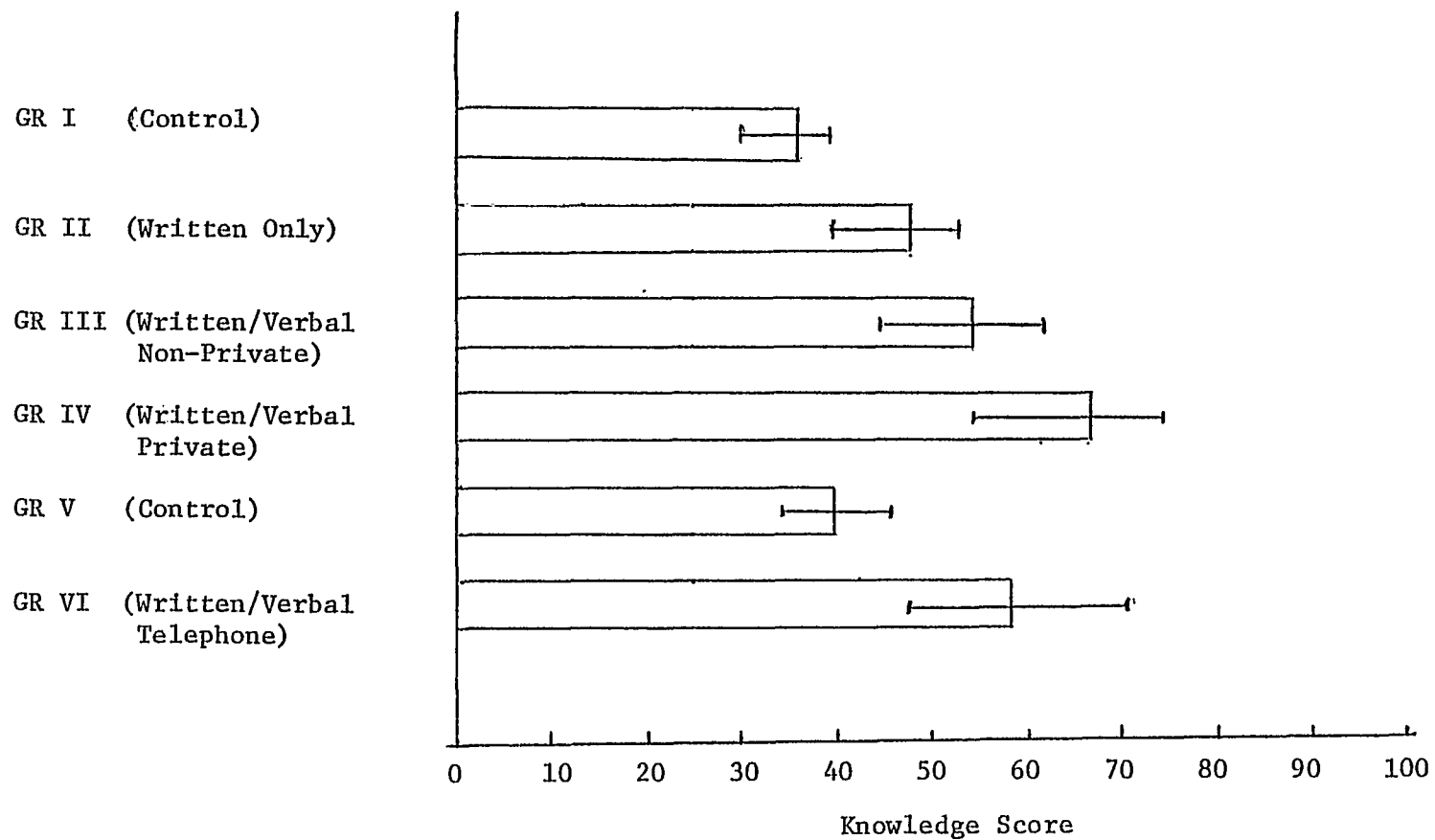


Figure 2: Study Groups' Short-Term Knowledge Scores.

Statistically different at $p = .05$:
 GR III > GR I, V
 GR IV > GR I, V, II
 GR VI > GR I, V

2. Long-Term Knowledge

The knowledge scores derived from patient responses at the home interview (long-term knowledge scores) were analyzed to determine if any significant differences existed between the study groups (Table VII). The control groups again had the lowest scores with 40.2 percent for group I and 38.7 percent for group V. This difference was not significant ($F = 4.886$; $df = 113$; $p > .05$). All treatment groups had significantly higher long-term knowledge scores than control groups ($F = 4.886$; $df = 113$; $p = .0005$). The mean long-term knowledge score was 50.3 percent for group II, 52 percent for group III, 55.7 percent for group IV and 52.4 percent for group VI. The differences between these four scores was not significant ($F = 4.886$; $df = 113$, $p > .05$). Figure 3 shows the relationship between the six study groups' long-term knowledge scores.

TABLE VII
LONG-TERM KNOWLEDGE SCORES

	Study Group					
	I n=18	II n=19	III n=20	IV n=19	V n=19	VI n=19
Group Mean (Percent)	40.2	50.3 ^a	52.0 ^a	55.7 ^a	38.7	52.4 ^a
Standard Deviation	9.6	13.4	14.8	12.8	10.3	19.3

^aStatistically higher than study groups I and V - $F = 4.886$; $df = 113$; $p = .0005$

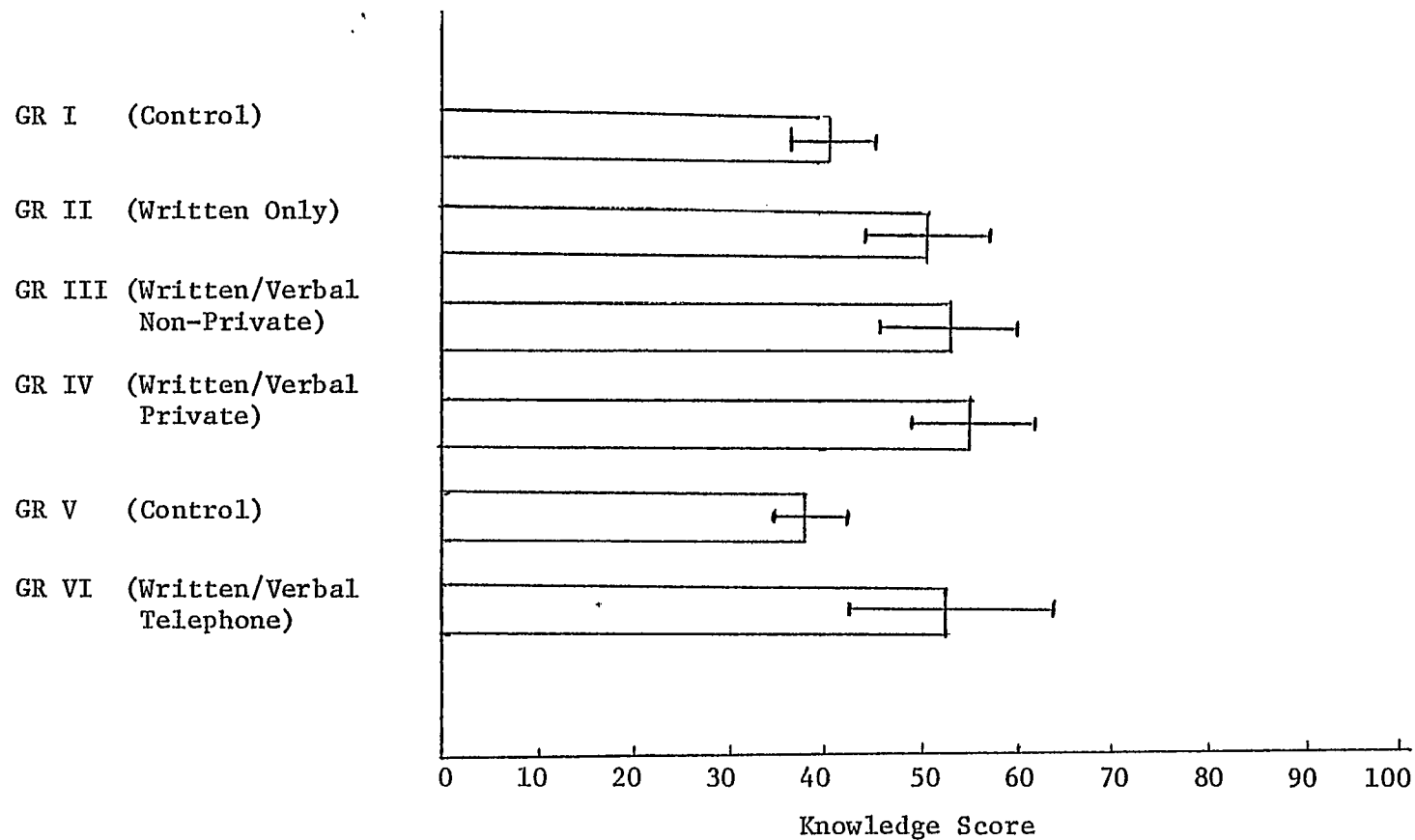


Figure 3: Study Groups' Long-Term Knowledge Scores.

Statistically different at $p = .05$:
 GR II > GR I, V
 GR III > GR I, V
 GR IV > GR I, V
 GR VI > GR I, V

A comparison of the short-term and long-term knowledge scores for each study group is shown in Figure 4. Control group I and the written information only group (GR II) had a slight increase in their level of knowledge at the time of the home interview. The mean knowledge score for patients receiving written and verbal information in a non-private area (GR III) remained the same, as did that of control group V. Groups IV and VI both had a decrease in their level of knowledge over the follow-up period. The design of the study did not allow statistical analysis of the differences in each groups' score across time.

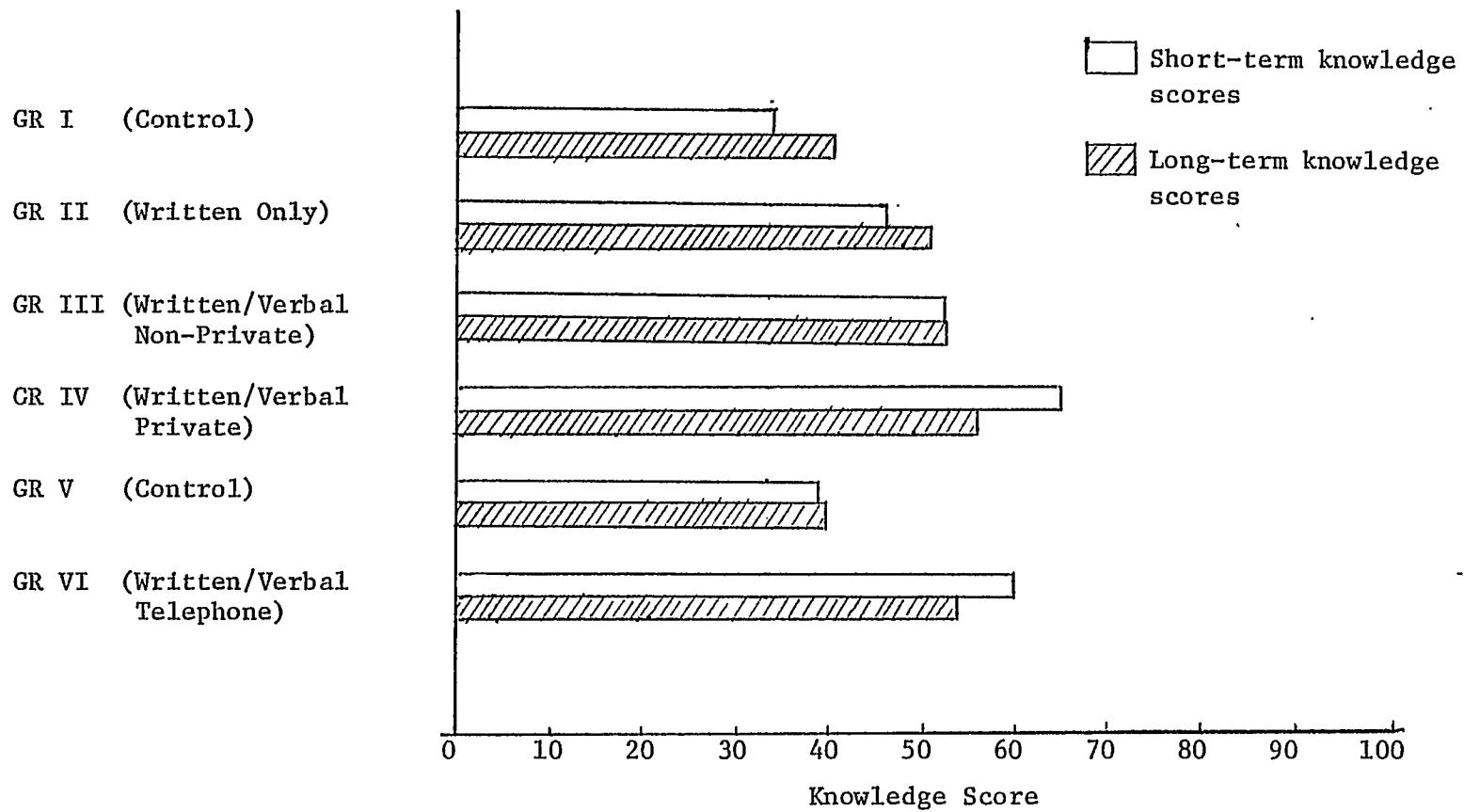


Figure 4: Comparison of Study Groups' Short-Term and Long-Term Knowledge Scores

3. Individual Categories of Knowledge

The individual questions on which the two knowledge scores were based were examined to determine where the study groups differed. The sample size employed in this study was not of adequate size to analyze these differences statistically. It appears that almost all patients were able to correctly answer questions concerning the purpose of their medication, the number of times of administration per day and the length of the medication regimen while patients other than those in groups IV and VI had a difficult time with the name of the drug (Table VIII). Questions involving the administration of the drug with respect to special instructions, diet and possible drug interactions (Table IX) were answered poorly by the control groups and in some cases the categories of knowledge were best improved when patients received private education (group IV) or telephone education (group VI). Patients allocated to these two study groups also seemed to have a better understanding of the side effects associated with their medication (Table X) and of the value of their medication (Table XI). It is difficult to say with certainty how each of the four methods of patient education affected the individual categories of drug information, without a statistical analysis of these differences.

TABLE VIII

PATIENTS' SHORT-TERM AND LONG-TERM KNOWLEDGE
OF BASIC ELEMENTS OF THE PRESCRIPTION

Study Group	Percentage of Patients in Each Group Answering Correctly							
	Name of Drug		Purpose		Directions		Length of Medication Regimen	
	Short Term	Long Term	Short Term	Long Term	Short Term	Long Term	Short Term	Long Term
GR I n = 18	39	56	100	100	78	78	89	89
GR II n = 19	37	58	100	100	100	100	95	90
GR III n = 20	35	70	95	95	100	95	95	100
GR IV n = 19	72	68	100	100	100	95	100	100
GR V n = 19	42	63	100	100	74	68	84	74
GR VI n = 19	67	63	95	95	84	95	100	100

TABLE IX

PATIENTS' SHORT-TERM AND LONG-TERM KNOWLEDGE
OF ELEMENTS RELATING TO ADMINISTRATION

A. Question: Are there any special instructions you are to follow about how or when to actually take your medicine?

Study Group	Percent Knowing					
	Short-Term			Long-Term		
	None	Some	All	None	Some	All
I (n = 18)	39	54	7	7	57	36
II (n = 19)	6	61	33	17	39	44
III (n = 20)	11	42	47	5	69	26
IV (n = 19)	0	53	47	6	69	25
V (n = 19)	24	53	23	24	59	17
VI (n = 19)	13	27	60	12	44	44

Table IX, continued

B. Question: Are there any foods or liquids you should add to your diet or avoid when you are taking this drug?

Study Group*	Percent Knowing					
	Short-Term			Long-Term		
	None	Some	All	None	Some	All
I (n = 5)	100	0	0	100	0	0
II (n = 8)	88	0	12	75	0	25
III (n = 6)	100	0	0	83	0	17
IV (n = 7)	71	0	29	57	0	43
V (n = 9)	78	0	22	44	0	56
VI (n = 10)	80	0	20	70	0	30

*Includes only patients receiving medications that may be affected by diet.

C. Question: Are there any medicines you should avoid or check with your doctor about when you are taking this drug?

Study Group*	Percent Knowing					
	Short-Term			Long-Term		
	None	Some	All	None	Some	All
I (n = 9)	100	0	0	100	0	0
II (n = 9)	100	0	0	100	0	0
III (n = 8)	100	0	0	100	0	0
IV (n = 10)	50	10	40	90	0	10
V (n = 11)	100	0	0	100	0	0
VI (n = 13)	77	0	23	77	8	15

*Includes only patients receiving medications that may be affected by other drugs.

Table IX, continued

D. Question: Can you drink alcoholic beverages when taking this drug?

Study Group	Group Percent					
	Short-Term			Long-Term		
	Answered Correctly	Didn't Know	Denied Alcohol Consumption	Answered Correctly	Didn't Know	Denied Alcohol Consumption
I (n=18)	6	73	21	17	72	11
II (n=17)	42	37	21	47	21	32
III (n=20)	40	30	30	30	30	40
IV (n=19)	58	21	21	53	26	21
V (n=19)	0	63	37	5	63	32
VI (n=19)	37	52	11	21	47	32

TABLE X
 PATIENTS' SHORT-TERM AND LONG-TERM KNOWLEDGE
 OF SIDE EFFECTS AND ADVERSE EFFECTS

A. Question: What side effects should you be aware of when you are being treated with this drug?

Study Group*	Percent Knowing					
	Short-Term			Long-Term		
	None	Some	All	None	Some	All
I (n = 14)	100	0	0	86	14	0
II (n = 17)	53	18	29	47	18	35
III (n = 15)	40	13	47	47	13	40
IV (n = 16)	13	37	50	37	38	25
V (n = 17)	100	0	0	88	12	0
VI (n = 18)	24	29	47	50	28	22

*Includes only patients receiving medications that may produce undesirable side effects

B. Question: What symptoms caused by this drug would you call your doctor about if you noticed you had them?

Study Group	Percent Knowing					
	Short-Term			Long-Term		
	None	Some	All	None	Some	All
I (n = 18)	94	6	0	94	6	0
II (n = 19)	68	32	0	68	32	0
III (n = 20)	60	40	0	70	30	0
IV (n = 19)	58	42	0	68	32	0
V (n = 19)	95	5	0	95	5	0
VI (n = 19)	53	37	10	72	28	0

TABLE XI
 PATIENTS' SHORT-TERM AND LONG-TERM KNOWLEDGE
 OF THEIR MEDICATION'S VALUE

A. Question: Do you know what this drug does to help your condition?

Study Group	Percent Knowing					
	Short-Term			Long-Term		
	Didn't Know	Knew	Knew Well	Didn't Know	Knew	Knew Well
I (n = 18)	61	33	6	50	28	22
II (n = 19)	63	26	11	37	37	26
III (n = 20)	50	15	35	45	40	15
IV (n = 19)	22	33	45	37	32	31
V (n = 19)	58	26	16	5	37	11
VI (n = 19)	28	33	39	26	37	37

B. Question: Do you know why it is important to take this drug regularly?

Study Group	Percent Knowing					
	Short-Term			Long-Term		
	Didn't Know	Knows	Knows Well	Didn't Know	Knows	Knows Well
I (n = 18)	56	22	22	67	11	22
II (n = 19)	58	37	5	68	21	11
III (n = 20)	35	50	15	45	55	0
IV (n = 19)	21	26	53	37	42	21
V (n = 19)	52	37	11	47	53	0
VI (n = 19)	26	37	37	32	32	26

B. Patient Compliance

Parametric one-way analysis of variance was used to analyze the effect of the four methods of patient education on patients' compliance (Table XII). The mean compliance score for each study group followed a similar pattern as found with the knowledge scores. Groups I and V (controls) had the lowest compliance scores at 64.3 percent and 60.2 percent respectively. No significant difference was found between these scores.

TABLE XII
COMPLIANCE SCORES

	Study Group					
	I n=18	II n=19	III n=19*	IV n=19	V n=19	VI n=19
Group Mean	64.3	69.8	70.7	80.5 ^a	60.2	85.1 ^a
Standard Deviation	21	20.3	21.5	19.9	26.3	10.9

*One patient in this group did not make the study drugs available for physical count

^aStatistically higher score than study groups I and V - $F = 4.026$; $df = 112$; $p = .0022$

Patients receiving written information only (GR II) consumed, on the average, 69.8 percent of the prescribed dosage, while patients receiving written and verbal information in the non-private area (GR III) consumed 70.7 percent of the prescribed dosage. There was no significant difference between these compliance scores and those of the control groups.

Patients in group IV (written and verbal/private) and GR VI

(written and verbal/telephone) had the highest mean compliance scores at 80.5 percent and 85.1 percent respectively. Both scores were significantly higher ($F = 4.030$, $df = 112$, $p = .0022$) than those obtained by the control groups.

The relationship between the six study groups' compliance scores is shown in figure 5.

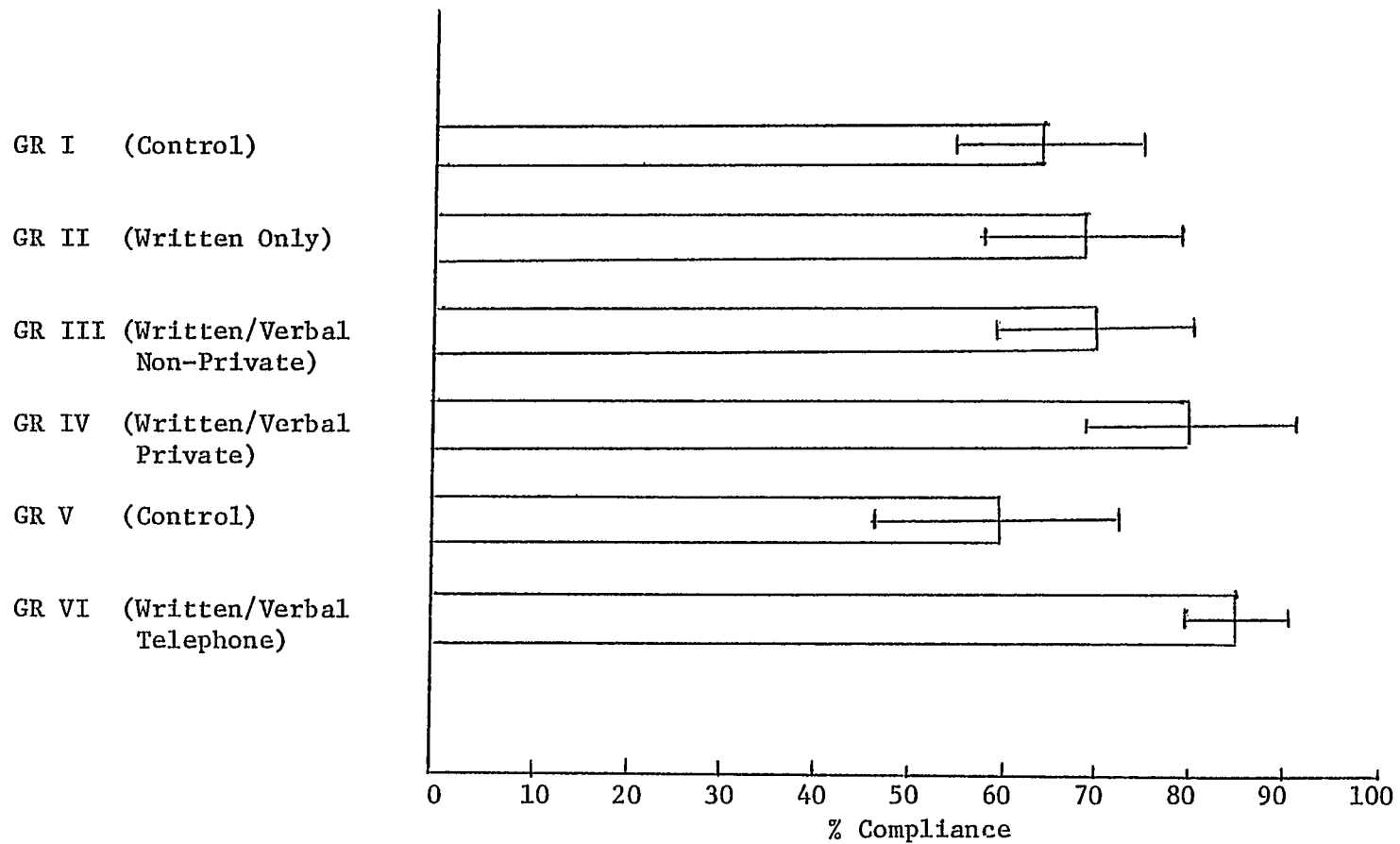


Figure 5: Study Groups Compliance Scores
 Statistically different at $p = .05$ GR IV > GR I, V
 GR VI > GR I, V

As discussed in Chapter I, several factors have been shown consistently to influence patients' compliance. When feasible, these factors were measured and compared by study group to determine if they were similarly distributed (Table XIII).

The degree of family support with compliance was assessed by asking the patient if anyone in the family, or who came into the home regularly, helped the patient to remember to take his medication (Question VII - B - Appendix G).

Significantly more patients in group I reported someone regularly reminded them to take their medication ($\chi^2 = 11.77$, $df = 5$, $p = .0381$). In the remainder of the study groups, the majority of patients reported they did not have this support; there were no significant differences in the distribution of this variable across groups II through VI ($\chi^2 = 3.38$, $df = 4$; $p = .4968$).

The random assignment procedure divided the study groups exceedingly well with regard to the complexity of the medication regimen and the patient's satisfaction with his physician. This latter variable was operationally defined for the purpose of this study by asking the patient if he agreed with the physician's diagnosis of the condition for which the medication was prescribed (Question VI - B.ii - Appendix G).

There are no guidelines in the literature which suggest at what point in his therapy the patient becomes less compliant. The duration of therapy variable (Question VI - B.iii - Appendix G) was arbitrarily divided by the author into the three time categories shown in Table XIII.

TABLE XIII

DISTRIBUTION OF VARIABLES KNOWN TO INFLUENCE COMPLIANCE

Variable	Study Group (Percent)					
	I n=18	II n=19	III n=20	IV n=19	V n=19	VI n=19
Family Support ^a with Compliance						
Yes	50	16	15	16	11	32
No	50	84	85	84	89	68
Complexity of ^b Medication Regimen						
Once Daily Dosing	17	21	15	21	16	16
> Once Daily Dosing	83	79	85	79	84	84
Satisfaction with ^c Physician						
Agree Diagnosis	89	84	90	90	95	90
Disagree Diagnosis	11	16	10	10	5	10
Duration of Therapy ^d						
3 weeks	17	42	20	21	5	0
3-52 weeks	44	21	40	37	32	16
More than 52 weeks	39	37	40	42	63	84

^a $\chi^2 = 11.77$; $df = 5$; $p < .05$; GR I not included: $\chi^2 = 3.38$; $df = 4$, $p > .05$

^b $\chi^2 = 0.50$; $df = 5$; $p > .05$.

^c>20% cells expected frequency <5 and some cells expected frequencies <2.5

^d $\chi^2 = 22.15$; $df = 10$; $p = .0144$; GR VI not included: $\chi^2 = 10.17$; $df = 8$; $p > .05$.

Significantly more patients in group VI had been taking the study drug for longer than one year ($\chi^2 = 22.15$, $df = 10$; $p = .0144$). The differences in the duration of therapy for study groups I through V were not statistically significant ($\chi^2 = 10.17$; $df = 8$; $p > .05$).

C. Pharmacist Time Requirements

A major objective of this study was to document and compare the amount of pharmacists' time required for each of the four methods of patient education. All time measurements (Table XIV) were defined as the amount of time spent with each patient, irrespective of the number of drugs discussed with that patient. This approach was necessary as drugs for the same condition often were discussed together, or the patient would ask a question about other drugs he was taking. It was impossible therefore to separate out the amount of time spent discussing individual drugs.

TABLE XIV

COMPARISON OF TIME REQUIRED FOR FOUR METHODS OF PATIENT EDUCATION

Treatment Group	Average Time Per Person	Range
GR II Written Only	20"	3"-2'40"
GR III Written/Verbal Non-Private	4'42"	40"-11'40"
GR IV Written/Verbal Private	12'52"	5'20"-24'16"
GR VI Written/Verbal Telephone	8'56"	3'20"-20'43"

The use of written information only (GR II) required the least amount of pharmacist time, with an average of 20 seconds needed to complete the written information.

The amount of time required for educating patients with written and verbal information was 4 minutes 42 seconds in the non-private area

(GR III); 12 minutes 52 seconds in the private area (GR IV); and 8 minutes 56 seconds via the telephone (GR VI).

D. Secondary Objectives

1. Side Effects

A secondary objective of this study was to determine whether there was any difference in the number of side effects patients in each study group attributed to their medication. This variable was assessed at each of the follow-up interviews by asking the patient whether he had experienced side effects from his medication. Table XV shows that 30 percent or fewer of all patients, except those receiving private patient education, reported that their medication had caused a side effect. In contrast, approximately 50 percent of patients educated in private attributed one or more side effects to their medication. These differences were not statistically significant.

TABLE XV

EFFECT OF PATIENT EDUCATION ON SIDE EFFECTS ATTRIBUTED TO MEDICATION

Statement: Have you experienced any side effects from this drug?

Response	Study Group (Percent)						Total
	I n=18	II n=19	III n=20	IV n=19	V n=19	VI n=19	
Telephone Interview ^a							
No	78	84	70	47	79	84	75
Yes*	22	16	30	53	21	16	25
Home Interview ^b							
No	84	74	70	53	89	79	75
Yes*	16	26	30	47	11	21	25

$$^a \chi^2 = 9.52; df = 5; p > .05$$

$$^b \chi^2 = 9.58; df = 5; p > .05$$

*Only those side effects which could be attributed to the medication were documented.

2. Patients' Attitudes Toward Clinical Activities

An objective of this study was to determine patients' attitudes toward activities a pharmacist would perform in his role as drug advisor and to assess the effect of pharmacist-conducted patient education on these attitudes. During the home interview a number of specific clinical activities were described to the patient by the interviewer (question IVB - Appendix G) and the patient was asked to indicate whether he felt these activities should be conducted by the pharmacist. A mean composite "activities score" (number of activities asked the patient which he felt the pharmacist should perform) was calculated for each patient (see Appendix I). Although there was a trend toward a higher "activities

score" in the treatment groups (Table XVI), one way analysis of variance on the grouped data revealed no significant difference between the study group's mean scores ($F = 1.363$; $df = 5$; $p = .2438$).

TABLE XVI
ACTIVITIES SCORES OF STUDY GROUPS

	Study Group					
	I (n=18)	II (n=19)	III (n=20)	IV (n=19)	V (n=19)	VI (n=19)
Group Mean	8.06	8.52	9.30	8.84	8.05	10.05
Standard Deviation	2.45	2.89	2.27	3.30	3.50	2.70

Generally, the patients' response to the individual clinical activities was favorable (Table XVII). Over 50 percent of the total study population felt the pharmacist should be offering eleven of the thirteen clinical activities. There were no significant differences between the groups responses to these individual questions with the exception of the fewer number of people in control group I who felt the pharmacist should ask a patient about allergies or previous bad reactions to the medication.

TABLE XVII

ATTITUDE TOWARD INDIVIDUAL CLINICAL ACTIVITIES PHARMACISTS MIGHT OFFER

Statement: Do you feel a pharmacist should offer the following?							
Clinical Activity ^a	Percent Responding Affirmatively						Total (n=114)
	Study Group						
	I (n=18)	II (n=19)	III (n=20)	IV (n=19)	V (n=19)	VI (n=19)	
1. Ask about allergies or bad reactions	17 ^b	58	45	53	42	47	44
2. Tell how drug works	39	47	50	47	42	63	48
3. Tell what drug is for	44	42	50	53	42	84	53
4. Ask other drugs taking	44	42	65	53	42	78	54
5. Tell length of treatment	61	63	65	63	58	68	63
6. Tell if refills	56	63	75	58	58	79	65
7. Tell side effects	56	58	80	84	63	79	70
8. Help select OTC	94	78	70	68	68	79	75
9. Tell food or OTC's to add/avoid	67	68	85	79	74	90	77
10. Provide written instructions	78	79	95	90	63	68	79
11. Check dosage instructions	72	90	80	79	74	90	81
12. Keep family records	78	74	70	84	90	100	83
13. Tell special storage	83	95	100	79	90	95	90

^aNo significant differences between groups except for b

^b $\chi^2 = 11.45$; $df = 5$; $p < .05$.

3. Source of Drug Information

To measure patients' perception of the pharmacist each patient was asked to rank his choices for four sources of information about prescription drugs (question III.A.3.a - Appendix G) and non-prescription drugs (question III.A.3.b - Appendix G). Results in Table XVIII show 88 percent of patients sought out physicians first for information regarding prescription drugs while only 8 percent marked the pharmacist as their first choice. This distribution of responses resulted in cell sizes which were too small to analyze statistically. Sixty-five percent of the total population chose the pharmacist as a second, third or fourth source of prescription drug information. There was no statistical difference between the study groups.

It was interesting to note 27 percent of the total population did not identify the pharmacist as a first, second, third or fourth source of prescription drug information. There were no significant differences between the study groups in the distribution of these ratings.

When seeking information about non-prescription medication, patients indicated the physician and the pharmacist as a first choice 46 percent and 42 percent of the time respectively (Table XIX). All study groups were similar in their distribution of these responses ($\chi^2 = 1.8040$; $df = 5$; $p > .05$). Twenty-five percent of the total population did not choose the pharmacist as any of the four choices offered. Again there were no significant differences between the study groups in this regard.

TABLE XVIII

PATIENTS' PERCEPTION OF THE PHARMACIST AS A SOURCE
OF PRESCRIPTION DRUG INFORMATION

Statement: If you had a question about a prescription drug whom would you ask?

Study Group	Percent Responding				
	First Choice ^a		Second Third or ^b		Would not ^c Ask a Pharmacist
	Physician	Pharmacist	Physician	Pharmacist	
GR I (n=18)	94	0	6	72	28
GR II (n=19)	100	0	0	79	21
GR III (n=20)	95	0	5	65	35
GR IV (n=19)	79	21	21	53	26
GR V (n=19)	68	16	32	68	16
GR VI (n=19)	90	10	10	53	37
Total (n=114)	88	8	12	65	27

^a>20% cells expected frequency <5 and some cells expected frequency <2.5.

^b $\chi^2 = 7.08$; df = 5; p >.05.

^c $\chi^2 = 2.86$; df = 5; p >.05.

TABLE XIX

PATIENTS' PERCEPTION OF THE PHARMACIST AS A SOURCE
OF NON-PRESCRIPTION DRUG INFORMATION

Statement: If you had a question about a non-prescription drug whom
would you ask?

Study Group	Percent Responding ^{*B}				
	First Choice ^a		Second, Third or Fourth Choice		Would Not ^c Ask a Pharmacist
	Physician	Pharmacist	Physician	Pharmacist	
I (n=18)	44	44	17	44	11
II (n=19)	58	42	16	32	26
III (n=20)	50	40	25	35	25
IV (n=19)	58	32	16	37	32
V (n=19)	37	42	16	32	26
VI (n=19)	26	53	21	21	26
Total (n=114)	46	42	18	33	22

* In some cases respondents did not mark a second, third or fourth choice.

$$^a_x^2 = 1.80; df = 5; p > .05.$$

$$^b_x^2 = 5.75; df = 5; p > .05.$$

$$^c_x^2 = 2.35; df = 5; p > .05.$$

Patients' perception of the pharmacist in general was assessed by asking patients how they would describe pharmacists with whom they had been in contact (question IVA - Appendix G). Table XX summarizes the responses given. Thirty-eight percent of the study population perceived the pharmacist as someone who spends most of his time behind the prescription counter, filling prescriptions while 8 percent felt pharmacists were primarily interested in making money. Forty-nine percent described the pharmacist as someone concerned about people and their medications. Analysis of this latter response against the first three responses revealed no significant differences existed between the study groups' general perception of the pharmacist.

TABLE XX

PATIENTS' GENERAL PERCEPTION OF THE PHARMACIST

Statement: How would you describe pharmacists you have been in contact with?							
Response ^a	Study Group (Percent)						Total n=114
	I n=18	II n=19	III n=20	IV n=19	V n=19	VI n=19	
1. Someone who stays beyond prescription counter	44	42	37	31	31	42	38.0
2. Interested in making money	11	5	11	5	16	0	8.0
3. Unsure	6	5	10	0	11	11	5.0
4. Someone concerned about people and their medicines	39	47	53	64	42	47	49.0

^a $\chi^2 = .3874$; $df = 5$; $p = >.05$ (first three responses combined).

4. Patient Satisfaction

Patients' satisfaction with the pharmacy was assessed at the home interview by asking four Likert-type questions (question IIIA.1 and 2b,c,e; Appendix G). The patient was asked to choose one of five possible responses which most closely corresponded to his or her feelings. The first question asked each patient's general satisfaction with pharmacy services. Table XXI shows ratings for this variable were relatively high. Patients' satisfaction with the amount of waiting time and the way the pharmacist acted also were high. As a result of these distributions, the chi-square statistic could not be used to analyze the differences between the study groups.

Patients were asked to indicate how they felt either about receiving or not receiving information on their medication at the time they entered the study. Over 50 percent of patients in each treatment group indicated they either were pleased or were very pleased with this service. A higher percentage of patients receiving written and verbal information in the non-private (GR III) area or in the private area (GR IV) were very pleased. Patients in both control groups most often were neither pleased nor displeased with the fact they did not receive information about their medication.

TABLE XXI
 PATIENTS' SATISFACTION

	Percentage Per Group					
	Control	Written Only	Written Verbal Non-Private	Written Verbal Private	Control	Written Verbal Telephone
1. General Satisfaction* ^a						
1-2	0	0	5	0	0	0
3	17	5	0	5	5	5
4	33	37	35	32	53	26
5	50	58	60	63	37	69
2. Satisfaction with waiting time* ^a						
1-2	0	0	0	5	0	0
3	0	0	10	11	16	17
4	50	42	35	37	21	26
5	50	58	55	47	53	57
3. Satisfaction with pharmacist* ^a						
1-2	0	0	0	0	0	5
3	11	11	0	5	5	11
4	33	32	40	32	42	37
5	50	58	60	63	47	47
4. Satisfaction with patient education*						
1-2	11	0	0	0	16	5
3	72	42	15	11	74	47
4	11	21	15	21	5	11
5	6	37	70	68	5	37

*Based on 5-point Likert scale where 1 = very unsatisfied and 5 = very satisfied.

^a>20% cells expected frequency <5 and some cells expected frequency <2.5.

5. Attitude Toward the Private Consultation Area

This study also examined consumer receptivity toward the availability of private consultation areas in pharmacies. Part V of the home interview (Appendix G) contained three questions specifically designed to evaluate patients attitudes about this environment.

The first question asked patients' preference for a private consultation area (Table XXII). Overall, 65 percent of patients (75 out of 114) indicated they would like a private area in the pharmacy. The highest percentage of positive responses (84 percent) came from patients who had received private consultation either in the pharmacy (GR IV) or by telephone (GR VI). In contrast, 65 percent or fewer of patients in other study groups felt a private area was necessary for patient education. These differences were not statistically significant.

The 75 patients who indicated they would like a private area in the pharmacy were asked if they would go out of their way to a pharmacy offering this service. Seventy-eight percent of this population answered affirmatively. Fewer patients in groups V and VI indicated they would go out of their way (67 percent and 56 percent respectively). The differences could not be analyzed statistically as the cell sizes were smaller than required for the chi-square statistic.

The same 75 patients were asked if they would be willing to pay a small fee (operationally defined as 50 cents to \$1.00) each time they received consultation in a private area. Sixty-two percent of these patients indicated they would be willing to pay for the service. There were no significant differences between the number of patients in each study group who gave this positive response.

TABLE XXII

ATTITUDE TOWARD PRIVATE CONSULTATION AREA

A. Statement: Would you like a private area in your pharmacy or do you feel it is not necessary?

Response ^a	Study Group (Percent)						Total n=114
	I (n=18)	II (n=19)	III (n=20)	IV (n=19)	V (n=19)	VI (n=19)	
"Would like" or "Would definitely like"	50	47	65	84	63	84	65
"Not necessary"	33	53	25	16	32	16	29
"Unsure"	17	0	10	0	5	0	6

$\chi^2 = 9.3452$; $df = 5$; $p = >.05$. ("unsure" responses not included in analysis)

B. Statement: Would you go out of your way to go to a pharmacy that had a private consultation area?

Response*	Group Percent						Total n=75
	I n=9	II n=9	III n=13	IV n=16	V n=12	VI n=16	
"Probably" or "Definitely Would"	89	100	77	88	67	56	78
"Would Not"	0	0	15	6	33	38	17
"Unsure"	11	0	8	6	0	6	5

*>20% of cells with expected frequency <5 and some cells expected frequency <2.5.

C. Statement: Would you be willing to pay a small fee (50 cents - \$1.00) each time you received consultation in a private area?

Response*	Group Percent						Total n=75
	I n=9	II n=9	III n=13	IV n=16	V n=12	VI n=16	
"Yes"	33	78	62	63	67	63	62
"No"	44	22	38	31	33	31	33
"Unsure"	23	0	0	6	0	6	5

$\chi^2 = 4.1640$; $df = 5$; $p >.05$ ("unsure" responses not included in analysis)

E. Miscellaneous Variables

In addition to the primary and secondary variables, information was collected at the home interview on other factors of interest to the author.

1. Twenty-Four Hour Recall

A second measure of compliance in this study was the patients' verbal report of how the medication had been taken during the twenty-four hours prior to the home interview (question I, Appendix G). A compliance "recall score" was calculated based on the frequency of administration, the time of administration and the number of pills administered at each scheduled dose (Appendix I). Over 50 percent of all study groups scored 100 percent when this method of evaluation was used to assess compliance (Table XXIII).

TABLE XXIII

COMPLIANCE RECALL SCORES

Score (Percent)	Study Group (Percent)					
	I n=18	II n=19	III n=20	IV n=19	V n=19	VI n=19
100	61	74	60	89	52	58
90-99	11	5	25	0	5	0
80-89	16	16	15	11	26	26
< 80	12	5	0	0	16	16

2. Special Procedure

Question VII.C (Appendix G) asked patients whether they used a special method which reminded them to take their medications. Nineteen percent of the total study population indicated they did have a special procedure. More patients in group IV reported doing this, however, the difference was not significant (Table XXIV).

TABLE XXIV
MISCELLANEOUS VARIABLES

	Study Group (Percent)						Total n=114
	I n=18	II n=19	III n=20	IV n=19	V n=19	VI n=19	
1. Use something to help remember? ^a							
Yes	11	11	20	37	16	21	19
No	89	89	80	63	84	79	81
2. Have written information sheet? ^b							
Yes	-	58	60	79	-	37	58
No	-	16	15	11	-	16	15
Denied Receiving	-	26	25	10	-	47	27
3. Phoned pharmacist in past 3 weeks							
Prescription information	0	5	5	11	11	5	6
Non-Prescription information	6	5	0	0	5	5	4
4. Phoned physician in past 3 weeks	17	16	20	11	11	37	18

^a $\chi^2 = 5.6625$; $df = 5$; $p > .05$.

^b $\chi^2 = 7.9598$; $df = 6$; $p > .05$ (analysis includes only the 4 treatment groups)

3. Utilization of Written Information Sheets

Patients were asked if they had ever received written information on the use of their medication from a pharmacist, and if so, whether they still had it. Fifty-eight percent (45 out of 77) patients in the treatment groups were able to produce the written information sheet they had been given at Medical Arts Pharmacy, while 27 percent of these patients denied receiving this information (Table XXIV). More patients in group IV had retained the written information sheet, but the difference was not statistically significant.

4. Physician or Pharmacist Contact

The final variable assessed was whether a physician or pharmacist had been contacted from the time patients entered the study until the home interview. Very few patients reported having initiated this contact and there was no difference between the study groups in this regard (Table XXIV).

F. Patient Attrition

Patient attrition was examined in relation to characteristics which were measured before the patient left the study (Table XXV). The attrition rate appeared equal for the two age groups and for the two sexes. Patients assigned to control group I were less likely to complete the follow-up interviews, with 15 of the 41 patients who chose to leave the study before its completion coming from this group. This might be attributed to the increased number of patients in this study group who were away during their follow-up period.

TABLE XXV

CHARACTERISTICS OF PATIENTS LEAVING STUDY

Group	I	II	III	IV	V	VI	Total
Number of patients	15	8	5	6	3	4	41
Age							
Less than 65 years	9	6	2	2	0	2	21
65 Years or older	6	2	3	4	3	2	20
Sex							
Male	8	2	4	3	1	1	19
Female	7	6	1	3	2	3	22
Class of Medication Ordered							
Cardiovascular	7	4	4	3	3	1	22
Antiinflammatory	6	4	1	2	0	3	16
Cimetidine	2	0	0	1	0	0	3
Reason for Leaving							
Illness	2	0	0	0	0	1	3
"Decided not to"	3	3	1	2	1	1	11
"Too many questions" or don't know any answers	0	3	2	1	1	1	8
"Don't take drugs wrong"	1	0	0	0	0	0	1
"Doctor takes care of me"	1	0	0	1	0	0	2
"Too busy"	1	1	0	0	1	0	3
"Not available"	2	1	1	2	0	1	7
Couldn't hear on phone	0	0	1	0	0	0	1
Away	5	0	0	0	0	1	6

CHAPTER XVIII

DISCUSSION

Pharmacist-conducted patient education is a proposal which has not been evaluated extensively in the past. For the most part, investigators have examined only one method of patient education at a time. Comparison of the studies' results is difficult due to the varied study populations and the different and often unreliable methods of evaluation utilized. As well, prior research presents somewhat conflicting reports about the method of patient education which should be adopted by practicing pharmacists. Both positive and negative alterations in patients' compliance have been attributed to the use of written information alone (121, 122) and when used in conjunction with verbal information in a non-private area (101, 122).

In an attempt to provide firmer guidelines for community pharmacists' involvement in patient education, this study has evaluated the effectiveness of four methods of patient education in one study population. An objective method of evaluating patients' compliance was employed and measurement of all dependent variables was the same for each study group. The design of this study therefore allows comparison of the methods tested and should offer a better understanding of how drug information might be presented to ambulatory patients.

A. Comparison of Patient Education Methods

A concern prior to the implementation of this study was that pharmacists were being advised to provide private areas for patients although it had not been determined whether this environment was necessary for effective patient-pharmacist communication. The results of this study

clearly demonstrate that private patient education is the most effective method of informing patients about their medication while they are in the pharmacy. Patients receiving privately conducted education were the most knowledgeable about their medication and this was the sole intervention tested in the pharmacy which resulted in a statistically significant increase in compliance.

One reason for the success of this intervention was that patients were removed from the busy cashier's area. As a result they were willing to discuss personal matters relating to their disease and to their experiences with the medication. Because the patient actively participated in the educational process, it was possible for the pharmacist-investigator to assess the patient's understanding of the medication, to correct any misconceptions and to supplement the patient's present knowledge. The effectiveness of this two-way communication process is demonstrated in the relatively high percentage of patients who knew the special administration instructions for the medication, the side effects associated with the medication and other special precautions to be noted while taking that medication (see Tables IX and X, pages 77 and 79).

Patients educated in the private area were the best informed about importance of taking the medication and the mechanism by which the medication improved their condition (see Table XI, page 80). In accordance with the Health Belief Model, it is reasonable to assume this understanding helped motivate patients to take their medication as prescribed. An equally important and not unrelated contribution to the increased compliance seen in this study group was patients were less threatened about

admitting to non-compliance in the private area. When patients revealed they did not always take their medication as prescribed, it was possible for the pharmacist-investigator to determine the reason for this behavior and to attempt to remove barriers which prevented them from taking the medication. These patients appeared pleased that someone recognized their problems and was willing to take the time to help solve them.

As a result of patients' willingness to discuss their medication in the private area, this intervention was the most time-consuming of the methods tested. Although the time spent with individual patients varied, an average of approximately 13 minutes was required to educate patients in this setting. This has important implications for the implementation of patient education in private areas as it will be difficult for pharmacists to find this amount of time for each patient, particularly in a busy dispensary. It should be noted however that the relatively long time required for this method is partially a reflection of the fact that these patients previously had received little information on their medication. It was necessary therefore to discuss all pertinent points with patients, independent of the length of time they had been taking the medication. It seems reasonable to assume, as in the study by McKenny et al. (102) that these average time requirements would be reduced on follow-up visits. Further research testing this hypothesis would be valuable. This study supports the recommendation that pharmacists should provide private consultation areas for their patients. Further involvement by pharmacists in effective patient education then will require that efforts be made to alter existing work patterns so that adequate time is available for a complete discussion with the patient in a private environment.

Non-private patient education does not appear to offer the pharmacist an effective alternative to private patient education. Although knowledge was improved significantly in this study group, a similar increase in compliance did not occur. Patients in this setting were reluctant to discuss their medication, particularly as it related to side effects they had experienced and difficulties they were having taking their medication. It was impossible in these cases to offer suggestions for improving compliance without the patient admitting to non-compliant behavior. The mean compliance rate of 70 percent found in this study group demonstrates these patients did not always take their medication as prescribed and suggests they could have benefited from further discussion with the pharmacist-investigator.

The use of written information alone was the simplest strategy evaluated in this study. If effective, this method of patient education would have offered an economical advantage to the pharmacist with regard to the amount of time required to provide information to patients.

In contrast to the study by Sharpe and Mikael (121) who studied the effectiveness of written information alone for patients taking antibiotics, neither knowledge nor compliance was improved when written information was used alone in this study. One explanation for this difference might be the dissimilar populations studied. It is possible an educational technique suitable for one group of patients is not as suitable for another. This study shows that for chronically ill ambulatory patients, the act of simply handing the patient a written information sheet cannot be regarded as effective patient education in

the pharmacy. There is no reason to assume this would not be the case when written information is used alone to educate patients not coming themselves to the pharmacy for their prescription.

These findings have important implications for the appropriate utilization of written information sheets, such as those presently being developed by the Canadian Pharmaceutical Association (10). If these sheets were to be used by pharmacists without verbal reinforcement of the information, the cost of producing and distributing the written sheets would not be justified in terms of patient benefit. The author feels it would be worthwhile if the importance of this verbal reinforcement were stressed when the sheets were distributed to pharmacists.

This study is the first known evaluation of the effectiveness of educating patients by telephone. Prior to the implementation of the study the author was concerned that this method of communication would not benefit patients because it lacked the personal contact found with education in the private area. The significant increase seen in this group's knowledge and compliance score suggests however that telephone counselling is an extremely effective method of patient education. As a result it provides the pharmacist with a valuable alternative to the use of written information alone as a method for educating patients who have their prescription delivered or picked up by a second party.

It is felt this intervention was successful for the same reasons as were attributed to the success of private patient education. The patients were able to discuss their drug therapy in the privacy and comfort of their own homes and in addition were not bothered by distractions such as parking

meters running out or being late for other appointments. If the patient was busy when the pharmacist-investigator telephoned an alternative time for the discussion could be scheduled at the patient's convenience. Furthermore, patients had the opportunity to read the written sheets prior to their discussion with the pharmacist-investigator. As a result, specific questions about the information could be raised and then discussed during the telephone call. This occurred frequently in this study and may account for the fact that telephone counselling required three-quarters of the time required to educate patients in the private area.

These observations raise several possibilities for the incorporation of patient education into a community pharmacist's work schedule. Although telephone counselling was examined specifically in this study as a method for reaching patients who do not come to the pharmacy for their prescription, it is reasonable to assume patients would benefit from this intervention irrespective of how they received the actual medication. If there was insufficient time to educate a patient while he was in the pharmacy, the information sheet could be enclosed with the prescription and the patient could be telephoned at the pharmacist's convenience. An evaluation of this concept would be worthwhile. It would be valuable also to determine if a reduction in the amount of time required to educate patients in a private area would occur when patients were given the written information sheet to read while waiting for the prescription to be processed.

The documentation of the relationship between the time and the effectiveness of patient education in this study suggests that insufficient time will act as a real barrier to pharmacists' involvement in patient

education. However, observations made in this study also suggest that while this "lack of time" is an important consideration, more efficient systems of patient education are likely to be found if pharmacists are willing to evaluate how they presently use the time available to them. Also, if pharmacists were to allocate dispensing responsibilities to pharmaceutical technicians as intended, it is possible they would find time to effectively educate patients. Several studies suggest that the roles of the pharmacist and the technician are often reversed, where the technician is found talking with the patient while the pharmacist is performing manipulative tasks in the dispensary (126, 152). The advent of computers in the practice of pharmacy also should help the pharmacist to deal with this "lack of time" problem.

B. Evaluation of the Hypotheses

The independent variables examined in this study do not account for group differences in compliance. Patients educated by telephone had been taking their medication for a longer period of time than patients in both control groups, but were significantly more compliant with that medication. As well, patients in control group I reported significantly more family support with their pill taking but were less compliant than all treatment groups. If these factors are related to compliance it seems patient education in the private area or by telephone overcame their negative influence.

Other commonly identified compliance factors not measured in this study and which are possible confounding variables, include: socio-behavioral features of the patient as incorporated into the Health Belief

Model; the efficiency or convenience of the physician's clinic; family stability; and the degree of behavioral change required by the medication regimen. As discussed previously however, non-compliance is a highly complex behavior and it is questionable whether an uneven distribution of one of these variables would account solely for the positive results seen with private patient education or telephone education in this study.

Factors influencing patients' knowledge of their medication have not been examined in the literature. It is possible that the number of years of formal education completed by the patient is a variable influencing knowledge. If so, it did not account for the higher knowledge scores in Groups III, IV and VI as these groups had fewer patients with tertiary education.

The marking procedure for patients' knowledge scores should not bias the results of this study. Guidelines for assessing patients' knowledge are non-existent and the system used in this study was designed by the author. While the absolute group scores are partially a reflection of this system, scoring was the same for all patients and the group knowledge scores were used only for comparative purposes. Differences between the group knowledge scores therefore may be attributed to the methods of patient education.

A factor accounting for the difference between the study groups knowledge scores could have been the readability of the written information sheets. If the information on these sheets had been too complicated for the average patient to understand, the higher short-term knowledge scores of groups III, IV and VI could be attributed to the verbal explanation these patients received from the pharmacist-investigator. However, these

sheets were written at the same level as literature for the general public. Theoretically, 80 percent of the population should have been able to read and understand material presented at this level. Although it would be desirable to have a lower readability level, it is felt this did not account for difference found between the group knowledge scores.

On the basis of the results of the study seven of the eight hypotheses developed prior to the implementation of the study may be accepted.

- 1) Patients who receive only written information from a pharmacist do not have significantly more knowledge about their drugs than patients who receive no information from a pharmacist.
- 2) Patients who receive only written information from a pharmacist are not significantly more compliant with their medication regimen than patients who receive no information from a pharmacist.
- 3) Patients who receive written and verbal information from a pharmacist in a non-private setting in a pharmacy have significantly more knowledge about their medication than patients who receive no information from a pharmacist.
- 5) Patients who receive written and verbal information from a pharmacist in a private setting in a pharmacy have significantly more knowledge of their medication than patients who receive no information from a pharmacist.
- 6) Patients who receive written and verbal information from a pharmacist in a private setting in a pharmacy are significantly more compliant with their medication regimen than patients who receive no information from a pharmacist.
- 7) Patients who receive written information from a pharmacy and verbal information by telephone from a pharmacist have significantly more knowledge of their medication than patients who receive no information from a pharmacist.
- 8) Patients who receive written information from a pharmacy and verbal information by telephone from a pharmacist are significantly more compliant with their medication regimen than patients who

receive no information from a pharmacist.

Hypothesis four is not accepted since patients receiving written and verbal information from a pharmacist in a non-private setting were not significantly more compliant than patients receiving no information.

- 4) Patients who receive written and verbal information from a pharmacist in a non-private setting in a pharmacy are significantly more compliant with their medication regimen than patients who receive no information from a pharmacist.

C. Long-Term Knowledge

It would be desirable if patients retained the information presented to them during the educational process. All treatment groups in this study had a higher long-term knowledge score than the control groups. A closer look at these scores, however, (see Figure 4, page 74) reveals patients in groups I (control) and II (written information only) answered more knowledge questions correctly at the home interview than at the telephone interview, while the reverse occurred in groups IV (private education) and VI (telephone education). The author feels these results might be explained on the basis of the following observations. As a rule, patients in the control groups and in the group receiving only written information were able to answer few questions on the first knowledge questionnaire. They appeared to feel uncomfortable about this and it is possible they made an effort to find the answers to these questions before the home interview. On the other hand, patients receiving private education or telephone education did well on the first knowledge questionnaire and did not have any reason to feel apprehensive about their level

of drug knowledge. It is likely they did not give much thought to their knowledge of the medication and did not make an effort to find out more about their medication. This situation is more generalizable to that which would occur without the obtrusiveness of the follow-up interviews. It is understandable that while these two methods of education significantly improve patients' short-term knowledge, reinforcement of the information will be required at a later time. It would be interesting to determine the effect of repeated education on patients' knowledge over a long period of time.

D. Side Effects

The concern that informed patients will be more prone to side effects does not appear to be supported by this study. Patients assigned to the treatment groups received detailed information on the side effects associated with their medication, however, they did not report the occurrence of these side effects significantly more often than patients receiving no information from the pharmacist (see Table XV, page 88). It should be noted that the phrasing of the question regarding side effects experienced from medication assessed only the patient's perception of their occurrence. It is possible some patients actually were experiencing a side effect but were unaware of its association with the medication. When patients were asked a general question about side effects during the educational process, they frequently stated the medication was not bothering them. When questioned further about specific side effects, however, they were able to identify symptoms which were actually presenting a problem. This identification occurred most often when patients were educated in the

private area. It is possible more patients in this group reported side effects during the follow-up interviews because these specific symptoms had been brought to their attention. At the home interview patients often said they were glad they had been told about the side effects and what to do to prevent them. These observations show the importance of discussing side effects with patients so measures may then be taken to alleviate the symptoms and reduce the potential for serious drug complications.

E. Patients' Attitudes

A secondary objective of this study was to determine whether patient attitudes about the role of the pharmacist would change as a result of increased patient education. On the basis of prior research it was anticipated patients in the control groups would be unaware of a pharmacist's knowledge about drugs and therefore would be unwilling to have the pharmacist offer patient education services. However, patients in all groups indicated an interest in the individual clinical activities associated with patient education, regardless of whether or not they received information on their medication (see Table XVII, page 90). As a result of this overall interest, no statistical differences appeared between the study groups attitudes toward the role of the pharmacist in patient education.

It is possible that patient education offered on a regular basis would cause an increase in the number of patients who were receptive to drug-use control services. The results of the study show patients do desire information on their medication, particularly as it relates to the proper use of that medication. It seems the lack of patient education in

community pharmacies discussed in Chapter III might be attributed more to the reluctance of pharmacists as opposed to the reluctance of patients to enter into this interaction.

The majority of patients also were receptive to having a private area in pharmacies, where they could discuss their medication (see Table XXII, page 98). More patients receiving private patient education were in favor of having a private area. This observation supports the hypothesis that exposure to services such as private patient education will result in a more positive attitude toward the value of that service. The results of this study should offer incentive for pharmacists to provide private consultation areas as many of the patients indicated a willingness to go out of their way as well as to pay a nominal fee for this service.

It is the author's feeling that patients receiving private education were more satisfied with the actual educational process than other treatment groups. Feedback from patients during this interaction and during the follow-up interviews suggested these patients were grateful that the pharmacist-investigator had supplied the information about their medication away from the interference of the crowded waiting room. Comments on the educational process did not come as often from the other treatment groups. These observed differences did not appear however when patients were asked to rate their satisfaction with pharmacy services (see Table XXI, page 96). A limitation inherent in the measurement of satisfaction is the lack of sensitivity of available scales to measure this variable. It is possible the limited choice of responses given for these questions caused the masking of any real differences in the satisfaction of patients

receiving privately conducted patient education.

It was interesting to note that although patients felt the pharmacist should supply patient education services, they indicated a high level of satisfaction when they received only the traditional dispensing services. It is possible that, never having received patient education services in the past, their limited interaction with the pharmacist-investigator in this study was all they expected and therefore they felt satisfied with the pharmacy services. It is also possible these patients simply were reluctant to indicate any dissatisfaction to the interviewer.

Patients' attitudes toward the pharmacist as a source of drug information also seemed at variance to their attitude towards the pharmacists' individual clinical activities. The patients in this study tended to choose the physician over the pharmacist as a primary source of prescription drug information and less than one-half of the study population saw the pharmacist as a primary source of non-prescription drug information (see Table XVIII, page 92 and Table XIX, page 93). One educational interaction with the pharmacist-investigator did not result in a change in this attitude. It appears the public may need more exposure to clinical pharmacy services, such as patient education, before they will initiate contact with a pharmacist for drug information. This hypothesis is supported by several studies which demonstrated a more positive attitude developed toward the role of the pharmacist after patients received clinical pharmacy services for a one-year period (153, 154).

The relatively high number of patients in this study who did

not consider the pharmacist as one of four choices for either prescription or non-prescription drug information suggests pharmacists should be concerned about their patients' perception of their professional responsibilities.

F. Additional Findings

1. Comparison of Control Groups

Two control groups were employed in this study to determine whether patients coming to the pharmacy for their prescriptions and patients having their prescriptions delivered could be regarded as similar populations in terms of their knowledge and compliance. No differences between the two groups' scores for these variables were noted. It was possible in this study therefore to compare the effectiveness of patient education in the pharmacy with patient education by telephone. These findings will be valuable to other researchers who wish to examine interventions aimed at both populations as it should not be necessary to study more than one control group.

2. Twenty-Four Hour Recall

A limitation of the pill count as a measurement of patients' pill-taking behavior is that administration errors such as incorrect timing in relation to foods or other medications may be missed. As well, the pill count measures only the number of pills taken over a pre-defined time period and does not provide information as to when the pills are actually taken during that period. An attempt was made in this study to measure compliance by having the patient verbally recall his pattern

of pill taking within a 24 hour period. Consistent with other reports in the literature (23, 131) this method of evaluation proved to greatly overestimate compliance (see Table XXIII, page 99). The majority of patients reported they took their medication correctly and few errors were detected. While this technique may be useful in individual cases involving gross errors, it does not appear to be a reliable method for evaluating the effect of patient education on compliance.

3. Utilization of Written Information Sheets

A concern expressed about offering written information to patients has been patients will discard the sheets before reading them. In this study, close to 60 percent of the patients receiving written information had retained their sheets over the three week follow-up. The interviewers commented that many patients could retrieve the sheets readily and had appeared to use them over this period. It seems, therefore, that the distribution of written information by pharmacists would be justified in terms of patients' utilization. Perhaps if the importance of the information contained in the sheets was stressed by pharmacists, even a larger portion of the patient population would make use of them.

CHAPTER IX
CONCLUSIONS

This study has attempted to answer some of the current issues involving pharmacist-conducted patient education in a community pharmacy setting. The following conclusions are based on the results of this study.

1. The most effective method of educating patients while they are in the pharmacy is through the use of written and verbal information in a private consultation area. Pharmacists should make every effort to provide this service for their patients.
2. Education of patients by telephone as a primary intervention is an effective method of patient education. It provides the pharmacist with a means of reaching all patients irrespective of how they receive the actual medication and offers a more efficient alternative to private patient education.
3. Education of patients with written and verbal information in a non-private area does not have a significant effect on patients' compliance. This method of patient education should not be used in place of private patient education. However, no negative effects were noted with this intervention and patients' knowledge was significantly increased. In this regard, pharmacists should conduct non-private patient education until they have a private consultation area established.

4. The use of written information alone as a method of patient education is ineffective. Pharmacists should be encouraged to supplement written instructions with verbal information in all cases.
5. Effective patient education requires a significant amount of the pharmacist's time. Perceived economic constraints may act as a real barrier to the implementation of effective patient education. Pharmacists must evaluate their existing work patterns and make an effort to incorporate effective patient education into their daily routine.
6. Patients will require reinforcement of drug information. An attempt should be made by pharmacists to review pertinent information each time patients receive a prescription.
7. Patient education does not significantly alter patient's perception of the occurrence of side effects. Pharmacists should not be concerned that offering information about side effects will have a negative influence on patients response to the medication. It is important, however, that this information be conveyed properly to the patient.
8. Patients' attitudes toward the role of the pharmacist in patient education is not a barrier to patient-pharmacist communication. Patients feel pharmacists should be offering drug use control services once these services have been explained to them.

9. Patients are satisfied when they receive only the traditional dispensing services. Efforts should be made to educate the public to expect patient education as an integral part of the dispensing process.
10. Patients are receptive to the availability of a private area in pharmacies, particularly when they have been exposed to this service. One method of educating patients about the value of clinical pharmaceutical services is to provide that service.
11. Patients do not view the pharmacist as a primary source of drug information when they have a question about their medication. It appears the public needs further exposure to clinical pharmacy services before the pharmacists' potential as a source of drug information will be realized.

In summary, this study shows the value of pharmacist-conducted patient education and provides guidelines for the methods of patient education which should be employed by community pharmacists. The need for effective patient education is supported further by the findings of this study. It is hoped these results will encourage pharmacists to provide these services and thus optimize their professional responsibility of drug-use control.

CHAPTER X

RECOMMENDATIONS FOR FUTURE RESEARCH

1. The results of this study may be generalizable only to the patient population investigated. Further research is needed on the comparison of private patient education with alternate methods of communication in other patient populations.
2. This is the first evaluation of the effectiveness of educating patients by telephone. Additional research exploring the value of this method of communication would be desirable.
3. It is possible that the work patterns presently employed in the majority of community pharmacies will not allow the additional time required for patient education. Several suggestions for change were offered in this study. A formal evaluation of the work patterns in pharmacies may shed further light on means by which effective patient education can efficiently be incorporated into the pharmacists daily routine.
4. This study examined the effectiveness of one patient education session. It would be valuable to extend the follow-up period in future studies to determine the effects of repeat patient education on a) patients' knowledge, compliance and attitudes and b) on the time required by the pharmacist to provide information.
5. The effect of patient education on the individual categories of drug knowledge could not be analyzed statistically in this study due to the small sample size. It would be worthwhile to determine

if certain categories of drug information are improved more than others by patient education.

6. Additional research is needed on the effect of patient education on the side effects experienced by patients. It would be valuable to determine whether patients did not report side effects because they were unaware of the association between the symptoms experienced and the medication.
7. In this study patients reported they would be willing to pay extra for private patient education. It would be valuable to determine whether this would occur in actual practice once patients received the service.

BIBLIOGRAPHY

1. Brodie, D.C., Drug-Use Control: Keystone to Pharmaceutical Service, Drug Intell.Clin.Pharm. 1, 63-65 (Feb.) 1967.
2. Brodie, D.C., The Challenge to Pharmacy in Times of Change, Report of the Commission on Pharmaceutical Services to Ambulant Patients by Hospitals and Related Facilities, The American Pharmaceutical Association and the American Society of Hospital Pharmacists, Washington, D.C., 1966, Part IV.
3. Anon., Pharmacists for the Future, The Report of the Study Commission on Pharmacy (Millis Commission), Health Administration Press, Ann Arbor, Michigan, 1975, p. 14.
4. Lalonde, M., A New Perspective on the Health of Canadians, A Working Document, Ottawa, Government of Canada, 1974.
5. White, K.L., William, T.F. and Greenberg, B.C., The Ecology of Medical Care, N.Engl.J.Med., 265, 885-892 (Nov. 2) 1961.
6. Sachett, D.L., The Magnitude of Compliance and Non-compliance in Compliance with Therapeutic Regimens, ed. D.L. Sachett and B.R. Haynes, The John Hopkins University Press, Baltimore, 1976, p. 16.
7. Cluff, L.E., Carananasos, H.J. and Stewart, R.B., Clinical Problems with Drugs, ed. Lloyd H. Smith in Major Problems in Internal Medicine, 5, Philedelphia, W.B. Saunders Company, 1975, p. 10.
8. Lalonde, M., Pharmacists' Role as Educators Increasing in Importance, Can.Pharm.J., 107, 206-210 (July) 1974.
9. Angevine, E., Quality Assurance in Health Care: The Patient, a consumer's viewpoint, Am.J.Hosp.Pharm. 31, 664-666, 1974.
10. Anon., Proposal for Supplementary Information on Medication (SIM), The Canadian Pharmaceutical Association, Toronto, Canada, 1979.
11. Dorsey, R., The Patient Package Insert: Is it Safe and Effective? J.Am.Med.Assoc. 238, 1936-1939, 1977.
12. Haunholter, J.T., Negligence and the Pharmacist: A Consideration of Some of the Aspects, Can.Pharm.J. 1, 12-16 (Jan.) 1978.
13. Salisbury, R., The Pharmacist's Duty to Warn the Patient of Side Effects of Drugs, J.Am.Pharm.Assoc. NS17, 97-100 (Feb.) 1977.
14. Smith, D.L., Patient Compliance with Medication Regimens, Drug Intell.Clin.Pharm. 10, 386-393 (July) 1976.

15. McKenney, J.M., Compliance and Pharmacists in Guidelines to Professional Pharmacy, 4:4, 1-2, 1977.
16. Stewart, R.B. and Cluff, L.E., A Review of Medication Errors and Compliance in Ambulant Patients, Clin.Pharmacol.Ther. 13, 463-468 (May-June) 1972.
17. Boyd, J.R., Covington, T.R., Stanaszek, W.F. and Coussons, R.T., Drug Defaulting. Part I: Determination of Compliance, Am.J.Hosp. Pharm. 31, 362-367 (Apr.) 1974.
18. Latiolais, C.J. and Berry, C.C., Misuse of Prescription Medications by Outpatients, Drug Intell.Clin.Pharm. 3, 270-277 (Oct.) 1969.
19. Boyd, J.R., Covington, T.R., Stanaszek, W.F. and Coussons, R.T., Drug Defaulting. Part II: Analysis of Non-Compliance Patterns, Am.J.Hosp.Pharm. 31, 485-491 (May) 1974.
20. Schwartz, D., Wong, M., Zeitz, L. and Goss, M.E.W., Medication Errors Made by Elderly, Chronically Ill Patients, Am.J.Public Health 52, 2018-2029 (Dec.) 1962.
21. Neely, E. and Patrick, M., Problems of Aged Persons Taking Medications at Home, Nurs.Res. 17, 52-55 (Jan.-Feb.) 1968.
22. McKenney, J.M. and Harrison, W.L., Drug-Related Hospital Admissions, Am.J.Hosp.Pharm. 33, 792-795 (Aug.) 1976.
23. Johnston, G.D., Kelly, J.G. and McDevitt, D.H., Do Patients Take Digoxin? Br.Heart J. 40, 1-7, 1978.
24. Haynes, R.B., Compliance with Antihypertensive Regimens, Can. Pharm.J. 111, 165-168 (May) 1978.
25. Becker, M.H., Rosenstock, S.M., Drachman, F.M., Schubert, R.H., and Teets, K.C., Compliance with a Medical Regimen for Asthma: A test of the health belief model, Public Health Rep. 93, 268-277 (May-June) 1978.
26. Mucklow, J.C. and Smith, J.W., Compliance with Anticonvulsant Therapy in a Hospital Clinic and in the Community, Br.J.Clin. Pharmacol. 6, 75-84 (Oct.) 1978.
27. Eshelman, F.N., Drug Compliance in Diabetics, Br.Med.J. 1, 581-584 (Mar. 2) 1978.
28. Lundin, D.V., Medication Taking Behavior of the Elderly, Drug Intell.Clin.Pharm. 12, 518-522 (Sept.) 1978.

29. Atkinson, L., Gibson, I. and Andrews, J., An Investigation into the Ability of the Elderly Patients Continuing to Take Prescribed Drugs After Discharge from Hospital and Recommendations Concerning Improving the Situation, Gerontology 24, 225-234 (Mar.) 1978.
30. Haynes, R.B., A Critical Review of the Determinants of Patient Compliance with Therapeutic Regimens in Patient Compliance with Therapeutic Regimens ed. D.R. Sachett and R.B. Haynes, The John Hopkins University Press, Baltimore, 1976, p. 29-36.
31. Weintraub, M., Au, W.Y. and Lasagna, L., Compliance as a Determinant of Serum Digoxin Concentration, J.Am.Med.Assoc. 224, 481-485 (Apr.) 1973.
32. Clinite, J.C. and Kabat, H.F., Errors During Self-Administration, J.Am.Pharm.Assoc. NS9, 450-452 (Sept.) 1969.
33. Madden, E.E., Evaluation of Outpatient Pharmacy Patient Counselling, J.Am.Pharm.Assoc. NS13, 437-443 (Aug.) 1973.
34. Steinberg, S.K., A Rational Approach to the Use of Drugs in the Elderly, Can.Pharm.J. 111, 86-92 (Mar.) 1978.
35. Dunnel, K. and Cartright, A., Medicine Takers, Prescribers and Hoarders, London: Routledge and Kegan Paul Ltd., 1972, pp. 90-92.
36. Skoll, S.L., Adding Life to Years, A Report to the Minister of Health of the Province of Saskatchewan, Regina, Saskatchewan, 1976.
37. Hall, M.R.P., Drug Therapy in the Elderly, Br.Med.J. 4, 582-584 (Sept.) 1973.
38. Hurwitz, N., Predisposing Factors in Adverse Reactions to Drugs, Br.Med.J. 1, 536-539 (Mar. 1) 1969.
39. Ivy, M.F., The Pharmacist in the Care of Ambulatory Mental Health Patients, Am.J.Hosp.Pharm. 30, 599-602 (July) 1973.
40. Charney, E., Bynum, R., Eldridge, D., Frank, D., MacWhinney, J.B., McNabb, N., Scheiner, A., Sumpster, E. and Iker, H., How Well Do Patients Take Oral Penicillin? A Collaborative Study in Private Practise, Pediatrics 40, 188-195 (Aug.) 1967.
41. Linkewich, J.A., Catalano, R.B. and Flach, H.L., The Effect of Packaging and Instruction on Outpatient Compliance with Medication Regimens, Dr.Intell.Clin.Pharm. 8, 10-15 (Jan.) 1974.
42. Francis, V., Korsch, B.M. and Morris, M.J., Gaps in Doctor-Patient Communication, N.Engl.J.Med. 280, 535-540 (Feb.) 1969.

43. Roth, H.P., Caron, H.S. and Bartholemew, P.H., Measuring Intake of a Prescribed Medication. A Bottle Count and a Tracer Technique Compared, Clin.Pharmacol.Ther. 11, 228-237 (Mar.-Apr.) 1970.
44. Musklin, A.I. and Appel, F.A., Diagnosing Potential Non-compliance, Arch.Int.Med. 137, 318-321 (Apr.) 1977.
45. Davis, M.S., Variations in Patients' Compliance with Doctors' Orders: Analysis of and Congruence Between Survey Responses and Results of Emperical Investigations, J.Med.Educ. 41, 1037-1048, 1966.
46. Haynes, R.B., A Critical Review of the Determinants of Compliance, Paper presented at the Compliance Workshop/Symposium, McMaster University, May 22-24, 1974.
47. Hare, E.H., Wilcox, D.R.C., Do Psychiatric In-patients Take Their Pills? Br.J.Psychiatry 113, 1435-1439 (Oct.) 1967.
48. Oakes, S.W., Ward, J.R., Gray, R.M., Klauber, M.R. and Moody, P.M., Family Expectations and Arthritis Patients' Compliance, J.Chron.Dis. 22, 757-764 (Aug.) 1970.
49. Donabedian, A. and Rosenfeld, S.S., Follow-up Study of Chroncially Ill Patients Discharged from Hospital, J.Chronic Dis. 17, 847-862 (Apr.) 1964.
50. Zifferblatt, S.M., Increasing Patient Compliance Through the Applied Analysis of Behavior, Prev.Med. 4, 173-182, 1975.
51. Haynes, R.B., Sackett, D.L. and Taylor, D.W., Manipulation of the Therapeutic Regimen to Improve Compliance: Conceptions and Mis-Conceptions, Clin.Pharmacol.Ther. 22, 125-130 (Feb.) 1977.
52. Ireland, H.D., Outpatient Chemotherapy for Tuberculosis. Am.Rev. Respir.Dis. 82, 378-382, 1960.
53. Bergman, A.B. and Weiner, R.J., Failure of Children to Receive Penicillin by Mouth, N.Engl.J.Med., 268, 1334-1338 (June 13) 1963.
54. Luntz, G. and Austin, R., New Stick Test for PAS in Urine. Report on the Use of 'Phenistix' and Problems of Long Term Chemotherapy for Tuberculosis, Br.Med.J. 1, 1679-1684 (June 4) 1960.
55. Caldwell, J.R., Cobb, S., Dowling, M.D. and de Jongh, D., The Dropout Problem in Antihypertensive Therapy, J.Chronic Dis. 22, 579-592, 1970.
56. Morris, L.A. and O'Neil, E.C., Judgments About a Drug's Effectiveness: The Role of Expectations and Outcomes, Drugs in Health Care 2, 179-186 (Summer) 1975.

57. Fitzgerald, J.D., "The Influence of the Medication on Compliance with Therapeutic Regimens" in Patient Compliance with Therapeutic Regimens, ed. D.R. Sachett and R.B. Haynes, The John Hopkins University Press, Baltimore, 1976, p. 120.
58. McKelvey, C.P. and Lamy, P.P., Patient Care Information in an Ambulatory Health Care Environment, Am.J.Hosp.Pharm. 29, 401-406 (May) 1972.
59. Barofsky, I., Behavioral Therapeutics and the Management of Therapeutic Regimens in Patient Compliance with Therapeutic Regimens, ed. D.R. Sachett and R.B. Haynes, The John Hopkins University Press, Baltimore, 1976, p. 100.
60. Stimson, G.V., Obeying Doctor's Orders: A View from the Other Side, Soc.Sci.Med. 8, 97-104, 1974.
61. Seligmann, A.W., McGrath, N.E. and Pratt, L., Level of Information Among Clinic Patients, J.Chronic Dis. 6, 497 (Nov.) 1957.
62. Watkins, J.D., Williams, T.F., Martin, D.A., Hogan, M.B. and Anderson, E., A Study of Diabetic Patients at Home, Am.J.Public Health 57, 452-459 (Sept.) 1967.
63. Marsh, W.W. and Perlman, L.V., Understanding Congestive Heart Failure and Self Administration of Digoxin, Geriatrics, 65-70 (July) 1972.
64. Merrett, R.A., Ambulatory Pharmacy Services: Are They Really Needed? Can.Pharm.J., 111, 197-181 (May) 1978.
65. Cyr, J. and McLean, W., Patient Knowledge of Prescription Medication. A Present Lack - A Future Necessity, Can.Pharm.J. 19, 361-367 (Oct.) 1978.
66. Parkin, D.M., Henney, C.R., Quirk, J. and Crooks, J., Deviation From Prescribed Drug Treatment After Discharge From Hospital, Br.Med.J. 2, 686-688 (Sept. 18) 1976.
67. McKercher, P.S. and Rucker, T.D., Patient Knowledge and Compliance with Medication Instructions, J.Am.Pharm.Assoc. NS17, 282-286, 291 (May) 1977.
68. Malahy, B., The Effect of Instruction and Labelling on the Number of Medication Errors Made by Patients at Home, Am.J.Hosp. Pharm. 23, 283-292 (June) 1966.
69. Becker, M.H. and Maiman, L.A., Sociobehavioral Determinants of Compliance with Health and Medical Care Recommendations, Med. Care 13, 10-24 (Jan.) 1975.

70. Becker, M.H., Sociobehavioral Determinants of Compliance in Patient Compliance with Therapeutic Regimens, ed. D.R. Sachett and R.B. Haynes, The John Hopkins University Press, Baltimore, 1976, p. 41.
71. Smith, D., Providing Pharmacy Service to Ambulatory Patients. Hosp.Admin U.S.A., 35-41 (Nov.-Dec.) 1976.
72. Chiles, V., Organization for Clinical Practise, Drug Merch. 57, 24 (June) 1976.
73. Arnhold, R.G., Adelonjo, F.O., Callas, E.R., Callas, J., Carte, E., and Stein, R.C., Patients and Prescriptions: Comprehension and Compliance with Medical Instructions in a Suburban Pediatric Practise, Clin.Pediatr. 9, 648-651, 1970.
74. Kotzan, J.A. and Williams, G.H., "An Experimental Analysis of Pharmacist-Patient Verbal Communications in Retail Pharmacy", presented to the A.Ph.A. Convention, 1972.
75. Rowles, B., Pharmacist As Compounder and Consultant, Drug Intell. Clin.Pharm. 8, 242-244 (May) 1974.
76. Hoff, S.C., How Often Do Consumers Seek your Advice on Prescription and OTC Products? Pharma Times 4, 52-55 (Aug:) 1975.
77. Anon., Pharmacists for the Future, The Report of the Study Commission on Pharmacy (Millis Commission), Health Administration Press, Ann Arbor, Michigan, 1975, p. 55-56.
78. Anon., Pharmacists for the Future, The Report of the Study Commission on Pharmacy (Millis Commission), Health Administration Press, Ann Arbor, Michigan, 1975, p. 140.
79. Griffenhagen, G.B., 'Phantom' Pharmacists, J.Am.Pharm.Assoc. NS20, 642-643 (Nov.) 1959.
80. Wensley, B., Why Schedule C is Important to You. Can.Pharm.J. 112, 513-517 (Mar.) 1979.
81. Talley, C.R., Mandatory Patient Counselling Regulations Have Little Effect on Hospital Pharmacists, Am.J.Hosp.Pharm. 36, 410, 414 (Mar.) 1979.
82. Campbell, R.K. and Grisofe, J.A., Compliance with the Washington State Patient Information Regulations, J.Am.Pharm.Assoc. NS15, 494-495 (Sept.) 1975.
83. Puckett, F.P., White, S.J., Mossberg, H.E. and Matchett, J.A., Pharmacist/Patient Counselling Practises, Contemp.Pharm.Pract. 1, 67-71, 1978.

84. Pratt, L., Seligman, A. and Reader, G., Physicians' Views on the Level of Medical Information Among Patients; Am.J.Public Health 47, 1277-1283 (Oct.) 1957.
85. Knapp, D.A., Wolf, H.H., Knapp, D.E. and Rudy, T.A., The Pharmacist as a Drug Advisor, J.Am.Pharm.Assoc. NS9, 502-505, 543 (Oct.) 1969.
86. Wertheimer, A.I., Shefter, E. and Cooper, R.M., The Pharmacist as a Drug Consultant: Three Case Studies, Drug Intell.Clin.Pharm. 7, 58-61 (Feb.) 1973.
87. Jang, R., Knapp, D.A. and Knapp, D.E., An Evaluation of the Quality of Drug-Related Services in Neighborhood Pharmacies. Drugs in Health Care 2, 21-38, 1975.
88. Nelson, A.A., Hutchinson, R.A., Mahoney, D. and Ringstrom, J., Evaluation of the Utilization of Medication Profiles, Drug Intell. Clin.Pharm. 10, 274-281 (May) 1976.
89. Vandervien, R.L., Adams, C., and Sanborn, M., The Pharmacist as Consultant - Five Years Later, Drug Intell.Clin.Pharm. 12, 718-719 (Dec.) 1978.
90. Anon., Pharmacists for the Future, The Report of the Study Commission on Pharmacy (Millis Commission), Health Administration Press, Ann Arbor, Michigan, 1975, p. 45-46.
91. Gagnon, J.P., Pharmaceutical Services - Consumer Perceptions. J.Am.Pharm.Assoc. NS16, 137-140 (Mar.) 1976.
92. Lupinski, J.J., Patient Prescription Record Systems - What are the Implications? Can.Pharm.J. 107, 154-158 (May) 1974.
93. Nordberg, B. and King, L., Third Party Payment for Patient Education, Am.J.Nurs. 76, 1269-1271 (Aug.) 1976.
94. Fudge, R.P. and Vlasses, P.H., Third Party Reimbursement for Patient Instruction About Antihemophilic Factor, Am.J.Hosp.Pharm. 34, 831-834 (Aug.) 1977.
95. Spalding, G. and Campbell, R.K., Paying the Pharmacist for Detecting Adverse Drug Reactions, J.Am.Pharm.Assoc. NS16, 86-89 (Feb.) 1976.
96. Strandberg, L.R., Stennett, D.J. and Simonson, W., Payment for Non-distributive Hospital Pharmacy Services - A regional survey, Drug Intell.Clin.Pharm. 12, 410-412 (July) 1978.
97. Manore, D.A., Third Party Payment Programs from East to West, Can.Pharm.J. 109, 15-18 (Mar.) 1976.

98. McGhan, W.F., Rowland, C.R. and Bootman, J.L., Cost-benefit and Cost-effectiveness: Methodologies for Evaluating Innovative Pharmaceutical Services, Am.J.Hosp.Pharm. 35, 133-140 (Feb.) 1978.
99. Hill, R.W. and Golden, B.A., A Plan for Pharmacist-Conducted Patient Discharge Interviews, Hosp.Formul. 11, 651-656 (Dec.) 1976.
100. Schwartz, J.I. and Swanson, L.N., Clinical Pharmacy Services. II: Cost and Contributions of Four Pharmacist Activities, Hosp.Formul. 11, 34-36 (Jan.) 1976.
101. Beardsley, R.A., Anderson, C. and Wise, G., Privacy as a Factor in Patient Counselling, J.Am.Pharm.Assoc. NS17, 366-368 (June) 1977.
102. McKenney, J.M., Slining, J.M., Henderson, H.R., Devins, D. and Barr, M., The Effect of Clinical Pharmacy Services on Patients With Essential Hypertension, Circulation, 48, 1104-1111 (Nov.) 1973.
103. Knapp, D.E. and Knapp, D.A., How Consumers View Drugs, Apothecary 88, 8-10 (July/Aug.) 1976.
104. Moore, S.R., Medication Taking Behavior of the Elderly, Drug Intell. Clin.Pharm. 12, 739-740 (Dec.) 1978.
105. Griffenhagen, G.B., Improving Patient Education and Understanding, J.Am.Pharm.Assoc. NS15, 483 (Sept.) 1975.
106. Spencer, E., The Attitudes of Ambulatory Patients Toward a Hospital-Based Pharmacy Service: The patient as consultant, Drug Intell.Clin.Pharm. 8, 710-716 (Dec.) 1974.
107. Knapp, D.E., Knapp, D.A. and Edwards, J.D., The Pharmacist as Perceived by Physicians, Patrons and Other Pharmacists, J.Am. Pharm.Assoc. NS9, 80-84 (Feb.) 1969.
108. Galloway, S.P. and Eby, C.E., Poverty Area Residents Look at Pharmacy Services, Am.J.Public Health 61, 2211-2222 (Nov.) 1971.
109. Stewart, J.E., Kabat, H.F. and Purohit, Consumer-Pharmacist Congruence - Understanding Consumer Wants and Needs, J.Am.Pharm. Assoc. NS17, 358-361 (June) 1977.
110. The Dichter Institute for Motivational Research Inc.: Communicating the Value of Comprehensive Pharmaceutical Services to the Consumer, Final Report, Washington, D.C., American Pharmaceutical Association, 1973, p. 14.

111. Hermann, F., The Outpatient Prescription Label as a Source of Medication Errors, Am.J.Hosp.Pharm. 30, 155-159 (Feb.) 1973.
112. Mazullo, J.M., Lasagna, S., and Griner, P.F., Variations in Interpretation of Prescription Instructions; the Need for Improved Prescribing Habits, J.Am.Med.Assoc. 227, 929-931 (Feb. 25) 1974.
113. Powell, J.R., Cali, T.J. and Linkewich, J.A., Inadequately Written Prescriptions, J.Am.Med.Assoc. 226, 999-1000 (Nov. 8) 1973.
114. Brands, A.J., Complete Directions for Prescription Medication, J.Am.Pharm.Assoc. NS7, 634-635 (Dec.) 1967.
115. Merrett, R.A. and Clarke, W.T., Auxillary Medication Instructions: One Way of Improving Compliance, Can.Med.Assoc.J. 117, 735 (Oct.) 1977.
116. Schilling, J.G., Patient Instruction by Written Communication, J.Am.Pharm.Assoc. NS6, 634 (Dec.) 1966.
117. Weibert, R.T. and Die, D.A., Experience in an Organized Patient Education Program, J.Am.Pharm.Assoc. NS16, 450-452 (Aug.) 1976.
118. Fox, S.A., Written Reinforcement of Auxillary Directions for Prescription Medications, Am.J.Hosp.Pharm. 26, 334-341 (June) 1969.
119. Hladik, W.B. and White, S.J., Evaluation of Written Reinforcements Used in Counselling Cardiovascular Patients, Am.J.Hosp.Pharm. 33, 1277-1280 (Dec.) 1976.
120. Ellis, D.A., Hopkin, J.M., Leitch, A.G. and Crofton, J., "Doctors Orders": Controlled Trial of Supplementary Written Information for Patients, Br.Med.J. 1, 456 (Feb. 17) 1979.
121. Sharpe, T.R. and Mikael, R.L., Patient Compliance with Antibiotic Regimens, Am.J.Hosp.Pharm. 31, 479-484 (May) 1974.
122. Clinite, J.C. and Kabat, H.F., Improving Patient Compliance, J.Am.Pharm.Assoc. NS16, 74-76, 85 (Feb.) 1976.
123. Sharpe, T.R. and Mikeal, R.L., Patient Compliance with Prescription Medication Regimens, J.Am.Pharm.Assoc. NS15, 191-192, 197 (Apr.) 1975.
124. Paulson, P.T., Bauch, R., Paulson, M.S. and Zilz, D.A., Medication Data Sheets - An Aid to Patient Education, Drug Intell.Clin.Pharm. 10, 448-453 (Aug.) 1976.

125. Crichton, E.T., Smith, D.T. and Demanuele, F., Patient Recall of Medication Information, Drug Intell.Clin.Pharm. 12, 591-599 (Oct.) 1978.
126. Dickson, W.M. and Rodowskas, G.A., Verbal Communications of Community Pharmacists, Med.Care 13, 486-496 (June) 1975.
127. Gibson, M.R., Patient Instruction by Private Consultation, J.Am.Pharm.Assoc. NS6, 632-646 (Dec.) 1966.
128. Brands, A.J., The Patient's Pharmacist, Am.J.Hosp.Pharm. 36, 311-315 (Mar.) 1979.
129. Korcok, M., Drugs and the Elderly, Can.Med.Assoc.J. 118, 1324-1326 (May) 1978.
130. Ludy, J.A., Gagnon, J.P. and Caiola, S.M., The Patient-Pharmacist Interaction in Two Ambulatory Settings - Its Relationship to Patient Satisfaction and Drug Misuse, Drug Intell.Clin.Pharm. 11, 81-89 (Feb.) 1977.
131. Rickels, K. and Briscoe, E., Assessment of Dosage Deviation in Outpatient Drug Research, J.Clin.Pharmacol., 153-160 (May-June) 1970.
132. Dickey, F.F., Mattar, M.E. and Chudzik, G.M., Pharmacist Counselling Increases Drug Regimen Compliance, Hospitals 49, 85-88 (May) 1975.
133. Lima, J., Nazarian, S., Charney, E. and Lahti, C., Compliance with Short-term Antimicrobial Therapy: Some Techniques That Help, Pediatrics 57, 383-386 (Mar.) 1976.
134. Wandless, I. and Davie, J.W., Can Drug Compliance in the Elderly be Improved? Br.Med.J. 1, 359-361 (Feb. 5) 1977.
135. MacDonald, E.T., MacDonald, J.B. and Phoenix, M., Improving Drug Compliance After Hospital Discharge, Br.Med.J. 2, 618-621 (Sept. 3) 1977.
136. Vlasses, P.H., Slutsky, P. and Taylor, E., Mediset[®]-Induced Over-Compliance, letter to ed., Drug Intell.Clin.Pharm. 11, 687-688 (Nov.) 1977.
137. Hoffman, R.P., Kerchner, J., Osburn, C., Louis, P. and Stewart, H., A Self-Medication Program for Obstetric Patients, Hosp.Pharm. 13, 129-136 (Mar.) 1978.
138. Gillespie, B.J. and Farkas, T., A Self-Medication Program for Post Coronary Patients, Can.J.Hosp.Pharm. 30, 188-190 (Nov.-Dec.) 1977.

139. Hannay, D.G., Self-Medication: A Developing Concept in Future Hospital Pharmacy Service, Hosp.Admin.Can. 19, 33, 36-37 (Jan.) 1977.
140. Madaio, A. and Clarke, T.R., Benefits of a Self-Medication Program in a Long-Term Care Facility, Hosp.Pharm. 12, 72-75, 1977.
141. Darr, M.S., Dube, J.E., Young, W.W. and Kimberlin, C.S., Theophylline Education: Development and Evaluation of Teaching Methods, Am.J.Hosp.Pharm. 36, 63-65 (Jan.) 1979.
142. Morris, R.W., Patient Counselling Using AV Aids, Drug Intell.Clin.Pharm. 9, 485-488 (Sept.) 1975.
143. Soflin, D., Young, W.W. and Clayton, B.D., Development and Evaluation of an Individualized Patient Education Program About Digoxin, Am.J.Hosp.Pharm. 34, 367-371 (Apr.) 1977.
144. Dayton, C.S., Pharmacist Involvement in a Tuberculosis Outpatient Clinic, Am.J.Hosp.Pharm. 35, 708-710 (June) 1978.
145. Gardner, M.E. and Trinca, C.E., The Pharmacy Clinic: A New Approach to Ambulatory Care, Am.J.Hosp.Pharm. 35, 429-431 (Apr.) 1978.
146. See, K. and Bergquist, S., Pharmacist as a Provider of Oncology Ambulatory Care Services, Am.J.Hosp.Pharm. 33, 1145-1147 (Nov.) 1976.
147. Davis, R.E., Crigler, W.H. and Marlin, H., Pharmacy and Family Practice-Concepts, Roles and Fees, Drug Intell.Clin.Pharm. 11, 616-621 (Oct.) 1977.
148. Solomon, D.K., Baumgartner, Jr., R.P., Weissman, A.M., Briscoe, M. E., Smith, R.M. and McCormick, W.C., Pharmaceutical Services to Improve Drug Therapy for Home Health Care Patients, Am.J.Hosp.Pharm. 35, 553-557 (May) 1978.
149. Schneider, P. and Cable, G., Compliance Clinic: An Opportunity for an Expanded Practise Role for Pharmacists, Am.J.Hosp.Pharm. 35, 288-295 (Mar.) 1978.
150. Fry, E.A., Readability Formula That Saves Time, The Journal of Reading 11, 7, 1968.
151. Gordis, S., Methodologic Issues in the Measurement of Patient Compliance with Therapeutic Regimens, ed. D.L. Sachett and B.R. Haynes, The John Hopkins University Press, Baltimore, 1976, p. 64.

152. Rodowskas, C.A. and Gagnon, J.P., Personnel Activities in Prescription Departments of Community Pharmacies, J.Am.Pharm.Assoc. NS12:407-411 (Aug.) 1972.
153. Yellin, A.K. and Norwood, G.J., The Public's Attitude Toward Pharmacy, J.Am.Pharm.Assoc. NS14:65-65 (Feb.) 1974.
154. Norwood, G.J., Impace of Clinical Pharmacists Emphasis on Patient Communication on Patient's Attitudes Toward Pharmacy, Drug Int.Clin.Pharm. 9:601-604, 1975.

A P P E N D I C E S

APPENDIX A

WRITTEN INFORMATION SHEETS

WRITTEN INFORMATION SHEETS

The written information sheets used in this study were developed by the author. For convenience these sheets were reduced to a 17 cm by 21 cm size and the information was printed on both sides of the sheet.

PATIENT DRUG INFORMATION - ACETYLSALICYLIC ACID (enteric-coated)

NAME OF DRUG: _____ is acetylsalicylic acid (A.S.A.) which is made with a special coating. It dissolves in the intestines rather than in the stomach so that the chance of stomach irritation is decreased.

USE: In low doses, A.S.A. is used as an analgesic to control mild pain. However, for the treatment of arthritic disorders, larger doses are needed (some patients may require up to 24 tablets a day). When used in these larger doses, A.S.A. acts to reduce the inflammation, as well as the pain and swelling often associated with inflammation. This does not mean that A.S.A. will cure arthritis - but it will help to prevent further tissue damage if taken regularly.

HOW AND WHEN TO TAKE _____ :

- Read your label carefully and be sure to take the exact amount of medication prescribed by your doctor.
- Unless otherwise directed, take these pills regularly and on a consistent basis, even if you are not experiencing pain. The absence of pain does not always mean there is no inflammation.
- To help you to remember to take your pills regularly, it is useful to get into the habit of taking them at the same time(s) each day.
- When taking A.S.A. for arthritis, your first dose should be taken as early in the morning as possible as this is when patients are usually most stiff from the inflammation. The remaining doses should then be taken at evenly spaced intervals during your waking hours, with the last dose taken just before you go to bed.
- Because of the special coating on these tablets, they must be swallowed whole. Do not crush, chew or break them into pieces. You should not take chipped tablets.
- Do not take an antacid at the same time you take these tablets unless your doctor recommends it. Taking your pills with food or a glassful of water will help reduce possible stomach irritation.
- When you first start taking these pills, it may take 2 to 4 weeks before significant beneficial effects are noted. Continue to take your pills even if they do not appear to be working at first. (Over)

SPECIAL PRECAUTIONS: *You may not experience any side effects while taking this drug; however, it is important for you to know how to prevent possible side effects and how to handle a side effect should one occur.*

- Do not drink more than a small amount of alcohol-containing beverages when taking these pills since this may increase the possibility of stomach irritation.
- If your tablets develop a strong vinegar-like smell, have your pharmacist check them. It may mean that they have deteriorated.
- A.S.A. interacts with many other drugs and certain combinations may result in harmful effects. For this reason, it is important to tell your doctor or pharmacist about ALL drugs you are taking.
- Medicines advertising "relief from arthritic pain" usually contain A.S.A. and will therefore not provide you with any additional benefit. Check with your pharmacist or doctor before you purchase any non-prescription products.

CHECK WITH YOUR DOCTOR if any of the following symptoms occur:

- persistent ringing in your ears
- persistent stomach upset or pain
- black bowel movements or if you notice blood in your bowel movements
- wheezing or difficult breathing
- dizziness
- unexplained tiredness
- skin rash

STORAGE: These pills should be stored in an air-tight container away from heat and moisture. Keep them out of the reach of children.

REFILLS: Be sure to reorder your drugs in sufficient time so that you do not miss any doses between refills. Please phone your pharmacist at least 1 day in advance to ensure your pills are ready for you.

PATIENT DRUG INFORMATION - ALDACTAZIDE[®]

NAME OF DRUG: You have received the drug Aldactazide[®], which is a combination of two diuretics - spironolactone and hydrochlorothiazide.

USE: Diuretics (water pills) are drugs which act on the kidney to increase the amount of urine excreted from the body. They are used in various conditions, to help the body get rid of excess fluids. Diuretics may also be used in the treatment of high blood pressure. The reason your doctor prescribed this drug for you depends on the condition you have.

HOW AND WHEN TO TAKE ALDACTAZIDE:

- Read your label carefully and be sure to take the exact amount of medication prescribed by your doctor. To help you to remember to take your pills regularly, it is useful to get in the habit of taking them at the same time(s) each day.
- Unless otherwise directed by your doctor, take your first tablet of the day in the morning. If more than one tablet a day has been prescribed, the last dose should be taken at least 6 hours before going to bed. This will prevent the increase in urine output from interfering with your nighttime sleep.
- To reduce the possibility of stomach upset, each Aldactazide[®] tablet should be taken with food or a glassful of milk.

SPECIAL PRECAUTIONS: *You may not experience any side effects while taking this drug; however, it is important for you to know how to prevent possible side effects and how to handle a side effect should one occur.*

- Occasionally, dizziness or lightheadedness may occur when taking Aldactazide[®], especially when rising from a lying or sitting position. Getting up slowly will help prevent this. If dizziness does occur, lie down flat until it passes.
- Too much salt in your diet may decrease the effectiveness of this drug. Highly salted foods, such as bacon, salted crackers or peanuts should therefore be avoided. Also, check with your pharmacist about the salt content of non-prescription drugs (e.g. Alka Seltzer[®]) before you buy them.
- Excessive water intake should be avoided. If you are unusually thirsty, check with your doctor.

(Over)

- This combination of diuretics is different from many other diuretics because it keeps your body from losing potassium. Therefore you should not require a potassium supplement (e.g. Slow K[®]) when taking Aldactazide[®].
- Some drugs may interfere with the action of Aldactazide[®] or the control of your condition. For this reason, it is important to tell your doctor and pharmacist about ALL drugs you are taking, including non-prescription products such as cold remedies.
- Drinking a small amount of alcohol-containing beverages is acceptable when taking Aldactazide[®]. However, the dizziness may be more noticeable with the use of alcohol.

CHECK WITH YOUR DOCTOR: if any of the following symptoms occur:

- muscle cramps or weakness
- vomiting or diarrhea
- bothersome or persistent dizziness
- skin rash
- persistent stomach upset
- unexplained sharp pain in a joint
- dry mouth or excessive thirst

STORAGE: These pills should be kept in a tightly capped container in a dark place (e.g. cupboard or medicine cabinet) and out of the reach of children.

REFILLS: Depending on the condition being treated it is sometimes necessary to take these pills on a regular basis for long periods of time. Please note which of the following applies to you.

_____ Your doctor has indicated you may have this prescription filled _____ time(s). Reorder your prescription in sufficient time so that you do not miss any tablets between refills.

_____ Your doctor has not indicated any repeats on this prescription. If you need a refill, please phone your pharmacist 1 day in advance so that your doctor may be contacted.

PATIENT DRUG INFORMATION - ALDORIL[®]

NAME OF DRUG: Aldoril[®] _____ is a combination of the drugs methyldopa and hydrochlorothiazide.

USE: ●Aldoril[®] is used to treat hypertension (high blood pressure). High blood pressure occurs when there is an increased pressure in your blood vessels. This makes more work for the heart. High blood pressure does not usually make you feel ill. However, IF IT IS UNTREATED, it may cause damage to your eyes and kidneys or may cause a stroke or heart attack.

●Your doctor has prescribed Aldoril[®] to lower your blood pressure and keep it in the normal range. It acts by preventing the narrowing of the blood vessels, and by helping the body get rid of the excess fluids which may cause an increase in blood pressure.

●High blood pressure is often a life-long condition. Once your blood pressure is in the normal range you must continue to take your pills to keep it there. It is important to return to your doctor as scheduled so he can evaluate your response to this drug and assure that your blood pressure is under control.

HOW AND WHEN TO TAKE ALDORIL[®]:

●Read your label carefully and be sure to take the exact amount of medication prescribed by your doctor, EVEN WHEN YOU ARE FEELING WELL. To help you to remember to take your pills regularly, it is useful to get in the habit of taking them at the same time(s) each day.

●When you first start taking Aldoril[®] you may have to go to the bathroom more often. Unless otherwise directed by your doctor, take your last pill of the day at least 6 hours before going to bed. This will prevent the initial increase in urine output from interfering with your nighttime sleep.

●To reduce the possibility of stomach upset, each Aldoril[®] tablet should be taken with food or a glassful of milk.

SPECIAL PRECAUTIONS: *You may not experience any side effects while taking this drug; however, it is important for you to know how to prevent possible side effects and how to handle a side effect should one occur.* (Over)

- You may experience drowsiness when taking Aldoril[®], especially at the beginning of your therapy or if your doctor increases your dose. It is therefore wise to start taking this medication at home to determine how it affects you before you drive a car or perform any tasks which require mental alertness. This drowsiness should disappear with continued use of the drug.
- Dizziness or lightheadedness may occur when rising too quickly from a sitting or lying position. To prevent this, avoid changing positions too rapidly. Rise slowly from a lying to a sitting position and from a sitting to a standing position. If dizziness occurs, lie down flat until the dizziness passes. If you cannot lie down, flexing your leg muscles and wiggling your toes will help relieve the dizziness.
- Drinking a small amount of alcohol-containing beverages is acceptable when taking Aldoril[®]. However, the dizziness and drowsiness may be more noticeable with the use of alcohol.
- Aldoril[®] may cause a dry mouth. This can be relieved by sucking a hard sugarless candy, chewing sugarless gum or sucking ice chips.
- Some drugs may interfere with the action of Aldoril[®] or with the control of your blood pressure. It is therefore important to tell your doctor and pharmacist about ALL prescription AND non-prescription drugs you are taking. You should also check with your doctor or pharmacist before using any non-prescription cold or hay fever remedies. Some of these products have ingredients which may cause your blood pressure to rise.

CHECK WITH YOUR DOCTOR if any of the following symptoms occur:

- | | |
|-------------------------------------|---|
| • muscle cramps or weakness | • persistent or bothersome dizziness |
| • persistent loss of appetite | • general weakness or tiredness |
| • unexplained sharp pain in a joint | • flu-like symptoms - fever, nausea, vomiting or diarrhea |
| • excessive thirst | |

STORAGE: These pills should be kept in a tightly capped container in a dark place (e.g. cupboard or medicine cabinet) and out of the reach of children.

REFILLS: Please note which of the following applies to you:

- _____ Your doctor has indicated you may have this prescription filled _____ time(s). Reorder your prescription in sufficient time so that you do not miss any tablets between refills.
- _____ Your doctor has not indicated any repeats on this prescription. Please phone your pharmacist 1 day in advance so that your doctor may be contacted for a refill.

- You may experience drowsiness when taking Aldoril[®], especially at the beginning of your therapy or if your doctor increases your dose. It is therefore wise to start taking this medication at home to determine how it affects you, before you drive a car or perform any tasks which require mental alertness. This drowsiness should disappear with continued use of the drug.
- Dizziness or lightheadedness may occur when rising too quickly from a sitting or lying position. To prevent this, avoid changing positions too rapidly. Rise slowly from a lying to a sitting position and from a sitting to a standing position. If dizziness occurs, lie down flat until the dizziness passes. If you cannot lie down, flexing your leg muscles and wiggling your toes will help relieve the dizziness.
- Drinking a small amount of alcohol-containing beverages is acceptable when taking Aldoril[®]. However, the dizziness and drowsiness may be more noticeable with the use of alcohol.
- Aldoril[®] may cause a dry mouth. This can be relieved by sucking a hard sugarless candy, chewing sugarless gum or sucking ice chips.
- Some drugs may interfere with the action of Aldoril[®] or with the control of your blood pressure. It is therefore important to tell your doctor and pharmacist about ALL prescription AND non-prescription drugs you are taking. You should also check with your doctor or pharmacist before using any non-prescription cold or hay fever remedies. Some of these products have ingredients which may cause your blood pressure to rise.

CHECK WITH YOUR DOCTOR if any of the following symptoms occur:

- | | |
|-------------------------------------|---|
| ● muscle cramps or weakness | ● persistent or bothersome dizziness |
| ● persistent loss of appetite | ● general weakness or tiredness |
| ● unexplained sharp pain in a joint | ● flu-like symptoms - fever, nausea, vomiting or diarrhea |
| ● excessive thirst | |

STORAGE: These pills should be kept in a tightly capped container in a dark place (e.g. cupboard or medicine cabinet) and out of the reach of children.

REFILLS: Please note which of the following applies to you:

- _____ Your doctor has indicated you may have this prescription filled _____ time(s). Reorder your prescription in sufficient time so that you do not miss any tablets between refills.
- _____ Your doctor has not indicated any repeats on this prescription. Please phone your pharmacist 1 day in advance so that your doctor may be contacted for a refill.

PATIENT DRUG INFORMATION - ALLOPURINOL

NAME OF DRUG: You have received the drug allopurinol _____ mg which is manufactured under the trade name "Zyloprim[®]".

USE: ● Allopurinol is used to treat conditions where there is more than a normal amount of uric acid in the body. It may be used for the correction of hyperuricemia (high amounts of uric acid in the blood stream). Long term use of allopurinol will prevent attacks of gout which occur when extra uric acid deposits in a joint. This causes a painful and sometimes swollen and inflamed joint. Allopurinol works in these conditions by decreasing the body's ability to make uric acid.

● Allopurinol also has other uses. The reason it was prescribed for you depends on the condition you have.

HOW AND WHEN TO TAKE ALLOPURINOL:

- Read your label carefully and be sure to take the exact amount of drug prescribed by your doctor.
- Since allopurinol controls, rather than cures your condition, it is important to take it consistently, even when you are feeling well. Do not stop taking allopurinol without telling your doctor.
- To help you to remember to take your pills regularly, it is useful to get in the habit of taking them at the same time(s) each day.
- To reduce the possibility of stomach upset, each allopurinol tablet should be taken with food or after meals.
- With some conditions, significant beneficial effects may not be noted for several months. Continue to take your pills even if, at first, they do not appear to be working.

SPECIAL PRECAUTIONS: *You may not experience any side effects while taking this drug; however, it is important for you to know how to prevent possible side effects and how to handle a side effect should one occur.*

- Allopurinol may cause drowsiness. Although this is not a common problem, it is wise to start taking this medication at home and to determine how it affects you, before you drive a car or perform any tasks which require mental alertness.

(Over)

●Allopurinol interferes with the action of some other drugs. It is therefore important to tell your doctor and pharmacist about ALL prescription AND non-prescription drugs you are taking.

CHECK WITH YOUR DOCTOR: if any of the following symptoms occur:

- skin rash
- persistent or bothersome stomach upset or stomach pain
- sore throat or fever

STORAGE: Keep these pills in a tightly capped container and out of the reach of children.

REFILLS: Depending on the condition being treated it is sometimes necessary to take these pills on a regular basis for long periods of time. Please note which of the following applies to you:

- _____ Your doctor has indicated you may have this prescription filled _____ time(s). Reorder your prescription in sufficient time so that you do not miss any tablets between refills.
- _____ Your doctor has not indicated any repeats on this prescription. If you need a refill please phone your pharmacist 1 day in advance so that your doctor may be contacted.

PATIENT DRUG INFORMATION - ALKA BUTAZOLIDIN[®]

NAME OF DRUG: You have received Alka Butazolidin[®] which is the drug phenylbutazone combined with some antacids.

USE: Alka Butazolidin[®] is used to treat various conditions where inflammation has occurred, such as arthritic and rheumatic disorders. It acts to reduce the inflammation, as well as the pain and swelling often associated with inflammation. The reason this drug was prescribed for you depends on the specific condition you have. Do not take it for any reason other than that for which it was prescribed.

HOW AND WHEN TO TAKE ALKA BUTAZOLIDIN[®]:

- Read your label carefully and take the exact amount of drug prescribed by your doctor.
- Unless otherwise directed, take these pills regularly and on a consistent basis during the course of your treatment, even if you are not experiencing pain. The absence of pain does not always mean there is no inflammation.
- To help you to remember to take your pills regularly, it is useful to get in the habit of taking them at the same time(s) each day. Your first dose of Alka Butazolidin[®] should be taken as early in the morning as possible as this is when patients are usually most stiff from the inflammation. The remaining pills should then be taken at evenly spaced intervals during your waking hours. If you forget to take a dose, take it as soon as you remember and evenly space the remaining doses.
- Since the most common side effect of this drug is stomach upset, each tablet should be taken with food or a full glass of milk. If you wish to take your tablet with an antacid, your pharmacist will recommend one with a low salt content.
- These tablets have a special coating and should be swallowed whole. Do not crush, chew, or break them into pieces.
- These tablets should help your condition within one week of starting to take them. Contact your physician if you do not notice a beneficial effect after one week. Also, be sure to take these pills only for as long as your doctor recommends it.
- Alka Butazolidin[®] is a potent medication that should be taken under close supervision of your doctor. Be sure to return to him as scheduled so he can follow your progress.

SPECIAL PRECAUTIONS: *You may not experience any side effects while taking this drug; however, it is important for you to know how to prevent possible side effects and how to handle a side effect should one occur.*

- Some people experience drowsiness, dizziness or lightheadedness when taking Alka Butazolidin [®]. It is, therefore, wise to start taking this medication at home to determine how it affects you, before you drive a car or perform any tasks which require mental alertness.
- Do not drink more than a small amount of alcohol-containing beverages when taking Alka Butazolidin [®] as this may increase the stomach irritation. Drowsiness and dizziness may also be more noticeable with the use of alcohol.
- Medicines advertising "relief from arthritic pain" will probably not provide you with any additional benefit. They usually contain A.S.A. (Aspirin [®]) which may interfere with the action of Alka Butazolidin [®]. You should check with your pharmacist or doctor before you purchase any non-prescription products.
- Alka Butazolidin [®] may interfere with the action of some other drugs and the combination may result in harmful effects. For this reason, it is important to tell your doctor and pharmacist about ALL drugs you are taking.

CHECK WITH YOUR DOCTOR: - if any of the following symptoms occur:

- | | |
|--|--|
| ● persistent stomach upset or pain | ● black bowel movements or if you notice blood in your bowel movements |
| ● persistent or bothersome dizziness or drowsiness | ● weight gain or swelling of the ankles and feet |
| ● skin rash | ● sore throat or fever |
| ● mouth sores | |

STORAGE: These pills should be stored in a tightly capped container in a dark place (e.g. cupboard or medicine cabinet) and out of the reach of children.

REFILLS: Please note which of the following applies to you:

_____ Your doctor has indicated you may have this prescription filled _____ time(s). Reorder your prescription in sufficient time so that you do not miss any tablets between refills.

_____ Your doctor has not indicated any repeats on this prescription. If you require a refill, please phone your pharmacist 1 day in advance so we can contact your doctor.

PATIENT DRUG INFORMATION - CHLOROTHIAZIDE

NAME OF DRUG: The drug "chlorothiazide" is manufactured by several different companies. The brand you have received is called _____.

USE: Chlorothiazide is a diuretic (water pill). Diuretics are drugs which act on the kidney to increase the amount of urine excreted from the body. They are used in various conditions to help the body get rid of excess fluids. Diuretics may also be used in the treatment of high blood pressure. The reason your doctor prescribed this drug for you depends on the condition you have.

HOW AND WHEN TO TAKE CHLOROTHIAZIDE:

- ⊗ Read your label carefully and be sure to take the exact amount of medication prescribed by your doctor. To help you to remember to take your pills, it is useful to get in the habit of taking them at the same time(s) each day.
- ⊗ Unless otherwise directed by your doctor, take your first tablet of the day in the morning, after breakfast. If more than one tablet a day has been prescribed, the last dose should be taken at least 6 hours before going to bed. This will prevent the increase in urine output from interfering with your nighttime sleep.
- ⊗ To reduce the possibility of stomach upset, each chlorothiazide tablet should be taken with food or a glassful of milk.

SPECIAL PRECAUTIONS: *You may not experience any side effects while taking this drug; however, it is important for you to know how to prevent possible side effects and how to handle a side effect should one occur.*

- ⊗ While removing extra water from the body, this drug may also remove potassium. Occasionally an excess loss of potassium may cause tiredness, muscle weakness or cramps. Your doctor may have prescribed a potassium supplement for you (e.g. Slow K[®]). If he has not, you should eat one or more of the following potassium-rich foods every day to replace any potassium you may have lost: Dried fruits, fresh fruits or fruit juices.
- ⊗ Too much salt in your diet may decrease the effectiveness of this drug. Highly salted foods, such as bacon, salted crackers or peanuts, should therefore be avoided. Also, check with your pharmacist about the salt content of non-prescription drugs (e.g. Alka-Seltzer[®]) before you buy them.

(Over)

- Excessive water intake should be avoided. If you are unusually thirsty, check with your doctor.
- Occasionally dizziness or lightheadedness may occur when taking chlorothiazide, especially when rising from a lying or sitting position. Getting up slowly will help prevent this. If dizziness occurs, lie down flat until it passes.
- Some drugs may interfere with the action of chlorothiazide or the control of your condition. For this reason, it is important to tell your doctor and pharmacist ALL drugs you are taking, including non-prescription products such as cold remedies.
- Drinking a small amount of alcohol-containing beverages is acceptable when taking chlorothiazide. However, the dizziness may be more noticeable with the use of alcohol.

CHECK WITH YOUR DOCTOR if any of the following symptoms occur:

- | | |
|--------------------------------------|-------------------------------------|
| ● muscle cramps or weakness | ● persistent loss of appetite |
| ● unexplained tiredness | ● persistent stomach upset |
| ● vomiting or diarrhea | ● unexplained sharp pain in a joint |
| ● persistent or bothersome dizziness | ● dry mouth or excessive thirst |

STORAGE: Keep these pills in a tightly capped container and out of the reach of children.

REFILLS: Depending on the condition being treated, it is sometimes necessary to take these pills on a regular basis for long periods of time. Please note which of the following applies to you.

_____ Your doctor has indicated you may have this prescription refilled _____ time(s). Reorder your prescription in sufficient time so that you do not miss any doses between refills.

_____ Your doctor has not indicated any repeats on this prescription. If you require a refill please phone your pharmacist 24 hours in advance so that your doctor may be contacted.

PATIENT DRUG INFORMATION - CHLORTHALIDONE

NAME OF DRUG: The drug chlorthalidone is manufactured by several different companies. The brand you have received is called _____.

USE: Chlorthalidone is a diuretic (water pill). Diuretics are drugs which act on the kidney to increase the amount of urine excreted from the body. They are used in various conditions to help the body get rid of excess fluids. Diuretics may also be used in the treatment of high blood pressure. The reason your doctor prescribed this drug for you depends on the condition you have.

HOW AND WHEN TO TAKE CHLORTHALIDONE:

- Read your label carefully and be sure to take the exact amount of drug prescribed by your doctor. To help you to remember to take your pills, it is useful to get in the habit of taking them at the same time(s) each day.
- Chlorthalidone begins to work about 2 hours after you take it and continues to work for the rest of the day. Unless otherwise directed by your doctor, take your tablet in the morning, after breakfast. This will prevent the increase in urine output from interfering with your nighttime sleep.
- To reduce the possibility of stomach upset, each chlorthalidone tablet should be taken with food or milk.

SPECIAL PRECAUTIONS: *You may not experience any side effects while taking this drug; however, it is important for you to know how to prevent possible side effects and how to handle a side effect should one occur.*

- While removing extra water from the body, this drug may also remove potassium. Occasionally, an excess loss of potassium may cause tiredness, muscle weakness or cramps. Your doctor may have prescribed a potassium supplement for you (e.g. Slow K). If he has not, you should eat one or more of the following potassium-rich foods daily to replace any potassium you have lost: Dried fruits, fresh fruits or fruit juices.
- Too much salt in your diet may decrease the effectiveness of this drug. Highly salted foods, such as bacon, salted crackers or peanuts, should therefore be avoided. Also, check with your pharmacist about the salt content of non-prescription drugs (e.g. Alka-Seltzer[®]) before you buy them. (Over)

- Excessive water intake should be avoided. If you are unusually thirsty, check with your doctor.
- Occasionally dizziness or lightheadedness may occur when taking chlorthalidone, especially when rising from a lying or sitting position. Getting up slowly will help prevent this. If dizziness occurs, lie down flat until it passes.
- Some drugs may interfere with the action of chlorthalidone or the control of your condition. For this reason, it is important to tell your doctor and pharmacist about ALL drugs you are taking, including non-prescription products such as cold remedies.
- Drinking a small amount of alcohol-containing beverages is acceptable when taking chlorthalidone. However, the dizziness may be more noticeable with the use of alcohol.

CHECK WITH YOUR DOCTOR if any of the following symptoms occur:

- muscle cramps or weakness
- unexplained tiredness
- vomiting or diarrhea
- persistent or bothersome dizziness
- persistent loss of appetite
- persistent stomach upset
- unexplained sharp pain in a joint
- dry mouth or excessive thirst

STORAGE: These pills should be kept in a tightly capped container in a dark place (e.g. cupboard or medicine cabinet) and out of the reach of children.

REFILLS: Depending on the condition being treated, it is sometimes necessary to take these pills on a regular basis for long periods of time. Please note which of the following applies to you.

- _____ Your doctor has indicated you may have this prescription filled _____ time(s). Reorder your prescription in sufficient time so that you do not miss any tablets between refills.
- _____ Your doctor has not indicated any repeats on this prescription. If you need a refill, please phone your pharmacist 24 hours in advance so that your doctor may be contacted.

PATIENT DRUG INFORMATION - CIMETIDINE

NAME OF DRUG: You have received the drug cimetidine which is manufactured under the trade name Tagamet[®].

USE: ● Tagamet[®] is used to treat various disorders and the reason it was prescribed for you depends on the condition you have.

- One of the conditions Tagamet[®] is used for is the treatment of ulcers. Ulcers usually occur when the acid in the stomach juices irritates the lining of the stomach. This drug acts to decrease the amount of acid the stomach makes. It, therefore, reduces the amount of pain associated with ulcers. The use of Tagamet[®] may also allow an ulcer to heal.

HOW AND WHEN TO TAKE TAGAMET[®]:

- Read your label carefully and be sure to take the exact amount of drug prescribed by your doctor.
- Beneficial effects from Tagamet[®] may not appear right away. Continue to take your pills even if they do not appear to be working at first. If you wish to stop taking your pills, discuss it with your doctor first. Also, continue to take any other medicines your doctor has recommended for your stomach.
- Since Tagamet[®] is used to prevent your condition from becoming worse, it should be taken on a regular basis, even when you are feeling well. To help you to remember to take your pills regularly, it is useful to get into the habit of taking them at the same time(s) each day.
- It is usually recommended that Tagamet[®] be taken just before, with, or just after meals. If you are to take Tagamet[®] four times a day, the last dose should be taken just before you go to bed.

SPECIAL PRECAUTIONS: *You may not experience any side effects while taking this drug; however, it is important for you to know how to handle a side effect should one occur.*

- Tagamet[®] rarely causes any side effects. The following symptoms may, however, mean you are sensitive to the drug and should be reported to your doctor:
 - dizziness
 - skin rash
 - unexplained muscle aches
 - excessive diarrhea
 - confusion

Cimetidine - 2

- You should inform your doctor and pharmacist about ALL other medicines you are taking. This includes medicines you can buy without a prescription, such as Aspirin[®] and cough and cold remedies.
- Be sure to return to your doctor regularly, as scheduled, so that he may accurately assess your response to this drug.

STORAGE: Tagamet[®] should be kept in an air-tight container in a cool place. As with all medicine, it should be kept out of the reach of children.

REFILLS: It is sometimes necessary to take these pills for long periods of time. Please note which refill procedure applies to you:

- Your doctor has indicated you may have this prescription filled _____ time(s). Reorder your prescription in sufficient time so that you do not miss taking any tablets between refills.
- Your doctor has not indicated any repeats on this prescription. Please phone the pharmacy one day before you need a refill so we can phone your doctor and have the prescription ready for you.

PATIENT DRUG INFORMATION - CLOFIBRATE

NAME OF DRUG: The drug clofibrate is manufactured by several different companies. The brand you have received is called _____ 500 mg.

USE: Clofibrate acts primarily to lower the amount of fat in the blood. It is used in the prevention and treatment of several diseases and the reason it was prescribed for you depends on the condition you have.

HOW AND WHEN TO TAKE CLOFIBRATE:

- Read your label carefully and be sure to take the exact amount of medication prescribed by your doctor.
- For best results, clofibrate should be taken consistently, even when you are feeling well. To help you to remember to take your pills regularly, it is useful to get in the habit of taking them at the same time(s) each day.
- To reduce the possibility of stomach upset, clofibrate may be taken with food or a glassful of milk.

SPECIAL PRECAUTIONS: *You may not experience any side effects while taking this drug; however, it is important for you to know how to prevent possible side effects and how to handle a side effect should one occur.*

- Some patients experience drowsiness or dizziness when taking clofibrate. It is therefore wise to start taking this medication at home and to determine how it affects you before you drive a car or perform any tasks which require mental alertness.
- Clofibrate interacts with other drugs and the combination may result in harmful effects. It is therefore important to tell your doctor and pharmacist about ALL prescription AND non-prescription drugs you are taking.

CHECK WITH YOUR DOCTOR: if any of the following symptoms occur:

- skin rash
- unexplained muscle or joint aching

STORAGE: These pills should be kept in an air-tight container in a dark place (e.g. cupboard) and away from heat. Keep them out of the reach of children.

REFILLS: Depending on the condition being treated, it is sometimes necessary to take these pills for long periods of time. Please note which of the following

(over)

applies to you.

_____ Your doctor has indicated you may have this prescription filled _____
time(s). Reorder your prescription in sufficient time so that you
do not miss any pills between refills.

_____ Your doctor has not indicated any repeats on this prescription.
Please phone your pharmacist 1 day in advance so that your doctor
may be contacted for a refill.

PATIENT DRUG INFORMATION - CLONIDINE

NAME OF DRUG: You have received the drug clonidine which is manufactured under the trade name Catapres[®] _____.

USE: • Clonidine is used to treat hypertension (high blood pressure). High blood pressure occurs when there is narrowing of the blood vessels. This causes increased pressure in your blood vessels and makes more work for your heart. High blood pressure does not usually make you feel ill. However, IF IT IS UNTREATED, it may cause damage to your eyes and kidneys or may cause a stroke or heart attack.

- Your doctor has prescribed clonidine for you to lower your blood pressure and keep it in the normal range so that these complications do not occur. It works by preventing the narrowing of your blood vessels. For the best results, this drug must be taken regularly, exactly as prescribed by your doctor. Taking less than prescribed may allow your blood pressure to remain high.
- High blood pressure is often a life-long condition. Once your blood pressure is in the normal range you must continue to take your pills to keep it there. It is important to return to your doctor as scheduled so he can evaluate your response to this drug and assure that your blood pressure is under control.

HOW AND WHEN TO TAKE CLONIDINE:

- Read your label carefully and take the exact amount of drug prescribed by your doctor, EVEN WHEN YOU ARE FEELING WELL. To help you to remember to take your pills regularly, it is useful to get into the habit of taking them at the same time(s) each day.
- Do not stop taking Catapres[®] abruptly. Doing so may cause your blood pressure to become excessively high.

SPECIAL PRECAUTIONS: *You may not experience any side effects while taking this drug; however, it is important for you to know how to prevent possible side effects and how to handle a side effect should one occur.*

- You may experience drowsiness when taking clonidine, especially at the beginning of your therapy, or if your doctor increases your dose. It is therefore wise to start taking this medication at home to determine how it affects you, before you drive a car or perform any tasks which require mental alertness. This drowsiness should disappear with continued use of the drug.

(Over)

- Dizziness or lightheadedness may occur when rising too quickly from a sitting or lying position. To prevent this, avoid changing positions too rapidly. Rise slowly from a lying to a sitting position, and from a sitting to a standing position.
- If dizziness occurs, lie down flat until the dizziness passes. If you cannot lie down, flexing your leg muscles and wiggling your toes will help relieve the dizziness.
- Drinking a small amount of alcohol-containing beverages is acceptable when taking clonidine. However, the dizziness and drowsiness may be more noticeable with the use of alcohol.
- Clonidine may cause a dry mouth. This can be relieved by sucking a hard sugarless candy, chewing sugarless gum or sucking ice chips.
- Some drugs may interfere with the action of clonidine or with the control of your blood pressure. It is therefore important to tell your doctor and pharmacist about ALL prescription AND non-prescription drugs you are taking.
- You should also check with your doctor or pharmacist before using any non-prescription cold or hay fever remedies. Some of these products have ingredients which may cause your blood pressure to rise.

CHECK WITH YOUR DOCTOR if any of the following occur:

- persistent or bothersome drowsiness or dizziness
- changes in sleep patterns or nightmares

STORAGE: These pills should be kept in a tightly capped container in a dark place (e.g. cupboard or medicine cabinet) and out of the reach of children.

REFILLS: Please note which of the following applies to you:

_____ Your doctor has indicated you may have this prescription filled _____ time(s). Reorder your prescription in sufficient time so that you do not miss any tablets between refills.

_____ Your doctor has not indicated any repeats on this prescription. Please phone your pharmacist 1 day in advance so that your doctor may be contacted for a refill.

PATIENT DRUG INFORMATION - DIGOXIN

NAME OF DRUG: The drug digoxin is manufactured by several different companies.

The brand you have received is called "Lanoxin[®]" _____. Be sure you always receive the same brand.

USE: Digoxin is used to help your heart work more efficiently. It does this by slowing the heart down and causing it to beat stronger and pump more blood. It may be used to treat conditions where the heart is weakened and cannot effectively pump blood through the body. It may also be used in various conditions to control irregular heart beats. The reason your doctor prescribed this drug for you depends on the condition you have.

HOW AND WHEN TO TAKE DIGOXIN:

- Read your label carefully and be sure to take the exact amount of drug prescribed by your doctor. The dose prescribed for you has been carefully adjusted so you will obtain maximum benefit without side effects. Do not increase or decrease your dose, or stop taking this drug without your doctor's recommendation.
- For the best results, this drug must be taken as directed, even when you are feeling well. To help you to remember to take your pills regularly, it is useful to get into the habit of taking them at the same time(s) each day.
- If you do miss taking a tablet, take it as soon as you remember. If more than one tablet is missed phone your doctor or pharmacist for advice.

SPECIAL PRECAUTIONS:

- Some drugs may interfere with the action of digoxin. For this reason it is important to tell your doctor or pharmacist about ALL drugs you are taking. You should also check with your pharmacist before buying any non-prescription drugs (e.g. cough and cold preparations, hay fever drugs, Aspirin[®]).
- If you are taking an antacid (e.g. Maalox[®], Amphogel[®]) you should take your digoxin tablet at least one hour before you take your antacid, or digoxin may be less effective.

(Over)

CHECK WITH YOUR DOCTOR if any of the following symptoms occur. They may indicate too much drug has been taken.

- an unexplained loss of appetite
- spells of weakness
- nausea, vomiting or diarrhea
- unexplained tiredness
- vision changes - such as hazy vision, yellow or green vision or colored haloes around bright objects

STORAGE: These drugs should be kept in a tightly capped container in a dark place (e.g. cupboard) and out of the reach of children.

REFILLS: Please note which of the following applies to you.

- _____ Your doctor has indicated you may have this prescription filled _____ time(s). Reorder your prescription in sufficient time so that you do not miss any tablets between refills.
- _____ Your doctor has not indicated any repeats on this prescription. Please phone your pharmacist 24 hours in advance so that your doctor may be contacted for a refill.

PATIENT DRUG INFORMATION - DYAZIDE[®]

NAME OF DRUG: You have received the drug Dyazide[®], which is a combination of two diuretics (water pills), hydrochlorothiazide and triamterene.

USE: Diuretics are drugs which act on the kidney to increase the amount of urine excreted from the body. They are used in various conditions to help the body get rid of excess fluids. Diuretics may also be used in the treatment of high blood pressure. The reason your doctor prescribed this drug for you depends on the condition you have.

HOW AND WHEN TO TAKE DYAZIDE:

- Read your label carefully and be sure to take the exact amount of medication prescribed by your doctor. To help you to remember to take your pills regularly, it is useful to get in the habit of taking them at the same time(s) each day.
- Unless otherwise directed by your doctor, take your first tablet of the day in the morning. If more than one tablet a day has been prescribed, the last dose should be taken at least 6 hours before going to bed. This will prevent the increase in urine output from interfering with your nighttime sleep.
- To reduce the possibility of stomach upset, each Dyazide[®] tablet should be taken with food or a glassful of milk.

SPECIAL PRECAUTIONS: *You may not experience any side effects while taking this drug; however, it is important for you to know how to prevent possible side effects and how to handle a side effect should one occur.*

- Occasionally, dizziness or lightheadedness may occur when taking Dyazide[®], especially when rising from a lying or sitting position. Getting up slowly will help prevent this. If dizziness occurs, lie down flat until it passes.
- Too much salt in your diet may decrease the effectiveness of this drug. Highly salted foods, such as bacon, salted crackers or peanuts should therefore be avoided. Also, check with your pharmacist about the salt content of non-prescription drugs (e.g. Alka Seltzer[®]) before you buy them.
- Excessive water intake should be avoided. If you are unusually thirsty, check with your doctor.
- This combination of diuretics is different from many other diuretics because it keeps your body from losing potassium. Therefore, you should not require a potassium supplement (e.g. Slow K[®]) when taking Dyazide[®]. (Over)

- Some drugs may interfere with the action of Dyazide[®] or the control of your condition. For this reason, it is important to tell your doctor and pharmacist about ALL drugs you are taking, including non-prescription products such as cold remedies.
- Drinking a small amount of alcohol-containing beverages is acceptable when taking Dyazide[®]. However, the dizziness may be more noticeable with the use of alcohol.

CHECK WITH YOUR DOCTOR if any of the following symptoms occur:

- muscle cramps or weakness
- persistent stomach upset
- vomiting or diarrhea
- unexplained sharp pain in a joint
- bothersome or persistent dizziness
- dry mouth or excessive thirst

STORAGE: These pills should be kept in a tightly capped container, in a dark place (e.g. cupboard or medicine cabinet) and out of the reach of children.

REFILLS: Depending on the condition being treated it is sometimes necessary to take these pills on a regular basis for long periods of time. Please note which of the following applies to you.

_____ Your doctor has indicated you may have this prescription filled _____ time(s). Reorder your prescription in sufficient time so that you do not miss any tablets between refills.

_____ Your doctor has not indicated any repeats on this prescription. If you need a refill, please phone your pharmacist 24 hours in advance so that your doctor may be contacted.

PATIENT DRUG INFORMATION - FENOPROFEN

NAME OF DRUG: You have received the drug fenopropfen which is manufactured under the trade name "Nalfon[®]" _____.

USE: Fenopropfen is used to treat various conditions where inflammation has occurred, such as arthritic and rheumatic disorders. It acts to reduce the inflammation, as well as the pain and swelling often associated with inflammation. The reason this was prescribed for you depends on the condition you have.

HOW AND WHEN TO TAKE FENOPROFEN:

- Read your label carefully and take the exact amount of drug prescribed by your doctor.
- Unless otherwise directed, take these pills regularly and on a consistent basis throughout the course of your therapy, even if you are not experiencing pain. The absence of pain does not always mean there is no inflammation.
- To help you to remember to take your pills regularly, it is useful to get in the habit of taking them at the same time(s) each day.
- Your first dose of fenopropfen should be taken as early in the morning as possible as this is when patients are usually most stiff from the inflammation. The remaining pills should then be taken at evenly spaced intervals during your waking hours. If you forget to take a dose, take it as soon as you remember and evenly space the remaining doses.
- With some conditions significant beneficial effects may not be noted for 1 or 2 weeks. Continue to take your pills regularly even if they do not appear to be working at first.
- To reduce the possibility of stomach irritation, all doses of fenopropfen should be taken with food or a glassful of milk.

SPECIAL PRECAUTIONS: *You may not experience any side effects while taking this drug; however, it is important for you to know how to prevent possible side effects and how to handle a side effect should one occur.*

- Some patients experience drowsiness, dizziness or lightheadedness when taking fenopropfen. It is therefore wise to start taking this medication at home and to determine how this medication affects you before you drive a car or perform any tasks which require mental alertness.

(Over)

- Do not drink more than a small amount of alcohol-containing beverages when taking fenoprofen since this may increase the stomach irritation. Drowsiness and dizziness may also be more noticeable with the use of alcohol.
- Fenoprofen may interfere with the action of some other drugs and the combination may result in harmful effects. For this reason it is important to tell your doctor or pharmacist about ALL drugs you are taking.

CHECK WITH YOUR DOCTOR if any of the following symptoms occur:

- skin rash
- change in eyesight
- persistent ringing in the ears
- black bowel movements or if you notice blood in your bowel movements
- persistent stomach upset or abdominal pain

STORAGE: Keep these drugs in a tightly capped container and out of the reach of children.

REFILLS: Depending on the condition being treated it is sometimes necessary to take these pills for long periods of time. Please note which of the following applies to you.

_____ Your doctor has indicated you may have this prescription filled _____ time(s). Reorder your prescription in sufficient time so that you do not miss any doses between refills.

_____ Your doctor has not indicated any repeats on this prescription. If you require a refill please phone your pharmacist 24 hours in advance so that your doctor may be contacted.

PATIENT DRUG INFORMATION - FUROSEMIDE

NAME OF DRUG: The drug furosemide is manufactured by several different companies. The brand you have received is called _____.

USE: Furosemide is a diuretic (water pill). Diuretics are drugs which act on the kidney to increase the amount of urine excreted from the body. They are used in various conditions to help the body get rid of excess fluids. Diuretics may also be used in the treatment of high blood pressure. The reason your doctor prescribed this drug for you depends on the condition you have.

HOW AND WHEN TO TAKE FUROSEMIDE:

- Read your label carefully and be sure to take the exact amount of medication prescribed by your doctor. To help you to remember to take your pills, it is useful to get in the habit of taking them at the same time(s) each day.
- Furosemide should begin to work $\frac{1}{2}$ to 1 hour after taking it and will continue to work for 6 to 8 hours. Unless otherwise directed by your doctor, take your first tablet of the day in the morning. If more than one tablet a day has been prescribed, the last tablet should be taken at least 6 hours before going to bed. This will prevent the increase in urine output from interfering with your nighttime sleep.
- To reduce the possibility of stomach upset, each furosemide tablet should be taken with food or a glassful of milk.

SPECIAL PRECAUTIONS: *You may not experience any side effects while taking this drug; however, it is important for you to know how to prevent possible side effects and how to handle a side effect should one occur.*

- While removing extra water from the body, this drug may also remove potassium. Occasionally, an excess loss of potassium may cause tiredness, muscle weakness or cramps. Your doctor may have prescribed a potassium supplement for you (e.g. Slow K[®]). If he has not, you should eat one or more of the following potassium-rich foods every day to replace any potassium you have lost: Dried fruits, fresh fruits or fruit juices.
- Too much salt in your diet may decrease the effectiveness of this drug. Highly salted foods, such as bacon, salted crackers or peanuts, should therefore be avoided. Also check with your pharmacist about the salt

(Over)

content of non-prescription drugs (e.g. Alka-Seltzer[®]) before you buy them.

- Excessive water intake should be avoided. If you are unusually thirsty, check with your doctor.
- Occasionally dizziness or lightheadedness may occur when taking furosemide, especially when rising from a lying or sitting position. Getting up slowly will help prevent this. If dizziness occurs, lie down flat until it passes.
- Some drugs may interfere with the action of furosemide or the control of your condition. For this reason, it is important to tell your doctor and pharmacist about ALL drugs you are taking, including non-prescription products such as cold remedies.
- Drinking a small amount of alcohol-containing beverages is acceptable when taking furosemide. However, the dizziness may be more noticeable with the use of alcohol.

CHECK WITH YOUR DOCTOR if any of the following symptoms occur:

- | | |
|--------------------------------------|-------------------------------------|
| ● muscle cramps or weakness | ● persistent loss of appetite |
| ● unexplained tiredness | ● persistent stomach upset |
| ● vomiting or diarrhea | ● unexplained sharp pain in a joint |
| ● persistent or bothersome dizziness | ● dry mouth or excessive thirst |

STORAGE: These pills should be kept in a tightly capped container in a dark place (e.g. cupboard or medicine cabinet) and out of the reach of children.

REFILLS: Depending on the condition being treated it is sometimes necessary to take these pills on a regular basis for long periods of time. Please note which of the following applies to you.

_____ Your doctor has indicated you may have this prescription filled _____ time(s). Reorder your prescription in sufficient time so that you do not miss any tablets between refills.

_____ Your doctor has not indicated any repeats on this prescription. If you need a refill, please phone your pharmacist 24 hours in advance so that your doctor may be contacted.

PATIENT DRUG INFORMATION - GUANETHIDINE

NAME OF DRUG: You have received the drug guanethidine _____ mg which is manufactured under the trade name Ismelin[®].

USE: ● Guanethidine is used to treat hypertension (high blood pressure). High blood pressure occurs when there is narrowing of the blood vessels. This causes increased pressure in your blood vessels and makes more work for your heart. High blood pressure does not usually make you feel ill. However, IF IT IS UNTREATED, it may cause damage to your eyes and kidneys or may cause a stroke or heart attack.

● Your doctor has prescribed guanethidine for you to lower your blood pressure and keep it in the normal range so that these complications do not occur. It works by preventing the narrowing of your blood vessels. For the best results, this drug must be taken regularly, exactly as prescribed by your doctor. Taking less than prescribed may allow your blood pressure to remain high.

● High blood pressure is often a life-long condition. Once your blood pressure is in the normal range you must continue to take your pills to keep it there. It is important to return to your doctor as scheduled so he can evaluate your response to this drug and assure that your blood pressure is under control.

HOW AND WHEN TO TAKE GUANETHIDINE:

● Read your label carefully and be sure to take the exact amount of medication prescribed by your doctor, EVEN WHEN YOU ARE FEELING WELL.

To help you to remember to take your pills regularly, it is useful to get in the habit of taking them at the same time(s) each day.

SPECIAL PRECAUTIONS: *You may not experience any side effects while taking this drug; however, it is important for you to know how to prevent possible side effects and how to handle a side effect should one occur.*

● Dizziness or lightheadedness may occur when rising too quickly from a lying or sitting position. To prevent this, avoid changing positions too rapidly. Rise slowly from a lying to a sitting position and from a sitting to a standing position, especially when getting out of bed in the morning.

(Over)

PATIENT DRUG INFORMATION - COMBIPRES[®]

Name of Drug: Combipres[®] is a combination of the drugs clonidine and chlorthalidone.

Use: ● Combipres[®] is used to treat hypertension (high blood pressure). High blood pressure occurs when there is an increased pressure in your blood vessels. This makes more work for the heart. High blood pressure does not usually make you feel ill. However, IF IT IS UNTREATED, it may cause damage to your eyes and kidneys or may cause a stroke or heart attack.

- Your doctor has prescribed Combipres[®] to lower your blood pressure and keep it in the normal range. It acts by preventing the narrowing of the blood vessels, and by helping the body get rid of the excess fluids which may cause an increase in blood pressure.
- High blood pressure is often a life-long condition. Once your blood pressure is in the normal range you must continue to take your pills to keep it there. It is important to return to your doctor as scheduled so he can evaluate your response to this drug and assure that your blood pressure is under control.

How and When to Take Combipres[®]:

- Read your label carefully and be sure to take the exact amount of medication prescribed by your doctor, EVEN WHEN YOU ARE FEELING WELL. To help you to remember to take your pills regularly, it is useful to get in the habit of taking them at the same time(s) each day.
- Unless otherwise directed by your doctor, take your first tablet of the day in the morning after breakfast. If more than one tablet a day has been prescribed, take the last dose just after supper.
- To reduce the possibility of stomach upset, each tablet should be taken with, or just after food or a glassful of milk.
- Do not stop taking Combipres[®] abruptly. Doing so may cause your blood pressure to become excessively high. If you wish to stop your pills, contact your doctor first.

Special Precautions: *You may not experience any side effects while taking this drug; however, it is important for you to know how to prevent possible side effects and how to handle a side effect should one occur.*

- You may experience drowsiness when taking Combipres[®], especially at the beginning of your therapy or if your doctor increases your dose. It is therefore wise to start taking this medication at home to determine how it affects you, before you drive a car or perform any tasks which require mental alertness. This drowsiness should disappear with continued use of the drug.

- Dizziness or lightheadedness may occur when rising too quickly from a sitting or lying position. To prevent this, avoid changing positions too rapidly. Rise slowly from a lying to a sitting position and from a sitting to a standing position. If dizziness occurs, lie down flat until the dizziness passes. If you cannot lie down, flexing your leg muscles and wiggling your toes will help relieve the dizziness.
- When you first start taking Combipres[®] you may find you have to go to the bathroom more often. This side effect should disappear in a week or so if you take your pills daily as directed.
- Unless otherwise directed, drinking a small amount of alcohol-containing beverages is acceptable when taking Combipres[®]. However, the dizziness and drowsiness may be more noticeable with the use of alcohol.
- Combipres[®] may cause a dry mouth. This can be relieved by sucking a hard sugarless candy, chewing sugarless gum or sucking ice chips.
- Some drugs may interfere with the action of Combipres[®] or with the control of your blood pressure. It is therefore important to tell your doctor and pharmacist about ALL prescription AND nonprescription drugs you are taking. You should also check with your doctor or pharmacist before using any nonprescription cold or hay fever remedies. Some of these products have ingredients which may cause your blood pressure to rise.

Check with your Doctor: If any of the following symptoms occur:

- muscle cramps or weakness
- persistent loss of appetite
- unexplained tiredness
- persistent stomach upset
- vomiting or diarrhea
- unexplained sharp pain in a joint
- persistent or bothersome diarrhea
- dry mouth or excessive thirst
- changes in sleep patterns or nightmares

Storage: These pills should be kept in a tightly-capped container in a dark place (e.g. cupboard or medicine cabinet) and out of the reach of children.

Refills: Please note which of the following applies to you:

- _____ Your doctor has indicated you may have this prescription filled _____ time(s). Reorder your prescription in sufficient time so that you do not miss any tablets between refills.
- _____ Your doctor has not indicated any repeats on this prescription. Please phone your pharmacist 1 day in advance so that your doctor may be contacted.

PATIENT DRUG INFORMATION - HYDRALAZINE

NAME OF DRUG: You have received the drug hydralazine which is manufactured under the trade name Apresoline[®] _____ mg.

USE: ●Hydralazine is used to treat hypertension (high blood pressure). High blood pressure occurs when there is narrowing of the blood vessels. This causes increased pressure in your blood vessels and makes more work for your heart. High blood pressure does not usually make you feel ill. However, IF IT IS UNTREATED, it may cause damage to your eyes and kidneys or may cause a stroke or heart attack.

●Your doctor has prescribed hydralazine for you to lower your blood pressure and keep it in the normal range so that these complications do not occur. It works by preventing the narrowing of your blood vessels. It is most often used along with other drugs to increase the effectiveness of your therapy. For best results, hydralazine must be taken regularly, exactly as prescribed by your doctor. Taking less than prescribed may allow your blood pressure to remain high.

●High blood pressure is a life-long condition. Once your blood pressure is in the normal range you must continue to take your pills to keep it there. It is important to return to your doctor as scheduled so he can evaluate your response to this drug and assure that your blood pressure is under control.

HOW AND WHEN TO TAKE HYDRALAZINE:

- Read your label carefully and be sure to take the exact amount of medication prescribed by your doctor, EVEN WHEN YOU ARE FEELING WELL. To help you to remember to take your pills regularly, it is useful to get in the habit of taking them at the same time(s) each day.
- To reduce the possibility of stomach upset, hydralazine tablets may be taken with food or a glassful of milk.

SPECIAL PRECAUTIONS: *You may not experience any side effects while taking this drug; however, it is important for you to know how to prevent possible side effects and how to handle a side effect should one occur.*

- Dizziness or lightheadedness may occur when rising too quickly from a sitting or lying position. To prevent this, avoid changing positions too

(Over)

HYDRALAZINE - 2

rapidly. Rise slowly from a lying to a sitting position and from a sitting to a standing position.

- If dizziness does occur, lie down flat until it passes. If you cannot lie down, flexing your leg muscles and wiggling your toes will help relieve the dizziness.
- When you first begin to take hydralazine you may get a headache. This will usually disappear within the first week of therapy. Do not stop taking hydralazine without telling your doctor.
- Drinking a small amount of alcohol-containing beverages is acceptable when taking hydralazine. However, the dizziness may be much more noticeable with the use of alcohol.
- Some drugs may interfere with the action of hydralazine or with the control of your blood pressure. It is therefore important to tell your doctor and pharmacist about ALL prescription and non-prescription drugs you are taking.
- You should also check with your doctor or pharmacist before using any non-prescription cold or hay fever remedies. Some of these products have ingredients which may cause your blood pressure to rise.

CHECK WITH YOUR DOCTOR: If any of the following symptoms occur:

- severe or prolonged headache
- skin rash
- bothersome or prolonged dizziness
- unexplained muscle aching or joint pain
- sore throat or fever
- very rapid heartbeat

STORAGE: These pills should be kept in a tightly capped container and out of the reach of children.

REFILLS: Please note which of the following applies to you:

- _____ Your doctor has indicated you may have this prescription filled _____ time(s). Reorder your prescription in sufficient time so that you do not miss any tablets between refills.
- _____ Your doctor has not indicated any repeats on this prescription. Please phone your pharmacist 1 day in advance so that your doctor may be contacted for a refill.

PATIENT DRUG INFORMATION - HYDROCHLOROTHIAZIDE

NAME OF DRUG: The drug "hydrochlorothiazide" is manufactured by several different companies. The brand you have received is called _____

USE: Hydrochlorothiazide is a diuretic (water pill). Diuretics are drugs which act on the kidney to increase the amount of urine excreted from the body. They are used in various conditions to help the body get rid of excess fluids. Diuretics may also be used in the treatment of high blood pressure. The reason your doctor prescribed this drug for you depends on the condition you have.

HOW AND WHEN TO TAKE HYDROCHLOROTHIAZIDE:

- Read your label carefully and be sure to take the exact amount of medication prescribed by your doctor. To help you to remember to take your pills, it is useful to get in the habit of taking them at the same time(s) each day.
- Unless otherwise directed by your doctor, take your first tablet of the day in the morning, after breakfast. If more than one tablet a day has been prescribed, the last dose should be taken at least 6 hours before going to bed. This will prevent the increase in urine output from interfering with your nighttime sleep.
- To reduce the possibility of stomach upset, each hydrochlorothiazide tablet should be taken with food or a glassful of milk.

SPECIAL PRECAUTIONS: *You may not experience any side effects while taking this drug; however, it is important for you to know how to prevent possible side effects and how to handle a side effect should one occur.*

- While removing extra water from the body, this drug may also remove potassium. Occasionally an excess loss of potassium may cause tiredness, muscle weakness or cramps. Your doctor may have prescribed a potassium supplement for you (e.g. Slow K[®]). If he has not, you should eat one or more of the following potassium-rich foods every day to replace any potassium you may have lost: Dried fruits, fresh fruits or fruit juices.
- Too much salt in your diet may decrease the effectiveness of this drug. Highly salted foods, such as bacon, salted crackers or peanuts, should therefore be avoided. Also, check with your pharmacist about the salt content of non-prescription drugs (e.g. Alka-Seltzer[®]) before you buy them. (Over)

- Excessive water intake should be avoided. If you are unusually thirsty, check with your doctor.
- Occasionally dizziness or lightheadedness may occur when taking hydrochlorothiazide, especially when rising from a lying or sitting position. Getting up slowly will help prevent this. If dizziness occurs, lie down flat until it passes.
- Some drugs may interfere with the action of hydrochlorothiazide or the control of your condition. For this reason, it is important to tell your doctor and pharmacist about ALL drugs you are taking including non-prescription products such as cold remedies.
- Drinking a small amount of alcohol-containing beverages is acceptable when taking hydrochlorothiazide. However, the dizziness may be more noticeable with the use of alcohol.

CHECK WITH YOUR DOCTOR if any of the following symptoms occur:

- | | |
|--------------------------------------|-------------------------------------|
| ● muscle cramps or weakness | ● persistent loss of appetite |
| ● unexplained tiredness | ● persistent stomach upset |
| ● vomiting or diarrhea | ● unexplained sharp pain in a joint |
| ● persistent or bothersome dizziness | ● dry mouth or excessive thirst |

STORAGE: Keep these pills in a tightly capped container and out of the reach of children.

REFILLS: Depending on the condition being treated, it is sometimes necessary to take these pills on a regular basis for long periods of time. Please note which of the following applies to you.

- _____ Your doctor has indicated you may have this prescription filled _____ time(s). Reorder your prescription in sufficient time so that you do not miss any doses between refills.
- _____ Your doctor has not indicated any repeats on this prescription. If you require a refill please phone your pharmacist 24 hours in advance so that your doctor may be contacted.

PATIENT DRUG INFORMATION - IBUPROFEN

NAME OF DRUG: You have received the drug ibuprofen which is manufactured under the trade name "Motrin[®]" _____.

USE: Ibuprofen is used to treat various conditions where inflammation has occurred, such as arthritic and rheumatic disorders. It acts to reduce the inflammation, as well as the pain and swelling often associated with inflammation. The reason this drug was prescribed for you depends on the condition you have.

HOW AND WHEN TO TAKE IBUPROFEN:

- Read your label carefully and take the exact amount of drug prescribed by your doctor.
- Unless otherwise directed, take these pills regularly and on a consistent basis, even if you are not experiencing pain. The absence of pain does not always mean there is no inflammation.
- To help you to remember to take your pills regularly, it is useful to get in the habit of taking them at the same time(s) each day.
- Your first dose of ibuprofen should be taken as early in the morning as possible as this is when patients are usually most stiff from the inflammation. The remaining pills should then be taken at evenly spaced intervals during your waking hours. If you forget to take a dose, take it as soon as you remember and evenly space the remaining doses.
- To reduce the possibility of stomach irritation, all doses of ibuprofen should be taken with food or a glassful of milk.
- With some conditions significant beneficial effects may not be noted for 1 or 2 weeks. Continue to take your pills regularly even if they do not appear to be working at first.

SPECIAL PRECAUTIONS: *You may not experience any side effects while taking this drug; however, it is important for you to know how to prevent possible side effects and how to handle a side effect should one occur.*

- Some patients experience drowsiness, dizziness or lightheadedness when taking ibuprofen. It is therefore wise to start taking this medication at home and to determine how this medication affects you, before you drive a car or perform any tasks which require mental alertness. (Over)

- Do not drink more than a small amount of alcohol containing beverages when taking ibuprofen since this may increase the stomach irritation. Drowsiness and dizziness may also be more noticeable with the use of alcohol.
- Ibuprofen may interfere with the action of some other drugs and the combination may result in harmful effects. For this reason it is important to tell your doctor or pharmacist about ALL drugs you are taking.

CHECK WITH YOUR DOCTOR if any of the following symptoms occur:

- skin rash
- change in eyesight
- black bowel movements or if you notice blood in your bowel movements
- persistent ringing in the ears
- persistent stomach upset or abdominal pain

STORAGE: Keep these drugs in a tightly capped container and out of the reach of children.

REFILLS: Depending on the condition being treated it is sometimes necessary to take these pills for long periods of time. Please note which of the following applies to you.

_____ Your doctor has indicated you may have this prescription filled _____ time(s). Reorder your prescription in sufficient time so that you do not miss any doses between refills.

_____ Your doctor has not indicated any repeats on this prescription. If you require a refill please phone your pharmacist 24 hours in advance so that your doctor may be contacted.

PATIENT DRUG INFORMATION - INDOMETHACIN

NAME OF DRUG: The drug indomethacin is manufactured by several different companies. The brand you have received is called _____.

USE: Indomethacin is used to treat various conditions where inflammation has occurred, such as arthritic and rheumatic disorders. It acts to reduce the inflammation, as well as the pain and swelling often associated with inflammation. The reason this drug was prescribed for you depends on the condition you have.

HOW AND WHEN TO TAKE INDOMETHACIN:

- Read your label carefully and take the exact amount of drug prescribed by your doctor.
- Unless otherwise directed, take these pills regularly and on a consistent basis, even if you are not experiencing pain. The absence of pain does not always mean there is no inflammation.
- To help you to remember to take your pills regularly, it is useful to get in the habit of taking them at the same time(s) each day.
- Your first dose of indomethacin should be taken as early in the morning as possible, as this is when patients are usually most stiff from the inflammation. The remaining pills should then be taken at evenly spaced intervals during your waking hours. If you forget to take a pill, take it as soon as you remember and evenly space the remaining pills.
- To reduce the possibility of stomach irritation, each capsule of indomethacin should be taken with food or a glassful of milk.
- With some conditions, it may take up to one month before significant beneficial effects are noted. Continue to take your pills even if they do not appear to be working at first.

SPECIAL PRECAUTIONS: *You may not experience any side effects while taking this drug; however, it is important for you to know how to prevent possible side effects and how to handle a side effect should one occur.*

- Some patients experience drowsiness, dizziness or lightheadedness when taking indomethacin. It is therefore wise to start taking this medication at home and to determine how this medication affects you, before you drive a car or perform any tasks which require mental alertness.

(Over)

- Do not drink more than a small amount of alcohol-containing beverages when taking indomethacin since this may increase the stomach irritation. Drowsiness and dizziness may also be more noticeable with the use of alcohol.
- These pills may cause headaches, which if they occur at all, may be most noticeable in the morning. These headaches should disappear with continued use of the drug.
- Indomethacin may interfere with the action of some other drugs and the combination may result in harmful effects. For this reason it is important to tell your doctor or pharmacist about ALL drugs you are taking.

CHECK WITH YOUR DOCTOR if any of the following symptoms occur:

- persistent or severe headaches
- persistent dizziness
- persistent ringing in the ears
- persistent stomach upset or pain
- sore throat or fever
- weight gain
- mouth sores
- change in eyesight
- black bowel movements or if you notice blood in your bowel movements

STORAGE: These pills should be stored in a tightly capped container in a dark place (e.g. cupboard or medicine cabinet) and out of the reach of children.

REFILLS: Depending on the condition being treated it is sometimes necessary to take these pills on a regular basis for long periods of time. Please note which of the following applies to you.

_____ Your doctor has indicated you may have this prescription filled _____ time(s). Reorder your prescription in sufficient time so that you do not miss any tablets between refills.

_____ Your doctor has not indicated any repeats on this prescription. If you require a refill, please phone your pharmacist 1 day in advance so that your doctor may be contacted.

PATIENT DRUG INFORMATION - ISOSORBIDE DINITRATE - ORAL

NAME OF DRUG: You have received the drug isosorbide dinitrate _____ mg which is manufactured under the trade name _____. This drug is available in two different forms: 1) tablets that are swallowed (oral tablets) and 2) tablets that are dissolved under the tongue (sublingual tablets). The information on this sheet is about the oral tablets you have received (Rx # : _____).

USE: Oral isosorbide is used to help prevent chest pain (angina attacks) which occurs when there is a decrease in the supply of blood to parts of your heart. It acts by dilating, or opening up blood vessels throughout your body so that the heart does not have to work as hard to pump the blood. It also improves blood flow to the parts of your heart which are not receiving enough blood.

HOW AND WHEN TO TAKE ORAL ISOSORBIDE:

- Read your label carefully and be sure to take the exact amount of medication prescribed by your doctor. Since these tablets are used to prevent attacks, they must be taken regularly and on a consistent basis, **EVEN WHEN YOU ARE FEELING WELL.**
- To help you to remember to take your pills regularly, it is useful to get in the habit of taking them at the same time(s) each day.
- To avoid stomach upset, it is best to take these tablets with food.

SPECIAL PRECAUTIONS: *You may not experience any side effects while taking this drug; however, it is important for you to know how to prevent possible side effects and how to handle a side effect should one occur.*

- During the first few days of taking this medication you may have a headache and flushing. This is a normal side effect and should not persist for longer than a few days to a week. The headache may be relieved by taking A.S.A. (Aspirin[®])
- Some people experience dizziness or lightheadedness when rising too quickly from a sitting or lying position. To prevent this, avoid changing positions too rapidly. Rise slowly from a lying to a sitting position and from a sitting to a standing position.
- If dizziness does occur, lie down flat until the dizziness passes. If you cannot lie down, flexing your leg muscles and wiggling your toes should help relieve the dizziness.

Isosorbide Dinitrate - Oral - 2

- It is usually recommended that people taking isosorbide tablets avoid the use of alcoholic beverages. The combination may cause undesired side effects such as extreme dizziness or fainting.
- Isosorbide in combination with some other drugs may result in altered actions. It is, therefore, important to tell your pharmacist and doctor about ALL medicines you are taking, including those you can buy without a prescription.

CHECK WITH YOUR DOCTOR: If any of the following symptoms occur:

- persistent headache
- fainting or excessive faintness
- skin rash

STORAGE: These pills should be kept in a tightly-capped container in a cool dry place.
Keep them in the container in which they were dispensed to you.

REFILLS: Be sure to reorder your drugs in sufficient time so that you do not miss any doses between refills. Please phone your pharmacist at least 1 day in advance to ensure your pills are ready for you.

PATIENT DRUG INFORMATION - ISOSORBIDE DINITRATE-SUBLINGUAL

NAME OF DRUG: You have received the drug isosorbide dinitrate _____ mg which is manufactured under the trade name _____. This drug is available in two different forms: 1) tablets that are swallowed (oral tablets) and 2) tablets that are dissolved under the tongue (sublingual tablets). The information on this sheet is about the sublingual tablets you have received (R_x # : _____).

USE: Sublingual isosorbide may be used to relieve chest pain which occurs during sudden attacks of angina. It is sometimes taken just before carrying out activities which might cause an attack of chest pain. It is a rapid-acting form of the drug which starts to work in about 5 minutes. Its beneficial action usually lasts for 1 to 2 hours.

HOW AND WHEN TO TAKE SUBLINGUAL ISOSORBIDE:

- If these tablets are to be used to relieve an attack, they should be used at the first sign of chest pain.
- When an attack occurs, cease all activity and place a tablet under your tongue, allowing it to dissolve. Try not to swallow until the taste of the drug has disappeared and the tablet is completely dissolved (about 20 seconds).
- You may use one tablet every 5 to 10 minutes during an attack. However, if your chest pain is not relieved within 20 minutes, it is recommended you contact your doctor immediately. Check with your doctor for specific instructions.

SPECIAL PRECAUTIONS: *You may not experience any side effects when taking this drug; however, it is important for you to know how to handle a side effect should one occur.*

- You may notice flushing and a slight headache after using these tablets. This is a normal side effect of the drug and should disappear in a short time.
- Some people experience dizziness after using isosorbide. It is therefore wise to be in a sitting or lying position when you take them. Also, avoid changing positions too rapidly for about 2 hours after you take them. Rise slowly from a lying to a sitting position and from a sitting to a standing position.
- The use of alcoholic beverages may increase the possibility of dizziness or fainting, therefore, should be avoided.

Isosorbide Dinitrate-Sublingual - 2

• Carry a few of these tablets with you so you will have them if you need them.

STORAGE: These tablets should be kept in a tightly-capped container in a cool dry place.

REFILLS: Be sure to reorder your pills in sufficient time so that you have some at all times. Please phone your pharmacy at least 1 day in advance to ensure your pills are ready for you.

PATIENT DRUG INFORMATION - KETOPROFEN

NAME OF DRUG: You have received the drug ketoprofen 50 mg which is manufactured under the trade name "Orudis[®]".

USE: Ketoprofen is used to treat various conditions where inflammation has occurred, such as arthritic and rheumatic disorders. It acts to reduce the inflammation, as well as the pain and swelling often associated with inflammation. The reason this was prescribed for you depends on the condition you have.

HOW AND WHEN TO TAKE KETOPROFEN:

- Read your label carefully and take the exact amount of drug prescribed by your doctor.
- Unless otherwise directed, take these pills regularly and on a consistent basis throughout the course of your therapy, even if you are not experiencing pain. The absence of pain does not always mean there is no inflammation.
- To help you to remember to take your pills regularly, it is useful to get in the habit of taking them at the same time(s) each day.
- Your first dose of ketoprofen should be taken as early in the morning as possible as this is when patients are usually most stiff from the inflammation. The remaining pills should then be taken at evenly spaced intervals during your waking hours. If you forget to take a dose, take it as soon as you remember and evenly space the remaining doses.
- With some conditions significant beneficial effects may not be noted for 1 or 2 weeks. Continue to take your pills regularly even if they do not appear to be working at first.
- To reduce the possibility of stomach irritation, each ketoprofen capsule should be taken with food or a glassful of milk.

SPECIAL PRECAUTIONS: *You may not experience any side effects while taking this drug; however, it is important for you to know how to prevent possible side effects and how to handle a side effect should one occur.*

- Some patients experience drowsiness, dizziness or lightheadedness when taking ketoprofen. It is therefore wise to start taking this medication at home and to determine how this medication affects you before you drive a car or perform any tasks which require mental alertness.

(Over)

- Do not drink more than a small amount of alcohol-containing beverages when taking ketoprofen, since this may increase the stomach irritation. Drowsiness and dizziness may also be more noticeable with the use of alcohol.
- Ketoprofen may interfere with the action of some other drugs and the combination may result in harmful effects. For this reason it is important to tell your doctor or pharmacist about ALL drugs you are taking.

CHECK WITH YOUR DOCTOR if any of the following symptoms occur:

- skin rash
- change in eyesight
- persistent stomach upset or abdominal pain
- black bowel movements or if you notice blood in your bowel movements
- persistent ringing in the ears

STORAGE: Keep these drugs in a tightly capped container and out of the reach of children.

REFILLS: Depending on the condition being treated it is sometimes necessary to take these pills for long periods of time. Please note which of the following applies to you.

_____ Your doctor has indicated you may have this prescription filled _____ time(s). Reorder your prescription in sufficient time so that you do not miss any doses between refills.

_____ Your doctor has not indicated any repeats on this prescription. If you require a refill please phone your pharmacist 24 hours in advance so that your doctor may be contacted.

PATIENT DRUG INFORMATION - METHYLDOPA

NAME OF DRUG: The drug methyldopa is manufactured by several different companies. The brand you have received is called _____.

USE:

- Methyldopa is used to treat hypertension (high blood pressure). High blood pressure occurs when there is narrowing of the blood vessels. This causes increased pressure in your blood vessels and makes more work for your heart. High blood pressure does not usually make you feel ill. However, IF IT IS UNTREATED, it may cause damage to your eyes and kidneys or may cause a stroke or heart attack.
- Your doctor has prescribed methyldopa for you to lower your blood pressure and keep it in the normal range so that these complications do not occur. It works by preventing the narrowing of your blood vessels. For the best results, this drug must be taken regularly, exactly as prescribed by your doctor. Taking less than prescribed may allow your blood pressure to remain high.
- High blood pressure is often a life-long condition. Once your blood pressure is in the normal range you must continue to take your pills to keep it there. It is important to return to your doctor as scheduled so he can evaluate your response to this drug and assure that your blood pressure is under control.

HOW AND WHEN TO TAKE METHYLDOPA:

- Read your label carefully and be sure to take the exact amount of medication prescribed by your doctor, EVEN WHEN YOU ARE FEELING WELL.
- To help you to remember to take your pills regularly, it is useful to get in the habit of taking them at the same time(s) each day.

SPECIAL PRECAUTIONS:

You may not experience any side effects while taking this drug; however, it is important for you to know how to prevent possible side effects and how to handle a side effect should one occur.

- You may experience drowsiness when first starting to take methyldopa or if your doctor increases your dose. It is therefore wise to start taking this medication at home to determine how it affects you, before you drive a car or perform any tasks which require mental alertness. This drowsiness should disappear with continued use of the drug.

(Over)

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- Dizziness or lightheadedness may occur when rising too quickly from a sitting or lying position. To prevent this, avoid changing positions too rapidly. Rise slowly from a lying to a sitting position and from a sitting to a standing position.
- If dizziness occurs, lie down flat until the dizziness passes. If you cannot lie down, flexing your leg muscles and wiggling your toes will help relieve the dizziness.
- Drinking a small amount of alcohol-containing beverages is acceptable when taking methyldopa. However, dizziness and drowsiness may be more noticeable with the use of alcohol.
- Methyldopa may cause a dry mouth. This can be relieved by sucking a hard sugarless candy, chewing sugarless gum or sucking ice chips.
- Some drugs may interfere with the action of methyldopa or with the control of your blood pressure. It is therefore important to tell your doctor and pharmacist about ALL prescription and non-prescription drugs you are taking.
- You should also check with your doctor or pharmacist before using any non-prescription cold or hay fever remedies. Some of these products have ingredients which may cause your blood pressure to rise.

CHECK WITH YOUR DOCTOR:

- If you have any symptoms resembling the flu, such as fever, loss of appetite, nausea or vomiting, or general weakness or tiredness.
- If the drowsiness or dizziness is prolonged or bothersome.

STORAGE: Keep these drugs in a tightly capped container in a dark place (e.g. cupboard or medicine cabinet) and out of the reach of children.

REFILLS: Please note which of the following applies to you.

_____ Your doctor has indicated you may have this prescription filled _____ time(s). Reorder your drugs in sufficient time so that you do not miss any doses between refills.

_____ Your doctor has not indicated any repeats on this prescription. Please contact your pharmacist 24 hours in advance so that your doctor may be contacted for a refill.

PATIENT DRUG INFORMATION. - METOPROLOL

NAME OF DRUG: You have received the drug Metoprolol _____ mg which is manufactured under the trade name _____.

USE: Metoprolol is usually used to treat heart conditions or to control hypertension (high blood pressure) but it also has other uses. The reason this drug was prescribed for you depends on the condition you have.

HOW AND WHEN TO TAKE METOPROLOL:

- Read your label carefully and be sure to take the exact amount of medication prescribed by your doctor, **EVEN WHEN YOU ARE FEELING WELL**. To help you to remember to take your pills regularly, it is useful to get in the habit of taking them at the same time(s) each day.
- Do not stop taking this drug without the advice of your doctor. If metoprolol is to be stopped, your doctor may suggest a gradual reduction of dosage so that you do not have any problems.

SPECIAL PRECAUTIONS: *You may not experience any side effects while taking this drug; however, it is important for you to know how to prevent possible side effects and how to handle a side effect should one occur.*

- Some people experience drowsiness or dizziness when taking metoprolol. It is therefore wise to start taking these pills at home, to determine how it affects you, before you drive a car or perform any tasks which require mental alertness.
- Dizziness or lightheadedness may occur when rising too quickly from a sitting or lying position. To prevent this, avoid changing positions too rapidly. Rise slowly from a lying to a sitting position, and from a sitting to a standing position. If dizziness occurs, lie down flat until the dizziness passes. If you cannot lie down, flexing your leg muscles and wiggling your toes will help relieve the dizziness.
- Drinking a small amount of alcohol-containing beverages is acceptable when taking metoprolol. However, the dizziness and drowsiness may be more noticeable with the use of alcohol.
- Metoprolol may cause a dry mouth. This can be relieved by sucking a hard sugarless candy, chewing sugarless gum or sucking ice chips.

(over)

METOPROLOL - 2

- Some drugs may interfere with the action of metoprolol or with the control of your condition. It is therefore important to tell your doctor and pharmacist about ALL prescription AND non-prescription drugs you are taking. Also, check with your pharmacist before purchasing any non-prescription products, especially cough and cold remedies and hay fever medications.

CHECK WITH YOUR DOCTOR if any of the following symptoms occur:

- wheezing or difficulty with breathing
- persistent or bothersome dizziness or drowsiness
- change in sleep patterns or nightmares
- unexplained fatigue or weakness
- swelling of ankles
- stomach upset or loss of appetite

STORAGE: These pills should be stored in a dark place (e.g. cupboard or medicine cabinet) and out of the reach of children.

REFILLS: Depending on the condition being treated it is often necessary to take these pills on a regular basis for long periods of time. Please note which of the following applies to you:

_____ Your doctor has indicated you may have this prescription filled _____ time(s). Reorder your prescription in sufficient time so that you do not miss any tablets between refills.

_____ Your doctor has not indicated any repeats on this prescription. Please phone your pharmacist 24 hours in advance so that your doctor may be contacted for a refill.

PATIENT DRUG INFORMATION - NAPROXEN

NAME OF DRUG: You have received the drug naproxen which is manufactured under the trade name "Naprosyn[®]" _____.

USE: Naproxen is used to treat various conditions where inflammation has occurred, such as arthritic and rheumatic disorders. It acts to reduce the inflammation, as well as the pain and swelling often associated with inflammation. The reason this drug was prescribed for you depends on the condition you have.

HOW AND WHEN TO TAKE NAPROXEN:

- Read your label carefully and take the exact amount of drug prescribed by your doctor.
- Unless otherwise directed, take these pills regularly and on a consistent basis, even if you are not experiencing pain. The absence of pain does not always mean there is no inflammation.
- Getting into the habit of taking your pills at the same time(s) each day will help you to avoid forgetting to take them. If you forget to take a dose, take it as soon as you remember.
- Your first dose of naproxen should be taken as early in the morning as possible as this is when patients are usually most stiff from the inflammation.
- To reduce the possibility of stomach irritation, all doses of naproxen should be taken with food or a glassful of milk.
- With some conditions significant beneficial effects may not be noted for 1 or 2 weeks. Continue to take your pills regularly even if they do not appear to be working at first.

SPECIAL PRECAUTIONS: *You may not experience any side effects while taking this drug; however, it is important for you to know how to prevent possible side effects and how to handle a side effect should one occur.*

- Some patients experience drowsiness, dizziness or lightheadedness when taking naproxen. It is therefore wise to start taking this medication at home and to determine how this medication affects you, before you drive a car or perform any tasks which require mental alertness. (Over)

- Do not drink more than a small amount of alcohol containing beverages when taking naproxen since this may increase the stomach irritation. Drowsiness and dizziness may also be more noticeable with the use of alcohol.
- Naproxen may interfere with the action of some other drugs and the combination may result in harmful effects. For this reason it is important to tell your doctor or pharmacist about ALL drugs you are taking.

CHECK WITH YOUR DOCTOR if any of the following symptoms occur:

- skin rash
- change in eyesight
- black bowel movements or if you notice blood in your bowel movements
- persistent ringing in the ears
- persistent stomach upset or abdominal pain

STORAGE: Keep these drugs in a tightly capped container and out of the reach of children.

REFILLS: Depending on the condition being treated, it is sometimes necessary to take these pills for long periods of time. Please note which of the following applies to you.

_____ Your doctor has indicated you may have this prescription filled _____ time(s). Reorder your prescription in sufficient time so that you do not miss any doses between refills.

_____ Your doctor has not indicated any repeats on this prescription. If you require a refill please phone your pharmacist 24 hours in advance so that your doctor may be contacted.

PATIENT DRUG INFORMATION - OXYPHENBUTAZONE

NAME OF DRUG: You have received the drug oxyphenbutazone which is manufactured under the trade name "Tandearil[®] 100 mg."

USE: Oxyphenbutazone is used to treat various conditions where inflammation has occurred, such as arthritic and rheumatic disorders. It acts to reduce the inflammation, as well as the pain and swelling often associated with inflammation. The reason this drug was prescribed for you depends on the specific condition you have. Do not take it for any reason other than that for which it was prescribed.

HOW AND WHEN TO TAKE OXYPHENBUTAZONE:

- Read your label carefully and take the exact amount of drug prescribed by your doctor.
- Unless otherwise directed, take these pills regularly and on a consistent basis during the course of treatment, even if you are not experiencing pain. The absence of pain does not always mean there is no inflammation.
- To help you to remember to take your pills regularly, it is useful to get in the habit of taking them at the same time(s) each day. The first dose should be taken as early in the morning as possible. The remaining pills should then be taken at evenly spaced intervals during your waking hours. If you do forget to take a pill, take it as soon as you remember and evenly space the remaining pills.
- Since the most common side effect of oxyphenbutazone is an upset stomach, each tablet should be taken with food or a full glass of milk. If you wish to take your tablet with an antacid, your pharmacist will recommend one with a low salt content.
- These tablets should help your condition within one week of starting to take them. Contact your physician if you do not notice a beneficial effect after one week. Also, be sure to take these pills only for as long as your doctor recommends it.
- Oxyphenbutazone is a potent medication that should be taken under close supervision of your doctor. Be sure to return to him as scheduled so he can follow your progress.

SPECIAL PRECAUTIONS: *You may not experience any side effects while taking this drug; however, it is important for you to know how to prevent possible side*

effects and how to handle a side effect should one occur.

- Some people experience drowsiness, dizziness or lightheadedness when taking oxyphenbutazone. It is, therefore, wise to start taking this medication at home to determine how it affects you, before you drive a car or perform any tasks which require mental alertness.
- Do not drink more than a small amount of alcohol-containing beverages when taking oxyphenbutazone as this may increase the stomach irritation. Drowsiness and dizziness may also be more noticeable with the use of alcohol.
- Medicines advertising "relief from arthritic pain" will probably not provide you with any additional benefit. They usually contain A.S.A. (Aspirin[®]) which may interfere with the action of oxyphenbutazone. You should check with your pharmacist or doctor before you purchase any non-prescription products.
- Oxyphenbutazone may interfere with the action of some other drugs and the combination may result in harmful effects. For this reason, it is important to tell your doctor and pharmacist about ALL drugs you are taking.

CHECK WITH YOUR DOCTOR: - if any of the following symptoms occur:

- | | |
|--|--|
| ● persistent stomach upset or pain | ● black bowel movements or if you notice blood in your bowel movements |
| ● persistent or bothersome dizziness or drowsiness | ● weight gain or swelling of the ankles and feet |
| ● skin rash | ● sore throat or fever |
| ● mouth sores | |

STORAGE: These pills should be stored in a tightly capped container in a dark place (e.g. cupboard or medicine cabinet) and out of the reach of children.

REFILLS: Please note which of the following applies to you:

_____ Your doctor has indicated you may have this prescription filled _____ time(s). Reorder your prescription in sufficient time so that you do not miss any tablets between refills.

_____ Your doctor has not indicated any repeats on this prescription. If you require a refill, please phone your pharmacist 1 day in advance so we can contact your doctor.

PATIENT DRUG INFORMATION - PHENYLBUAZONE

NAME OF DRUG: The drug phenylbutazone is manufactured by several different companies. The brand you have received is called _____.

USE: Phenylbutazone is used to treat various conditions where inflammation has occurred, such as arthritic and rheumatic disorders. It acts to reduce the inflammation, as well as the pain and swelling often associated with inflammation. The reason this drug was prescribed for you depends on the specific condition you have. Do not take it for any reason other than that for which it was prescribed.

HOW AND WHEN TO TAKE PHENYLBUAZONE:

- Read your label carefully and take the exact amount of drug prescribed by your doctor.
- Unless otherwise directed, take these pills regularly and on a consistent basis, during the course of treatment, even if you are not experiencing pain. The absence of pain does not always mean there is no inflammation.
- To help you to remember to take your pills regularly, it is useful to get in the habit of taking them at the same time(s) each day. The first dose should be taken as early in the morning as possible. The remaining pills should then be taken at evenly spaced intervals during your waking hours. If you do forget to take a pill, take it as soon as you remember and evenly space the remaining pills.
- Since the most common side effect of phenylbutazone is an upset stomach, each tablet should be taken with food or a full glass of milk. If you wish to take your tablet with an antacid, your pharmacist will recommend one with a low salt content.
- These tablets should help your condition within one week of starting to take them. Contact your physician if you do not notice a beneficial effect after one week. Also, be sure to take these pills only for as long as your doctor recommends it.
- Phenylbutazone is a potent medication that should be taken under close supervision of your doctor. Be sure to return to him as scheduled so he can follow your progress.

SPECIAL PRECAUTIONS: *You may not experience any side effects while taking this drug; however, it is important for you to know how to prevent possible side effects and how to handle a side effect should one occur.*

Phenylbutazone - 2

- Some people experience drowsiness, dizziness or lightheadedness when taking phenylbutazone. It is therefore wise to start taking this medication at home to determine how it affects you, before you drive a car or perform any tasks which require mental alertness.
- Do not drink more than a small amount of alcohol-containing beverages when taking phenylbutazone as this may increase the stomach irritation. Drowsiness and dizziness may also be more noticeable with the use of alcohol.
- Medicines advertizing "relief from arthritic pain" will probably not provide you with any additional benefit. They usually contain A.S.A. (Aspirin[®]) which may interfere with the action of phenylbutazone. You should check with your pharmacist or doctor before you purchase any nonprescription products.
- Phenylbutazone may interfere with the action of some other drugs and the combination may result in harmful effects. For this reason it is important to tell your doctor and pharmacist about ALL drugs you are taking.

CHECK WITH YOUR DOCTOR: If any of the following symptoms occur:

- | | |
|--|--|
| ● persistent stomach upset or pain | ● black bowel movements or if you notice blood in your bowel movements |
| ● persistent or bothersome dizziness or drowsiness | ● persistent ringing in the ears |
| ● weight gain or swelling of the ankles and feet | ● skin rash |
| ● mouth sores | ● sore throat or fever |

STORAGE: These pills should be stored in a tightly-capped container in a dark place (e.g. cupboard or medicine cabinet) and out of the reach of children.

REFILLS: Please note which of the following applies to you:

- _____ Your doctor has indicated you may have this prescription filled _____ time(s). Reorder your prescription in sufficient time so that you do not miss any tablets between refills.
- _____ Your doctor has not indicated any repeats on this prescription. If you require a refill, please phone your pharmacist one day in advance so we can contact your doctor.

PATIENT DRUG INFORMATION - PROPRANOLOL

NAME OF DRUG: You have received the drug propranolol _____.mg which is manufactured under the trade name Inderal[®].

USE: Propranolol is usually used to treat heart conditions or to control hypertension (high blood pressure) but it also has other uses. The reason this drug was prescribed for you depends on the condition you have.

HOW AND WHEN TO TAKE PROPRANOLOL:

- Read your label carefully and be sure to take the exact amount of medication prescribed by your doctor, EVEN WHEN YOU ARE FEELING WELL. To help you to remember to take your pills regularly, it is useful to get in the habit of taking them at the same time(s) each day.
- Do not stop taking propranolol without the advice of your doctor. If propranolol is to be stopped, your doctor may suggest a gradual reduction of dosage so that you do not have any problems.

SPECIAL PRECAUTIONS: *You may not experience any side effects while taking this drug; however, it is important for you to know how to prevent possible side effects and how to handle a side effect should one occur.*

- Some people experience drowsiness or dizziness when taking propranolol. It is therefore wise to start taking these pills at home to determine how it affects you, before you drive a car or perform any tasks which require mental alertness.
- Dizziness or lightheadedness may occur when rising too quickly from a sitting or lying position. To prevent this, avoid changing positions too rapidly. Rise slowly from a lying to a sitting position, and from a sitting to a standing position. If dizziness occurs, lie down flat until the dizziness passes. If you cannot lie down, flexing your leg muscles and wiggling your toes will help relieve the dizziness.
- Drinking a small amount of alcohol-containing beverages is acceptable when taking propranolol. However, the dizziness and drowsiness may be more noticeable with the use of alcohol.
- Propranolol may cause a dry mouth. This can be relieved by sucking a hard sugarless candy, chewing sugarless gum or sucking ice chips.
- Some drugs may interfere with the action of propranolol or with the control of your condition. It is therefore important to tell your doctor and

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pharmacist about ALL prescription AND non-prescription drugs you are taking. Also, check with your pharmacist before purchasing any non-prescription products, especially cough and cold remedies and hay fever medications.

CHECK WITH YOUR DOCTOR if any of the following symptoms occur:

- wheezing or difficulty with breathing
- persistent or bothersome dizziness or drowsiness
- change in sleep patterns or nightmares
- unexplained fatigue or weakness
- swelling of ankles
- stomach upset, or loss of appetite

STORAGE: These pills should be stored in a dark place (e.g. cupboard or medicine cabinet) and out of the reach of children.

REFILLS: Depending on the condition being treated it is often necessary to take these pills on a regular basis for long periods of time. Please note which of the following applies to you:

_____ Your doctor has indicated you may have this prescription filled _____ time(s). Reorder your prescription in sufficient time so that you do not miss any tablets between refills.

_____ Your doctor has not indicated any repeats on this prescription. Please phone your pharmacist 24 hours in advance so that your doctor may be contacted for a refill.

PATIENT DRUG INFORMATION - QUINIDINE

NAME OF DRUG: The drug quinidine is manufactured by several companies. The brand you have received is called _____.

USE: Quinidine is known as an "anti-arrhythmic" drug because it prevents heart-beat irregularities (arrhythmias). It acts by decreasing the irritability of the heart muscle and keeps your heart beating at a regular pace.

HOW AND WHEN TO TAKE QUINIDINE:

- Read your label carefully and be sure to take the exact amount of medication prescribed by your doctor.
- For best results, quinidine should be taken consistently, even when you are feeling well. To help you to remember to take your pills regularly, it is useful to get in the habit of taking them at the same time(s) each day.
- To reduce the possibility of stomach upset, quinidine should be taken with food or a glassful of milk.

SPECIAL PRECAUTIONS: *You may not experience any side effects while taking this drug; however, it is important for you to know how to prevent possible side effects and how to handle a side effect should one occur.*

- Dizziness or lightheadedness may occur when rising too quickly from a sitting or lying position. To prevent this, avoid changing positions too rapidly. Rise slowly from a lying to a sitting position and from a sitting to a standing position. If dizziness does occur, lie down flat until it passes.
- Drinking a small amount of alcohol is acceptable when taking quinidine.
- Quinidine interacts with many other drugs and the combination may result in harmful effects. It is therefore important to tell your doctor or pharmacist about ALL prescription and non-prescription drugs you are taking. Also, make sure you tell other doctors you see that you are taking quinidine.

CHECK WITH YOUR DOCTOR: if any of the following symptoms occur:

- nausea, vomiting, stomach cramps or diarrhea
- "ringing in the ears" with headache, dizziness or blurred vision
- unusual bruising of the skin
- unusual faintness or fainting
- unexplained fever

(Over)

STORAGE: These pills should be kept in a tightly capped container in a dark place (e.g. cupboard) and out of the reach of children.

REFILLS: Please note which of the following applies to you.

- _____ Your doctor has indicated you may have this prescription filled _____ time(s). Reorder your prescription in sufficient time so that you do not miss any tablets between refills.
- _____ Your doctor has not indicated any repeats on this prescription. Please phone your pharmacist 1 day in advance so that your doctor may be contacted for a refill.

PATIENT DRUG INFORMATION - RESERPINE

NAME OF DRUG: The drug reserpine is manufactured by several different companies. The brand you have received is called _____.

USE: ● Reserpine is used to treat hypertension (high blood pressure). High blood pressure occurs when there is narrowing of the blood vessels. This causes increased pressure in your blood vessels and makes more work for your heart. High blood pressure does not usually make you feel ill. However, IF IT IS UNTREATED, it may cause damage to your eyes and kidneys or may cause a stroke or heart attack.

● Your doctor has prescribed reserpine for you to lower your blood pressure and keep it in the normal range so that these complications do not occur. It works by preventing the narrowing of your blood vessels. For the best results, this drug must be taken regularly, exactly as prescribed by your doctor. Taking less than prescribed may allow your blood pressure to remain high.

● High blood pressure is often a life-long condition. Once your blood pressure is in the normal range you must continue to take your pills to keep it there. It is important to return to your doctor as scheduled so he can evaluate your response to this drug and assure that your blood pressure is under control.

HOW AND WHEN TO TAKE RESERPINE:

● Read your label carefully and be sure to take the exact amount of medication prescribed by your doctor, EVEN WHEN YOU ARE FEELING WELL. To help you to remember to take your pills regularly, it is useful to get in the habit of taking them at the same time(s) each day.

● To reduce the possibility of stomach upset, each reserpine tablet should be taken with food, or a glassful of milk.

SPECIAL PRECAUTIONS: *You may not experience any side effects while taking this drug; however, it is important for you to know how to prevent possible side effects and how to handle a side effect should one occur.*

● Reserpine may cause drowsiness. It is therefore wise to start taking this medication at home to determine how it affects you, before you drive a car or perform any tasks which require mental alertness.

(Over)

- Dizziness or lightheadedness may occur when rising too quickly from a sitting or lying position. To prevent this, avoid changing positions too rapidly. Rise slowly from a lying to a sitting position and from a sitting to a standing position.
- If dizziness occurs, lie down flat until the dizziness passes. If you cannot lie down, flexing your leg muscles and wiggling your toes will help relieve the dizziness.
- Drinking a small amount of alcohol-containing beverages is acceptable when taking reserpine. However the dizziness and drowsiness may be more noticeable with the use of alcohol.
- Reserpine may cause a dry mouth. This can be relieved by sucking a hard sugarless candy, chewing sugarless gum or chewing ice chips.
- Some drugs may interfere with the action of reserpine or with the control of your blood pressure. It is therefore important to tell your doctor and pharmacist about ALL prescription AND non-prescription drugs you are taking.
- Reserpine may cause nasal stuffiness. Do not self-medicate without asking your doctor or pharmacist to recommend a suitable product. Some cold and hay-fever remedies have ingredients in them which may cause your blood pressure to rise.

CHECK WITH YOUR DOCTOR: if any of the following symptoms occur:

- changes in sleep patterns (e.g. nightmares or early morning insomnia)
- excessive tiredness or drowsiness
- prolonged dizziness or unsteadiness when walking
- persistent diarrhea
- persistent stomach upset or abdominal pain
- black bowel movements or if you notice blood in your bowel movements

STORAGE: These pills should be kept in a tightly capped container in a dark place (e.g. cupboard) and out of the reach of children.

REFILLS: Please note which of the following applies to you:

_____ Your doctor has indicated you may have this prescription filled _____ time(s). Reorder your prescription in sufficient time so that you do not miss any tablets between refills.

_____ Your doctor has not indicated any repeats on this prescription. Please phone your pharmacist 1 day in advance so that your doctor may be contacted for a refill.

PATIENT DRUG INFORMATION - SER-AP-ES[®]

NAME OF DRUG: Ser-Ap-Es[®] is a combination of three drugs - reserpine, hydralazine and hydrochlorothiazide.

USE: ●Ser-Ap-Es[®] is used to treat hypertension (high blood pressure). High blood pressure occurs when there is an increased pressure in your blood vessels. This makes more work for the heart. High blood pressure does not usually make you feel ill. However, IF IT IS UNTREATED, it may cause damage to your eyes and kidneys or may cause a stroke or heart attack.

●Your doctor has prescribed Ser-Ap-Es[®] to lower your blood pressure and keep it in the normal range. It acts by preventing the narrowing of the blood vessels and by helping the body get rid of the excess fluids which may cause an increase in blood pressure.

●High blood pressure is often a life-long condition. Once your blood pressure is in the normal range you must continue to take your pills to keep it there. It is important to return to your doctor as scheduled so he can evaluate your response to this drug and assure that your blood pressure is under control.

HOW AND WHEN TO TAKE SER-AP-ES[®]:

●Read your label carefully and be sure to take the exact amount of medication prescribed by your doctor, EVEN WHEN YOU ARE FEELING WELL. To help you to remember to take your pills regularly, it is useful to get in the habit of taking them at the same time(s) each day.

●When you first start taking Ser-Ap-Es[®] you may have to go to the bathroom more often. Unless otherwise directed by your doctor, take your last pill of the day at least 6 hours before going to bed. This will prevent the initial increase in urine output from interfering with your nighttime sleep.

●To reduce the possibility of stomach upset, each Ser-Ap-Es[®] tablet should be taken with food or a glassful of milk.

SPECIAL PRECAUTIONS: *You may not experience any side effects while taking this drug; however, it is important for you to know how to prevent possible side effects and how to handle a side effect should one occur.*

●Ser-Ap-Es[®] may cause drowsiness. It is therefore wise to start taking this medication at home to determine how it affects you, before you drive a car or perform any tasks which require mental alertness.

●Dizziness or lightheadedness may occur when rising too quickly from a sitting or lying position. To prevent this, avoid changing positions too rapidly, as when getting out of

(Over)

bed. Rise slowly from a lying to a sitting position and from a sitting position to a standing position. If dizziness does occur, lie down flat until it passes. If you cannot lie down, flexing your leg muscles and wiggling your toes will help relieve the dizziness.

- Drinking a small amount of alcohol-containing beverages is acceptable when taking Ser-Ap-Es[®]. However, the dizziness and drowsiness may be more noticeable with the use of alcohol.
- While removing extra water from your body, this drug may also remove potassium. If your doctor has not prescribed a potassium supplement (e.g. Slow K[®]) for you, you should eat one or more of the potassium-rich foods: Dried fruits, fresh fruits or fruit juices.
- Ser-Ap-Es[®] may cause a dry mouth. This can be relieved by sucking a hard sugarless candy, chewing sugarless gum or chewing ice chips.
- Some drugs may interfere with the action of Ser-Ap-Es[®] or with the control of your blood pressure. It is therefore important to tell your doctor and pharmacist about ALL prescription and non-prescription drugs you are taking. You should also check with your doctor or pharmacist before using any non-prescription cold or hay-fever remedies. Some of these products have ingredients which may cause your blood pressure to rise.

CHECK WITH YOUR DOCTOR: If any of the following symptoms occur:

- changes in sleep patterns
- excessive tiredness or drowsiness.
- prolonged or bothersome dizziness
- persistent diarrhea
- black bowel movements or blood in your bowel movements
- unexplained muscle aching or pain in a joint
- skin rash
- persistent stomach upset or stomach pain

STORAGE: These pills should be kept in a tightly capped container in a dark place (e.g. cupboard) and out of the reach of children.

REFILLS: Please note which of the following applies to you:

- _____ Your doctor has indicated you may have this prescription filled _____ time(s). Reorder your prescription in sufficient time so that you do not miss any tablets between refills.
- _____ Your doctor has not indicated any repeats on this prescription. Please phone your pharmacist 1 day in advance so that your doctor may be contacted for a refill.

PATIENT DRUG INFORMATION - SLOW K[®]

NAME OF DRUG: You have received the drug potassium chloride which is manufactured under the trade name "Slow K[®]".

USE: Potassium is a mineral that is needed by the body for the heart, nerves and muscles to function properly. Potassium is present in many of the foods that you eat, but some diseases or drugs may cause an increased loss of potassium from the body. Your doctor has prescribed Slow K[®] to keep the amount of potassium in your body at the correct level.

HOW AND WHEN TO TAKE SLOW K:

- Read your label carefully and be sure to take the exact amount of medication prescribed by your doctor.
- Unless otherwise directed take these pills regularly to maintain your body potassium at the correct level.
- To help you to remember to take your pills regularly, it is useful to get into the habit of taking them at the same time(s) each day.
- These pills should be swallowed whole. Do not crush, chew or break them into pieces.
- To reduce the possibility of stomach upset, take all Slow K[®] tablets with a full glass of water or orange juice. If stomach upset occurs, this drug may be taken after meals.

SPECIAL PRECAUTIONS:

- A potassium level that is too high may be dangerous. Be sure to return to your doctor regularly as scheduled so that he may measure your potassium level.

CHECK WITH YOUR DOCTOR:

- if you have difficulty swallowing your pills
- if you have persistent indigestion or stomach upset or if you develop severe stomach pain
- if you notice blood in your bowel movements or if your bowel movements are very black
- if you develop a feeling of heaviness in your legs or tingling in the hands and feet.

STORAGE: Keep this medication in a dry, tightly capped container, away from excessive heat and out of the reach of children.

(Over)

REFILLS: Be sure to reorder your drugs in sufficient time so that you do not miss any doses between refills. Please phone your pharmacist at least one day in advance to ensure your pills are ready for you.

PATIENT DRUG INFORMATION - SPIRONOLACTONE

NAME OF DRUG: You have received the drug spironolactone. It is manufactured under the trade name "Aldactone[®]" _____.

USE: Spironolactone is a diuretic (water pill). Diuretics are drugs which act on the kidney to increase the amount of urine excreted from the body. They are used in various conditions, when water retention has occurred, to help the body get rid of excess fluids. Diuretics may also be used in the treatment of high blood pressure. The reason your doctor prescribed this drug for you depends on the condition you have.

HOW AND WHEN TO TAKE SPIRONOLACTONE:

- Read your label carefully and be sure to take the exact amount of drug prescribed by your doctor. To keep you to remember to take your pills, it is useful to get in the habit of taking them at the same time(s) each day.
- To reduce the possibility of stomach upset, each spironolactone tablet should be taken with food or a glassful of milk.

SPECIAL PRECAUTIONS: *You may not experience any side effects while taking this drug; however, it is important for you to know how to prevent possible side effects and how to handle a side effect should one occur.*

- This diuretic is different than many other diuretics because it keeps your body from losing potassium. Therefore, you should not require a potassium supplement (e.g. Slow K[®]) when taking spironolactone.
- Too much salt in your diet may decrease the effectiveness of this drug. Highly salted foods, such as bacon, salted crackers or peanuts should therefore be avoided. Also, check with your pharmacist about the salt content of non-prescription drugs (e.g. Alka-Seltzer[®]) before you buy them.
- Excessive water intake should be avoided. If you are unusually thirsty, check with your doctor.
- Some drugs may interfere with the action of spironolactone or with the control of your condition. It is therefore important to tell your doctor about ALL drugs you are taking. Also, tell your pharmacist you are taking this drug and why you are taking it before you purchase any non-prescription products, especially cough and cold remedies, hay fever medications, Aspirin[®] or A.S.A.-containing products.

(over)

CHECK WITH YOUR DOCTOR if any of the following symptoms occur:

- dry mouth or excessive thirst
- vomiting or diarrhea
- drowsiness or muscle weakness
- persistent stomach upset
- skin rash
- abdominal pain

STORAGE: These pills should be kept in a tightly capped container in a dark place (e.g. cupboard or medicine cabinet) and out of the reach of children.

REFILLS: Depending on the condition being treated it is sometimes necessary to take these pills on a regular basis for long periods of time. Please note which of the following applies to you:

_____ Your doctor has indicated you may have this prescription filled _____ time(s). Reorder your prescription in sufficient time so that you do not miss any tablets between refills.

_____ Your doctor has not indicated any repeats on this prescription. If you need a refill, please phone your pharmacist 24 hours in advance so that your doctor may be contacted.

PATIENT DRUG INFORMATION - SUPRES[®]

NAME OF DRUG: Supres[®] _____ is a combination of the drugs methyldopa and chlorothiazide.

USE: ● Supres[®] is used to treat hypertension (high blood pressure). High blood pressure occurs when there is an increased pressure in your blood vessels. This makes more work for the heart. High blood pressure does not usually make you feel ill. However, IF IT IS UNTREATED, it may cause damage to your eyes and kidneys or may cause a stroke or heart attack.

● Your doctor has prescribed Supres[®] to lower your blood pressure and keep it in the normal range. It acts by preventing the narrowing of the blood vessels, and by helping the body get rid of the excess fluids which may cause an increase in blood pressure.

● High blood pressure is often a life-long condition. Once your blood pressure is in the normal range you must continue to take your pills to keep it there. It is important to return to your doctor as scheduled so he can evaluate your response to this drug and assure that your blood pressure is under control.

HOW AND WHEN TO TAKE SUPRES[®]:

● Read your label carefully and be sure to take the exact amount of medication prescribed by your doctor, EVEN WHEN YOU ARE FEELING WELL. To help you to remember to take your pills regularly, it is useful to get in the habit of taking them at the same time(s) each day.

● When you first start taking Supres[®] you may have to go to the bathroom more often. Unless otherwise directed by your doctor, take your last pill of the day at least 6 hours before going to bed. This will prevent the initial increase in urine output from interfering with your nighttime sleep.

● To reduce the possibility of stomach upset, each Supres[®] tablet should be taken with food or a glassful of milk.

SPECIAL PRECAUTIONS: *You may not experience any side effects while taking this drug; however, it is important for you to know how to prevent possible side effects and how to handle a side effect should one occur.*

● You may experience drowsiness when taking Supres[®], especially at the beginning of your therapy or if your doctor increases your dose. It is (Over)

therefore wise to start taking this medication at home, to determine how it affects you, before you drive a car or perform any tasks which require mental alertness. This drowsiness should disappear with continued use of the drug.

- Dizziness or lightheadedness may occur when rising too quickly from a sitting or lying position. To prevent this, avoid changing positions too rapidly. Rise slowly from a lying to a sitting position and from a sitting to a standing position. If dizziness occurs, lie down flat until the dizziness passes. If you cannot lie down, flexing your leg muscles and wiggling your toes will help relieve the dizziness.
- Drinking a small amount of alcohol-containing beverages is acceptable when taking Supres[®]. However, the dizziness and drowsiness may be more noticeable with the use of alcohol.
- Supres[®] may cause a dry mouth. This can be relieved by sucking a hard sugarless candy, chewing sugarless gum or sucking ice chips.
- Some drugs may interfere with the action of Supres[®] or with the control of your blood pressure. It is therefore important to tell your doctor and pharmacist about ALL prescription AND non-prescription drugs you are taking. You should also check with your doctor or pharmacist before using any non-prescription cold or hay fever remedies. Some of these products have ingredients which may cause your blood pressure to rise.

CHECK WITH YOUR DOCTOR if any of the following symptoms occur:

- | | |
|-------------------------------------|---|
| • muscle cramps or weakness | • persistent or bothersome dizziness |
| • persistent loss of appetite | • general weakness or tiredness |
| • unexplained sharp pain in a joint | • flu-like symptoms - fever, nausea, vomiting or diarrhea |
| • excessive thirst | |

STORAGE: These pills should be kept in a tightly capped container in a dark place (e.g. cupboard or medicine cabinet) and out of the reach of children.

REFILLS: Please note which of the following applies to you:

_____ Your doctor has indicated you may have this prescription filled _____ time(s). Reorder your prescription in sufficient time so that you do not miss any tablets between refills.

_____ Your doctor has not indicated any repeats on this prescription. Please phone your pharmacist 1 day in advance so that your doctor may be contacted for a refill.

PATIENT DRUG INFORMATION - WARFARIN

NAME OF DRUG: The drug warfarin is manufactured by several companies. The brand you have received is called _____ . Be sure you always receive the same brand.

USE: Warfarin is an anticoagulant. Anticoagulants are drugs which increase the amount of time needed for the blood to clot. They therefore reduce the possibility of harmful clots forming in the blood vessels. They are used to treat those conditions where a clot either may occur or has occurred. The reason this drug was prescribed for you depends on the condition you have.

HOW AND WHEN TO TAKE WARFARIN:

- Read your label carefully and be sure to take the exact amount of medication prescribed by your doctor. Taking less drug than prescribed may allow clots to form, while taking too much may cause bleeding.
- To help you to remember to take your pills regularly it is useful to get in the habit of taking them at the same time(s) each day.

SPECIAL PRECAUTIONS: *You may not experience any side effects while taking this drug; however, it is important for you to know how to prevent possible side effects and how to handle a side effect should one occur.*

- Taking other drugs at the same time as warfarin may alter its expected action and certain combinations may result in harmful effects. For this reason, it is important to tell your doctor or pharmacist about ALL drugs you are taking. Do not add any drugs or stop any drugs you are currently taking without your doctor's approval.
- It is important that all dentists and doctors you see know you are taking warfarin so they do not give you other drugs which interfere with warfarin's effect. It is recommended that you carry an identification card or bracelet indicating that you are taking warfarin.
- You should also check with your doctor or pharmacist before self-medicating with any products containing A.S.A. (Aspirin[®]) or salicylate. This includes many pain killers, antacids and laxatives. Your pharmacist can tell you which preparations contain A.S.A.
- It is recommended that alcohol-containing beverages be avoided while taking warfarin as the combination may cause undesired side effects. (Over)

- If you have a tendency to cut yourself while shaving, you may wish to use an electric razor.
- Periodic blood tests are necessary to determine the effects of warfarin. Be sure to return to your doctor regularly as scheduled so that he can properly follow your response and select the correct dosage for you.

CHECK WITH YOUR DOCTOR:

- if you develop diarrhea
- if any signs of bleeding occur such as
 - unusual bruising
 - red or dark brown urine
 - black bowel movements or blood in your bowel movements
 - nose bleeds
 - bleeding from the mouth or gums, after brushing your teeth

STORAGE: These pills should be kept in a tightly capped container in a dark place (e.g. cupboard) and out of the reach of children.

REFILLS: Please note which of the following applies to you:

- _____ Your doctor has indicated you may have this prescription filled _____ time(s). Reorder your prescription in sufficient time so that you do not miss any tablets between refills.
- _____ Your doctor has not indicated any repeats on this prescription. Please phone your pharmacist 1 day in advance so that your doctor may be contacted for a refill..

APPENDIX B

LETTER OF EXPLANATION TO PATIENTS

Dear Customer:

The College of Pharmacy at the University of Saskatchewan is doing a survey about prescription drugs and drug stores. They have asked us to recommend people who we feel would be of help to them.

All that the College is asking you to do, is to allow them to interview you on the phone with one short questionnaire they have made up. They would also like to interview you, in your home, in about 3 weeks.

We have been asked to assure you that the information the College needs from you will NOT be highly personal. The replies which you give to them will not be given to anyone, and your name will NOT be used in any part of the study results.

We feel this study is very important. It will help us, as pharmacists, to improve our services to you. Also, the College will use the results of the study to provide the necessary educational background to their students.

If you have no objections to participating in this study, a researcher associated with the project will be calling on you in the next day or two. In the meantime, if you have any questions, you may contact Professor Jim Blackburn at the College of Pharmacy (phone 343-4778).

Thank you.

Yours truly,

Don McBean
Owner
Medical Arts Pharmacy

DMcB:sk

APPENDIX C
INITIAL CONTACT PROCEDURE

This appendix describes the initial procedure employed for contacting patients to participate in the study. Numerous problems were associated with this procedure and these are included for the information of other researchers attempting a similar study design.

Initial Procedure for Contacting Patients

In the early stages of the study the patient records of those patients eligible for inclusion in the study were reviewed regularly to determine approximately when a patient would be ordering a refill of the study prescription. Ten to fourteen days prior to the expected refill date the patient was sent a letter from the College of Pharmacy which explained the research project. Five or six days after the letter was sent, the patient was contacted by telephone to determine whether he was willing to participate in the study. It was explained his participation would require several interviews within the following two to six weeks. If the patient indicated he would be willing to grant these interviews he was informed that "one portion of the survey was to determine when patients reordered their medication refills." He was asked to complete the card which had been enclosed with the letter (see figure) and to present the information to the pharmacist when he reordered his prescription. There were two reasons for this procedure: 1) to provide a base-line pill quantity for the purpose of the pill count and 2) to alert the pharmacist-investigator that a study participant was re-ordering a prescription.

It was anticipated that some participants would forget to produce

this card. Therefore, a list was made of all patients who indicated they would participate in the study and was placed in the dispensary. This list was checked by the clerk before she handed out prescriptions and the pharmacist-investigator was informed when participants were re-ordering their medication. The participant was randomly assigned to a study group as described in the text of this paper.

<u>INFORMATION FOR THE PHARMACIST</u>	
<u>NAME:</u>	_____
<u>DATE:</u>	_____
<u>NAME OF PILL</u>	<u>NUMBER LEFT</u>
1. _____	_____
2. _____	_____
3. _____	_____
4. _____	_____
5. _____	_____
(Keep this card by your pills)	

The Problems

The major reason this procedure was not satisfactory was that a number of potential participants had to be excluded from the study. The pharmacist-investigator was usually present at the pharmacy only in the afternoon. If a patient reordered his prescription at a time other than this, he could not be assigned to a study group. As well, many of the patients contacted did not reorder their prescription near the

expected refill date. Some patients were missed because they reordered their prescription just prior to being contacted by telephone while others did not appear for some time after they had been contacted by telephone. This made it extremely awkward to conduct the study follow-up within the time frame originally explained to the patients. Many patients forgot to provide the information about the number of dosage units remaining and in some cases the clerk did not identify these patients through the checklist. As a result some patients received the study prescription and left the pharmacy without going through the random assignment procedure.

This method of contacting patients also was unsatisfactory because it was awkward for the clerk to inform the pharmacist-investigator a patient was reordering a prescription without the patient becoming aware that something special was to occur. It was desirable that patients remained unaware the pharmacist-investigator was involved in the study and the original procedure did not always allow this to occur.

This procedure identified only patients who received a repeat prescription and patients receiving a new prescription from Medical Arts Pharmacy had to be excluded from the study.

Finally, there was a high refusal rate when this contact procedure was employed. It was felt this was due to the fact patients were unfamiliar with the College of Pharmacy and were uncomfortable about granting interviews to this institution. It was felt a more personal approach could be taken by contacting patients through Medical Arts Pharmacy and the decision was made to alter the procedure to that outlined in Chapter VI. This second procedure was much more satisfactory and very few problems were noted.

APPENDIX D

WRITTEN EXPLANATION OF PRIVATE AREA
AND TELEPHONE EDUCATION

WRITTEN EXPLANATION OF PRIVATE AREA AND TELEPHONE INTERVIEW

Patients in this study had not been exposed to a private consultation area prior to the study. The following written explanation was developed to minimize alarm the patient might feel about going to the private area. The use of this written explanation also saved time as it was not necessary to verbally explain this to patients when they received their prescription.

SASKATOON MEDICAL ARTS PHARMACY LTD.

MEDICAL ARTS BLDG. SPADINA CRESCENT
PHONE 652-5252
DON McBEAN

The staff of Medical Arts Pharmacy is looking at a new method of dispensing medications to patients. When you receive your prescription, you will have a private interview with the pharmacist, in a room set up at the back of our store. At this time the directions for taking your pills and any precautions you should take will be explained.

Patients allocated to receive patient education by telephone

received the following note with the written information sheet so they would be expecting the pharmacist-investigator's call.

Dear _____:

You have received some information about your drugs. A pharmacist will call you later today to go over the information with you and to see if you have any questions about your drugs.

APPENDIX E

"PATIENT DATA FORM" AND "PATIENT SCHEDULE"

PATIENT DATA FORM

NAME: _____

AGE: _____

SEX: _____

ADDRESS: _____

LIVES: alone spouse child(s) relative friend
other _____
someone in regularly _____

PHONE: _____

GROUP: I II III IV V VI

pick up
delivery

EDUCATION: _____

DATE HOME INTERVIEW: _____

DATE: _____

NUMBER OF MEDICATION TAKING DAYS: _____

DRUGS-DIRECTIONS	# LEFT # GOT	INFO ORDER	CONDITION	AWARE	FIRST TREATED	DOCTOR	should have -number has deviation
1.							
2.							
3.							
4.							
5.							
6.							
7.							
8.							
9.							
10.							

TOTAL NUMBER OF DRUGS PRESCRIBED _____
TOTAL NUMBER OF MEDICATION TAKING OCCASIONS PER DAY _____

COMMENTS ON INTERACTION: _____

TIME/INTERACTIONS: _____

send letter if phones
pills left?
fill in log
schedule
X out patient record
cross off randomization
fill in questionnaire

PATIENT SCHEDULE

NAME: _____

ADDRESS: _____

PHONE NUMBER: _____

DOCTOR: _____ YES NO

Expected date for R_x: _____

SEND LETTER: _____

PHONE: _____

PARTICIPATE: YES NO LATER EXPECTS TO BE IN:

DATE R_x RECEIVED: _____

PHONE FOR KNOWLEDGE: EXPECTED: _____ ACTUAL: _____

PHONE FOR 24-HR. RECALL: - EXPECTED: _____ ACTUAL: _____

HOME INTERVIEW: EXPECTED: _____ ACTUAL: _____

DRUGS ON: _____

APPENDIX F

TELEPHONE INTERVIEW EXPLANATION AND QUESTIONNAIRE

EXPLANATION TO PATIENTS OF THE PURPOSE OF THE INTERVIEW

Patients were told that the College of Pharmacy was interested in setting up formal programs in pharmacies to inform the consumer about his medication. It was explained the College of Pharmacy felt it was important to first determine whether there was a need for these programs. The purpose of the telephone interview therefore was to determine what people knew about their medications. The patients were assured they were not expected to know all the answers, as some of the questions were a little more difficult than others.

TELEPHONE INTERVIEW GUIDE

I. NAME AND PURPOSE OF DRUGS

- A. What illnesses or problems do you have that you take medicines for the treatment or control of?
- B. What is the name of the medicine(s) you are taking for the treatment/control of _____?

II. MECHANISM OF ACTION

- A. What is your understanding of how _____ (drug) works to treat or control your condition?

III. DIRECTIONS FOR TAKING

- A. When you are taking this drug, how many pills are you to take at a single does? (i.e. at one time)
- B. How many times (a day) are you to take the drug?

IV. SPECIAL ADMINISTRATION INSTRUCTIONS

- A. i) RECALL: Some drugs have to be taken a special way, either to get the most benefit from them, or to avoid some side effects. Are there any special instructions you should follow about how or when to actually take this medicine?
 - ii) PROBE: (only with those NOT mentioned in part i)
 - a) What about taking the drug with food or on an empty stomach?
 - b) Any particular hours or times of the day, or special times between doses?
 - c) What about actually taking the pill - are you to chew it first? swallow it whole? dissolve it under your tongue?
- B. i) Are you to take this drug only when you have symptoms from the (condition), (such as pain or whatever), or are you to take it regularly, all the time, even if you do not have any symptoms or feel badly?
 - ii) "ALL THE TIME" --- What will happen if you do not take it all the time/regularly?

V. SPECIAL PRECAUTIONS AND SIDE EFFECTS

A. SIDE EFFECTS EXPERIENCED

- i) Sometimes medicines have other effects on people besides what they were originally given for. What side effects or bad effects from (drug) have you had or experienced?

B. SPECIAL PRECAUTIONS

- i) RECALL: What precautions about (drug) should you be aware of when you are being treated with this drug? For example, side effects the drug may cause or certain foods or liquids that you should take or avoid?
- ii) PROBE: (only with those NOT mentioned in part i)
 - a) What about dizziness? drowsiness? things like a dry mouth or other side effects people should be aware of, that the drug might cause?
 - b) What about precautions people might take to avoid getting some side effect or what to do if a certain side effect does occur.
 - c) Re foods: What about avoiding excess salt or water? Adding potassium foods or liquids to their diet?

C. ALCOHOL

There is a lot of advertising these days about taking alcohol-containing beverages and drugs at the same time, but this does not, of course, apply to all drugs. Can alcoholic beverages be taken in combination with (drug) ?

D. OTC'S

- i) Sometimes when people are taking a certain drug, they may have to avoid taking some medicines you can buy without a prescription, such as cold or allergy medicines, aspirin or things for stomach upset. Are you aware of any of these types of medicines that you should either not take, or should check with your doctor or druggist about, BEFORE you do take them, when you are being treated with (drug) ?

E. CHECK WITH DOCTOR

- i) Certain symptoms that some people may get from drugs should be reported to their doctor, either because they mean the dose has to be changed or they are having a reaction to the drug. What symptoms, caused by (drug) would prompt you to check with your doctor about, if you got them?

VI. REFILLS

- i) When you need more of (drug), do you have to check with the doctor yourself each time?
- ii) If "NO" can you tell me about the arrangements for getting more of _____ without checking with the doctor yourself?

VII. STORAGE Is there a particular place or a particular way you should store your drugs?

APPENDIX G
HOME INTERVIEW QUESTIONNAIRE

II. STORAGE/NUMBER OF MEDICATIONS/PILL CHECK

A. i) *"Will you show me where you keep your drugs?"*

(Interviewer go with person to see how many different kinds of medicines in the home. Ask which ones are presently being used. Note anything which you feel is pertinent, for example, stock piling of medicines, etc. Wait until you go back to fill in observations. If respondent asks why you want to see, tell them there are some medicines which have to be stored in certain way, etc.)

Drugs stored: _____
Estimate of # of medicines in home: _____
Number (and name if possible) of medicines <u>not</u> being used: _____
Comments: _____ _____

ii) Pill Check

"I would like to take these (the study drug) back with us. We want to see if medicines that people get are in good condition, for example, if there are any chipped or broken tablets."

Drug	Date	Rx#	Number Left
1.			
2.			
3.			
4.			

III. SATISFACTION AND SOURCE OF DRUG INFORMATION

- A. *"I wonder if you would mind filling out this questionnaire. (Explain questionnaire) If you are wondering about how to answer any of these questions do not hesitate to ask. (Indicate it is okay for them to take their time.) Also, please feel free to indicate any dissatisfaction which you have felt, as it will be helpful to us in our assessment. We certainly realize that things can always be improved. As we mentioned in our initial letter, any replies you give will be completely confidential, and will not be shown to anyone, including your pharmacist."*

Written Questionnaire

1. Which statement most closely describes how you feel, generally, about the services provided by the pharmacy where you get your prescription?

- "In general, I feel the services provided by my pharmacy are very dissatisfactory."
- "In general, I feel the services provided by my pharmacy are moderately dissatisfactory."
- "In general, I would say the services provided by my pharmacy are fair."
- "In general, I feel the services provided by my pharmacy are good."
- "In general, I feel the services provided by my pharmacy are excellent."

2. The following questions are about the time you got a prescription filled approximately 3 weeks ago, when you entered our study. Please think back to that time as you answer these questions.

a) What was the approximate amount of time you had to wait for your prescription?

- less than 5 minutes
- 5 to 15 minutes
- more than 15 minutes
- prescription delivered or picked up by someone else

Comments: _____

b) Which statement most closely describes how you felt about the amount of time you had to wait for your prescription either to be filled at the store, or delivered.

- "I was very annoyed with the amount of time I had to wait for my prescription."
- "I was slightly annoyed with the amount of time I had to wait for my prescription."
- "I was neither annoyed or pleased with the amount of time I had to wait for my prescription."
- "I was moderately pleased with the amount of time I had to wait for my prescription."
- "I was extremely pleased with the amount of time I had to wait for my prescription."

Comments: _____

- c) Which of the following statements most closely describes how you felt about the way the pharmacist acted toward you three weeks ago. (This could be on the phone or in person.)

"I was extremely unhappy with the way the pharmacist acted toward me."

"I was slightly unhappy with the way the pharmacist acted toward me."

"I was neither unhappy nor happy with the way the pharmacist acted toward me."

"I was moderately happy with the way the pharmacist acted toward me."

"I was extremely happy with the way the pharmacist acted toward me."

- d) When you got your prescription filled three weeks ago, did the pharmacist give you any information about the medicines you bought?

Yes No

- e) How did you feel about the pharmacist either giving you or not giving you information about your medications?

"I was very disappointed that the pharmacist did not offer any information on the use of my drugs."

"I was very slightly disappointed that the pharmacist did not offer any information on the use of my drugs."

"I was neither disappointed nor pleased, because the pharmacist usually does not offer any information on the use of my drugs."

"I was moderately pleased because the pharmacist gave me information about the use of my drugs."

"I was extremely pleased because the pharmacist gave me information about the use of my drugs."

Comments: _____

3. a) If you had a question about the use of a prescription drug, whom would you ask? Rank the following people so that your first choice is given the number "1", your second choice the number "2" and so on. If you would not ask a particular person, leave it blank.

Nurse Doctor Pharmacist Friend Other: _____

- b) If you had a question about medicines you can buy at the store without a prescription, such as cough and cold remedies, aspirin, or stomach remedies, whom would you ask? Rank the following people as explained above.

Nurse Doctor Pharmacist Friend Other: _____

4. a) Do you have any books or pamphlets in your home that you can refer to when someone is not well?
- ___ Yes What books or pamphlets are they? _____
 ___ No _____
- b) Do you have any books, pamphlets or other forms of information in your home, that you can refer to when you want to know something about the medicines you are taking?
- ___ Yes What books or pamphlets or other forms of information
 ___ No are they? _____
5. a) In the last three weeks, how many times have you asked a pharmacist for information about prescription drugs you are taking?
- ___ times
- b) In the last three weeks, how many times have you asked a pharmacist for information about medicines you can buy at the store without a prescription?
- ___ times
- c) In the last three weeks, how many times have you contacted your doctor for information about prescription or non-prescription medicines you are taking?
- ___ times

-
- B. Look over the questionnaire when finished and get comments on 2d & e if applicable. For example ... *"I notice you indicated that the pharmacist gave you some information about your medicines. Do you have any other comments or criticisms about this."* OR *"I noticed the pharmacist did not offer you any information about your medicines. Do you remember if you had any questions about your medicines or would you have liked to talk to the pharmacist about your medicines if he had been available."*

General or Pertinent Comments on Satisfaction Questionnaire:

IV. PERCEPTION OF PHARMACIST

A. Description of Pharmacy

"I would be interested in knowing how you would describe the pharmacists which you have had contact with. For example, some people have said they would describe the pharmacists they had contact with as (i) someone who spends most of his time behind the prescription counter, filling prescriptions. Others have said they think (ii) pharmacists are mostly concerned with making money, while other people I've talked to feel that a pharmacist's major concern is (iii) making sure that his customers know about their medicines and that they are not having any problems. How would you describe the pharmacist(s) who have filled your prescriptions?"

-
- Don't know
 Stays behind counter
 Making money
 Concerned with customers
 Other _____
-

B. Clinical Activities

I have a list of statements here (hand respondent the sheet) which have been made about things that pharmacists might do for their customers when they get a prescription filled. I'd like to go through these with you to see which of these you feel pharmacists should or shouldn't be offering. As you can see from the two examples at the top, they range from very basic things that most pharmacists do up to some which may or may not be done! For example, do you feel that when a pharmacist fills a prescription he should type the name of the drug on the label? And do you feel a pharmacist should give injections to his customers when asked? I would also be interested in knowing, as we go through these, if you have, in the past, had a pharmacist offer any of these services."

(Interviewer: Go through statements, varying the way they are asked; for example, "Do you feel pharmacists should" or "The statement has been made that pharmacists should" Do you agree with this? Check off the appropriate square on page 3 using one ✓ to indicate answers such as "I suppose so" and ✓✓ if the respondent strongly agrees or disagrees with the statement. Do not press as to whether the person has received the service except for written information. If respondent indicates he has received written information, ask if you would be able to see it.)

STATEMENTS

e.g.: When a pharmacist fills a prescription he should type the name of the drug on the label.

A pharmacist should give injections to his customers.

1. Before a pharmacist fills a new prescription for me, he should check to see if I am allergic to any medicines, or if I have had any previous bad reactions to any medicines. Yes ___ No ___ DK ___
2. When a pharmacist fills a new prescription for me, I feel he should ask me what other medicines I am taking, to make sure they can be taken with the medicines I am buying.
Yes ___ No ___ DK ___
3. Pharmacists should keep family prescription records (a written record, filed under the patient's name, of the medicines a person is taking and any special problems he has) for his customers.
Yes ___ No ___ DK ___
4. When the pharmacist gives the person his prescription, he should check to make sure the person understands what condition the medicine is for. Yes ___ No ___ DK ___
5. Pharmacists should explain how the medicine a person is buying, works in the treatment of the condition it has been prescribed for. Yes ___ No ___ DK ___
6. When a pharmacist hands out a prescription, he should check to make sure the person understands the directions for taking the medicine, and should tell him if there is a special way the medicine should be taken. (For example, with meals) Yes ___ No ___ DK ___
7. Pharmacists should make sure a person knows the length of time the medicine should be taken. Yes ___ No ___ DK ___
8. I feel a pharmacist should tell me what side effects a medicine might cause, and what I can do, if anything, to stop or prevent these side effects. Yes ___ No ___ DK ___
9. Pharmacists should inform people about things they should avoid, such as foods or medicines you can buy without a prescription, which might cause a reaction with the drug they are buying.
Yes ___ No ___ DK ___
10. When a person gets a prescription filled, the pharmacists should tell him how many times it can be renewed. Yes ___ No ___ DK ___
11. The pharmacist should inform people about any special storage requirements for their medicines. Yes ___ No ___ DK ___
12. Pharmacists should help people select non-prescription medicines, such as cough and cold remedies, vitamins and stomach remedies.
Yes ___ No ___ DK ___
13. Pharmacists should provide written information of important points about the medicines a person is buying. Yes ___ No ___ DK ___

Patient have written sheet? _____

C. Are there any other services you feel should be offered by pharmacists or pharmacies or anything you feel would help us to improve our services to the public that we haven't covered.

V. ACCEPTABILITY OF PRIVATE AREA

"Many pharmacists tell us that they would like to spend more time talking to people about the drugs they are taking and answering any questions people might have about their drugs. It is felt that many people do have questions about their drugs but that they are maybe reluctant to ask them in the rather impersonal and sometimes crowded setting that occurs when they pick up a prescription at the pharmacy. Some pharmacists are therefore interested in providing a private area where they can talk to customers about their drugs. We would like to get an idea of how people would feel about such a service."

A. Would you like there to be a private area at the pharmacy where you get your prescription filled, or do you feel it is not necessary.

___ Not necessary Comments: _____
___ Would like private area _____
___ Don't know _____

(Interviewer: ask the following questions only if respondent indicates he would like a private area.)

B. Would you go out of your way to go to a store that offered this service?

___ Yes Comments: _____
___ No _____

C. One problem with this kind of service is that it takes time to talk to people and time, of course, is money. We would like to know whether you would be willing to pay a small fee (say around 50¢-\$1.00) each time you received this service.

___ Not willing to pay fee Comments: _____
___ Willing to pay fee _____

VI. THE CONDITION/KNOWLEDGE OF DRUGS

A. Condition/Name of Drugs and Directions for Taking

- i) What has your doctor said your illness(es) or problem(s) is/are? (find out all conditions)*
- ii) What is the name of the medicines you are taking for the treatment or control of condition? (May have previously stated)*
- iii) When you are taking drug, how many times a day are you to take it?*
- iv) So that is different medicines you are presently taking?*

*If "no" - What other medicines are you presently taking?
How many times a day to you take or use these?*

B. Length of Awareness and Treatment/Agreement with Doctor

(Use table and ask only for those conditions specified. Use words that respondent has to describe condition.)

- i) Going back to condition, how long have you known that you have this condition or problem?*
- ii) Do you agree with your doctor that this is the problem, or do you feel that it is something else, or something more, or even something less?*
- iii) When was it that you first started taking medicines for condition?*

(NOTE: Conditions to focus on: _____, _____, _____, for questions Bi, ii and iii)

CONDITION	AWARE OF CONDITION	LENGTH OF TREATMENT	"P" if persons looks on bottle DRUG(S)	DIRECTIONS
1. _____ no disagreement _____ something else/more _____			1. 2. 3. 4.	1. 2. 3. 4.
2. _____ no disagreement _____ something else/more _____			1. 2. 3. 4.	1. 2. 3. 4.
3. _____ no disagreement _____ something else/more _____			1. 2. 3. 4.	1. 2. 3. 4.
4. _____			1.	1.
5. _____			1.	1.
6. _____			1.	1.

C. *"I would like to ask you some questions about the medicines you take. some of these are similar to those we asked the first time we phoned you. We want to ask these questions again so we can get an average. Remember, we don't expect people to know the answer to all these questions as some are much harder than others."*

i) *Going back to (drug) _____, the one you said was for (condition) _____, what is your understanding of how it works in the treatment or control of (condition) _____?*

ii) Are you to take this drug only when you have symptoms from the _____, (such as pain, etc.), or are you to take it regularly, all the time, even if you do not feel badly?

If "All the time" ---- What will happen if you do not take it all the time?

iii) Special Administration Instructions

- a) Recall: Some drugs have to be taken a special way, either to get the most benefit from them, or to avoid some side effects. Are there any special instructions you should follow about how or when to actually take this medicine?
- b) Probe: (only with those NOT mentioned in part i)
1. What about taking the drug with food or on an empty stomach?
 2. Any particular hours or times of the day or special times between doses?
 3. What about actually taking the pill; are you to chew it first? swallow it whole? dissolve it under your tongue?

iv) Special Precautions and Side Effects

- a) Recall: What precautions about (drug) should you be aware of when you are being treated with this drug? For example, side effects the drug may cause or certain foods or liquids you should add to your diet or avoid.
- b) Probe: (only with those NOT mentioned in part i)
1. What about dizziness? drowsiness? things like a dry mouth or other side effects?
 2. What about how to avoid getting some side effect or what one can do if a certain side effect does occur?
 3. Avoiding excess salt or water? adding potassium foods to their diet?
- c) What side effects or bad effects from (drug) have you actually experienced?
- d) Can alcoholic beverages be taken in combination with (drug) ?

APPENDIX H

GUIDELINES FOR MARKING KNOWLEDGE QUESTIONNAIRE

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KNOWLEDGE SCORING FOR: FENOPROFEN, KETOPROFEN,
IBUPROFEN AND NAPROXYN

Mark	
1	<u>NAME OF DRUG</u>
2	<u>CONDITION OR BODY PART AFFECTED</u> 2 marks if arthritis or inflammation in joints 1 if just "pain"
2	<u>MECHANISM OF DRUG'S ACTION</u> 2 marks if reduces inflammation - decreased pain and swelling 1 mark if pain reliever only
1	<u>DIRECTIONS</u>
2	<u>SPECIAL ADMINISTRATION INSTRUCTIONS</u> 1 - food or milk 1 - AM, evenly spaced, bedtime
1	<u>REGULARLY</u>
2	<u>REASON</u> Only if take regularly 2 marks if used for inflammation and pain not always with inflammation 1 mark if "pain will come back" only
1	<u>SPECIAL PRECAUTIONS</u> <u>SIDE EFFECTS</u> drowsiness
N/A	<u>FOODS ADD OR AVOID</u>
1	<u>ALCOHOL</u>
N/A	<u>OTC'S AVOID OR CHECK</u>
N/A	<u>OTHER</u>
2	<u>SYMPTOMS TO BE AWARE OF</u> skin rash change in eyesight ringing ears re bowel movements mark is x/4 times 2
N/A	<u>STORAGE</u>
N/A	<u>OTHER</u>
15	<u>TOTAL POSSIBLE MARK</u>

Mark	
1	<u>NAME OF DRUG</u>
2	<u>CONDITION OR BODY PART AFFECTED</u> 2 - if specific such as arrhythmias or irregular heart beats 1 - if only "for my heart"
2	<u>MECHANISM OF DRUG'S ACTION</u> 2 - if specific - decreases irritability and makes heart beat at regular pace
1	<u>DIRECTIONS</u>
1	<u>SPECIAL ADMINISTRATION INSTRUCTIONS</u> food
1	<u>REGULARLY</u>
2	<u>REASON</u> Only if take regularly 2 if knows has to take to prevent arrhythmias
1	<u>SPECIAL PRECAUTIONS</u> <u>SIDE EFFECTS</u> dizziness or lightheadedness
N/A	<u>FOODS ADD OR AVOID</u>
1	<u>ALCOHOL</u>
N/A	<u>OTC'S AVOID OR CHECK</u>
N/A	<u>OTHER</u>
2	<u>SYMPTOMS TO BE AWARE OF</u> ringing in ears with headache, blurred vision, etc. bruising of skin unexplained fever mark x/3 times 2
N/A	<u>STORAGE</u>
N/A	<u>OTHER</u>
14	<u>TOTAL POSSIBLE MARK</u>

Mark	
1	<u>NAME OF DRUG</u>
2	<u>CONDITION OR BODY PART AFFECTED</u> for high blood pressure
2	<u>MECHANISM OF DRUG'S ACTION</u> 2 - if specific, i.e. causes widening of blood vessels 1 - if specific, i.e. keeps blood pressure down
1	<u>DIRECTIONS</u>
1	<u>SPECIAL ADMINISTRATION INSTRUCTIONS</u> food
1	<u>REGULARLY</u>
2	<u>REASON</u> Only if take regularly 2 if specific, e.g. complications from high blood pressure 1 mark only if just "blood pressure will go up"
2	<u>SPECIAL PRECAUTIONS</u> <u>SIDE EFFECTS</u> 1 - dizziness 1 - headache
N/A	<u>FOODS ADD OR AVOID</u>
1	<u>ALCOHOL</u>
1	<u>OTC'S AVOID OR CHECK</u> cough and cold
N/A	<u>OTHER</u>
2	<u>SYMPTOMS TO BE AWARE OF</u> sore throat, fever skin rash muscle or joint pain rapid heart beat mark x/4 x 2
N/A	<u>STORAGE</u>
N/A	<u>OTHER</u>
16	<u>TOTAL POSSIBLE MARK</u>

Mark	
1	<u>NAME OF DRUG</u>
2	<u>CONDITION OR BODY PART AFFECTED</u> 2 marks for specific answer such as arthritis or joint inflammation 1 mark for less specific answers such as "pain"
2	<u>MECHANISM OF DRUG'S ACTION</u> 2 marks for those such as reduces inflammation, etc. 1 mark for "reduces pain" only
1	<u>DIRECTIONS</u>
3	<u>SPECIAL ADMINISTRATION INSTRUCTIONS</u> 1 - early AM, evenly spaced, bedtime, etc. 1 - food or glassful of water 1 - swallowed whole, do not crush, etc.
1	<u>REGULARLY</u>
2	<u>REASON</u> Only if take regularly 2 marks - inflammation not always associated with pain 1 mark - pain will come back
N/A	<u>SPECIAL PRECAUTIONS</u> <u>SIDE EFFECTS</u>
N/A	<u>FOODS ADD OR AVOID</u>
1	<u>ALCOHOL</u>
N/A	<u>OTC'S AVOID OR CHECK</u>
1	<u>OTHER</u> Re vinegar - like smell of deteriorated medication
2	<u>SYMPTOMS TO BE AWARE OF</u> - ringing in ears - breathing mark is x/7 times 2 - stomach upset - dizziness - bowel movements - unexplained tiredness - skin rash
N/A	<u>STORAGE</u>
N/A	<u>OTHER</u>
16	<u>TOTAL POSSIBLE MARK</u>

Mark	
1	<u>NAME OF DRUG</u>
2	<u>CONDITION OR BODY PART AFFECTED</u> for high blood pressure
2	<u>MECHANISM OF DRUG'S ACTION</u> 2 - if specific such as decrease narrowing of blood vessels 1 - if general such as decrease blood pressure only
1	<u>DIRECTIONS</u>
N/A	<u>SPECIAL ADMINISTRATION INSTRUCTIONS</u>
1	<u>REGULARLY</u>
2	<u>REASON</u> Only if take regularly 2 - if specific such as keep blood pressure down so no complications 1 - if "so blood pressure doesn't go up" only
3	<u>SPECIAL PRECAUTIONS</u> <u>SIDE EFFECTS</u> dizziness drowsiness dry mouth
N/A	<u>FOODS ADD OR AVOID</u>
1	<u>ALCOHOL</u>
1	<u>OTC'S AVOID OR CHECK</u> cough and cold
N/A	<u>OTHER</u>
2	<u>SYMPTOMS TO BE AWARE OF</u> flu like symptoms
N/A	<u>STORAGE</u>
N/A	<u>OTHER</u>
16	<u>TOTAL POSSIBLE MARK</u>

Mark	
1	<u>NAME OF DRUG</u>
2	<u>CONDITION OR BODY PART AFFECTED</u> for high blood pressure
2	<u>MECHANISM OF DRUG'S ACTION</u> 2 - if specific such as prevent narrowing of blood vessels 1 - if general such as decrease blood pressure
1	<u>DIRECTIONS</u>
1	<u>SPECIAL ADMINISTRATION INSTRUCTIONS</u> food or milk
1	<u>REGULARLY</u>
2	<u>REASON</u> Only if take regularly 2 if knows that complications may occur 1 if just that blood pressure will go up
3	<u>SPECIAL PRECAUTIONS</u> <u>SIDE EFFECTS</u> 1 - drowsiness 1 - dizziness 1 - dry mouth
N/A	<u>FOODS ADD OR AVOID</u>
1	<u>ALCOHOL</u>
1	<u>OTC'S AVOID OR CHECK</u> cough and cold preps, re nasal stuffiness
N/A	<u>OTHER</u>
2	<u>SYMPTOMS TO BE AWARE OF</u> change in sleep patterns diarrhea re bowel movements
mark x/3 x 2	
N/A	<u>STORAGE</u>
N/A	<u>OTHER</u>
17	<u>TOTAL POSSIBLE MARK</u>

Mark	
1	<u>NAME OF DRUG</u>
2	<u>CONDITION OR BODY PART AFFECTED</u> high blood pressure
2	<u>MECHANISM OF DRUG'S ACTION</u> 2 if specific 1 if general such as decrease blood pressure only
1	<u>DIRECTIONS</u>
2	<u>SPECIAL ADMINISTRATION INSTRUCTIONS</u> AM (and 6 hours before bedtime) dosing food
1	<u>REGULARLY</u>
2	<u>REASON</u> Only if take regularly 2 marks if know that may have complications if not 1 mark if just that blood pressure will go up
3	<u>SPECIAL PRECAUTIONS</u> <u>SIDE EFFECTS</u> drowsiness dizziness dry mouth
1	<u>FOODS ADD OR AVOID</u> add potassium
1	<u>ALCOHOL</u>
1	<u>OTC'S AVOID OR CHECK</u> cough and cold preps
N/A	<u>OTHER</u>
2	<u>SYMPTOMS TO BE AWARE OF</u> change in sleep pattern diarrhea re bowel movements muscle or joint pain skin rash mark x/5 times 2
N/A	<u>STORAGE</u>
N/A	<u>OTHER</u>
19	<u>TOTAL POSSIBLE MARK</u>

Mark		
1	<u>NAME OF DRUG</u>	
2	<u>CONDITION OR BODY PART AFFECTED</u> for high blood pressure	
2	<u>MECHANISM OF DRUG'S ACTION</u> 2 if specific, i.e. prevents narrowing of blood vessels 1 if genreal, i.e. decrease blood pressure	
1	<u>DIRECTIONS</u>	
N/A	<u>SPECIAL ADMINISTRATION INSTRUCTIONS</u>	
1	<u>REGULARLY</u>	
2	<u>REASON</u> Only if take regularly 2 - if knows complications may occur 1 - if just that blood pressure will go up	
3	<u>SPECIAL PRECAUTIONS</u> <u>SIDE EFFECTS</u> dizziness blurred vision dry mouth	
N/A	<u>FOODS ADD OR AVOID</u>	
1	<u>ALCOHOL</u>	
1	<u>OTC'S AVOID OR CHECK</u> cough and cold	
N/A	<u>OTHER</u>	
2	<u>SYMPTOMS TO BE AWARE OF</u> diarrhea/stomach cramps	Mark is x/1 times 2
N/A	<u>STORAGE</u>	
N/A	<u>OTHER</u>	
16	<u>TOTAL POSSIBLE MARK</u>	

Mark	
1	<u>NAME OF DRUG</u>
2	<u>CONDITION OR BODY PART AFFECTED</u> 2 marks if specific e.g. fluid retention from CHF or hypertension 1 mark if "for swelling" only (if taken regularly)
1	<u>MECHANISM OF DRUG'S ACTION</u> 2 - kidneys, loss of excess fluid 1 - if less specific
1	<u>DIRECTIONS</u>
2	<u>SPECIAL ADMINISTRATION INSTRUCTIONS</u> 1 - AM (and afternoon if indicated) 1 - food or milk
1	<u>REGULARLY</u>
2	<u>REASON</u> Only if take regularly 2 - if specific, e.g. prevent fluid build up 1 - if more general
1	<u>SPECIAL PRECAUTIONS</u> <u>SIDE EFFECTS</u> dizziness, etc.
1	<u>FOODS ADD OR AVOID</u> salt
1	<u>ALCOHOL</u>
1	<u>OTC'S AVOID OR CHECK</u> cough and cold, salt content
N/A	<u>OTHER</u>
2	<u>SYMPTOMS TO BE AWARE OF</u> muscle cramps, weakness skin rash unexplained sharp pain in joint dry mouth/excessive thirst mark is x/4 times 2
N/A	<u>STORAGE</u>
N/A	<u>OTHER</u>
	<u>TOTAL POSSIBLE MARK</u> is out of 17 if pills are taken regularly is out of 15 if pills are taken on a prn basis

Mark	
1	<u>NAME OF DRUG</u>
2	<u>CONDITION OR BODY PART AFFECTED</u> 2 - if specific such as tachycardia, fast heart beat, hypertension, etc. 1 - if general answer such as "for my heart"
2	<u>MECHANISM OF DRUG'S ACTION</u> slows heart
1	<u>DIRECTIONS</u>
N/A	<u>SPECIAL ADMINISTRATION INSTRUCTIONS</u>
1	<u>REGULARLY</u>
2	<u>REASON</u> Only if take regularly 2 - if specific 1 - if general
3	<u>SPECIAL PRECAUTIONS</u> <u>SIDE EFFECTS</u> 1 - drowsiness 1 - dizziness 1 - dry mouth
N/A	<u>FOODS ADD OR AVOID</u>
1	<u>ALCOHOL</u>
1	<u>OTC'S AVOID OR CHECK</u> cough and cold
1	<u>OTHER</u> do not stop abruptly
2	<u>SYMPTOMS TO BE AWARE OF</u> wheezing, difficult breathing change in sleep patterns fatigue, weakness swelling ankles stomach upset mark x/5 times 2
N/A	<u>STORAGE</u>
N/A	<u>OTHER</u>
17	<u>TOTAL POSSIBLE MARK</u>

Mark	
1	<u>NAME OF DRUG</u>
2	<u>CONDITION OR BODY PART AFFECTED</u> for high blood pressure
2	<u>MECHANISM OF DRUG'S ACTION</u> 2 if specific such as decrease narrowing, decrease fluid which decreases blood pressure 1 only if answer is "decrease blood pressure" only
1	<u>DIRECTIONS</u>
2	<u>SPECIAL ADMINISTRATION INSTRUCTIONS</u> 1 - food, milk 1 - AM (and 6 hr before hs if indicated)
1	<u>REGULARLY</u>
2	<u>REASON</u> Only if take regularly 2 marks if keep blood pressure down so no complication, etc. 1 mark if "so blood pressure doesn't go up" only
3	<u>SPECIAL PRECAUTIONS</u> <u>SIDE EFFECTS</u> 1 - drowsiness - at start or increase in dose 1 - dizziness 1 - dry mouth
1	<u>FOODS ADD OR AVOID</u> add potassium
1	<u>ALCOHOL</u>
1	<u>OTC'S AVOID OR CHECK</u> cough and cold
N/A	<u>OTHER</u>
2	<u>SYMPTOMS TO BE AWARE OF</u> muscle cramps/weakness loss of appetite pain in joint flu symptoms mark is x/4 times 2
N/A	<u>STORAGE</u>
N/A	<u>OTHER</u>
19	<u>TOTAL POSSIBLE MARK</u>

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KNOWLEDGE SCORING FOR: TAGMET

Mark	
1	<u>NAME OF DRUG</u>
2	<u>CONDITION OR BODY PART AFFECTED</u> 2 if specific such as ulcer 1 if "sore stomach" only
2	<u>MECHANISM OF DRUG'S ACTION</u> 2 if reference to decreasing amount of acid stomach makes 1 if relieves stomach pain only
1	<u>DIRECTIONS</u>
1	<u>SPECIAL ADMINISTRATION INSTRUCTIONS</u> take around meals and bedtime
1	<u>REGULARLY</u>
2	<u>REASON</u> Only if take regularly 2 - prevent condition from becoming worse 1 - pain will come back
N/A	<u>SPECIAL PRECAUTIONS</u> <u>SIDE EFFECTS</u>
N/A	<u>FOODS ADD OR AVOID</u>
N/A	<u>ALCOHOL</u>
N/A	<u>OTC'S AVOID OR CHECK</u>
N/A	<u>OTHER</u>
2	<u>SYMPTOMS TO BE AWARE OF</u> dizziness x/5 times 2 unexplained muscle aches confusion skin rash diarrhea
N/A	<u>STORAGE</u>
N/A	<u>OTHER</u>
12	<u>TOTAL POSSIBLE MARK</u>

Mark	
1	<u>NAME OF DRUG</u>
2	<u>CONDITION OR BODY PART AFFECTED</u> 2 - if specific such as gout 1 - if general
2	<u>MECHANISM OF DRUG'S ACTION</u> 2 - if specific, e.g. decreases body's ability to make uric acid 1 - if general
1	<u>DIRECTIONS</u>
1	<u>SPECIAL ADMINISTRATION INSTRUCTIONS</u> food or milk
1	<u>REGULARLY</u>
2	<u>REASON</u> Only if take regularly 2 - if specific such as controls condition, if stop - uric acid levels will rise 1 - if more general such as pain will come back
1	<u>SPECIAL PRECAUTIONS</u> <u>SIDE EFFECTS</u> drowsiness
N/A	<u>FOODS ADD OR AVOID</u>
N/A	<u>ALCOHOL</u>
N/A	<u>OTC'S AVOID OR CHECK</u>
N/A	<u>OTHER</u>
2	<u>SYMPTOMS TO BE AWARE OF</u> skin rash sore throat or fever mark is x/2 times 2
N/A	<u>STORAGE</u>
N/A	<u>OTHER</u>
13	<u>TOTAL POSSIBLE MARK</u>

Mark	
1	<u>NAME OF DRUG</u>
2	<u>CONDITION OR BODY PART AFFECTED</u> 2 - Congestive heart failure 1 - for my heart
2	<u>MECHANISM OF DRUG'S ACTION</u> 2 - if specific, e.g. slows heart and causes it to pump more blood 1 - if general
1	<u>DIRECTIONS</u>
N/A	<u>SPECIAL ADMINISTRATION INSTRUCTIONS</u>
1	<u>REGULARLY</u>
2	<u>REASON</u> Only if take regularly 2 - if specific, e.g. to keep heart working efficiently
N/A	<u>SPECIAL PRECAUTIONS</u> <u>SIDE EFFECTS</u>
N/A	<u>FOODS ADD OR AVOID</u>
N/A	<u>ALCOHOL</u>
1	<u>OTC'S AVOID OR CHECK</u> Antacids
N/A	<u>OTHER</u>
2	<u>SYMPTOMS TO BE AWARE OF</u> loss of appetite nausea/vomitting/diarrhea spells of weakness tiredness vision changes
N/A	<u>STORAGE</u>
N/A	<u>OTHER</u>
12	<u>TOTAL POSSIBLE MARK</u>

x/5 times 2

Mark	
1	<u>NAME OF DRUG</u>
2	<u>CONDITION OR BODY PART AFFECTED</u>
2	<u>MECHANISM OF DRUG'S ACTION</u> 2 - if specific such as lowers amount of fats in the blood
1	<u>DIRECTIONS</u>
1	<u>SPECIAL ADMINISTRATION INSTRUCTIONS</u> food or milk
1	<u>REGULARLY</u>
2	<u>REASON</u> Only if take regularly 2 - if specific such as to prevent high levels of fats and complications 1 - if general
1	<u>SPECIAL PRECAUTIONS</u> <u>SIDE EFFECTS</u> drowsiness or dizziness
N/A	<u>FOODS ADD OR AVOID</u>
N/A	<u>ALCOHOL</u>
N/A	<u>OTC'S AVOID OR CHECK</u>
N/A	<u>OTHER</u>
2	<u>SYMPTOMS TO BE AWARE OF</u> skin rash x/2 times 2 muscle or joint aching
1	<u>STORAGE</u> away from heat
N/A	<u>OTHER</u>
14	<u>TOTAL POSSIBLE MARK</u>

Mark	
1	<u>NAME OF DRUG</u>
2	<u>CONDITION OR BODY PART AFFECTED</u> 2 if specific such as arthritis or inflammation in joint 1 if general such as pain
2	<u>MECHANISM OF DRUG'S ACTION</u> 2 marks for those such as reduces inflammation, swelling and pain 1 mark for "pain reliever" only
1	<u>DIRECTIONS</u>
2	<u>SPECIAL ADMINISTRATION INSTRUCTIONS</u> 1 - food 1 - evenly spaced. AM and bedtime dosing
1	<u>REGULARLY</u>
2	<u>REASON</u> Only if take regularly 2 marks - inflammation not always associated with pain 1 mark - pain will come back
2	<u>SPECIAL PRECAUTIONS</u> <u>SIDE EFFECTS</u> 1 - dizziness or drowsiness 1 - headache
N/A	<u>FOODS ADD OR AVOID</u>
1	<u>ALCOHOL</u>
N/A	<u>OTC'S AVOID OR CHECK</u>
N/A	<u>OTHER</u>
2	<u>SYMPTOMS TO BE AWARE OF</u> ringing in ears black stools or blood Mark x/6 times 2 sore throat/fever weight gain mouth sores change in eyesight
N/A	<u>STORAGE</u>
N/A	<u>OTHER</u>
16	<u>TOTAL POSSIBLE MARK</u>

Mark	
1	<u>NAME OF DRUG</u>
2	<u>CONDITION OR BODY PART AFFECTED</u> 2- because on drug that causes loss of K
2	<u>MECHANISM OF DRUG'S ACTION</u> replaces potassium
1	<u>DIRECTIONS</u>
2	<u>SPECIAL ADMINISTRATION INSTRUCTIONS</u> 1 - swallow whole 1 - full glass water, or after meals
1	<u>REGULARLY</u>
2	<u>REASON</u> Only if take regularly maintain level
N/A	<u>SPECIAL PRECAUTIONS</u> <u>SIDE EFFECTS</u>
N/A	<u>FOODS ADD OR AVOID</u>
N/A	<u>ALCOHOL</u>
N/A	<u>OTC'S AVOID OR CHECK</u>
N/A	<u>OTHER</u>
2	<u>SYMPTOMS TO BE AWARE OF</u> difficulty swallowing pills re bowel movements heaviness or tingling in legs.
N/A	<u>STORAGE</u>
N/A	<u>OTHER</u>
13	<u>TOTAL POSSIBLE MARK</u>

B. Balderston
Masters 77-79

KNOWLEDGE SCORING FOR: *CHLOROTHIAZIDE
*HYDROCHLOROTHIAZIDE *FUROSAMIDE *CHLORTHALIDONE

Mark	
1	<u>NAME OF DRUG</u>
2	<u>CONDITION OR BODY PART AFFECTED</u> 2 - if specific, e.g. fluid retention from CHF or hypertension 1 - if general, e.g. swelling
2	<u>MECHANISM OF DRUG'S ACTION</u> 2 if kidneys or causes loss of extra water 1 if general
1	<u>DIRECTIONS</u>
2	<u>SPECIAL ADMINISTRATION INSTRUCTIONS</u> 1 - AM (and afternoon if indicated) 2 - food or milk
1	<u>REGULARLY</u>
2	<u>REASON</u> Only if take regularly 2 - if specific, e.g. prevents fluid build up 1 - if general
2	<u>SPECIAL PRECAUTIONS</u> <u>SIDE EFFECTS</u> 1 - dizziness 1 - potassium loss - weakness/cramps eat K foods
1	<u>FOODS ADD OR AVOID</u> salt
1	<u>ALCOHOL</u>
1	<u>OTC'S AVOID OR CHECK</u> cough and cold; salt (if applicable)
N/A	<u>OTHER</u>
2	<u>SYMPTOMS TO BE AWARE OF</u> loss of appetite mark is x/3 times 2 sharp pain in joint dry mouth/excessive thirst
N/A	<u>STORAGE</u>
	<u>OTHER</u>
	<u>TOTAL POSSIBLE MARK</u> is out of 18 if pills taken regularly is out of 16 if pills taken prn

Mark	
1	<u>NAME OF DRUG</u>
2	<u>CONDITION OR BODY PART AFFECTED</u> 2 if specific eg: fluid retention from GHF, HT etc. 1 if "for swelling" only
2	<u>MECHANISM OF DRUG'S ACTION</u> 2 - kidneys - loss of excess fluid 1 - if general
1	<u>DIRECTIONS</u>
1	<u>SPECIAL ADMINISTRATION INSTRUCTIONS</u> food
1	<u>REGULARLY</u>
2	<u>REASON</u> Only if take regularly 2 - if specific such as prevents fluid build-up
N/A	<u>SPECIAL PRECAUTIONS</u> <u>SIDE EFFECTS</u>
1	<u>FOODS ADD OR AVOID</u> salt
1	<u>ALCOHOL</u>
1	<u>OTC'S AVOID OR CHECK</u> couth and cold remedies
N/A	<u>OTHER</u>
2	<u>SYMPTOMS TO BE AWARE OF</u> dry mouth drowsiness skin rash Mark x/3 times 2
N/A	<u>STORAGE</u>
N/A	<u>OTHER</u>
15	<u>TOTAL POSSIBLE MARK</u>

APPENDIX I
EXAMPLES OF CALCULATIONS PERFORMED
FOR STUDY VARIABLES

KNOWLEDGE SCORE DETERMINATION

Example: FENOPROFEN

	<u>Maximum Mark</u>	<u>Correct Responses</u>	
		<u>Telephone Interview</u>	<u>Home Interview</u>
Name	1	0	1
Condition	2	1	1
Mechanism	2	0	1
Directions	1	1	1
Special Administration	2	2	1
Regularly	1	1	1
Reason	2	2	2
Side Effects	1	1	0
Foods Add/Avoid	N/A	-	0
Alcohol	1	0	0
OTC's	N/A	-	-
Other	N/A	-	-
Symptoms	2	$3/4 \times 2 = 1.5$	$1/4 \times 2 = .5$
Storage	N/A	-	-
Total Correct Responses		9.5	8.5
Maximum Knowledge Score		15	15
Drug Score		9.5/15	8.5/15
Knowledge Score (%)		63%	57%

COMPLAINACE SCORE DETERMINATION (PILL COUNT)*

A = theoretical number of doses consumed by patient if he consumed all doses intended during time interval.

B = number of doses in patients possession upon entry into study (number dispensed plus number remaining from any previous prescription).

C = number of doses remaining at pill count

D = number of doses consumed (B-C)

E = absolute variance ($|D-A|$)

Score = $1 - (E \div A)$ (100% = no deviation from theoretical count)

*adapted from Ludy (130).

ACTIVITIES SCORE DETERMINATION

Question: Do you feel the pharmacist should offer the following?

	<u>Yes</u>	<u>No</u>	<u>DK</u>
1. Ask about allergies or bad reactions		✓	
2. Tell how drug works		✓	
3. Tell what drug is for	✓		
4. Ask other drugs taking	✓		
5. Tell length of treatment		✓	
6. Tell if refills	✓		
7. Tell side effects	✓		
8. Help select OTC's	✓		
9. Tell food to add/avoid	✓		
10. Provide written instructions	✓		
11. Check dosage instructions	✓		
12. Keep family records	✓		
13. Tell special storage	✓		
Total "yes"	10		
Total asked	13		
Activities Score	10/13		

COMPLIANCE SCORE DETERMINATION (RECALL SCORE)

A = Single Dose - 1 mark if patient consumed correct amount of each scheduled dose

B = Frequency - 1 mark if patient consumed dose(s) the correct number of times during the 24 hour period
- fraction of 1 mark if less than correct

C = Timing - 1 mark if patient consumed the scheduled doses correctly in relation to meals, other medication and at the correct time of day.

$$\text{Recall Score} = \frac{A + B + C}{3} \times 100$$