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Application of clinical pharmacy in the rural community : the Livingston project

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APPLICATION OF CLINICAL PHARMACY IN THE RURAL COMMUNITY: THE LIVINGSTON PROJECT

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INTRODUCTION

During the past few years the health care delivery system of the United States has come under increasingly close scrutiny and attack by citizens concerned over the illogical distribution and cost of receiving adequate health care. Outcries for changing our current standards of health care delivery have reached the attention not only of consumer groups but also influential individuals in various levels of state and federal government. One need only look at proposed legislation (1-3) recently introduced in both the United States Senate and the House of Representatives, concerning enactment of some form of national health insurance, to grasp fully the urgency of demand for change currently facing our health care delivery patterns. A look at the startling economic picture depicting our current pattern of health care delivery further illustrates the status of the health care within the United States.

Current Status of Health Care

Statistics (Figure 1) indicate how much Americans pay annually to receive some form of health care. During the fiscal year 1970, medical expenses represented 7% of the Gross National Product (G.N.P.). While 7% may not appear to be a startling figure, it represented 67.2 billion dollars. This figure gains significance when one considers the rapid rise incurred since 1960 when medical care expenditures totaled 26.4 billion dollars, representing 5.3% of the G.N.P. Another factor adding

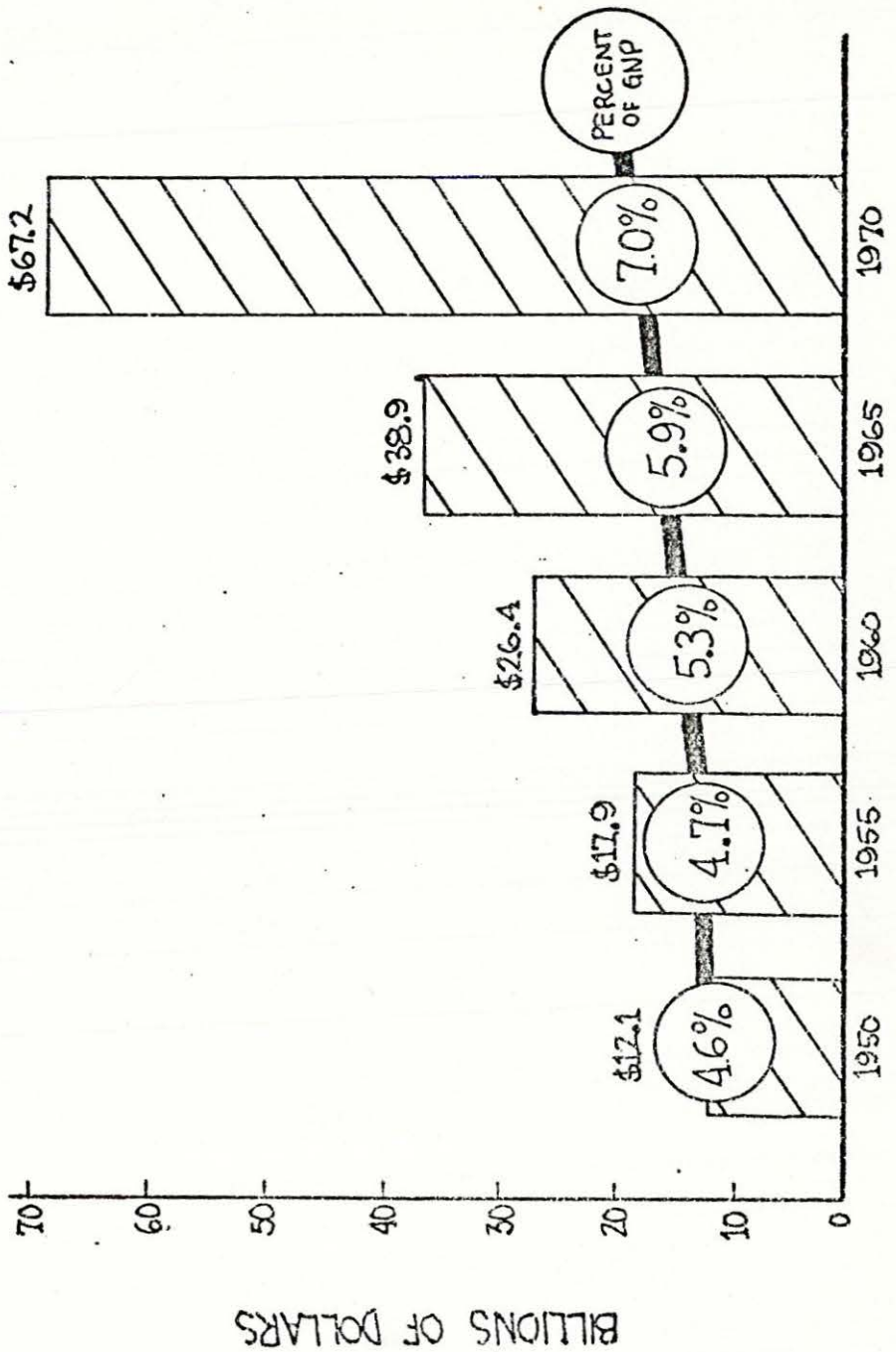

Figure 1. Medical Expenses in America, 1950-1970 (4)

to health care expenditures is inflation. Health, Education, and Welfare statistics indicate that the health care consumer paid $324 in 1970 to receive the same degree of health care costing only $216 in 1960 (Figure 2). The mention of the word consumer does not intend to imply that this is a term excluding health providers from its meaning. It must be kept in mind that practitioners in the health care professions are themselves, on occasion, consumers of the health care commodity.

Despite increasing health care expenditures and the challenge by consumers to all health professions, including pharmacy, to provide better health care, statistics indicate that the American people are not obtaining adequate health benefits from these efforts. In 1970, the United States ranked eighteenth in the world in male life expectancy at birth, eleventh in female life expectancy at birth, and thirteenth in infant mortality (4). These are hardly comforting figures in a nation having vast technological resources. Apparently, simple increases in expenditures for health care are not wholly effective.

The problems in health care have been created by a deficiency in the numbers, types and distribution of health care providers paralleling the increased demand by consumers. This problem is particularly acute for the physician. Federal and state health care studies (5-9) indicate the lack of proper and convenient medical treatment being provided to the majority of Americans. From such studies have come demands not only to train more physicians, but also to utilize existing allied health professionals better in order to meet the increasing demands of the health care consumer. A viable source for meeting the increasing needs of primary health care through better utilization of health professionals can be found in the pharmacy profession.

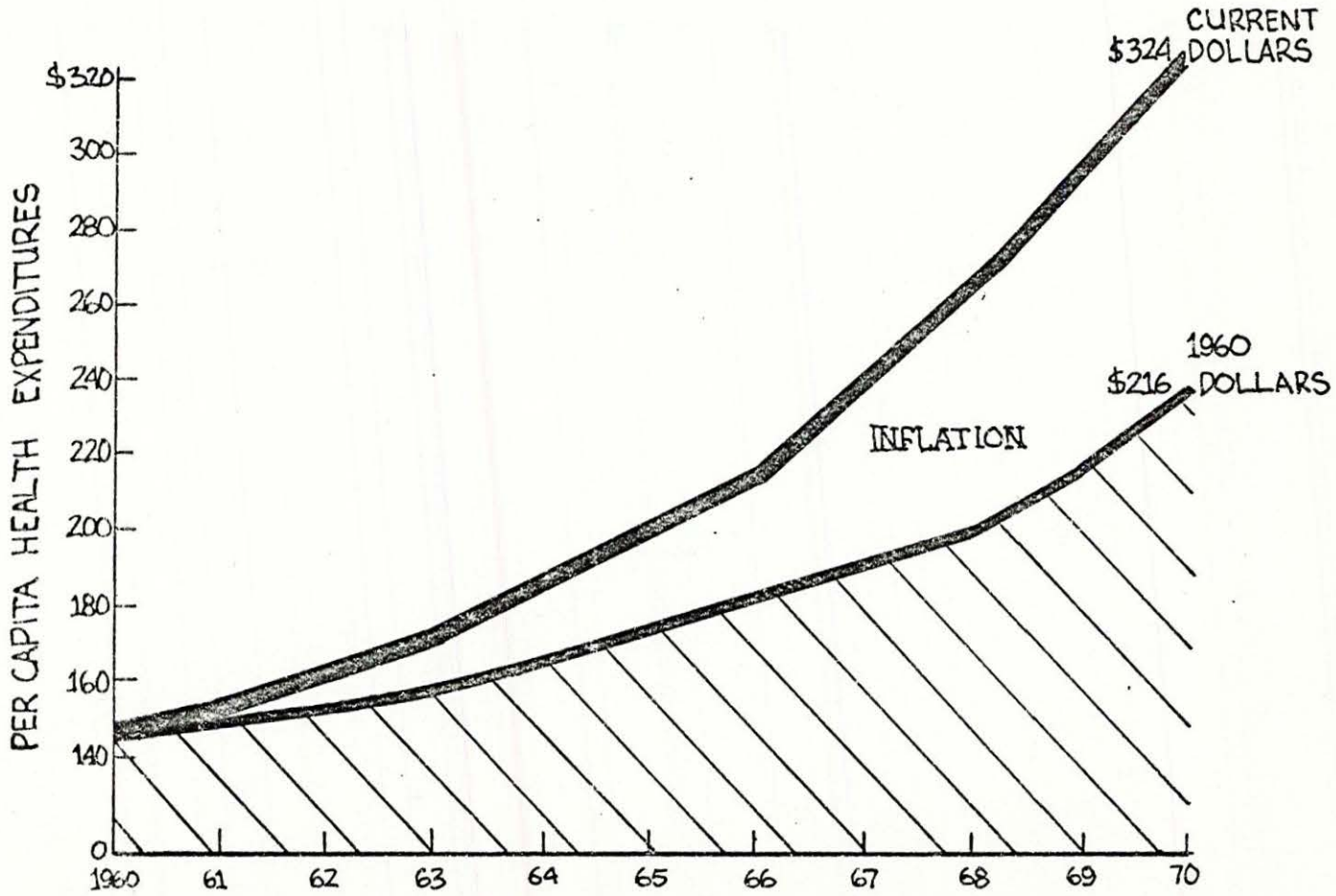

Figure 2. Effect of Inflation on Cost of Health Care in America from 1960 to 1970 (4)

Studies indicate the potential opportunity for increasing pharmacist/patient contact as the consumer's acquisition of medications, both prescribed and nonprescribed, increases. The United States per capita acquisition rate for prescribed medicines rose from 2.4 prescriptions in 1950 to 4.7 in 1967 (10). Knapp and Knapp determined, in a year long study conducted among a panel of 275 Columbus, Ohio families, that of 2,814 recorded illness episodes, 62.3% were treated with nonprescribed medications only (11). The percentage reached 70% for illnesses treated by nonprescribed drugs alone and/or in conjunction with prescribed medicaments (11).

Clinical Pharmacy

Within the past decade, a significant trend has occurred in the emphasis of pharmaceutical education, which has also been reflected in the "real world," from that of a product oriented pharmacist to one more oriented towards the patient. Many term this "clinical" pharmacy. In both educational and professional circles, the term clinical pharmacy has been grossly misused, overused, and still remains poorly defined. There is confusion as to what it is and where it can be practiced. There is debate as to whether clinical pharmacy can exist in the community setting or if it must be confined within the institutional setting.

While numerous authors have expounded on the virtues of applying clinical pharmacy to the ambulatory patient, most of the experience has been gained within the institutional setting (12-21). Few reports (22, 23) exist which have been conducted within the community setting to test consumer and/or other health care provider's acceptance of an expanded pharmacy role. The concept of clinical pharmacy in the community however

is neither unique nor even startling at this time. In 1965, Sperandio (24) discussed the possibility that clinical pharmacy included both the community and hospital practice. In clarifying a muddled opinion, he approached the problem of defining clinical pharmacy as follows:

> Dictionary definitions of the word 'clinical' differ in their complete interpretations of its meaning; yet all of them agree that direct contact with a person or persons is basic. Thus, we have clinical medicine, clinical psychology, clinical pharmacology and clinical investigations--all specifically denoting a professional service or activity involving human subjects. . .

In order to provide clinical pharmacy for the community's "living human subjects," pharmaceutical services must be designed to meet the needs of people in the community rather than merely resolving the needs of its health providers. Careful program development nurtured on the needs of the people and with empathy for their care is essential in planning the expansion of clinical pharmacy to help meet the health care problems of the community.

While problems of health care are universal in nature, the area of increasing federal interest concerns the plight of rural Americans. Undoubtedly, part of the problem has been due to increased centralization of medical manpower in the metropolitan areas, leaving small towns devoid of even the most rudimentary primary medical services. Merced County, located in California's Central Valley, serves as an example of the problem of insufficient medical care. That county has the most unfavorable physician-population ratio of any area in the state (Figure 3). There is approximately one physician for every 1400 people, with the number of physicians dwindling as some retire or tire of their workload and leave the area. This county is not unique in its medical health care problems, but serves as a graphic example of the health care

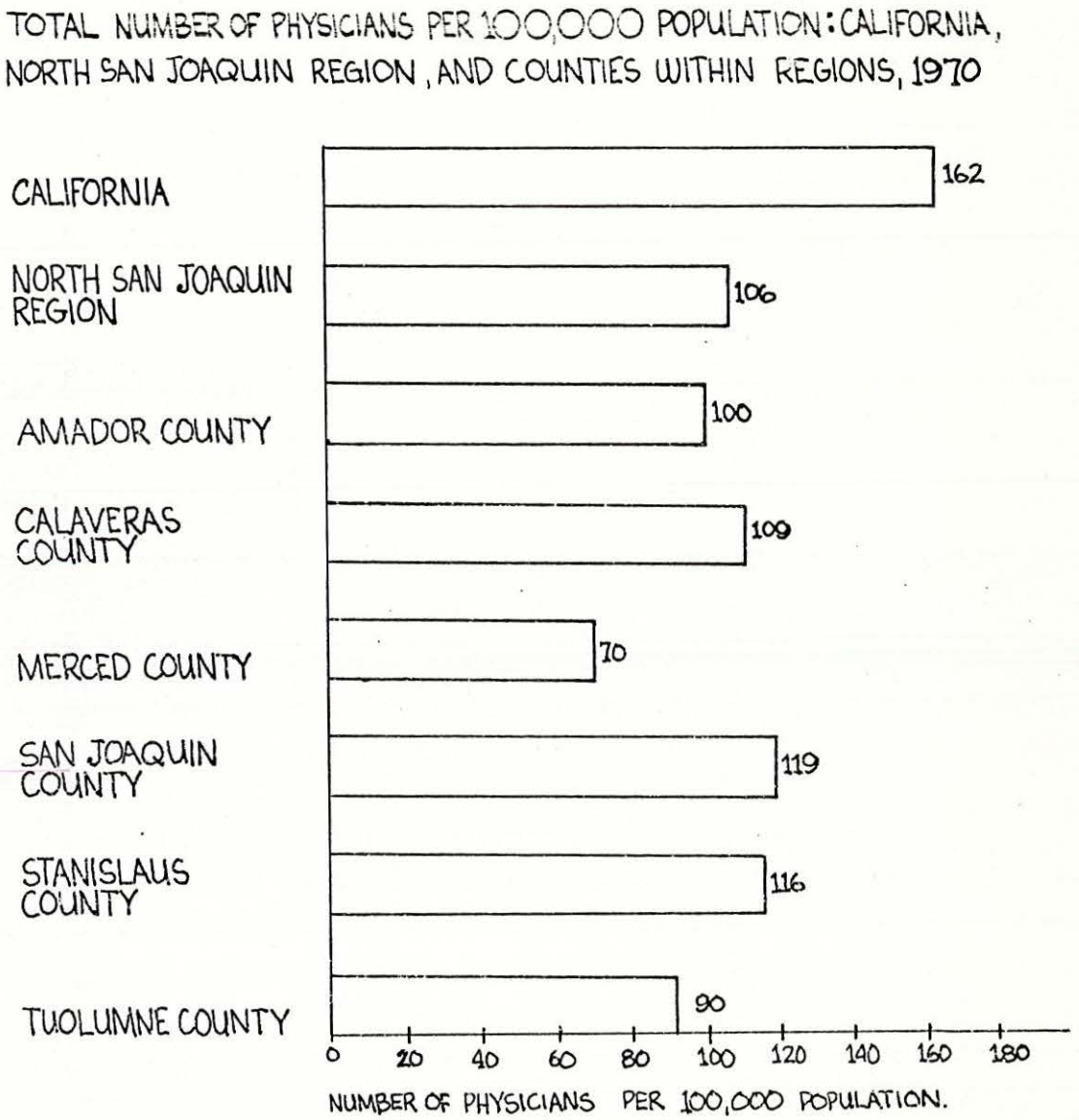

Figure 3. Physician Manpower in the North San Joaquin Comprehensive Health Planning Region (25)

delivery problems facing rural America. With an increasing consumer demand on a diminishing resource, health care in rural America has become a scarce and expensive commodity.

A Solution to the Problem

Despite the lack of primary care physician services, most rural areas, including Merced County, have easy access to pharmaceutical and other health care services provided by community pharmacists. Daily, community pharmacists encounter numbers of ambulatory patients who are under physician care, yet are responsible for maintaining their own treatment on potent and potentially dangerous medications. Many of these ambulatory patients are told little, if anything, about the relationship of their disease state to their drug therapy (26).

One report states that 51% of previously stabilized diabetics readmitted to a hospital in coma were found to have failed to take their insulin injections (27). Another, conducted on 151 tuberculosis patients attending an outpatient clinic, revealed that only 76 (50%) patients adhered to the prescribed drug therapy (28).

Our medical care system often relies on potent pharmaceuticals to help return the body to its natural equilibrium state. Drugs used improperly can lead to undesirable or even tragic consequences. Despite, or, in fact, due to the sophistication of the medical agents utilized by medicine, the incidence of drug-induced iatrogenic disorders has increased (29-37). It has been estimated that about 5% of the hospital admissions occur each year as a result of some adverse drug effect and, additionally, 10-31% of the patients in hospitals experience untoward reaction to prescribed drugs at sometime during the course of

their hospital stay (38). A survey of chronically ill patients, over 60 years of age, revealed that each patient averaged 1.5 medication errors (39). Of those taking four or more prescribed medications, 52% made errors of some manner in their medication behavior (39). Simmons (40) summarized the serious nature of the problem earlier this decade by stating:

> It is clear to me that the increasing misuse of drugs in America poses a major problem to us all. I would like to consider with you some of the dimensions of the problem. The information on this is sketchy, but rough figures are available. First of all, the American people are being dosed with approximately two billion prescriptions per year. This excludes the use of over-the-counter drugs, which, as you know, is even greater. It is common knowledge that much drug therapy avails little or nothing in terms of patient benefit and that a large number of these prescriptions have been for ineffective or only partially effective drugs. In fact, Americans spend nearly a half billion dollars a year for prescription drugs for which there is at present no valid proof of efficacy. Unfortunately, whether a drug is effective or ineffective, it can still cause adverse reactions and, not infrequently, does. It appears that the incidence of complications in drug therapy is roughly 10 percent, and that approximately 5 percent of patients admitted to the medical services of general hospitals are admitted because of serious drug reactions. It is estimated that approximately one and a half million hospital admissions per year are necessitated by the diseases caused by drugs.

Failures by patients either to adhere to their drug therapy or to benefit from the desired therapeutic effects have resulted from confusion, misunderstanding, lack of expertise, human error, or idiosyncrasies. Preventive medicine reverts to crisis intervention when a patient fails to achieve the desired therapeutic effect because of an unfilled prescription, improperly administered medication, or simultaneous administration of interacting medications.

Most people perceive preventive medicine as involving only the prevention of disease before it starts; this is primary prevention. While the pharmacist has traditionally fulfilled a role in the primary

prevention of disease, he may also participate in secondary and tertiary preventive medicine. In essence (41):

> . . . With early detection and treatment, much can be done to prevent complications from occurring and leading to worsening of the patient's condition (secondary prevention). Certainly, a great deal can be done to limit the patient's disability and to provide him with rehabilitation measures which will enable him to carry on his everyday activities (tertiary prevention).

Pharmacists dispense the rehabilitation measures (potent medications) necessary for many individuals to carry on daily activities, and offer information essential for patient compliance; compliance which may prevent the worsening of a disease state. Secondary and tertiary preventive medicine offer two means by which a pharmacist can diminish the probability of preventive medicine reverting back to crisis intervention.

One approach towards preventing this problem lies in education. Given the facts, a patient can and should be in a position to comprehend better the rationale of his particular drug therapy as well as understanding the serious consequences of either drug misuse or drug abuse. A pharmacist stands out as the most readily available source to prevent drug interactions and to advise patients as how best to administer their medications. Citizens of a community will visit a pharmacy with a frequency which far exceeds their visits to any other health facility (42). Kabat (43) verified this claim in a survey of adults in urban and rural areas of Minnesota. Results showed that 60% of those interviewed visited a pharmacy at least weekly and over 90% at least monthly. This provides an opportunity for a community pharmacist to expand his role as a "clinical pharmacist." It calls for him to be dedicated to achieving a more direct relationship with the patient in respect to identification and correction of drug misuse and abuse, as well as

providing essential health care advice to the people of his community.

Another role for the "clinical pharmacist" is that of being a drug consultant to the patient. The pharmacist must go beyond merely explaining the mechanism of action of various medicines in order to assist health practitioners in prescribing the best drug therapy. It is the pharmacist's responsibility to insure that the patient understands how to utilize the medication, why he should be taking it, the duration of time he should continue taking the drug, special storage requirements, and common side reactions which might occur due to this medication or other substances being consumed. Today, the consumer of medicinals questions and demands to know more about the medication he must self-administer. People have been told what to do medically all their lives with little or no understanding as to the reasons. The educational process allows them to cope better with their particular medical problems and the medications which drastically alter the body's natural and diseased states. Drug education can keep a medicinal agent serving the medical needs of the patient rather than the patient serving the needs of the drug.

In essence, the community pharmacist with his pharmaceutical training, continued education and updating, and community location, can become the first contact or entry into the health care delivery system, while coordinating or providing services vital for preventive medicine. The Honorable Paul G. Rogers (44), Chairman of the Subcommittee on Public Health and Environment for the United States House of Representatives, stated at the 1972 annual meeting of the American Association of Colleges of Pharmacy in Houston, Texas:

. . . I believe that the pharmacist must assume far greater

> responsibilities inside and outside the pharmacy, both in his own community and on the national level. Our country's increasing maldistribution of health personnel has, in many areas, left the pharmacist as the lone health professional in his community.

What Congressman Rogers has stated can be condensed into a single word: innovation. At no other time in our past has rural health care been in more need for innovative thoughts which will provide the impetus, if not the outright solutions, for making quality health care available, acceptable, and accountable to the people. Certainly, if pharmacy is to continue playing a viable role in the nation's health care, pharmacists must seek ways to provide improved pharmaceutical care, as well as to expand their services into areas void of adequate medical coverage. In order to attain these goals, undoubtedly certain barriers imposed by either professional jealousy, ego, or legal restrictions will have to be altered or removed. Health care does not exist for the benefit of the provider, but for the care of the patient. This statement has been implanted at all levels of government by the consumers decree that health care is the right of the people, and not a privilege.

Pharmacists must seek opportunities to demonstrate their potential for expanded responsibilities in delivering primary health care. The profession cannot afford the luxury of awaiting an invitation to display its potential skills. Being realistic, not every physician, pharmacist, or community may be receptive to altering an existing health care delivery system through new programs utilizing the pharmacist. Opportunities, however, do exist.

The rural community of Livingston, located in California's Central San Joaquin Valley, has been confronted by an acute medical crisis and has met the challenge through innovative medical care over

the past several years. This community has provided one experimental location in which to demonstrate pharmacy's potential.

Livingston Community Health Service Clinic

Just prior to the end of the last decade, the community of Livingston faced the reality of increasing medical expenses and decreasing medical care. For nearly 24 years, there had been one general practitioner in Livingston who attempted to serve the medical needs of the town of 3000 and the surrounding area which included another 9000 people. Unable to attract a partner for eight years, and a successor during the last four years, the physician had no alternative but to see up to 75 patients a day. Exhausted from his workload, Livingston's physician decided to accept a residency in Psychiatry in San Francisco. For one year, from September 1969 to September 1970, he commuted the 100 miles from San Francisco on evenings and weekends to maintain, as best he could under the circumstances, an adequate level of medical care for the community. With a date of September 1970 set for his total withdrawal from general practice, the community was faced with the prospect of being without medical service.

During the months of June through October 1969, a faculty member and several medical students from Stanford University, with the cooperation of the local doctor, developed a free clinic for migrant workers. This clinic cared for over 1000 patients during a four month period, despite operating only three evenings each week. The Livingston Community Health Services developed from this first experimental operation between Livingston and Stanford. Dialogue continued between Livingston and Stanford as to establishing some cooperative links which

could provide ongoing care for Livingston's surrounding population, and fill the vacuum created by the physician's departure.

Plans were proposed for the development of a health center at Livingston in the form of a nonprofit corporation directed by a representative group of community leaders. Stanford University would participate in a collaborative role to assist in the initiation and development of the center. The Livingston community responded by the formation of a committee and began work to establish the new health center. This committee set down four basic principles for the center (45):

1. The center should be community controlled and responsive to the needs of the population. This allows the people of the area to decide what services and programs it wants and can afford.

2. The center should be self-supporting. This establishes the intention to avoid dependence on direct government aid such as Office of Economic Opportunity (O.E.O.) centers receive, because of the uncertainty of continued funding and a loss of community responsibility.

3. The center shall serve a geographically defined population. This principle was to avoid overloading the center and to assure that the people who control the center would be served by it. The boundary was established as the Livingston High School District, with the addition of an area to the west to encompass the farm camps of E. & J. Gallo.

4. The center will be operated to serve the entire community. This reflects the community's desire to avoid the traditional pattern of one quality of care for the rich, another for the poor. Through innovative use of health professionals, the administrative techniques, and operating efficiencies, it is felt that quality care can be brought within the reach of all citizens.

Although serving as a "geographically defined population," the Livingston Community High School District provided a reasonable testing area for studying various ethnic attitudes towards health care delivery. While

a majority of Livingston's population could be classified as Caucasian, minority groups such as Mexican-Americans or Mexicans (20.1%), Japanese-American (3.8%), and Portuguese (7.6%) comprised a considerable portion of Livingston's health care consumers. This diversified ethnic population provided a fair means for determining acceptance of new approaches for expanded pharmacy services in rural settings.

In addition to these principles, the committee and the community delineated the following concepts (45):

a. The community should be provided with full information about the center's policies and programs. All aspects of the operation should be continually reviewed and evaluated.

b. Comprehensive services should be the goal. This means that social services, dental services, health education, preventive medicine, transportation, etc., should be added to a full complement of the more traditional medical services as quickly as possible. [Author's comment: Take note that there is a conspicuous absence of the mention of any type of pharmaceutical services in this goal.]

c. The clinic will operate on a fee for service basis for an interim period until data can be generated to plan a prepaid capitation system.

d. All doctors and staff members are to be salaried.

e. Care is to be centered around the family unit.

On August 3, 1970, the clinic became a legal reality as a community board was incorporated under the name of Livingston Community Health Services. Responsibility for the operation of the nonprofit Livingston Community Health Services resided with the consumer-based Board of Directors. Board membership consisted of a group of residents in the Livingston Community High School District appointed or elected to serve a two year Board term from one of the following community organizations:

Chamber of Commerce
American Legion
Lions Club

Rotary Club
Senior Citizens
Japanese-American Citizens League
Latin-American Club
Portuguese (S.P.R.E.)
Livingston Community Action Council
Livingston Neighborhood Service Center
Delhi Neighborhood Service Center
Self-Help Housing
Foster Farms Poultry Workers Union
United Farm Workers
County Medical Association
High School Student Body
Parent Advisory Board--O.E.O. Migrant Day Care Center
Volunteer Firemen
St. Jude's Parents' Club Faculty and Employees
Livingston High School P.T.A., Faculty and Employees
Filipino Community

There were an additional ten positions at large to insure that the people living in the outlying regions of the district had representation. The officers of the corporation were elected by the board.

Each month the Board of Directors met to discuss the business of the clinic. The major task of controlling the operation of the center and making recommendations to the board was handled by committee. Staffing for many of the positions on the various committees came from community members who were currently not board members. In addition, several of the committees were broken up into subcommittees. Many community residents were also involved in this work. Committee structure consisted of the following: finance, personnel, grievance, fee schedules, professional advisory, public relations information, building, community development, outreach, planning, and services. In order to facilitate dialogue between the clinic, the community board, and the community in general, a young business school graduate was employed to serve as a business administrator of the Livingston Community Health Services. This administrator's primary duties were to insure the

solvency of the clinic and to help determine the economic feasibility of new and expanded programs.

The community board proved to be an effective instrument for organization by conducting fund raising drives and projects which secured enough capital to acquire the needed facilities. Once facilities were acquired, the Livingston Community Health Services Clinic still had the task of acquiring a staff. From July 1, 1970 to September 1, 1970, a group of Stanford medical students and faculty members began seeing patients in the name of the Livingston Community Health Services to help the center get started. On September 1, an internist who had previously been in private practice in a city north of Livingston, came on the staff full time as Executive Director. Since the clinic's inception, the resident medical staff has been aided by medical students who came to Livingston as part of their training in community health. They worked directly under medical staff supervision and had the opportunity to observe and to participate in the delivery of primary care in a rural area. Until June 1972, Stanford also supplied the clinic with a full time resident in internal medicine. Another full time physician was added to the staff under the auspices of the National Health Services Corps. In addition to the two full time physicians at the clinic, area physicians came at regular intervals to conduct clinics in special services such as pediatrics, obstetrics and gynecology, EENT, orthopedics, surgery, and neurology. Stanford faculty members also came to the Livingston Community Health Services Clinic regularly for consultation.

Other staff members who worked full time at the center included a registered nurse, a licensed vocational nurse, a licensed medical

technologist, a licensed x-ray technologist, and a business staff of three who worked with the business administrator. In addition, several high school students were employed part time to handle secretarial services.

After the successful operation of the Livingston Community Health Services for the first two years, the Board of Directors and the citizens of Livingston recognized the need to plan carefully for future growth and development. The time seemed right for some creative thought and input into the planning of Livingston's pharmaceutical care. It was in this period that the University of the Pacific School of Pharmacy became actively involved with the Livingston Community Health Services.

The purpose of the study described in this thesis is to explore the nature and applicability of pharmaceutical support to the mission of a health services clinic in the nonurban setting. Exploratory work was designed to determine to what extent pharmaceutical services would enhance comprehensive health care service and, more specifically, exactly what needs existed that might be fulfilled by a community pharmacist with a "clinical" background.

Chapter 2

EXPERIMENTAL METHOD

During the Fall of 1971, a graduate class at the University of the Pacific School of Pharmacy studied various modes of health care delivery. During the course of classroom discussion, a great deal of interest centered on the Livingston Clinic and its unique administrative approach towards consumer control of medical facilities and services. Dean Ivan Rowland at the University of the Pacific School of Pharmacy had long advocated a stronger role for the community rural pharmacist in primary care (46-47). His interest was keen in taking a more comprehensive look at the Clinic and exploring the possibilities for innovative pharmaceutical care. At that time, no pharmacy programs were being conducted or even planned at the Livingston Community Health Services Clinic. With Livingston located only 65 miles south of the School of Pharmacy, arrangements were made for selected pharmacy graduate students at the University of the Pacific to meet with the staff of the Livingston Community Health Services to exchange ideas. This dialogue stimulated interest to see what could be done in the area of experimental pharmaceutical services at Livingston.

Based on the goals of the Livingston committee,

> . . . to promote optimum health in the community through an active program of education; to prevent illness and injuries through an active program which educates people to seek early diagnostic examination; to provide services for early detection of illness services for treatment of diseases

and injuries, and services for rehabilitation . . .

the University of the Pacific School of Pharmacy faced an unique series of challenges. These were:

1. To explore and pursue areas of health care which a rural pharmacist could and should be providing the people of his community.

2. To develop these new program goals and apply their principles in an actual setting to determine patient and physician acceptance.

3. To demonstrate whether these new pharmaceutical goals could be developed within the physical structure of a community pharmacy.

4. To demonstrate how a pharmacist could contribute his talents and knowledge to enhance the health care of patients in addition to the customary role of distributing medications.

Expanded pharmaceutical care was initiated at the Livingston Community Health Services Clinic in January 1972. A graduate student from the University arrived to study the feasibility of developing a clinical pharmacy program within the clinic and the community.

Objectives of the Livingston Project

Rather than pursuing several of the potential avenues for clinical pharmacy experimentation, four specific objectives were identified for Livingston. The four objectives were:

1. The utilization of a community pharmacist as a screening agent for the clinician.

2. The community pharmacist as an extension of the clinic into the community.

3. The demonstration of a community pharmacist's role as a public health educator and coordinator.

4. The enhanced capability of a community pharmacist as a health consultant.

Each objective shared the goal of preventive rather than crisis medicine, in which the pharmacist provided some solution to a health care problem or need. The clinic and the community, as a laboratory setting, offered the opportunity to apply these principles of community "clinical" pharmacy within a realistic environment and to ascertain patient and physician acceptance of a community pharmacist's expanded role in patient care. It seemed that this role might supplement, if not replace, the need for a highly trained pharmacist to be confined by tradition and law to a distribution function.

Screening

The first objective in the expansion of the clinical pharmacy program at Livingston concerned the pharmacist in pre- and post-physician interviews with patients at the Livingston Community Health Services Clinic. Goals of this screening process were to obtain information which might assist the physician in making the diagnosis and/or prescribing for the patient; and to explain to a patient the significance of their particular drug therapy as well as to indicate any precautions or instructions necessary to obtain the desired drug response. A prototype for this pharmaceutical service has been demonstrated and discussed by Lesshafft (48). His outline (Appendix A, p. 95) for a pre-examination interview provided an example for a questionnaire utilized at the clinic.

Pre-physician patient interviews were conducted in treatment rooms at the Livingston Community Health Services Clinic. Shortly after the nurse finished transcribing the patient's vital signs and chief complaint, the pharmacist conducted an interview utilizing the patient's

chart, and two forms (Appendixes B, p. 98 and C, p. 100). The patient's chart provided valuable information concerning the drugs which had been prescribed, the length of time such medications had been taken, duration of time between authorized renewals, current and past diseases of the patient, results of previous clinical and laboratory tests, and any precautionary notes written by the physician.

The nurse introduced the pharmacist as a member of the Livingston Community Health Service Clinic. She indicated that he was present to obtain drug information about the patient for the physicians, as well as to answer any questions the patient might have concerning medicinal agents. On several occasions a bilingual health aide from the clinic assisted in questioning and talking with patients who were conversive in only Spanish or Portuguese.

One of the primary goals of the pre-physician interview was to compile as complete a drug history as possible in order to assist the physician in the selection of the proper drug therapy for the patient. To attain this goal, questions were directed towards the patient concerning:

1. Allergies to either drugs or food.
2. Drugs currently being taken including over-the-counter medications (OTC).
3. Drugs given in the past or used extensively including OTC medications.
4. Refills needed on currently administered medications.
5. Symptoms which might be manifested by a particular drug reaction.
6. Symptoms concerning their chief complaint; these were compared with nurse's notes in patient's chart.
7. Questions the patient might have concerning either

their medications or pharmacy in general.

The average duration of conversation between the pharmacist and patient in over 100 contacts was approximately ten minutes with the extremes being three minutes to one-half hour. Any comments which would prove beneficial or would assist the physician either in his diagnosing of the patient's problem or in his selection of drug therapy were recorded in the patient's chart and initialed by the pharmacist.

The pharmacist then screened the patient's drug history for any possible drug interactions or modifications of routine lab tests run at the clinic. On several occasions the pharmacist assisted with the selection of a patient's drug therapy or offered the medical staff suggestions concerning therapeutic alternatives in treating a particular individual. Following the physician's selection of drug therapy, the pharmacist returned to the examining room in order to advise the patient on the proper use of his medication. The need for patients to have a concluding pharmaceutical consultation on the proper use of their medications has been illustrated by Malahy (16), Clinite and Kabat (33), Cole (49), and Madden (23).

Suggestions were made concerning the time of administration of the medication, proper storage, duration of time to take the medication as well as precautions; e.g., the possibility of drowsiness when driving while taking antihistamines, possible side effects, and suggestions (such as taking certain medications on an empty stomach or after a meal) which would benefit the patient. Through the use of pre- and post-physician interviews, the possible use of the pharmacist as a basic screening agent was demonstrated.

Outreach

A follow-up on pharmaceutical service is a necessity in comprehensive health care. This type of service includes ongoing drug advice to patients to insure that no overt adverse reaction occurs and that the patient continues to take the medication properly with the desired therapeutic results. This mechanism is vital to the success of medical treatment for both acute and chronic illnesses. Improper drug utilization may result in a controlled or treated disease state requiring additional medical care. Such results are inconsistent with the concept of preventive medicine.

The second objective of the clinical pharmacy program at Livingston, that of "outreach," was based on a referral system established by the physicians. Charts of patients released to home care following either hospitalization or extensive clinical care were referred to the pharmacist early in the week by the physicians. Physicians also referred to the pharmacist the charts of patients considered to present problems of drug management due to either the complexity of the therapy, the potency of the medication, or the patient's inability to comprehend the prescribed therapy. These charts contained valuable information such as the patient's various complaints and illnesses, previous medications, current diagnosis, known allergies, and the current course of therapy. This data permitted the pharmacist to take a more constructive role in monitoring the patient's therapeutic progress. Arrangements were then made for the pharmacist to accompany a health aide to visit with these particular patients. The health aides had training in recording vital signs on a sheet which they returned to the physicians at the clinic. The aides were of added assistance because of their bilingual abilities.

This enabled the pharmacist to convey directions to the Spanish and Portuguese speaking segments of the Livingston Community. Information desired by the physicians concerned the patient's general physical condition, apparent success or failure in complying with his medical therapy, and the appearance or lack of desired therapeutic effects. These points constituted the framework for the second objective--that of involving the pharmacist as an extension of the clinic into the community. This approach demonstrated the abilities of a pharmacist to utilize skills in preventive medicine; i.e., identifying a potential problem before it necessitated more complicated and expensive medical assistance. Failure to take the prescribed medication, difficulty in complying with directions or inability to comprehend the physician's dictates, adverse drug reactions to the prescribed medication as well as lack of proper response to the prescribed therapy all necessitated that an expert in drug therapy periodically monitor patients. Cole (49) demonstrated a reduction of 66% deviation from prescribed drug regimen to an 8% deviation among those patients who received a consultation from a pharmacist.

Public Health Educator and Coordinator

While the concept of a pharmacist serving as a public health educator may not be new or even unique, it did comprise an integral component of a total program demonstrating how a community pharmacist could better serve his community. In Livingston, the presence of a pharmacist willing to help coordinate public health education programs filled a void. Merced County did not have a public health educator on the staff at the Department of Public Health. Because preventive

medicine relies heavily on avoiding problems and, therefore, often depends on the patient gaining knowledge through education, it was felt that the pharmacist, located in the community, could better utilize his formalized education by helping to provide this education. Such a pharmacist would accomplish this not by merely distributing health literature in his pharmacy, but, more significantly, by leaving the confines of his pharmacy to reach the people of his community through participation in and coordination of health education activities. As the most readily available health professional, the pharmacist should assume greater responsibility for disseminating public health information. Basically, the effects towards demonstrating this last point fell into two categories: (1) the pharmacist working in the public school system; (2) the pharmacist working on specific community health problems.

Public Health Educator:
School Level

A potential site for developing the concepts of preventive medicine resides in the public school system. An easy vehicle is provided for the pharmacist or any other public health educator to reach a majority of the young people, who are not only open and inquisitive, but also impressionable. It is during this period of development that many of these youths will formulate health habits which they will retain for the rest of their lives. The random approach towards health matters and health education prevalent in many high schools served as an impetus to seek a qualified individual for active involvement in junior and senior high school public health education. During high school, the amount of time devoted to such things as venereal disease and other

public health matters often is dependent upon the number of rainy days occurring during physical education classes, the teacher's attitude toward health matters, and the limitations of the teacher's education in public health. Without vital facts, it is difficult, at best, to determine correct health care habits. One need only to look at the alarming statistics (Figures 4, 5, and 6) concerning the rise of venereal disease in California and the United States to appreciate the magnitude of the problem of this one communicable disease. These statistics become even more alarming in light of the fact that venereal disease can be prevented, treated, and cured. Appropriate educational information regarding venereal diseases must be made available to more people.

One hurdle for achieving this goal in California has been partially removed with the passage in 1972 of both Assemblywoman Fong's bill AB 1468 on sex education and Assemblyman Vasconcellous' bill AB 359 concerning venereal disease education in the public school system. The problem now is the lack of enough qualified instructors to educate students in our public school systems. This is especially evident for those people living in our vast rural areas. The pharmacist is an ideal professional to educate these inquisitive minds to the areas of public health.

At Livingston, the first opportunity for demonstrating the pharmacist's capability in public health education came through the elementary school. A year prior to the arrival of the pharmacy graduate at Livingston, a program on venereal disease had been conducted for eighth grade students by a medical student from the clinic. A school psychologist working at Livingston's elementary school sought to repeat this program. Upon approaching the clinic, she was directed to meet

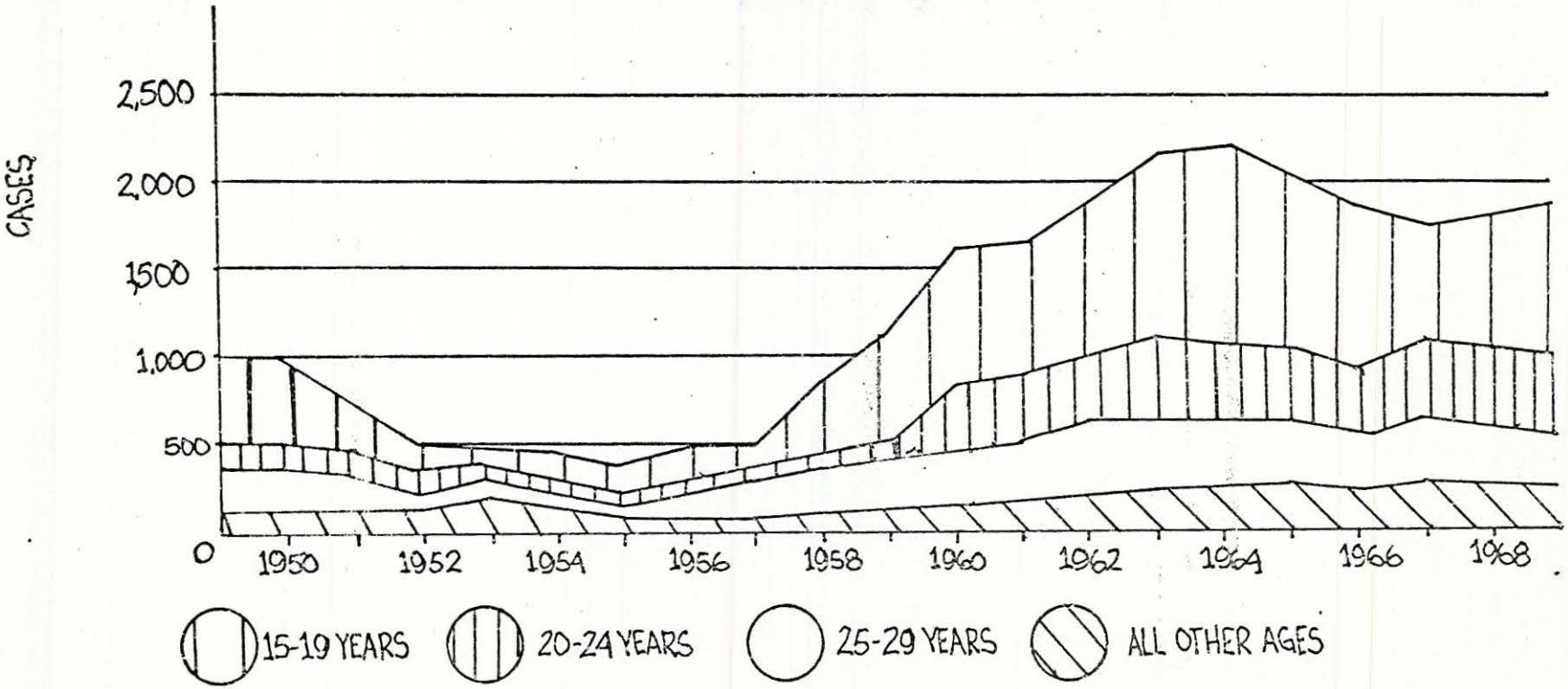

Figure 4. Rate of Incidence for Primary and Secondary Syphilis from 1950-1970 for the State of California (50)

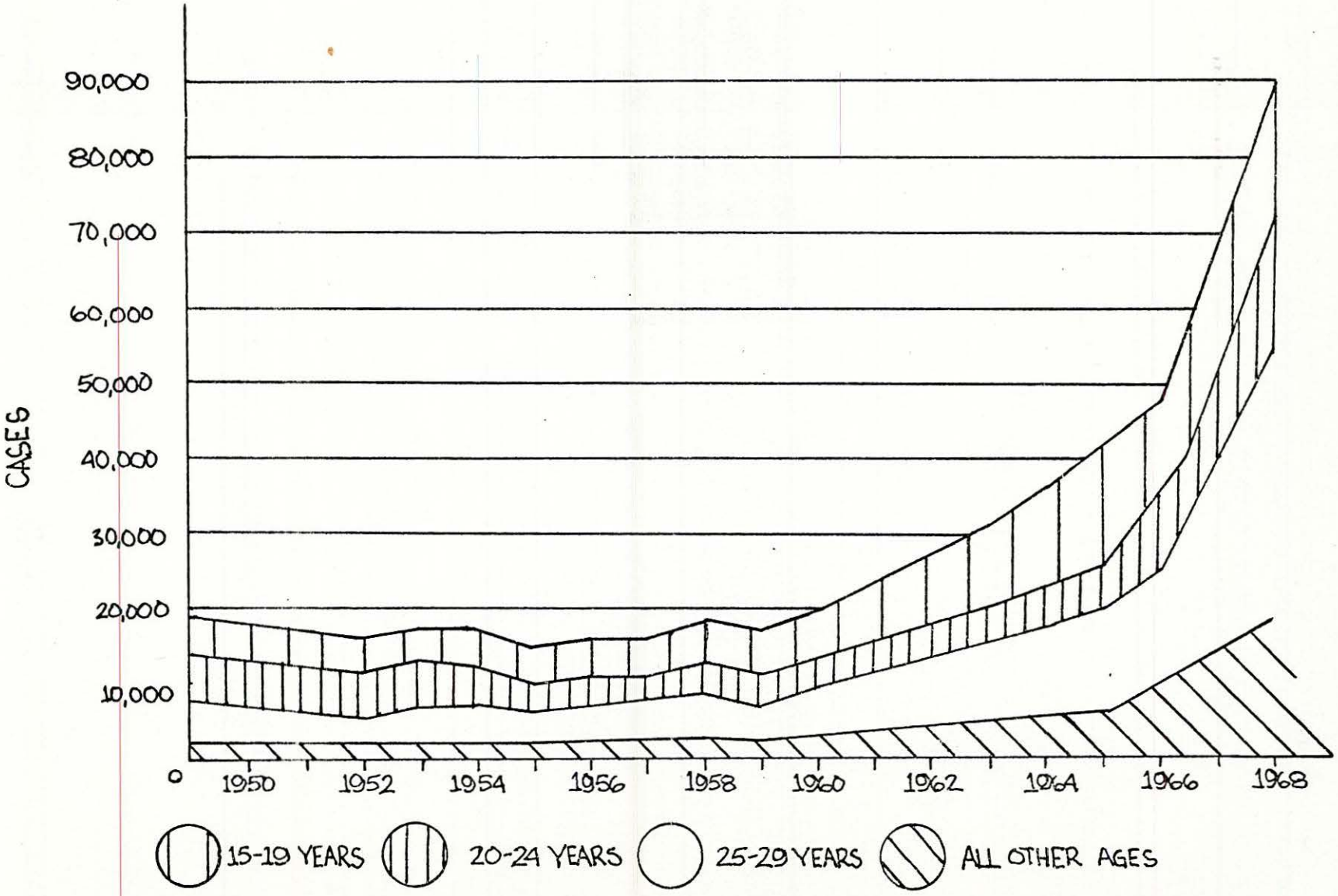

Figure 5. Rate of Incidence for Gonorrhea From 1950-1970 for the State of California (50)

FACTS: VENEREAL DISEASE IN CALIFORNIA

Problem

1. In 1971, VD topped the list of reportable communicable diseases in California for the tenth consecutive year.

2. Total venereal disease reported in California in 1971: 114,188 cases.

3. In 1971, reported syphilis was 12,538 cases; gonorrhea, 101,650.

4. Total reported cases of venereal disease for persons under 30 are over 75% of all cases:

	Under 10	10-19	20-29
1970*	209	23,194	64,075

5. From current trends for incidence of all VD, it is estimated one in ten persons aged 15-25 will have VD in 1972.

6. Reported congenital syphilis in 1971 (born with the Disease): 263

7. Number of syphilitic insane in state mental institutions: 311*

8. 1968 cost to maintain syphilitic insane in California institutions: $2,116,044*

9. Estimated aid to the syphilitic blind in California in 1967: $629,000*

10. Costs of gonorrhea have never been calculated (urethritis, prostatis, arthritis, sterility, eye infection of newborn). We do know that countless women receive outpatient treatment for acute pelvic inflammatory disease and many thousands are hospitalized to obtain treatment or hysterectomy due to chronic gonorrhea.

11. Venereal diseases involve a significantly higher rate of cancer, especially in women.

12. Control

More than four and one-half million dollars was spent on California's VD Control Program from July 1, 1969 through June 30, 1970:

Sources:		
	U.S. Public Health Service	$ 558,673
	California State	86,000
	Local Health Departments	4,038,000
	Total:	$4,682,673

Failure to control VD directly costs California taxpayers over $11,000,000 yearly. Lost wages due to VD represent another $11,000,000.

Figure 6. Summarization of Venereal Disease Statistics for California Department of Public Health, 1970 (51)

with the pharmacist. The result was his being asked to speak to eighth grade students on the symptoms, effects, prevention, and basic treatment of the venereal diseases gonorrhea and syphilis.

Arrangements were made with the State Department of Public Health in Berkeley to obtain literature in both Spanish and English (52-53). Copies were also made of a questionnaire (Appendixes D, p. 101 and E, p. 103) which would be distributed to the class along with the literature. A preliminary meeting was held with the principal of the Campus Park Elementary School to discuss the program and to review the literature and questionnaires which were to be distributed.

Faced with a time limitation of approximately 40 minutes for a class period, it was decided to base the presentation around the questionnaire (Appendixes D and E). This would allow for discussion along the lines of the symptoms of the disease, its prevention, and its treatment. More significantly, by asking for class response in participation to a question, the students became active participants rather than passive listeners. On the designated morning 45 eighth grade students and the pharmacist met for the first time. After introducing the speaker as a graduate pharmacist from the University of the Pacific School of Pharmacy, working with the Livingston Community Health Services Clinic, the teacher left the room. This was done to create a freer atmosphere between the students and the pharmacist in order to discuss and to answer questions concerning venereal disease.

To help stimulate interest and curiosity, the word prophylaxis was written on the board. This served as an introduction into the discussion and emphasized that the theme of the program concerned presentation of facts pertinent to the prevention of a serious

communicable disease. Discussion then centered around the questionnaire, with increasing class participation as more answers were provided for questions. Answers were not given as a simple True or False, but explanations were given as to the reason for the particular answer. Often one question would lead directly into a more lengthy discussion. Question 3 on the questionnaire which suggests that "the symptoms of syphilis will go away even if the person does not have proper medical treatment for the disease" serves as an example. This question led into discussion of the symptoms of syphilis as well as the necessity for prompt medical treatment. Following the questionnaire and the formal presentation, a brief summation was made regarding the symptoms, prevention, and treatment of venereal disease.

Following this initial exposure in meeting with students concerning public health education, there came a second invitation. Several students in a health care club at Livingston High School had heard of a pharmacist working at the Livingston Community Health Services Clinic and were curious as to his "new" duties and interests. During a meeting with these students, discussion centered on medications, both street drugs and proprietary medications, with respect to their use, potential harm, and actual mechanism of action. A 15 minute discussion became a 45 minute pharmaceutical presentation.

At the same time several students approached their instructor and principal requesting that a pharmacist talk to the senior history classes about drugs and drug abuse. Their argument was that while the police, physicians, and even ex-heroin addicts had all met with the students, no one had ever explained how or where a drug worked in the body. Arrangements were made with the author to meet with the high school

principal and an instructor to discuss the approach to be pursued and the literature to be distributed. The literature consisted of information compiled and edited by pharmacy students and professors at the University of the Pacific School of Pharmacy concerning known facts on the various categories of the drugs of abuse (54). The approach was one utilized by S.D.T. (Straight Drug Talk) at the University of the Pacific School of Pharmacy over the past five years. It entailed meeting with the students in the absence of any instructor in order to remove as much inhibition of discussion as possible. In addition, the class would be informed that all discussion would remain strictly confidential. Upon approval of the format and the literature, students from the health club agreed to introduce the pharmacist to their peers in the classroom. This approach had proved successful in previous drug abuse programs in order to help the pharmacist gain initial acceptance by the students.

Due to the time limit imposed by a classroom period (45 minutes), it was decided to repeat the presentation for four different classes during the day. Following a brief description of a pharmacist's educational background, interest in drug use and abuse, and the goals of preventive medicine, the initials P.C.P. (Phencyclidine), T.H.C. ($\Delta 9'$ Tetrahydrocannabinol), and L.S.D. (Lysergic Acid Diethylamide) were written on the blackboard. The members of the class were then asked if they knew what these terms meant. Discussions and questions arose from the listing of these terms and led into further discussion of various drugs. Another set of terms: tolerance, habituation, and dependence was also placed on the board and the class queried on how these terms were related to the drug scene. A blackboard was used extensively throughout the discussion to explain and diagram various actions of

drugs and sites of action in the body.

Another aspect of the presentation concerned the efficacy of street drugs as opposed to those of prescription or proprietary drugs sold in pharmacies. Much of the discussion centered on the information and research conducted by the Pacific Information Service on Street Drugs (55). Several brochures published by the Pacific Information Service on Street Drugs were utilized to point out the discrepancies of drugs sold on the street which supposedly contain one ingredient while actually containing something different. These bulletins further documented evidence indicating the discrepancies in active ingredients and dosage amounts that the various street drugs contained. With the conclusion of the period, the students were handed the pamphlet published by the Student American Pharmaceutical Association (S.A.Ph.A.) at the University of the Pacific School of Pharmacy. Arrangements were then made for students to obtain further information or to meet with the author concerning any questions they wanted to pursue in depth.

Public Health Coordinator:
Community Level

With venereal disease reaching epidemic proportions in California, it was decided to expand the public health program on venereal disease into the Livingston Community. The objectives of this expanded program were to disseminate information to an enlarged population and to determine a pharmacist's potential for serving as a public health coordinator at the community level. A target group for this venereal disease education program consisted of 2500 individuals employed at a large food processing plant in Livingston. The program was initiated by the pharmacist with the assistance of a public health nurse and two

volunteers from the Livingston Community Health Services Action Board. For two days this group handed out pamphlets and questionnaires to the employees as the shifts changed at the plant. Answers to the questionnaires were then posted in English, Spanish, and Portuguese in a centrally located cafeteria on bulletin boards located near the exits. Through the use of bilingual information on venereal disease, and with the posting of the results of the questionnaires on bulletin boards, the committee hoped to reach the greatest flow of foot traffic and therefore the greatest concentration of employees. This part of the program was then followed by a movie presentation on two nights with alternate films concerning venereal disease being shown in English and Spanish on both nights. Following the films, time was allotted to answer any questions.

When the clinic contacted the plant management for permission to conduct the program, it was well received. The next contact was with the State Department of Public Health in Berkeley to obtain bilingual literature and films on venereal disease. The literature was similar to the material previously distributed to the eighth grade class (52-53). The questionnaires (Appendixes D and E) which were utilized in the eighth grade discussion on venereal disease were reproduced for this program. After obtaining the literature, questionnaires, and films, all information was previewed by both the clinic and managerial personnel at the plant. Arrangements were then made to use a school auditorium for two evenings to show the films. In order to assure that not only the employees of the plant but that other citizens of the community would be reached and made aware of the program being conducted, a great deal of publicity went into the project. Signs were made in English and in

Spanish announcing the program and giving the specifics. Several sites for the location of these signs were selected in Livingston. The Spanish posters were posted at the theatre and the Spanish bakery; and the English posters were placed in a community pharmacy and a local grocery store. In addition, a brightly colored poster urging everybody to "spread the word and not the disease" was placed at the end of the main street. Handbills were then printed giving the specifics of the time, place, reason, and the personnel involved in the presentation of this program. These were handed out at the industrial plant along with the venereal disease information. In addition, supplies of handbills were placed at various central locations within Livingston, such as the grocery store, the pharmacy, the washer-dryer, the bakery, two barber shops, and several bars. Editors of both local newspapers serving Livingston agreed to print an article concerning the problem of venereal disease in California and the program being conducted by the clinic. The articles appeared just prior to the meeting dates (Figure 7).

Several members of the medical staff at the Livingston Community Health Services Clinic agreed to attend the nightly meetings and assist in any discussion that might occur following either the films or the distribution of the questionnaires and literature. In addition, two health aides met with the pharmacist so that they might be able to serve as translators for any discussion following the viewing of the Spanish films. The meeting with these health aides was planned to provide them with sufficient background so that they would be able to answer most of the questions concerning venereal disease with little assistance from the pharmacist. These trained health aides could then discuss with the Spanish speaking people of Livingston the serious

VD film to be shown

The Livingston Community Health Services will sponsor a film on venereal disease Wednesday, June 28, at 8 p.m. in Spanish, and 9 p.m. in English, and on Thursday, June 29, at 8 p.m. in English, and 9 p.m. in Spanish, at the Campus Park School auditorium. The showing will be free of charge.

After the showing, a pamphlet will be handed out on how to prevent, treat and cure venereal disease and a questionnaire in both languages. If anyone would like to talk privately about the disease he may call the Livingston Community Health Services. Members will be on hand during the film.

Here are a few facts about venereal disease in California: In 1971, VD topped the list of reportable communicable diseases for the tenth consecutive year. Total venereal disease reported in California in 1971 was 114,188 cases. Venereal diseases involve a significantly higher rate of cancer, especially in women. Failure to control VD directly costs California taxpayers over $11,000,000 yearly. Lost wages due to VD represent another $11,000,000.

VD Clinic Set For Livingston

LIVINGSTON — The Livingston Community Health Services (LCHS) organization will present a clinic meeting Wednesday and Thursday evenings in Livingston on curbing of venereal disease.

The clinics will be held Wednesday at 9 p.m. and Thursday at 8 p.m. in the cafeteria of Campus Park School. On Wednesday at 8 p.m. and Thursday at 9 p.m. the same demonstration will be given in Spanish.

Greg Matzen, graduate pharmacist student at the University of Pacific in Stockton, said the LCHS clinic will offer a half-hour film and free literature on prevention and treatment of the disease.

Matzen said the staff of the LCHS will be present at the meetings to answer any questions or to meet with small group discussions or interested individuals.

Venereal disease, which costs state taxpayers over $11 million to control, is the top communicable disease in California and primarily involved those under 30 years of age.

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Figure 7. Newsreleases for Venereal Disease Presentations

problems of venereal disease, without having to refer these individuals to a clinic for health information or, worse, having to say "No sẽ" (I don't know). In essence, this demonstrated the use of a pharmacist training other paramedical health professionals in the area of public health education.

Another effort to extend clinic services into the community by utilizing a pharmacist concerned several programs held at labor camps located outside Livingston. Arrangements were made between the camp advisory board and the clinic for a pharmacist to meet with the camp inhabitants to discuss venereal disease and such common disorders as bee stings, minor burns, muscle strains or aches, heat prostration, and diarrhea. During the presentation, the pharmacist would discuss the proper use and administration of various medications. To help allay any stigmas associated with venereal disease, announcements for the program mentioned that along with entertainment and refreshments that a film in Spanish, "Twenty Million Teen-Agers" would be of special interest to all teen-agers, young adults, and parents. Once again, pamphlets in Spanish were distributed. The questionnaire (Appendix E, p. 103) served as the vehicle for discussion just as it did at the presentation to the eighth grade class. The Livingston Community Health Service provided the pharmacist with a bilingual health aide to assist in translation. This public health project, along with the previous community health endeavors, relied upon the educational and organizational expertise of the pharmacist.

Pharmacist-Patient Consultation

With the exception of the community public health programs, most

of the clinical pharmacy projects at Livingston involved a pharmacist meeting on a one to one basis with a patient. In this capacity, the pharmacist served as an adviser to the patient on the various aspects of proper drug administration. The author believes that expansion of this pharmacy role will be the key to pharmacy's future. For this reason, the fourth objective of the Livingston project concerned consultation between a pharmacist and a group of patients suffering from a common chronic pathologic state. This objective was simply entitled Pharmacist-Patient Consultation.

The selection of chronic diseases for the pharmacist-patient consultation resulted from several facts. A large percentage of chronic diseases involves long term drug therapy. As the life expectancy of the American people increases, more individuals will be affected by chronic diseases. Approximately one-third of the population under 45 years of age and approximately two-thirds under 64 years of age suffer from some form of chronic disease (56). Chronic disease cases represent a significant percentage of all patient visitations. Since people must routinely obtain medications for chronic diseases, it stands to reason that the pharmacist could make a significant contribution to these patients' health care through medication consultation.

Efforts were directed towards having a pharmacist consult with several patients suffering similar chronic disease states to clarify the significance of their particular drug therapy as well as to explain the disease state itself. Emphasis was placed on explaining the drugs' mode of action, side effects, proper storage, correct times of administration, as well as to clarify and explain any possible drug interactions involving the drugs these patients were taking. Following extensive

discussion of this goal at the clinic, it was decided that the two disease states to be used for experimentation in this approach would be diabetes mellitus and hypertension. These disease states were chosen for the following reasons:

1. Patients may be administered numerous medications for therapy of both diseases.
2. Individuals suffering from the same disease may be treated by different medication regimens.
3. Patients often express misconceptions regarding the disease state and/or therapy.
4. Patients may have difficulty adhering to physician's directions and this may lead to serious complications.
5. Patients may be susceptible to drug interactions between drugs administered for diabetes and for hypertension and medications taken for other disease entities.

Deliberate efforts were made to make this encounter as similar as possible to one which a pharmacist might conduct in a small consultation room in a community pharmacy. Unfortunately there were no pharmaceutical facilities available in which these interviews could be conducted at the time of the program's inception. An air-conditioned room adjacent to the clinic was selected for the study. The dimensions of the room were approximately 15 feet by 20 feet. Furnishing consisted of a blackboard and several chairs. Physicians at the Livingston Community Health Services Clinic referred several patients for the pharmacist to contact. The first consultation would be with a small group of diabetics to be followed by a second discussion, held one month later, with patients suffering from essential hypertension. The Livingston Community Health Services Clinic had one of the receptionists contact the diabetics by telephone and letter, while the pharmacist contacted the hypertensive personally. Each person was informed of the

pharmacist's position and educational background. Each was told that the purpose of the meeting was to discuss his disease state with emphasis on information concerning his particular medications. Mention was made that no charge would be made at this time. Each session would last approximately one hour with the time being set for 10 AM on Thursday morning with a repeat at 7 PM that night if warranted by patient response. Transportation would be provided by health aides when needed. Eight diabetics were contacted by the clinic to attend the first pharmacy-patient consultation period, with five out of the eight responding favorably and attending. For the second pharmacy-patient consultation, 24 patients suffering from essential hypertension were contacted with 17 responding favorably and attending the meeting.

Besides referring certain patients for the consultation sessions, the clinic physicians also provided the pharmacist with the patients' charts. These provided the information needed to answer individual questions concerning drug therapy as well as providing reference to the particular drugs which should be mentioned and might be asked about by the patients. In order to facilitate eye contact as well as ease in listening, the chairs were arranged in a half-circle with the pharmacist facing the group. Preparation for both meetings with the patients consisted of outlining the major areas of emphasis to be discussed concerning each disease state.

Summary

Each objective or goal explored at the Livingston Community Health Services Clinic concerning a community pharmacist's clinical role has been discussed as a separate entity. Upon application, we found

each objective intermingled with the others. The concern of this project was to apply several theories based on clinical pharmacy in an operational program at the community level. The program was established in a rural community and exposed to realistic situations and consumer demands. Livingston provided a microscopic view into the rural health care consumer's demands or needs, while expressing their responses to "new" roles for a pharmacist in meeting these demands.

Chapter 3

RESULTS

The "Livingston project" was an exploratory study designed to determine the applicability of developing new "clinical" roles for the community pharmacist. The data base obtained at Livingston was insufficient to adequately test the hypothesis of acceptance by both consumers and providers of health care. However, it was hoped that the results of Livingston would stimulate further studies as to the acceptance and the economic feasibility for expanded pharmaceutical care, i.e., clinical pharmacy, at the community level.

Due to the limited sample involved in the exploratory study conducted at Livingston, the resulting data base was intended to be hypothesis-generating, rather than hypothesis-testing. The acquisition and interpretation of this data base were based on a qualitative perspective rather than as a quantitative confirmation of any hypothesis. One should note that the data applied to a specific situation covering a definite period of time. The data may not be projected to another geographical area nor to another period of time with any degree of certainty.

To some extent, questionnaires were used in order to gather data. It must be recognized that the data were gathered in order to determine whether or not a consensus existed within an extremely small population. This study was not intended to present statistical analysis based upon

the data gathered from the limited population under consideration.

While the questions comprising the questionnaires were designed carefully, the possibility existed that different respondents might have interpreted the questions within different frameworks of meanings. Implications were drawn based upon a partial return of questionnaires. It should be noted that those who failed to respond might have provided answers which were different from those who did respond.

The Pharmacist as a Public Health Educator

When considering the idea of demonstrating a pharmacist's ability to educate students, as well as his acceptance by both students and school officials to perform this role, it seemed that the most suitable proving ground would be provided in the high school setting. This premise was based on the difficulties fellow pharmacists encountered in obtaining sanction of elementary school administration for an "outsider" to come in and to instruct students in health matters. The fact that the subject matter to be discussed concerned venereal disease did not seem to ease the situation. However, four weeks after arriving at Livingston Community Health Services, the author was approached by the elementary school psychologist inquiring as to the possibility of his making a presentation in two days to a class of eighth graders.

Unfortunately, the lack of preparation time precluded acquiring a film on venereal disease available from the State Department of Public Health. Past experiences demonstrated that the viewing of a film lays the groundwork for further discussion, as well as answering basic questions concerning a disease. The film also tends to lead the students into further discussion concerning the disease, its symptoms or its

prevention. The time factor also severely affected the class attendance. Permit slips discussing the nature of the presentation had to be sent home with the students and returned with parental permission indicated. Since this significant technicality had to be accomplished over the weekend, the inevitable result was that a number of students (approximately 15 to 20) forgot to return their permission slips although stating that they had been granted parental permission. Unfortunately, these students could not attend the presentation. If school had not been ending in another two days, the program could have been moved to midweek so that the students could be reminded to return their parental permission slips.

In spite of a lack of sufficient time for preparation, class attendance on the allotted Monday morning was good. Forty-five students attended the venereal disease presentation. During the presentation, again, time was a limiting factor. Within a 45 minute class period, it was necessary to provide background information, lead a discussion on the disease, and also to answer questions. Statistics provided by the Venereal Disease Section, California State Department of Public Health (Figure 6, p. 30) indicated the risk potential of the classes' age group for the disease. The presentation centered on a classroom discussion of the questionnaire. This was done by asking each question, waiting for the class response, stating the correct answer, and most significantly, explaining the rationale behind each correct response, as well as indicating why any other response would be incorrect. After only five questions, the class exhibited little inhibition and began to engage actively in classroom discussion and questioning. The questionnaire allowed the presentation to be given in a concise, well ordered form,

and led naturally to a summation of not only the symptoms of the disease, but also as to its treatment and prevention. The pamphlets which were handed out were stamped on the back in both English and Spanish as to the location of the Merced County Department Public Health hospital where persons could receive free treatment for venereal disease. In addition, the Livingston Community Health Services Clinic was mentioned as a center to diagnose and treat persons infected or suspicious of being infected with venereal disease.

Unfortunately, insufficient time prevented designing a questionnaire to survey the students, the school administration, and the faculty as to their interests or responses to a pharmacist making a presentation on venereal disease. Nevertheless, the attentive attitude of the class, the pertinent questions these students raised, the requests by many students for more printed material for their classmates unable to attend the discussion, and the students' verbal expression of appreciation at the end of the presentation indicated success. The favorable responses given later by faculty members having students attend the presentation, the absence of negative comments, and the thanks of the school psychologist and principal for "a good job," as well as their requests for a repeat appearance during the fall semester, also indicated the acceptance of the pharmacist in providing a vital service as a public health educator in the community.

The results of several presentations on drug use and misuse made to approximately one hundred graduating high school seniors demonstrated again the relevance of a clinical pharmacist being utilized by his community as a public health educator and spokesman for preventive health care. Following the presentations, the seniors were asked to complete a

questionnaire (see Appendix F, p. 105). Of the one hundred questionnaires distributed, 24 or nearly 25% of the class did respond (Table 1). The questionnaire sought answers to several questions. One point of interest was whether the students received any new pertinent information regarding prescription, nonprescription, and "street" drugs (questions 3 and 4). Additional questions asked whether such a program involving a pharmacist should be repeated (questions 1 and 5); and, finally, when such a program would be of the most benefit (questions 2 and 5).

A significant aspect of the presentations was whether the pharmacist could communicate in his area of expertise to the students in a manner they could comprehend. Responses to questions three and four indicated students received information they could understand. Over half (13) of the responses showed that the students had "learned a great deal about drug actions." Seven other students stated a "pharmacist should be able to answer questions as he knows about drugs," while four more students expressed that they "learned more than they expected," and five others felt the "pharmacist stimulated their interest and answered their questions." Although effort was made to avoid utilizing terminology unfamiliar to the class, two students noted confusion in comprehending a few technical terms.

All of the students approved the concept of having a pharmacist repeat this program for another class as suggested in questions 1 and 5. These affirmative responses to the questions also included some interesting comments. Seven students stated that this discussion had given them the educational background needed to prevent their experimenting with illicit drugs. Nine other students felt the pharmacist "really knew what he was talking about." Nine students indicated that their desire for knowledge

Table 1

Results of a Questionnaire on the Pharmacist
As a Public Health Educator

Questions	Responses
1. Based on a pharmacist's training (5 to 6 years of school emphasizing drugs and their actions), do you feel that it would be worth your time to have a young pharmacist meet and discuss the actions of both prescription and "street" drugs?	YES 24 NO 0
2. At what point in your education should such a program be done--8th, 9th, 10th, 11th, 12th, earlier?	All responded that the program should be conducted earlier than the 12th grade.
3. Did you find this approach of a pharmacist talking on drugs worth your time? Did you learn anything new?*	YES 24 NO 0
4. Do you feel that a pharmacist can answer most of your questions concerning drugs? Did you get your questions answered satisfactorily?*	YES 24 NO 0
5. Should such a program (using a pharmacist) be repeated for other classes? If so, when? If not, why not?	YES 24 NO 0 All responded by stating earlier

*Indicated pharmacist could relate to lay public.

on how and where drugs actually worked within the body had been satisfied. Two students felt that a pharmacist was easier to relate to than any other so-called "drug" expert. A short course on drug education taught by a pharmacist was proposed by three other students. When interpreting or evaluating these student responses, it is significant to note that these students had been exposed to drug education seminars in high school, had conferred with physicians at school, had heard a presentation by an ex-addict, and had met with law enforcement officers--all dealing with the problem of drug abuse. At no time, however, had the students been exposed to a pharmacist nor had the students had any explanation as to the site of action of either legal or illegal medications.

Most of the students indicated that a pharmacist should conduct a similar program early in the school year. As far as determining the best stage in development for such an educational program student response varied (Table 1). Ten felt such a program should be conducted at the elementary school level while ten other students opted for the junior high school level (7th, 8th or 9th). These students indicated their desire to have these programs conducted early due to the severity of the drug program as they interpreted it, and the fact that students were being exposed to drugs at an earlier age. Another ten students pointed out the necessity of repeating such a program at both the elementary and high school levels. This could be accomplished through two different presentations, differing in degree of material covered and the technicality of the discussion.

The data based on the questionnaire, in conjunction with the attentiveness of the classes, the noticeable lack of negative responses, the discussions these students raised through their questioning, their

genuine interest in the presentation, and the thanks expressed by several faculty members at the Livingston High School, all indicate the receptiveness of a community and the school district in particular to the efforts of a pharmacist to provide public health education and to promote the concept of preventive health care.

Unfortunately, the venereal disease program conducted for the community of Livingston did not compare with the favorable results obtained at the schools. Poor attendance was noted at both night programs planned for the showing of movies and discussions on venereal disease, in spite of the publicity and promotional efforts.

Several reasons might account for this apparent lack of community concern regarding venereal disease. Possibly people were still reluctant to discuss a sexually oriented disease state such as the venereal diseases, or were reluctant to spend any of their free time learning about such a disease. Possibly the selection of a school auditorium was not the proper location to conduct such a program; any future programs in the Livingston area should be held at the Livingston Community Health Center facility. Some suggested that a map indicating the exact location of the school might have been useful as, apparently, there was some confusion as to which school building the program would be conducted in, and as even to the location of that school within the community itself. Possibly, the venereal disease programs conducted at both the elementary school and the industrial plant provided sufficient information, making these nightly sessions an unnecessary duplication. While over 1500 pamphlets and questionnaires in both Spanish and English were handed out at the plant, and while the attendance and response had been good at the Livingston Elementary School, it was unfortunate that a majority of the

people within the Livingston Community failed to, or were unable to attend a meeting in which the information needed to recognize symptoms, locate sites for treatment, and to prevent the disease was made easily attainable.

Apparently one of the useful techniques in gaining acceptance of venereal disease education is to discuss it with a closed audience. Attendance and participation by the laborers and their families at the Baleco Labor Camp health education meeting was excellent. The Spanish film on venereal disease "Twenty Million Teen Agers" seemed not only to interest the audience but also to stimulate discussion on the questionnaire. In addition, several mothers raised questions concerning home-care treatment prior to seeing a physician for their children who have fevers or diarrhea. In answering these queries, the pharmacist entered into discussion on minor first aid for sprains, muscle strains, bee stings, and heat prostration. The staff physicians agreed that it was vital for these people to have some working knowledge of all of these areas due to their working conditions, distance from medical facilities, and their ignorance of these maladies. It was emphasized that these suggestions were not a replacement for a physician nor were they a complete therapy for the problem.

The favorable results obtained at the Baleco Labor Camp contrast to a similar program held at the Gallo Labor Camp No. 1. Problems arose during this presentation because of language difficulties as most of the people in this camp were of Portuguese descent. In addition, the interpreter failed to appear; all material, as well as the film presentation was in Spanish and not in the Portuguese language. No one in the audience was willing to translate due to the stigma associated in

discussing venereal diseases. The fact that the building was hot and stuffy greatly diminished audience attention or understanding.

While not always obtaining the desired results, these experiences in public health education did point in a positive direction. A pharmacist could help expand the health care knowledge of the community and foster the concept of preventive health care. Each area of pursuit helped demonstrate that a pharmacist not only has the educational background to conduct such programs, but can present them to the lay public in an understandable fashion. Both these traits are absolutely necessary to assure quality programs directed to and understood by the general public. Undoubtedly, both qualities helped assure acceptance of a pharmacist in this new role by both the health professionals and the general public.

Results of Pre- and Post-Physician Interviews

Another area warranting analysis involves the dialogue between the clinical pharmacist, other health professionals, and more significantly, the patients. As previously mentioned, the clinical pharmacist at the Livingston Community Health Service Clinic was primarily concerned with the people and their improved health. The State Plan for Health (5) under the section on Manpower proposes new styles for pharmacists such as

> . . . increased responsibility, in conjunction with a physician, for drug management of the patient, including review of total drug records, patient education following physician's instructions, consultations with physician on drugs and drug therapy, advice to patients on non-prescription drugs; . . .

Efforts were made to demonstrate the significance and relevance of this dialogue through the use of a pharmacist in pre- and post-physician encounters with patients at the Livingston Community Health Services.

During a three month period (May, June and July), a pharmacist interviewed over 100 patients. From these sessions, it was recorded that 38 patients desired more information pertaining to their drug regimen or required some explanation on the proper administration of their medicinals in order to obtain the proper therapeutic effect. In addition, in four of these instances it was deemed necessary for the pharmacist to consult with the patient and physician to assist in determining the most effective drug therapy. On 11 other occasions the staff physicians and medical students at the Livingston Community Health Services asked the pharmacist questions which directly affected a patient's drug therapy. A composite list of the questions asked, the peculiarities observed or advice given to patients, the instances where the pharmacist met with both the physician and the patient, and lastly the questions asked of the pharmacist by both the medical staff and patients are summarized in Appendix G, p. 106.

While meeting with the patients and conducting these interviews, the pharmacist noted the patients' complaints and any significant symptomology indicated on the patient's chart. On several occasions, the pharmacist uncovered pertinent information concerning a patient's complaint which had not been mentioned to the nurse or was inadvertently omitted from the chart. This information often affected the physician's diagnosis or therapy selection. One such instance concerned a patient with an apparent upper respiratory infection. He had been treated unsuccessfully two months earlier and was returning to the Livingston Community Health Services Clinic. Between visits to the clinic, the patient had seen another physician and received an injection of penicillin on four consecutive days with no apparent response. In addition,

the patient had been advised to get an x-ray but had failed to do so. None of this information had been included on the patient's chart nor was the physician aware of this expanded background on the patient's complaint.

On two separate occasions, patients for whom a drug for urinary infections had been prescribed returned for treatment. During an interview, the pharmacist determined that one patient had never taken her medication, while the other had not completed the cycle of therapy. Once again this information had not been noted on the patient's chart following the nurse's work up.

In an effort to determine patient response to the interviews, a questionnaire (Appendix H, p. 114) was sent to a sampling of patients the pharmacist interviewed. Unfortunately the response was poor in numbers (11 out of 100), but the results (Table 2) indicate the desirability of pursuing this concept of pharmacist-patient dialogue further. Handing a patient the interview questionnaire personally, following each session rather than mailing them at the end of the study, would be a better procedure for obtaining quantitative results.

Questions 1 and 2 (Table 2) were structured so that responses by patients would be indicative of either their acceptance or rejection of a pharmacist-patient dialogue. Responses to both of these questions were affirmative. The remaining three questions were worded to provide some insight into incorporating the pharmacist-patient dialogue as part of a comprehensive health care program. Question 3 alluded to a pharmacist establishing a close relationship with a clinic or other facility housing medical providers. Once again, the patients responding indicated their desire not only to meet with the pharmacist, but to do so in conjunction

Table 2

Results of a Questionnaire on the Pharmacist Conducting Pre- and Post-Physician Interviews

Questions	Responses
1. Did you feel the time and effort of having the pharmacist meet with you was beneficial?	YES 11 NO 1
2. Were your questions or problems answered to your satisfaction?	YES 10 NO 2
3. Would you be interested in meeting with a pharmacist to discuss your particular medical needs in conjunction with the Clinic?	YES 10 NO 2
4. If such a program were offered and covered by an office visit fee, would you make use of this service? (a) Would you pay for this service if it were offered at a nominal cost?	YES 9 NO 3 YES 10 NO 2
5. Would you be willing to do so with a pharmacist in conjunction with the Clinic, if such a service was offered in a consultation room adjoining the community pharmacy?	YES 10 NO 1 No opinion 1

with their primary source of care. Question 5 took this concept one step further by seeking acceptance of such meetings or dialogues as part of the clinic program, or in another facility such as "in a consultation room adjoining the community pharmacy." The responses were affirmative.

Affirmative responses to this questionnaire indicate the feasibility of offering such services under a Health Maintenance Organization (H.M.O.) setting by utilizing the community pharmacist as an extension of the clinic into the community. This could be accomplished with minor physical alterations to existing pharmacy facilities providing private pharmacy consultations. Question 4 addressed the utilization of such a service by the patients if it were covered on a capitation basis or if it were offered at a "nominal cost." In both instances, the majority responded affirmatively.

While the sampling may be small, those patients responding indicated their desire for a more structured pharmacist-patient dialogue in conjunction with their medical program, and the willingness to participate in such a program within the confines of the community pharmacy, either on a prepaid capitation basis, or a fee-for-service basis.

Results of Outpatient Interviews

A number of case reports demonstrate a few of the health care and drug related problems encountered during outpatient interviews with patients referred to the pharmacist by the clinic physicians. These illustrate some ways in which a pharmacist can promote better health care.

One patient, a sixteen year old Portuguese-American, living in

a migrant labor camp, suffered from epilepsy. Word reached the clinic through a brother that the family was concerned over his recent seizures. In order to interview the patient, a health aide accompanied the pharmacist on his visit. It was learned that the boy had suffered three seizures the previous night; the seizures varied in length from 10 to 15 minutes. Upon questioning, the pharmacist noticed discrepancies between the directions on the medication vials and the instructions recorded on the patient's medication record. Apparently the mother had inadvertently transferred renewal medications into medication vials which carried old instructions for administration of the drugs. The directions on the vials differed from those the physician had issued the patient in the office, and the mix-up had resulted in the seizures and the family concern. The pharmacist recorded the proper instructions on paper and then verbally reviewed them with the patient. With the assistance of the health aide, the pharmacist reviewed the instructions in Spanish with the mother, and had her repeat the instructions. To prevent a reocurrence of the seizures and the difficulties, new prescriptions, with the proper directions, were written and presented to the youth. During the two months following the visit, the boy did not suffer from any seizures.

Another case involved an elderly man, approximately 70 years of age, who suffered from congestive heart failure and the effects of long term use of alcohol. A health aide had reported to the clinic that the patient failed to understand the nature of his medications and failed to administer them properly. The pharmacist, on his visit, noticed the patient had failed to get a refill on his digoxin and was administering his diuretic only once daily instead of the prescribed pattern of twice

daily. In addition, the patient complained that the Cogentin,[R] which had been prescribed for the control of his seizures following alcohol withdrawal, had failed to control these tremors and, therefore, he resumed his drinking. Upon further questioning, it was ascertained that the patient had two different strengths of the Cogentin [R] (1 mg and 2 mg), both in the same medication vial. While the 2 mg dosage controlled the tremors, the 1 mg dosage would not. The patient was instructed to either take two of the oblong (1 mg), or one of the round (2 mg) tablets. In addition, he was advised that when the medication was depleted, that a new prescription should be filled for Cogentin [R] 2 mg. The significance of the medications was explained and discussed with both the patient and his wife.

A third case involved an elderly male (approximately 85 years of age) whose daughter complained that he would not take his medications for the treatment of his tuberculosis. The patient had been recently confined to a wheel chair following the amputation of his right leg. Improper self-medication of a leg infection had resulted in gangrenous growth and amputation. Besides the isoniazid and ethambutol for the tuberculosis infection, the patient also had been administering a prescription for APC with codeine for pain accompanying the amputation. On this visit, the pharmacist discussed the nature of tuberculosis with the patient, and emphasized that a lack of chest pain did not represent the absence of the infection. Through this discussion, it was ascertained that he had stopped taking all medications due to constipation. The patient could not determine which medication had caused this difficulty so had discontinued taking all of them. Because the patient had previously taken both isoniazid and ethambutol without this

distressing side effect, the apparent cause could be traced to the codeine. This point was discussed with the patient and a stool softener (upon physician's consent) was suggested. The patient agreed to try the stool softener and renew the medications for the tuberculosis while foregoing the APC with codeine as the pain in the leg had diminished significantly. Further discussion led to the discovery of a round lesion about an inch and one-half in diameter on the lower left extremity which he had been treating unsuccessfully with hand cream for approximately a week. According to the health aide, a similar lesion had led to the infectious state and the gangrenous growth necessitating the amputation of the patient's right leg. Along with advising the housekeeper to obtain and apply triple antibiotic ointment to the lesion, the pharmacist made an appointment with the clinic for the patient to see a physician. The patient arrived at the clinic four days later and the physician noted that not only was he resuming his prescribed tuberculosis medications, but through application of the triple antibiotic ointment and careful cleansing of the wound, the lesion was healing satisfactorily.

One may speculate regarding the eventual outcome in each of these cases if the pharmacist had not (1) educated the patients to acquire a respect for their medications, (2) instructed the patients in the proper utilization of their drugs, (3) assured that the patients obtained the proper medications in sufficient quantity until the next visit with the physician, and (4) relayed his findings to the physicians for any further medical follow-up. Undoubtedly, the patients involved would have suffered unnecessary and uncomfortable complications. These complications could have diminished, if not nullified, the goals of the prescribed medications and of preventive medicine.

Results of Pharmacist-Patient Consultations

A major component of the Livingston Project involved the pharmacist counseling patients as to the precautions and proper administration of therapeutic agents for their specific disease states. While it may be argued by many pharmacists that they have been providing such knowledge in brief dialogue with patients for a number of years without charge, there was a need for endorsing the acceptability of consumers meeting with a pharmacist for a defined period of time (one hour) at a predetermined place and date. On both occasions (diabetic counsels and hypertension counsels), the physicians not only accepted this idea of an expanded role for the pharmacist, but provided valuable assistance by referring patients they felt would benefit from such sessions.

Several questions (see Appendix I, p. 115) had to be answered in order to determine the relevancy of a pharmacist in such a role. While not providing overwhelming evidence, the oral responses of the five patients who participated in the diabetic counsel session and the 15 patients who attended the hypertensive session provided some insight into the acceptance of this expanded pharmaceutical role. Fortunately, 15 of the 20 people who participated in the sessions returned their questionnaires. These are summarized in Table 3.

One of the first questions asked was whether consumers objected to a pharmacist discussing various aspects of their disease state and its treatment with them. Fourteen out of the 15 responses indicated that there was no reservation to such a meeting. It is interesting to note that the one individual "objecting to the use of a pharmacist" responded with positive answers to all remaining questions. When asked

Table 3

Results of a Questionnaire on Pharmacist-Patient Consultation

Questions	Responses
1. Did you object to a pharmacist meeting and discussing with you various aspects of your disease state and treatment?	YES 1 NO 14
2. Were you given information that might prove helpful in the management of your disease?	YES 14 NO 1
3. During the discussion, did you learn anything new?	YES 14 NO 1
4. Suppose this pharmacist was located in a nearby pharmacy and worked with the Clinic to provide health services. Would you be willing to meet with a pharmacist in a consultation room off the pharmacy to discuss any questions you might have regarding your medication--such as the diabetic meeting held at the Clinic?	YES 13 NO 2
5. Would you be willing to pay a fee ($2-$3) for such a prearranged meeting, such as one we had on medications? Please explain your answer.	YES 14 NO 1
6. Would you be willing to have such services provided when you pay for a visit to the Clinic?	YES 15 NO 0
7. What was your overall opinion of this idea of a pharmacist serving as a consultant, such as the diabetic clinic? Any suggestions you might make would be appreciated.	All responses to the question were favorable

whether the information presented during the discussion proved useful in the management of the discussed disease state, again 14 responded positively with one indicating a negative response. Question 3 (Table 3) sought to determine whether the patients had received valuable information, and if they had acquired new knowledge. Once again the responses were an overwhelming Yes, with 14 positive responses as opposed to one negative response.

Questions 4, 5, and 6 (see Table 3) sought to determine the acceptability of a consultation room within a community pharmacy to hold such discussions, as well as to determine the possible means of compensation for a pharmacist participating in such a program. When asked their willingness to meet with a pharmacist in a consultation room within a community pharmacy to discuss their disease state or medications, 13 positive and two negative responses were received. In order to determine a possible mechanism of remittance for the pharmacist, two questions were asked. The first (question 5) asked the consumer whether he would be willing to pay on a fee-for-service basis for such a prearranged meeting, while question 6 inquired as to the patient's acceptance of having such services covered on a capitation-based program of health care. The responses to both questions were positive with 14 individuals responding positively to a fee basis for remittance. There were 15 positive responses to the capitation type remittance approach towards pharmacist-patient consultations. These responses indicate the patient's willingness to not only attend these sessions, but to pay for them through some reimbursement plan.

In an effort to obtain some dialogue from the consumers regarding the use of the pharmacist as a consultant, question 7 was included. A

number of interesting responses were given to this. One stated:

> I think a great many diabetic people need more meetings, for you (a pharmacist) as a consultant would be a great help to them. I know some who are so confused and do not always do as they are supposed to as they forget and do not know how to really care for themselves properly.

Another indicated that the talks were needed as "doctors do not always explain drugs to patients." One patient thought "it was great, I found out a lot more about blood pressure than I have ever found from a doctor." Still another attendee thought the idea of a pharmacist serving as a consultant was "a splendid idea." Perhaps one participant in the sessions best summarized the attitudes of acceptance of the others by stating that "I think a meeting such as the one I attended gave me a better knowledge of my medications and the problem I had."

Several other parameters exist by which to measure the merit of pharmacist-patient consultations. One such was the attendance by three patients at both the diabetic session and at the hypertensive session. All three of these patients expressed their satisfaction in attending both sessions and their desire to be informed of any future sessions. Still another base for measuring success lies in the attendance by participants to these sessions which were separate from their normal clinic visits. All attended by their own free will and not on the basis of passing the time while awaiting their medical appointment. It is of further interest to note that nine of the 20 participants had office visits following these sessions, and requested to meet with the pharmacist to discuss their medications. This was accomplished in conjunction with the medical staff at the Livingston Community Health Services Clinic.

Medication Calendar Sheet

During the course of patient interviews, postpatient interviews, outpatient visits, and consult sessions, the number of patients who were unaware of the proper directions for the administration of their medications became quite apparent. Most administration errors were the result of a patient's forgetfulness, confusion over different directions to several medications, or physician's ordered alterations in therapy following a clinic appointment. This inability of patients to establish an effective drug administration pattern led to irregular administration of prescribed medications, doubling of prescribed medication dosages or failure to administer the prescribed therapeutic dosages. Health aides, due to their lack of pharmaceutical training, were unable to ascertain often whether a patient was or was not taking the medication properly. In order to assist patients in remembering the correct dosages and the time of administration; to assist health aides in their visits with the patients; and to help the physician in providing the necessary medication information as well as following up on the patient's medication progress, a Medication Calendar Sheet was introduced (Appendix J, p. 116) to the physicians and nursing staff at the Livingston Community Health Services Clinic. This sheet was similar in format to the Patient Calendar Sheet developed by the City of Hope Hospital Pharmacy in Duarte, California. A slight modification provided the health aide with some room to record any significant data such as the patient's weight, pulse, temperature, or blood pressure.

This calendar demonstrated the usefulness of such a sheet in providing the patient with a physical reminder as to the reason for taking each medication, the proper amount of each medication to take, as

well as the proper time to administer each medication. While at the Livingston Community Health Services Clinic, the pharmacist's duties included filling out this form for many elderly patients: specifically for those having been prescribed more than two medications and for those who were referred to him by the physicians during post-physician interviews. All data recorded on the sheet were written in pencil to facilitate making any changes in directions, amounts, or times of administration according to physician's instructions. It provided the patient with a convenient means to update his therapeutic regimen and served as a daily reminder for proper drug utilization. During outpatient visitations, the health aide could easily ascertain the patient's compliance with the prescribed therapy and compare information recorded from previous visits.

Survey of Staff of Livingston Community Health Services Clinic

While working at the Livingston Community Health Services Clinic, the pharmacist came to be regarded as an integral member of the clinic team with his services being increasingly utilized and requested. Many of these services did not include the dispensing of medications. Both physicians and nurses came to rely upon his drug expertise. Requests from the staff ranged from the pharmacist's discussing medication therapy with the patient and the various factors necessary to assure proper drug therapy, to consulting with the physician about the dosage or some other pertinent drug information concerning a therapeutic problem.

A questionnaire (Appendix K, p. 117) was distributed to the following individuals who had contact with both the patients and the pharmacist:

Two physicians
Two health aides
A licensed vocational nurse
A public nurse
Medical technician
Business manager
Office manager
X-ray technician

Following the format of the previous questionnaires, no identification was requested on the returned questionnaires. Eight out of the ten persons responded. Each of the questions sought to determine a response from the clinic staff on a particular phase of the expanded pharmacy role. The results are summarized in Table 4.

The first item concerned the pharmacist serving as a public health coordinator or educator. All of the responses received were of a positive nature; three people specifically expressed the belief that a pharmacist served a valuable function as a public health coordinator. Two other comments indicated that a "young" pharmacist could easily relate to the youths of a community on various aspects of public health such as venereal disease and drug abuse.

Questions 2 and 3 sought to determine whether clinic personnel felt that pharmacist conducted pre- and post-physician interviews were beneficial as a source for therapeutic selection as well as a monitor of drug therapy. No negative comments were received for either question. Two responses indicated that a pharmacist was more qualified than a physician to answer a patient's questions concerning medications and asserted that the pharmacist was qualified to assure the patient's understanding for maintaining the proper drug therapy. These responses indicated the belief that not only did a pharmacist have the ability to monitor patient therapy, but that a concern existed for the availability

Table 4

Results of a Survey of the Staff at the Livingston Community Health Services Clinic

Questions	Responses
1. Several programs involving public health were conducted by the pharmacist (V.D., Drug Abuse). Primarily, these programs were designed as "preventive medicine." What is your opinion of having a qualified pharmacist conducting public health programs in areas such as Merced County, where there is no formal public health education?	No negative comments. General opinion was pharmacist served a vital role as public health coordinator. Favorable comments regarding pharmacist relating to youth on matters of public health.
2. Numerous patients met with the pharmacist before or after seeing the physician to discuss any drug problems or questions (administration, side effects, etc.). Do you think this was worth the effort and time?	No negative comments. Concern expressed for economic feasibility. Noted that patients have less misunderstanding of their medications.
3. The pharmacist can serve as a resource for therapeutic selection, help monitor patients' drug therapy to prevent drug interaction, and also observe any adverse drug effects or disease complications. Did these services prove useful?	No negative comments. Responses indicated need for pharmacist to monitor patient drug regimen.

Table 4 (continued)

Questions	Responses
4. Another area of pharmacy interest concerned outpatient follow-ups. This was done to assure proper patient utilization of medications, as well as to check the general health of the patient for complications. Were these services useful?	No negative comments. Responses only questioned the economic feasibility of such a service. Responses indicated need for the pharmacist to reinforce proper medication compliance to the patient.
5. During this period of time, several pharmacy patient consults occurred with nine patients suffering from either diabetes or hypertension. Discussion centered on history, disease, symptomology, therapy and medical management. Was this a valuable adjunct to the mission of the Clinic?	No negative comments. Answers indicated that this service valuable in private practice and applicable for a pharmacist.
6. All of these programs might be coordinated by use of a pharmacy and pharmacist contracted with the Clinic. With the addition of a consulting room in a pharmacy, along with access to medical records, the pharmacist could perform these duties and others for the community in coordination with the Clinic. This pharmacy involvement could help meet the idea of preventive medicine as well as providing conventional pharmacy services on a contractual basis. Based on expansion of medical services, would such a program be of interest to the Clinic?	No negative comments. Responses ranged from allowing better and safer drug utilization and prescribing, to saving physician time while drawing physician attention to problems, to enabling more preventive medicine to be practiced.

of such a qualified individual to relate pertinent information to both the practitioner and the patient.

Another noted how patients had expressed their appreciation to clinic personnel for the opportunity to discuss their medications with a pharmacist. Another comment by the clinic personnel indicated that utilization of a pharmacist had simplified office visits and phone calls by patients seeking answers to questions concerning medications. Two responses indicated a concern for the economic feasibility of employing a pharmacist full time at the clinic to pursue this expanded role. This economic concern reappeared in question 4 when the clinic personnel were asked to comment on the utilization of a pharmacist in outpatient follow-up. While all eight respondees indicated the desirability for a pharmacist to reinforce the proper utilization of medication to a patient, four questioned the economic feasibility for employment of a pharmacist in this role.

All responses to the next question indicated a definite value for utilizing a pharmacist in expanded therapeutic consultations with patients suffering from various disease states. Two comments were that this proposal would be not only applicable but valuable to a pharmacist practicing in a community pharmacy. Such a service could be conducted in conjunction with the clinic, resulting in the pharmacist becoming more accepted as an essential component of the health team.

The final question sought to tie several parameters together: the feasibility of utilizing a community pharmacist and his facilities to promote preventive medicine, and whether this might be accomplished by the inclusion of a small consulting room in a community pharmacy. It is envisioned that the pharmacist would work in close liaison with a

clinic and its professional staff. This goal would be additional to providing conventional pharmaceutical services on a contractual basis.

The answers received to this inquiry were all positive, but for various reasons. Responses ranged from allowing better and safer drug utilization as well as prescribing habits (three such responses), to saving physicians' valuable time while drawing the physicians' attention to potential therapeutic problems (two such responses). One response indicated such an arrangement could stimulate formation of a formulary which, when combined with volume purchasing, could allow savings on drug overhead to be passed on to the consumer. Three respondees indicated that such an agreement would provide valuable drug education for both physicians and patients. Another pair of responses indicated a desire by the clinic personnel to provide access to dialogue by a qualified individual for patients having questions on their medications. Prior to the appearance of a pharmacist at the clinic, the clinic personnel had lacked the necessary time to accomplish this goal. In addition, one of these respondees told how the patients had appreciated these encounters with the pharmacist and expressed this openly to the clinic personnel.

The only concern for implementation of the pharmacist's expanded role was raised by two respondees who questioned the source for funding such services.

Chapter 4

DISCUSSION

The Livingston Community Health Services Clinic was an appropriate setting in which to explore the potential for the development of innovative health care programs, utilizing a pharmacist as one of the primary sources for such care. The pharmacist as a source for such care has long intrigued many individuals concerned with health care delivery. Several leading pharmacy educators have proposed some specific concepts utilizing a highly educated pharmacist's capabilities for providing the community with primary health care (57-66).

The major components of this proposal centered on a "Primary Health Care Team" approach utilizing the expertise of a pharmacist, nurse, and a social worker. The Livingston project made such a team approach a working reality through a modification of this proposal in which a pharmacist, nurse and a bilingual health care aide extended the clinic into the community to meet the needs of the people. The example of active pharmaceutical involvement on a rural health team established at Livingston should be diligently pursued and explored. The efforts at Livingston merely indicate some facets for such a pharmacy role and should not be regarded as indicative of the only services a pharmacist can or should provide. Rather, the pharmaceutical services exhibited at Livingston should serve to dampen the pessimism of various health practitioners who scoff at the idea of pharmacy's "new" role being

accepted by consumers, let alone by providers. Livingston should awaken those who advocate the status quo of health care delivery and relegate "clinical pharmacy" to the hospital setting. While the Report of the Task Force on the Pharmacist's Clinical Role (67) casually mentions that ". . . the opportunity for clinical experience in the care of ambulatory patients does exist," the Livingston project demonstrated that, in addition to the age-old role of dispensing prescription medication, the community pharmacist can and should provide additional services which are patient oriented and require a clinically oriented pharmacist. Several pharmacists in different communities already provide some of these "clinical" services through the use of patient profiles to monitor a patient's medications and prevent drug interactions, allergic responses, or contraindications; through the dissemination of complete instructions or directions of how, why, and when concerning both over-the-counter and prescription medications; advising patients about agents which may enhance or antagonize the effects of their medication; and through interpretation of information pertaining to medications and making this information available to the physicians. The pharmaceutical experiences at Livingston imply that a community based clinical pharmacist should include in addition to these services: participation in community health education programs; outpatient follow-ups in conjunction with the local physicians; and consultation services to patients as well as to other health team members. When combined in a structured program, these provisions represent appropriate pharmaceutical services conducted by clinically motivated community pharmacists. The community at Livingston demonstrated that such services were acceptable to both providers and consumers.

Application of outpatient follow-ups and patient consultations is possible within the confines of a community pharmacy. A recent issue of Trans-Act (68), in discussing an ideal comprehensive health care system, states that home care

> . . . would be provided principally by the staff of the local health center. Physicians would go when necessary - usually for acute emergencies - but most initial or follow-up home visits would be done by broadly trained nurses or medical assistants attached to the health center.

Perhaps, for ambulatory patients, such a role could be provided through the utilization of a community pharmacist.

A physician could refer certain patients to the pharmacy after a period of time to have the pharmacist perform similar duties to those achieved at Livingston. A possible mechanism for accomplishing this could be through the use of medication refills, patient profile cards, and a flagging system. In order to get a refill, certain patients would have to consult with the pharmacist. This might be indicated by a yellow tab. Within the guidelines established by the physician, the pharmacist could determine whether the patient should receive the refill or be directed for re-examination by the physician. This appointment could be made by the pharmacist directly with the clinic on the behalf of the patient. Colored tabs on the profile card could indicate the week or month the patient should visit the pharmacy; with a red flier added when a patient or his agent failed to appear for a refill. Other colored tabs might indicate certain data the pharmacist should obtain periodically from the patient and relay to the physician. This approach not only makes further use of the pharmacist and strengthens the professional relationship between the physician and pharmacist, but helps assure the patient's welfare through preventive medicine.

The experiences at Livingston demonstrated that a small room independent from the operational display areas of the pharmacy, yet near the dispensing site, could provide the necessary conditions to conduct patient consultations. Some pharmacies have the space in which to construct such a room, while other pharmacies might accomplish the same thing through remodeling of office space or a room used infrequently.

While the results obtained at the Livingston Community Health Services Clinic are not statistically significant, they may be indicative of what a community pharmacist could accomplish if he decided to expand his role by providing clinical pharmacy through his community location. The evidence generated in the Livinjston community concerning the acceptability of expanded pharmaceutical services is of some merit as it reflects the feelings and attitudes of a rural town's health care consumers, as well as the attitudes of the providers who serve the health needs of the community. This acceptance is significant when one recalls that the pharmacist who initiated the program entered the community as a relative stranger attempting new ideas in health care delivery. Undoubtedly an established pharmacist in a community could expand upon a program faster and easier with more customer awareness and acceptance than an outsider could ever hope to attain.

The responses received to the questionnaire distributed to clinical personnel (Table 4) may be negated by some critics as insignificant due to the lack of numbers involved or the responses. However, the positive results obtained in ten responses of the clinical personnel are reflected in a study conducted by Kapnick, Blissitt, and Rabe (59) on Physicians in the St. Louis area. Out of their study, the following conclusions were supported: the pharmacist should serve in a closer

drug advisory capacity, and a pharmacist should be prepared to serve as medication consultant.

Other critics of the Livingston project might assume that the presence of a clinic in a community of this size would dictate that the logical location for such pharmaceutical services would be within the confines of the clinic, and not in a community pharmacy. An interesting survey (69) indicates that, even in the presence of a clinic with a pharmacy, a majority of people utilizing the clinic still choose to have their prescriptions filled at a community pharmacy. In addition to receiving their legend medications at the community pharmacy, many of these patients will also utilize this facility to purchase their over-the-counter medications. Many in the health profession speak of the necessity to monitor legend drugs for drug interactions or adverse effects. Block and Lamy (32) indicate another area of concern when they stated:

> Frequently the ambulatory patient requires greater supervision and surveillance as control of diet and self medication can significantly influence the effectiveness of a particular therapeutic regimen.

The potential seriousness of alterations involving over-the-counter products and prescribed medications has been recognized by physicians (70).

The community of Livingston, located in California's Central Valley with its significant population of Mexican-American or Spanish surname, revealed another consideration essential to providing adequate health care; that of determining how to assure better communications between the pharmacist and patient who is separated from adequate communication by a language barrier. A significant number of Mexican-Americans can neither read nor speak English and must be reached through

their native language, Spanish. A pharmacist cannot assume that the patient will understand or be able to comply with his medication directions if such directions are typed or explained in English. Nor can the pharmacist assume that an English speaking friend will provide the translation or explanation essential to attaining the necessary therapeutic results. The Livingston team dealt with a population whose communication problems were significant and potentially hazardous to health care. The bilingual health aides demonstrated their usefulness in breaching this communication gap, both in and out of the clinic. A community pharmacy might utilize such an individual as either a clerk or a pharmacy technician. Utilization of a bilingual employee performing as both clerk or technician and as translator provides a valuable service without adding unnecessarily to the overhead cost.

Undoubtedly many concerned pharmacists may wonder how these expanded pharmaceutical roles might be accomplished when almost all of the pharmacists' time must be spent counting, typing, and filling as designated by law. There is little, if any, time left for consultations with patients. Dialogue established between the pharmacist and the patient cannot be accomplished by merely "squeezing it in" when convenient, nor by conducting such dialogue over the barrier presented by a counter or display case.

While both pre- and post-physician interviews occurred within the confines of the Livingston clinic, a similar objective could be achieved within a community pharmacy equipped with a small private room for consultation. A consultation room offering some privacy for the pharmacist and patient will help assure meaningful dialogue in dealing with medication problems the patient may encounter. Braced by a patient's

medication card and supplemented by a format of questions, the pharmacist can enter into discussion with his patient. The Livingston project indicates that dialogue is not only accepted and desired by patients, but is a service for which they are willing to provide the pharmacist a remuneration.

With the advent of Health Maintenance Organizations (HMO), more data will be made available to all providers as part of the criteria for assuring uniform and quality care within the HMO. This opens the real possibility of a community pharmacist receiving a direct copy of the physician's orders along with the patient's medication requests. This format currently occurs in numerous hospitals where a direct copy of all physicians' orders for a patient accompany the medication requests. The community pharmacist in such a system would enter into an unique patient-physician-pharmacist relationship, based upon an adequate knowledge of the patient's physical condition, diagnoses and anticipated therapeutic results. The pharmacist can instruct the patient on how to take his medications, monitor the patient's drug intake, and provide adequate follow-up to assure patient compliance with the instructions.

While a direct copy of physician's orders, as well as medications for the patient may solve one problem, another obstacle remains. There must be a means to free the pharmacist from the restraints imposed by interprofessional ethics and regulations which limit his function in the health care system to the control and distribution of drug products. This is not to say that such duties should not be under the supervision of a pharmacist. It does imply that the pharmacist can supervise technical help to perform the mechanics of prescription filling which will free him to engage in professional pursuits such as demonstrated at

Livingston. In 1968, the second interim report and recommendations of the United States Department of Health, Education and Welfare Task Force on prescription drugs made a favorable recommendation on the training and utilization of pharmacy aides. Studies by Baldwin and McMahon (71) and Tindall and McEvilla (72) indicate that many pharmacists utilize such personnel in various supplemental roles in community pharmacies. Such personnel can permit the pharmacist to expand his professional responsibilities within the confines of a pharmacy. Tindall and McEvilla conclude their study by stating

> Community pharmacists, looking to the future, envision their practices having greater emphasis on drug consulting, maintenance of family prescription records, spotting potentially dangerous drug interactions and recommending alternative therapy, and a greater involvement in the paper work of third party prescription plans. The community pharmacist will thus require an aide to assist in many routine tasks requiring little or no direct supervision. In reality, each practicing pharmacist of the future will need an extra pair of hands in order to have time to perform his professional role.

Other articles have appeared commenting on the utilization of sub-professionals in pharmacy (73-75).

Pharmacy involvement at Livingston demonstrated some of the expanded areas of comprehensive health care open to a pharmacist freed from the dispensing role. California's State Plan for Health Section on Manpower (5 and 76) offers more support for the re-evaluation of the restrictions on the utilization of pharmacists. This plan recommends:

> 1. Review and amend the Medical Practice Act, the Pharmacy Law and other licensing laws for health personnel so as to permit utilizing the full professional capabilities of the pharmacist.
>
> 2. Amend the Pharmacy Law, the Medical Practice Act and other regulations, so as to permit nurses, assistants to pharmacists, and medication technicians to perform selected functions with appropriate safeguards on issuance of medications.

The Livingston Community Health Services Clinic demonstrated what some

of these "full professional capabilities of a pharmacist" can be.

Another sphere of involvement touched upon in dialogue with the physicians at the Livingston Community Health Services Clinic concerned the community pharmacist evaluating the condition of a patient regarding a prescription refill request. Currently most refills on medications, especially those involving chronic drug therapy, are dispensed with little if any organized effort to evaluate the patient's condition. This practice does not attain the standards necessary for maintaining the goals of good preventive medicine. A pharmacist conducting some simple laboratory tests or obtaining the results of these tests, interpreting the data within the parameters established by the practitioner, and utilizing the patient's chart as possibly indicated under an HMO setting, can utilize this data base to screen patient refills and to determine whether the pharmacist should arrange an appointment for the patient with the physician. This notion of community pharmacy involvement may sound impractical or unrealistic, but such a program has been in existence at a government hospital for nearly three years (77).

The real significance of the experimental pharmacy role attempted at Livingston was in the acceptance of this role both by providers of health care and the consumers toward whom this care must be directed. Unfortunately, while the project demonstrated the acceptance of the clinical community pharmacist, the economic justification or survival ability of such a venture remains to be proven. Until community pharmacists implement programs similar to the Livingston project the economic feasibility of clinical pharmacy in the community setting remains one of conjecture and debate. A few carefully selected three year Federally or State funded projects for demonstrating the feasibility of such a program

in the community pharmacy might eliminate the need for conjecture by providing some worthy examples without needlessly exposing involved pharmacists to possible economic disaster. APhA Past President Latiolais made such a proposal in May 1972 (65) for model pharmacies. Another impetus has been provided by the California Pharmaceutical Association Task Force Report on the Role of the Pharmacist in California's State Plan for Health (78), and has been incorporated into the California State Plan for Health Section on Manpower Recommendations as follows:

> The State Health Planning Council encourages projects through which federal funds are sought to determine: the feasibility of pharmacists taking on greater responsibility for health care; the systems for education, renovation, and use (solo practice, group setting, etc.).

Earlier in this same report possible avenues for pharmacists assuming greater responsibility for health care consisted of:

> 1. Increased responsibility, in conjunction with a physician, for drug management of the patient, including review of total drug records, patient education following the physician's instructions, consultation with physicians on drugs and drug therapy, advice to patients on nonprescription drugs;
>
> 2. Service as a health educator to the community and assistance and referral of the public, especially in rural areas where health manpower is scarce;
>
> 3. Utilization in a variety of settings such as public schools, welfare systems, care for the aged, and team services in ambulatory care;
>
> 4. Use of the pharmacy as a center ("store front clinic") for persons seeking access to health care.

These responsibilities were demonstrated at Livingston as being within the realm of pharmacists' capabilities and training, and more significantly, as beneficial and needed additions towards providing more comprehensive health care.

As mentioned earlier, the criteria for expansion of pharmaceutical

services, as well as the economic feasibility of these, may lie in the development of HMO's. Any health maintenance organization lacking adequate pharmaceutical services cannot be considered as offering comprehensive health care. Certain criteria utilizing pharmacists must be met in the establishment of this type of health care delivery system. Undoubtedly, the federal government will play a significant role as a third party in the development of the HMO concept of health care. One need only look towards the "Health Maintenance Organization Resources Development Act of 1972" introduced by Senator Edward Kennedy to support this theory. Among other criteria for comprehensive self-services required for organizing an HMO, this legislation requests

> Provision of or payment for prescription drugs with patterns of patient drug utilization under continuous surveillance, evaluation, and review by a clinical pharmacist whose duty shall include the maintenance of a drug use profile for each enrollee.

More significantly, a report accompanying this Bill, SB3327, specifically designates the requirements for a clinical pharmacist as follows:

> The requirement that a clinical pharmacist survey, evaluate, and review patterns of drug utilization (including drug regimens and therapies) and maintaining drug use profile for each enrollee of an HMO is intended to insure the input of a drug specialist into the development of a rational drug therapy for each patient. The committee expects such a pharmacist to be one who has had substantial training and experience in designing and monitoring patient drug therapy. In addition, the clinical pharmacist is expected to play a major role in disseminating important drug use and abuse information, both to the HMO staff and the member patients.

Reduced to simplest terms, the HMO consists of two essential aspects. It brings together in a single organization, a comprehensive range of medical services. This includes health maintenance and preventive care rather than merely providing restorative care so that a participating patient may be assured of access to the specific services he requires. Secondly, it provides these services through a prepaid

(capitation) arrangement, paid in advance by those patients who participate in the HMO. Emphasis should be placed on the almost limitless means by which these goals may be reached by the HMO. So long as the HMO provides comprehensive health services at a reasonable cost to participating consumers, it has almost unlimited flexibility to enter into an arrangement by contract or other negotiated means to provide these necessary services. This would indicate that numerous options exist for providing medicinal agents and pharmaceutical services to the enrolled population of HMO. These options range from in-house facilities (such as demonstrated by Kaiser Hospital pharmacies) to independent, neighborhood based pharmacies or store front clinics. Rather than expend funds to duplicate facilities already in existence, the health maintenance organization might contract with a pharmacy foundation to maximize existing neighborhood based pharmacies as outlets for drugs, pharmaceutical, and other health care services.

Based on the pharmacy foundation option, a group practice of independent community pharmacists, bound by professional and contractural agreements, could agree to provide drugs, pharmaceutical and related health care services to HMO enrollees in return for a fixed capitation payment. In addition, nothing precludes this foundation of community pharmacists from operating with a formulary or dispensing prepackaged medications; both practices which have proven economically sound in hospital pharmacy practice. Ralph Engel, Director of the National Pharmacy Insurance Council, has gone on record as to the mechanisms for organizing a pharmacy foundation, as well as alluding to possible operational features of such a foundation (79). An address (80) presented in late 1971, for the UOP Preceptor Intern Program, afforded community

pharmacists the opportunity to learn of some definite areas in which they could provide services in a health maintenance organization while retaining their state of independence.

Pharmacists must not wait for some third party carrier to provide either the financial incentive or the rationale for developing clinical pharmacy within the community pharmacy setting. Pharmacists have too often waited to be told what their professional limitations are rather than taking the initiative to establish their own course of professional development. This attitude has resulted in the profession being dictated to rather than being consulted with by both legislative bodies and third party programs. There must be a concentrated effort on the part of community pharmacists on the local level to work with community health planners and organizers during the initial phases of development for any comprehensive health care program. If the pharmacist wants to be involved in the planning, as well as the operational stages of any evolving health care delivery system, he cannot afford the luxury of awaiting an invitation to participate. Planning for the future may well necessitate numerous phone calls, meetings with various interest groups, and a demonstration of a genuine interest, competence, and compassion to assist the health consumers of the pharmacist's community, as well as the other health providers concerned with the organization and application of a comprehensive health care program. If pharmacists face the challenge of expanding their capabilities to serve the patient through broader patient care roles, pharmacy will add significantly to its inclusions and abilities to participate in HMO's or any other organized health care systems. The pharmacy role attempted in Livingston, California and discussed in this paper has reviewed some

areas for development of "clinical pharmacy" within the community pharmacy. In addition, the Livingston project demonstrated the need for further studies concerning these and other roles facing the community pharmacist in an evolving health care delivery system. Such a system demands innovation and imagination in serving the health care needs of the American citizens.

Chapter 5

SUMMARY AND CONCLUSIONS

The rural community of Livingston, California was used to explore means by which a community pharmacist, through application of clinical pharmacy, could enhance the health care of the nonurban population. A pharmacist with clinical pharmacy training spent four months in the community-owned Livingston Community Health Services Clinic. While residing there and working in conjunction with the staff at the clinic, he sought to demonstrate the opportunities for clinical pharmacy to be practiced in the rural setting by means of expanded pharmaceutical services and responsibilities. The four objectives identified for demonstration were:

1. The utilization of a community pharmacist as a screening agent for the clinic.
2. The community pharmacist as an extension of the clinic into the community.
3. The community pharmacist's role as a public health educator and coordinator.
4. Increased utilization of a community pharmacist serving as a health consultant.

The clinic and the community, serving as the laboratory setting, offered an unique opportunity to demonstrate several principles of community "clinical" pharmacy within a realistic environment, and to

ascertain both patient and physician acceptance of a community pharmacist's expanded role in patient care.

While this study was designed to explore the relevancy of new "clinical" roles for community pharmacists, any inferences or implications which may be drawn from the findings should be subject to the limitations which are noted in Chapter 3. In particular it should be pointed out that the resulting data base was intended to be hypotheses-generating rather than hypotheses-testing.

Results of the four month Livingston study indicated the need for a pharmacist to serve as a public health educator, coordinator and health consultant. A significant percentage of patients encountered during pre-physician screening and on outpatient visits had experienced medication or therapeutic difficulties. Most of these problems were attributed either to the patients' noncompliance with physicians' orders or misinterpretations of dosage instructions. These problems appeared to be reduced by dialogue between the patients and the pharmacist acting as a health care coordinator.

The role of the pharmacist as a health coordinator was again illustrated through a drug abuse program, conducted at the high school, and venereal disease presentations conducted for both the school and the general population.

The role of the pharmacist as a health consultant and educator was continued with the consultation between a pharmacist and a group of patients suffering from either diabetes mellitus or hypertension. Efforts were directed towards having the pharmacist consult with several patients suffering from these chronic disease states in order to clarify the significance of the particular drug therapies as well as explaining

the nature of the diseases. Despite the chronic nature of the diseases, the patients indicated that they had gained valuable new insights into the management of their particular diseases. The majority agreed that the pharmacist should be compensated for this consulting and educational service.

The positive results attained at Livingston take on added significance when one considers that the experiment was conducted in a realistic setting. Both patient and physician endorsement of the community pharmacists' expanded health care role helps diminish the long argued point of its nonacceptance by either the patient or physician. Further, this study indicated that the health care needs of the people necessitated an expanded educational role by the pharmacist. One could contend that such an expanded role should supplement, if not replace, the need for a highly trained pharmacist to be confined by tradition and statute to a distribution function.

With the implication of health care revolving around preventive medicine and probably some future form of national comprehensive health care, the experimental program conducted at Livingston offers a possible means by which pharmacists can expand their role in health care delivery. The favorable results of the Livingston project identify a clinical role for the community pharmacist. The encouraging data obtained in this work indicate that the concept of a clinical pharmacist providing innovative health care services for a rural community <u>through</u> the pharmacy appears to have significant potential. Conclusive proof of such a role necessitates further experimentation within the community setting. The roles of a community clinical pharmacist demonstrated at Livingston should be subjected to further investigation, application, and economic analysis

within the confines of a self-sustaining community pharmacy at the earliest opportunity.

BIBLIOGRAPHY

1. Landis, Richard H., Henley, A. J.: "Partnership for Health," J. Am. Pharm. Assoc. NS9: 257-259 (June) 1969.

2. Braverman, Jordan: "Yesterday's Theory-Tomorrow's Reality?," J. Am. Pharm Assoc. NS10: 266-275 (May) 1970.

3. Anonymous: A Comparative Summary of Major National Health Insurance Proposals-1971, J. Am. Pharm. Assoc. NS11: 324-327 (June) 1971.

4. Towards a Comprehensive Health Policy for the 1970's: A White Paper, U.S. Department of Health, Education, and Welfare; 10,(May) 1971.

5. California State Plan for Health; Formulated by the Task Force for the Development of the State Plan for Health as set forth in the 1971 State Plan for Health.

6. People Planning for People: Regional Plan for Health; North San Joaquin Comprehensive Health Planning Association: (June) 1972.

7. Meeting the Crisis in Health Care Services in Our Communities: Report of the 1970 National Health Forum held in Washington, D.C., February 23-25, 1970 under the guidance of the National Health Council, Inc.

8. The National Health Partnership: A Comprehensive Health Policy for the 1970's: U.S. Department of Health, Education, and Welfare; (February) 1971.

9. Vitalie, Carl: The Task Ahead, California Pharmacist: 18-19, (April) 1970.

10. The Drug User: U.S. Dept. of Health, Education and Welfare Task Force on Prescription Drugs; Office of the Secretary, Washington, D.C., 16, 1968.

11. Knapp, David A. and Knapp, Deanne E.: "Decision-Making and Self-Medication: Preliminary Findings," Am. J. of Hosp. Pharm. 29: 1004-1012, (Dec.) 1972.

12. Editorial, Amer. J. Hosp. Pharm., 19, 359 (1962).

13. Gibson, M. R.: "Patient Instruction by Private Consultation," J. Amer. Pharm. Assoc. NS6: 632 (Dec.) 1966.

14. Schwartz, A.: "City of Hope Plans Patient Consultation," The White Sheet--Hospital Pharmacy (April) 1970.

15. Brands, A. J.: "Complete Directions for Prescription Medication," J. Am. Pharm. Assoc. NS7: 634, (Dec.) 1967.

16. Malahy, B.: "The Effect of Instruction and Labeling on the Number of Medication Errors Made by Patients at Home," Amer. J. Hosp. Pharm., 23; 283 (June) 1966.

17. Clinite, J. C. and Kabat, H. F.: "Errors During Self-Administration," J. Am. Pharm. Assoc. NS9: 450 (Sept.) 1969.

18. Streit, Richard J.: "Long-Term Drug Therapy--A Program Expanding the Pharmacist's Role," J. Am. Pharm. Assoc. NS13: 434-436 (Aug.) 1973.

19. Canada, Andrew T. and Iazzetta, Sandra M.: "Pharmacy Care for Ambulatory Patients--The Consultation Concept," J. Amer. Pharm. Assoc. NS14: 18-20 (Jan.) 1974.

20. Smith, W. E.: "The Future Role of the Hospital Pharmacist in the Patient Care Area," Am. J. Hosp. Pharm., 24,228 (April) 1967.

21. Godwin, H. N.: "Developing a Clinical Role for the Hospital Pharmacist," Drug Install. 2: 152 (June) 1968.

22. Wilson, Robert M.: "A Broader Range of Service for the Community Pharmacist," J. Am. Pharm. Assoc. NS14: 21-25 (Jan.) 1974.

23. Madden, Edward E. Jr.: "Evaluation of Outpatient Pharmacy Patient Counseling," J. Am. Pharm. Assoc. NS13: 437-443 (Aug.) 1973.

24. Editorial, J. Am. Pharm. Assoc. NS11: 45 (Feb.) 1971.

25. Distribution of Physicians in the United States, 1970. American Medical Association, 1971.

26. Smith, Mickey C., Waters, I. W., and Grogan, James F.: "Three Months of Observations in Rural Pharmacies," J. Am. Pharm. Assoc. NS11: 64-67 (Feb.) 1971.

27. Drug and Therapeutics Bulletin, Vol. 3: 8, April 16, 1963.

28. Dixon, Strandling, Wooton: "Outpatient PAS Therapy," Lancet, 2: 871, November 2, 1957.

29. Schwartz, D., Wang, M., Zeitz, L., Gross, M. E.: "Medication Errors Made by Elderly, Chronically Ill Patients," Am. J. Pub. Health 52: 2018 (Dec.) 1962.

30. Shimko, M. S. Sr.: "A Study of Patient Knowledge of Medications," Hospital 40: 86 (Aug. 1) 1966.

31. Block, L. H., Lang, P. P.: "Legend Drugs with O.T.C. Drugs. . . Therapeutic Incompatabilities," J. Am. Pharm. Assoc. NS8: 66 (Feb.) 1968.

32. Block, Lawrence H., Lamy, Peter P.: "With Emphasis on O.T.C. Drugs. . .Drug Interactions," J. Am. Pharm. Assoc. NS9: 202-206 (May) 1969.

33. Clinite, James C., Kabat, Hugh F.: "Errors During Self-Administration," J. Am. Pharm. Assoc. NS9: (Sept.) 1969.

34. Anonymous: "Drug Interactions that can Affect Your Patients," Patient Care I: 23 (Nov.) 1967.

35. Keller, Bernard G. Jr., Bennett, Raymond J.: "The Last Possible Source of Error," J. Am. Pharm. Assoc. NS10: 451-453 (Aug.) 1970.

36. Lang, Leonard A., Kabat, Hugh F.: "Drug Interactions in Nursing Home Patient Prescriptions," J. Am. Pharm. Assoc. NS10: (Dec.) 1970.

37. Hartshorn, Edward A.: Handbook of Drug Interactions, Donald E. Francke, Editor and Publisher, Cincinnati, 1970.

38. Gardner, Pierce and Cluff, Leighton E.: "The Epidemiology of Adverse Drug Reactions: A Review and Perspective," The Johns Hopkins Med. J. Vol. 126: 77-87 (Feb.) 1970.

39. Schwartz, D., et. al.: "Medication Errors Made by Elderly Chronically Ill Patients," Am. J. of Public Health 52: 249 (Dec.) 1962.

40. Presentation by Henry E. Simmons, M.D.: "The Pharmacist's Role in Drug Efficacy Control," at Invitational Conference on Pharmacy Manpower, September 10-12, 1970 in San Francisco, California and summarized in DHEW Publication No. (HSM) 72-3000.

41. Grant, Murray: Handbook of Preventive Medicine and Public Health, Lea & Feiberger, Philadelphia, 55, 1967.

42. "Health Status and Family Income," U.S. Dept. of Health, Education, and Welfare, Public Health Service Publication No. 1000, Series 10, No. 9: 24 (May) 1964.

43. Kabat, Hugh F.: "Choice of Source of Pharmaceutical Service," J. Am. Pharm. Assoc. NS9: 73-78 (Feb.) 1969.

44. Presentation by Honorable Paul G. Rogers, Chairman of the Subcommittee on Public Health and Environment for the United States House of Representatives at the 1972 Annual Meeting of the American Association of Colleges of Pharmacy, Houston, Texas.

45. Rowland, Robert: "Livingston Community Health Services: A New Form of Health Care for the Community," a report compiled by the Livingston Health Center Administrator, July 31, 1971.

46. Rowland, Ivan W.: "Educating Pharmacists for New Roles," California Pharmacist: 30-33 (Aug.) 1971.

47. Interview with Ivan W. Rowland: "New Diplomas Put Medical Authority in Pharmacists' Hands," Drug Topics: 8-9 (Dec. 20) 1971.

48. Lesshafft, Charles T. Jr.: "Pharmacist's Role in Outpatient Clinics," J. Am. Pharm. Assoc. NS10: 205-209 (April) 1970.

49. Cole, Philip and Sister Emmanuel: "Drug Consultation: Its Significance to the Discharged Hospital Patient and its Relevance as a Role for the Pharmacist," Am. J. Hosp. Pharm. 28: 954 (Dec.) 1971.

50. Perspectives for Health Planning, A Supplement to California State Plan for Health; July, 1971.

51. State of California, Department of Public Health, Morbidity Records 1970.

52. "Plain Talk About Venereal Disease," pamphlet in English and Spanish distributed by Youngs Drug Products Corporation.

53. "Venereal Disease: What Is It? How Is It Spread? When Do I Know I Have It? Where Do I Get Treated," pamphlet in English and Spanish distributed by State Department of Public Health, California.

54. "Picture the End Before You Start," pamphlet sponsored by the Student American Pharmaceutical Association, University of the Pacific School of Pharmacy.

55. Pacific Information Service on Street Drugs; sponsored by Beta Omega Chapter of Rho Chi Honorary Pharmacy Fraternity; University of the Pacific School of Pharmacy; Stockton, California.

56. Streit, Richard J.: "A Program Expanding the Pharmacist's Role," J. Am. Pharm. Assoc. NS13: 434 (Aug.) 1973.

57. Claus, Edward P.:. "The Future Roles of the Practicing Pharmacist," J. Am. Pharm. Assoc. NS9: 70-72 (Feb.) 1969.

58. Knapp, D. A., Wolf, H. H., and Rudy, T. A.: "An Experimental Analysis. . The Pharmacist as a Drug Advisor," J. Am. Pharm. Assoc. NS9: 502 (Oct.) 1969.

59. Kapnick, P. L., Blissitt, C. W., and Rabe, C. C.: "Present and Future Pharmacy Practice," J. Am. Pharm. Assoc. NS10: 460 (Aug.) 1970.

60. Goyan, Jere E.: "The Pharmacist and the Physician," California Medicine 114: 95-99 (May) 1971.

61. Rowland, Ivan W.: "Position Paper from the School of Pharmacy at the University of the Pacific," delivered by the Dean to the Hearings of the Committee on Health Manpower Office of Comprehensive Health Planning in Sacramento, November 12, 1970.

62. McLeod, Donald C.: "Clinical Pharmacy Practice in a Community Health Center," J. Am. Pharm. Assoc. NS11: 56 (Feb.) 1971.

63. Rowland, Ivan W.: "Educating Pharmacists for New Roles," op. cit.

64. Interview with Ivan W. Rowland: "New Diplomas Put Medical Authority in Pharmacists' Hands," op. cit.

65. Latiolais, Clifton J.: "A.Ph.A. President Advocates Model Pharmacies," presented at the 1972 Annual Meeting of the California Pharmaceutical Association, Lake Tahoe, May 1972. Proceedings in California Pharmacist, 30-33, July 1972.

66. Goyan, Jere E.: "The Education and Abilities of the Clinically Trained Pharmacist," presented as opening address, conference on "The Expanding Role of the Pharmacist," co-sponsored by C.Ph.A. and Area II Regional Medical Programs, U.C. Davis, October 18, 1972.

67. "Report of the Task Force on the Pharmacist's Clinical Role," HSRD BRIEFS, No. 4, Drug-Related Studies Program, National Center for Health Services Research and Development, Health Services and Mental Health Administration, Department of Health, Education, and Welfare, Spring 1971, and reproduced with permission in J. Amer. Pharm. Assoc. NS11: 482-485 (Sept.) 1971.

68. Roemer, Milton I.: "Nationalized Medicine for America," Trans-Action: 31-36, (Sept.) 1971.

69. Paul, Stephen H.: "Community Pharmacy Participation in OEO Comprehensive Health Centers," J. Am. Pharm. Assoc. NS11: 60-63 (Feb.) 1971.

70. Editorial: "Pharmacist, Physician and Health Care," California Medicine, 114: 95-99 (May) 1971.

71. Baldwin, John H. and McMahon, J. Leon: "The Use of Nonprofessional Personnel in the Dispensing Process," J. Am. Pharm. Assoc. NS12: 60 (Feb.) 1972.

72. Tindall, William and McEvilla, Joseph D.: "Pharmacy Technicians--Findings in Ten Community Pharmacies," J. Am. Pharm. Assoc. NS12: 62 (Feb.) 1972.

73. Goyan, Jere E.: "Pharmacy Technicians," J. Calif. Pharm. Assoc. Vol 15: 4-7 (Jan.) 1969.

74. Braverman, Jordan: "Subprofessionals in Pharmacy," J. Am. Pharm. Assoc. NS9: 273 (June) 1969.

75. Anon: "Practitioner's and Subprofessional's Roles in Pharmacy," J. Am. Pharm. Assoc. NS9: 415 (Aug.) 1969.

76. Anon: "State Plan for Health Adopted," Calif. Pharmacist: 29 (July) 1971.

77. Streit, Richard J. and Clark, Terrence C.: "An Expanded Drug Refill Program: Building the Data Base to Aid in Patient Care," report submitted to the Cass Lake Hospital Pharmacy and Therapeutics Committee, (March) 1971.

78. Brown, Richard, Holsten, Donald, Lofholm, Paul, Masse, Robert, Smith, James, Meyers, John: "The Role of the Pharmacist in California's State Plan for Health," Calif. Pharmacist: 17-20 (Jan.) 1971.

79. Engel, Ralph: "The NPIC's Role in Pre-Paid Health Plans," presented at the California Pharmaceutical Association Interim Session, January 23, 1972, Monterey, California.

APPENDIX A

OUTLINE OF THE PRE-EXAMINATION INTERVIEW

1. Introduce yourself by name and identify yourself as a pharmacist.
2. Learn the patient's name. Address the patient by name during the interview.
3. Be pleasant, friendly, and courteous.
4. State the purpose of the interview to the patient. Tell the patient that you would like to talk to him about his medicine--you want to find out what medicine he is taking so that you can report this to the physician.
5. Where do you live?
6. How old are you? When were you born?
7. Do you know the names of the drugs you are taking?
8. Did you bring your medicine with you?
9. Can you describe the medicine, i.e., what it looks like?
10. Do you know why you are taking this medicine?
11. How often do you take your medicine?
12. What time of the day do you take your medicine?
13. Do you ever miss a dose?
14. Do you take your medicine regularly?
15. How long have you taken this medicine?
16. What medication did you take before this?
17. Repeat questions 8 through 15.
18. Do you ever take any medicine other than your prescription medication? How about aspirin, laxatives, cold medicine, cough syrup, worm medicine, oral contraceptives (not considered usually as a drug by the layman and should be specifically mentioned)?
19. Why do you take this (o-t-c medication)?
20. How often do you take this?

APPENDIX A (continued)

21. Do you drink coffee? . . . a lot? . . . soft drinks? How about alcoholic beverages?

22. Are you allergic to any foods?

23. Are you allergic to any drugs? Have you ever taken any drugs that made you sick?

24. Have you ever taken any penicillin?

25. Have you ever taken someone else's medicine?

26. Have you ever given someone else your medicine to take?

27. Where do you keep your medicine at home?

28. Do you have a system to help you remember to take your medicine?

29. Where do you get your medicine? (Name of pharmacist)

30. Who is your local physician?

31. How often do you see him?

32. When was the last time you saw your physician?

33. When was the last time you had a blood test?

34. Do you have any trouble getting your medicine?

35. What do you do when you run out of medicine?

36. Are you on medicaid?

37. How far do you have to travel to get your medicine? . . . To see your physician?

38. Why are you seeing the physician today? (Get patient to talk about his complaint. If epileptic, inquire into the frequency of his seizures and when he had his last seizure. This part of the interview has been found helpful to the physician because it prepares the patient for the questions which the physician will ask. This type of conversation also leads the patient into the next question without suspecting the motive for the question.)

39. Do you have any stomach trouble? . . . Trouble with your teeth? (Inquire about symptoms which may indicate any adverse effects of the drugs patient is taking. Do not let on that you are connecting these symptoms with his medicine.)

APPENDIX A (continued)

40. When interview is ended thank patient for talking to you and tell him to return to his seat in the waiting room until the physician is ready to see him.

APPENDIX B

MEDICATION HISTORY DATA SHEET

Date_____

Patient name_____Age___Wt.____Sex___Race_____

Address_____Married_____

Occupation_____

Medications taken during past 6 months (name or description)_____

_____

Reason_____

Medications that have been discontinued in last 6 months_____

_____

Reason_____

Medications taken in addition to prescription medication_____

___Laxatives
___Vitamins
___Aspirin
___Cold medications
___Cough preparations
___Pain medications
___Antacids
___Topical preparations
___Antidiarrheals
___Drugs to stay awake
___Drugs for insomnia
___Drugs for nerves
___Drugs for fluid retention
___Other_____

Comments_____

Allergies_____Drugs_____
Food_____
Pets_____
Other family members with allergies_____

Physical conditions (which may affect drug therapy)

___TB
___Glaucoma
___Hay Fever
___Diabetes
___Asthma
___Hypertension
___Other (specify)
_____
_____

Reactions to Medications_____

_____

APPENDIX B (continued)

Name of local Physician(s)_____Local Pharmacies_____
Medicare_____Medicaid_____Medical_____Private_____
Other_____

Comments_____

_____R.Ph.

APPENDIX C

QUESTIONNAIRE

1. Are you taking any medication now?
2. How often?

   Do you ever miss a dose?
3. Are you taking any of the following?

   Vitamins____; Laxatives____; Antacids____;

   Lotions_____; Ointments____; Antitussives____.
4. Are you allergic to any drugs? Foods? .
5. Have you taken any drugs that make you sick?
6. Have you taken any one else's medicine?
7. Where do you keep your medicine at home?
8. Do you have any problem remembering to take your medicine?
9. Where do you get your medicine?
10. Do you have any trouble getting your medicine?

    Transportation?

    Cost?

    Medi-Cal?
11. What do you do when you are out of medicine?
12. Why are you here today?
13. Inquire into possible Side-Effects from the medications:
14. Do you have any problem with medication that I may help you with or make note of for the physician?
15. Other: _____

    _____

    _____

APPENDIX D

HOW MUCH DO YOU KNOW ABOUT THE VENEREAL DISEASES?

____ 1. Since syphilis germs can live a long time outside of the body, it is possible to acquire the disease in a variety of ways.

____ 2. Sores and rashes can always be found on people who have syphilis; therefore, people know when they are infected.

____ 3. The symptoms of syphilis will go away even if a person does not have proper medical treatment for the disease.

____ 4. If a pregnant woman has syphilis, she can transmit the disease to her unborn child, if she does not receive treatment soon enough.

____ 5. Syphilis can be inherited and passed on for generations.

____ 6. Once a person has syphilis and the disease is cured in the early stage, he can never get the disease again.

____ 7. Some people have syphilis yet may never have any outward signs of the disease.

____ 8. If syphilis is not found and treated, it may cause blindness, insanity, crippling or even death.

____ 9. Gonorrhea is often caused by lifting a heavy object (strain).

____10. If gonorrhea in the female is not found and treated, it may cause sterility (prevent the woman from ever having a baby).

____11. The symptoms of gonorrhea will go away even though the person is not cured of the disease.

____12. If a person has gonorrhea once and is cured, he will never get it again because he has become immune.

____13. It is possible for a female to have gonorrhea and not know it.

____14. If gonorrhea is not treated, it will turn into syphilis.

____15. Syphilis and gonorrhea are almost always acquired by sexual contact with an infectious person.

____16. It is possible for a person to have both syphilis and gonorrhea at the same time.

____17. A blood test can be used to diagnose both gonorrhea and syphilis.

APPENDIX D (continued)

____18. Both syphilis and gonorrhea are frequently acquired by contact with any object an infected person has used such as toilet seats, lipsticks and towels.

____19. People with syphilis or gonorrhea have a distinctive appearance so that it is possible to tell an infected person just by looking at him.

____20. Both syphilis and gonorrhea can be cured by proper medical treatment.

APPENDIX E

Que tanto sabe usted de las Enfermedades Venereas?

____ 1. Como el microbio del sífiles (sangre mala) vive afuera del cuerpo, es posible adquirir la enfermedad de varias maneras?

____ 2. Llagas y sarpullidos todo el tiempo se, encuentran en las personas que tienen sífiles asi que las personas saben que estan infectados?

____ 3. Las sintomas de sífiles se desaperecen aunque no tengan propia curacion medica para la enferemad?

____ 4. Si una mujer embarazada tiene sífiles, ella puede transmitar la enfermedad al niño sin nacer, si no recive curacion a tiempo?

____ 5. Sífiles puede venir por herencia y pasado en generaciones?

____ 6. Ya una vez teniendo sífiles y la enfermedad esta curada en la primer etapa, nunca puede infectarse otra vez?

____ 7. Algunas personas tienen sífiles y nunca tienen senales visibles de la enfermedad?

____ 8. Si sífiles no es hallado y curado, puede causar cequedad, locura, o muerte?

____ 9. Gonorrea muchas veces es causado por cosas pesadas que levanta uno (estirar con fuerza)?

____10. Si sintomas de gonorrea en la mujer es hallado y curado, puede causar esterilidad (Prevenir la mujer para siempre de tener un niño)?

____11. Las sintomas de gonorrea se desaperecen aunque las persona no es curado de la enfermedad?

____12. Si la persona tiene gonorrea una vez y es curado, nunca podra tenerlo otra vez, porque va hacerse inmune?

____13. Es posible para una mujer tener gonorrea y no saber lo?

____14. Si la gonorrea no es curado se hace sífiles?

____15. Sífiles y gonorrea son adquiridos por contacto sexual con una persona infectada?

____16. Es posible para una persona tener sífiles y gonorrea al mismo tiempo?

APPENDIX E (continued)

____17. Un analisis de la sanger se puede hacer para saber si hay gonorrea o sífiles?

____18. Sífiles y gonorrea son adquiridos por la persona infectada por ejemplo, sillas de escuado, pinturcas de boca, o toallas?

____19. Personas con sífiles y gonorrea tienen aparacions distinctas, y es posible saber a la pura vista que la persona esta infectada?

____20. Sífiles y gonorrea pueden ser curadas con propios tratamientos medecinales?

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APPENDIX F

QUESTIONNAIRE DISTRIBUTED TO HIGH SCHOOL CLASS
FOLLOWING DRUG ABUSE PRESENTATION

1. Based on a pharmacist's training (5 to 6 years of school emphasizing drugs and their actions), do you feel that it would be worth your time to have a young pharmacist meet and discuss the actions of both prescription and "street" drugs?

_____Yes _____No

2. At what point in your education should such a program be done - 8th, 9th, 10th, 11th, 12th, or earlier?

5th____ 7th____ 8th____ 9th____ 10th____ Earlier____

3. Did you find this approach of a pharmacist talking on durgs worth your time? Did you learn anything new?

____Yes

4. Do you feel that a pharmacist can answer most of your questions concerning drugs? Did you get your questions answered satisfactorily?

____Yes

5. Should such a program (using a pharmacist) be repeated for other classes? If so when? If not, why not?

____Yes

APPENDIX G

SUMMARIZATION OF PHARMACIST CONTACTS

1. Encountered one patient who indicated a concern over her husband's lack of knowledge of his medications.

   A follow-up interview was done with the husband.

2. Encountered a patient who complained of gastrointestinal upset when taking aspirin.

   Suggested taking medication with some food.

   Suggested substitution of acetaminophen for aspirin.

3. A patient complained of nausea - vomiting due to the administration of oral diethystibesterol.

   Advised physician of such information.

   Previously unrecorded on patient's chart.

4. A patient was administered penicillin shots for four consecutive days for an apparent upper respiratory infection.

   Patient had persistent apparent upper respiratory infection for two months.

   X-rays had been indicated for the patient to have but he had not fulfilled such duty.

   No indication on patient's chart of his having seen another physician.

   No indication on patient's chart of the history of having penicillin administered by another physician.

5. Patient informed of the necessity and desirability of consuming large amounts of water taking Gantrisin ^{R} .

APPENDIX G (continued)

Discussed therapeutic use of Gantrisin [R] .

Also discussed prevention of tubal damage to kidneys with Gantrisin [R] .

6. Stressed importance to patient for her to use all Mycostatin[R] vaginal tabs even when vaginal discharge had stopped.

   Patient had been to clinic twice previously for the same disorder.

   Patient had failed to complete cycle of medication in both instances.

7. Patient with unknown or unrecorded allergy complained of shortness of breath when taking his medication.

   Also noted on daughter's chart possibility of some familial drug sensitivities.

8. Explained the necessity to a patient for him to take hypertensive medication not only when he felt rise in blood pressure.

   Discussed with patient the rationale behind daily therapy.

9. Patient on reserpine complained of stuffy nose and at times difficulty in breathing.

   Explained to patient the side effect of the medication.

10. Noted possible interaction between indomethacin and phenobarbital on the Cogentin [R] as patient complained of irregular behavior in response to medication.

    Met with physician and suggested use of levo-dopa for the Parkinsonism.

    Met the criteria for the patient as medication covered under third party program.

APPENDIX G (continued)

11. Talked with patient who was sensitive to codeine causing gastrointestinal upset.

    Suggested the patient take the medication with some food or milk, not on an empty stomach.

12. Discussed with concerned mother the apparent unresponsiveness of a child to an antibiotic.

    So noted this information on the chart.

    Discussed with the mother the need for the child to be given all the medication even when the child is apparently well.

    Also discussed with the mother the proper storage of medications as to her request.

13. Advised a patient against sharing her pain medications with her daughter who was undergoing a tonsillectomy.

    Also discussed the dangers of giving aspirin without the physicians's consent due to enhanced possibility of bleeding.

14. Discussed gastrointestinal upset with patient taking codeine medication.

    Suggested that the patient take medication with food and/or milk.

15. Discussed with patient the desirability of taking her antibiotic on an empty stomach for enhanced absorption and rapid action.

16. Met with patient who complained of drowsiness on prescription antihistamine.

    As patient was truck driver, recorded so on chart with suggestion that the patient be warned of the use of such medication when driving and that possibility since the patient desired more of a

APPENDIX G (continued)

decongestant, that the antihistimine be substituted by a good decongestant.

17. Answered questions regarding dosage, side effects, tolerance, patient response, and mode of action of levo-dopa.

18. Explained to a patient how her diuretics worked. Also explained to her husband the pharmacological action of the various antigout medications.

19. Discussed with patient the variables involved in prices charged by various pharmacies.

    Also discussed why prices vary.

    Also discussed why patients are not given indefinite refills - therapeutic rationale for such.

20. Discussed with a patient the need to take medications for tuberculosis despite the fact that there was no apparent pain in the chest.

21. Discussed with a mother her notions concerning baby aspirin pointing out the fallacies in her statement that if one tablet is good, two will be better.

    Also indicated to her how baby aspirin worked and what it actually was.

22. Discussed with a patient the time of onset versus action and duration of medications.

23. Explained to a patient the significance of daily drug therapy concerning diuretics and the retention of water.

    Emphasized not to wait until water builds up to start taking diuretic.

24. Discussed with patient taking penicillin the desirability of taking

APPENDIX G (continued)

the medication on an empty stomach.

Also stressed the desirability of taking all the medication prescribed.

25. Noted allergic response on patient to 5-Flurourecil by exposure to sunlight.

Patient worked outdoors in the hot sun.

Recorded on chart.

26. Asked by a concerned parent about the apparent effect of "reds" (Seconal ®).

27. Suggested an over-the-counter expectorant for a child exhibiting no fever with advice to mother to bring the child in to the clinic if no change noted within two to three days.

28. Noted possible ergotrate poisoning.

Patient had difficulty focusing eyes, exhibited flushing of the face, complained of dizziness, and tingling and loss of sensation in fingers. Noted that patient took three to four Belergal Spacetabs ® daily for headaches.

29. Noted bilateral post-arthritic response to drug Apresoline ®.

Symptoms of vascular collapse, arthralgia and localized edema.

30. Explained the use of insulin, its time of administration and mechanism of action.

31. Advised patients of the desirability to avoid consuming dairy products such as milk while taking tetracycline.

32. Explained to patient how her muscle relaxant medication worked and cautioned her on possible drowsiness.

She drives a great deal in the heat of the day.

APPENDIX G (continued)

33. Noted a patient who was returning for medical assistance for a urinary tract infection.

    Learned that patient had failed to pick up medication prescribed for urinary tract infection.

34. Discussed, through an interpreter, the need for a Mexican-American patient to take all of her antibiotic and to do so on an empty stomach.

35. Encountered female patient who failed to finish cycle of Flagyl [R] due to nausea.

    Admitted taking medication on an empty stomach.

    I advised her to take medication following meals, and to finish the therapeutic cycle.

    Inquired as to husband's compliance with his Flagyl [R] therapeutic cycle.

36. Suggested, on physician's request, an over-the-counter expectorant for a young child.

37. Discussed the possible cause of diarrhea during ampicillin therapy with patient and physician.

    Suggested replacement of natural bacteria flora in the intestine with either yogurt or Lactinex [R] .

38. Discussed, with patient and physician, dizziness exhibited by patient while being administered Pavabid [R] .

    Discussion with physician on use of this drug for ischemia with the side effects apparently outweighing therapeutic effectiveness.

APPENDIX G (continued)

39. Discussed with physician and patient the effect of large doses of prednisone on the white blood cell count.
40. Patient stated that current decrease in dosage of oral hypoglycemic agent had made urine 3+ Tes-Tape [R] measurement in the morning. Suggested to physician and patient that dosage of oral agent be increased to morning and evening dosages.
41. Discussed with physician the use of Aveno [R] and Nutriderm [R] for dry skin due to allergy.
42. Discussed with physicians possible drug interactions between the drug Coumadin [R] and phenobarbital (an enzyme inducer), chloral hydrate (competes for enzyme deactivator of Coumadin [R]), and indomethacin (displaces Coumadin [R] from plasma protein).
43. Discussed with medical students the ability to administer erythromycin without lowering dosage in patients with renal impairment.
44. Discussed the use of Artane [R] with medical students in an effort to counter the extrapyramidal effects of phenothiazines.
45. Discussed the detoxification of a Darvon [R] addict.
46. Discussed the inability to use Dilantin [R] to prevent barbiturate induced seizures.
47. Discussed the various actions of phenobarbital and Dilantin [R] in seizures.
48. Discussed impotency caused by administration of methyldopa.
49. Discussed the relative potencies of chlorthiazide and hydrochlorthiazide.

APPENDIX G (continued)

50. Discussed the combination of regular and NPH-insulins.

51. Discussed the variance in absorption of potassium phenoxymethyl penicillin vs. phenoxymethyl penicillin.

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APPENDIX H

QUESTIONNAIRE DISTRIBUTED TO PATIENTS FOLLOWING PRE- AND POST-PHYSICIAN INTERVIEWS WITH THE PHARMACIST

Recently, the Livingston Community Health Service Clinic offered an expansion of its health services by utilizing a pharmacist to meet with patients and answer their questions or discuss any problems pertaining to either prescription medications or over-the-counter prescriptions (aspirin; cough medicine). At this time, we'd like to know your reaction to this program. Your comments would be appreciated.

1. Did you feel the time and effort of having the pharmacist meet with you was beneficial?

_____Yes _____No

2. Were your questions or problems answered to your satisfaction?

_____Yes _____No

3. Would you be interested in meeting with a pharmacist to discuss your particular medical needs in conjunction with the Clinic?

_____Yes _____No

4. If such a program were offered and covered by an office visit fee, would you make use of this service?

_____Yes _____No

(a) Would you pay for this service if it were offered at a nominal cost?

_____Yes _____No

5. Would you be willing to do so with a pharmacist in conjunction with the Clinic, if such a service was offered in a consultation room adjoining the community pharmacy?

_____Yes _____No

Form GM1

Thank you,

Gregory P. Matzen, R.Ph.

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APPENDIX I

QUESTIONNAIRE DISTRIBUTED TO PATIENTS ATTENDING THE DIABETES AND HYPERTENSION CONSULTS

cently, you met with a pharmacist at the Livingston Community Health Service, ere you had the opportunity to discuss with him any particular questions you ght have regarding drugs. Based on this meeting, could you please answer the llowing questions and return this questionnaire as soon as possible. You need t sign your name, so please be as honest as you can.

Did you object to a pharmacist meeting and discussing with you various aspects of your disease state and treatment?

_____Yes _____No

Were you given information that might prove helpful in the management of your disease?

_____Yes _____No

During the discussion, did you learn anything new?

_____Yes _____No

Suppose this pharmacist was located in a nearby pharmacy and worked with the Clinic to provide health services. Would you be willing to meet with a pharmacist in a consultation room off the pharmacy to discuss any questions you might have regarding your medication - such as, the diabetic meeting held at the Clinic?

_____Yes _____No

Would you be willing to pay a fee ($2-$3) for such a prearranged meeting, such as one we had on medications. Please explain your answer.

_____Yes _____No

Would you be willing to have such services provided when you pay for a visit to the Clinic?

_____Yes _____No

What was your overall opinion of this idea of a pharmacist serving as a consultant, such as the diabetic clinic? Any suggestions you might make would be appreciated.

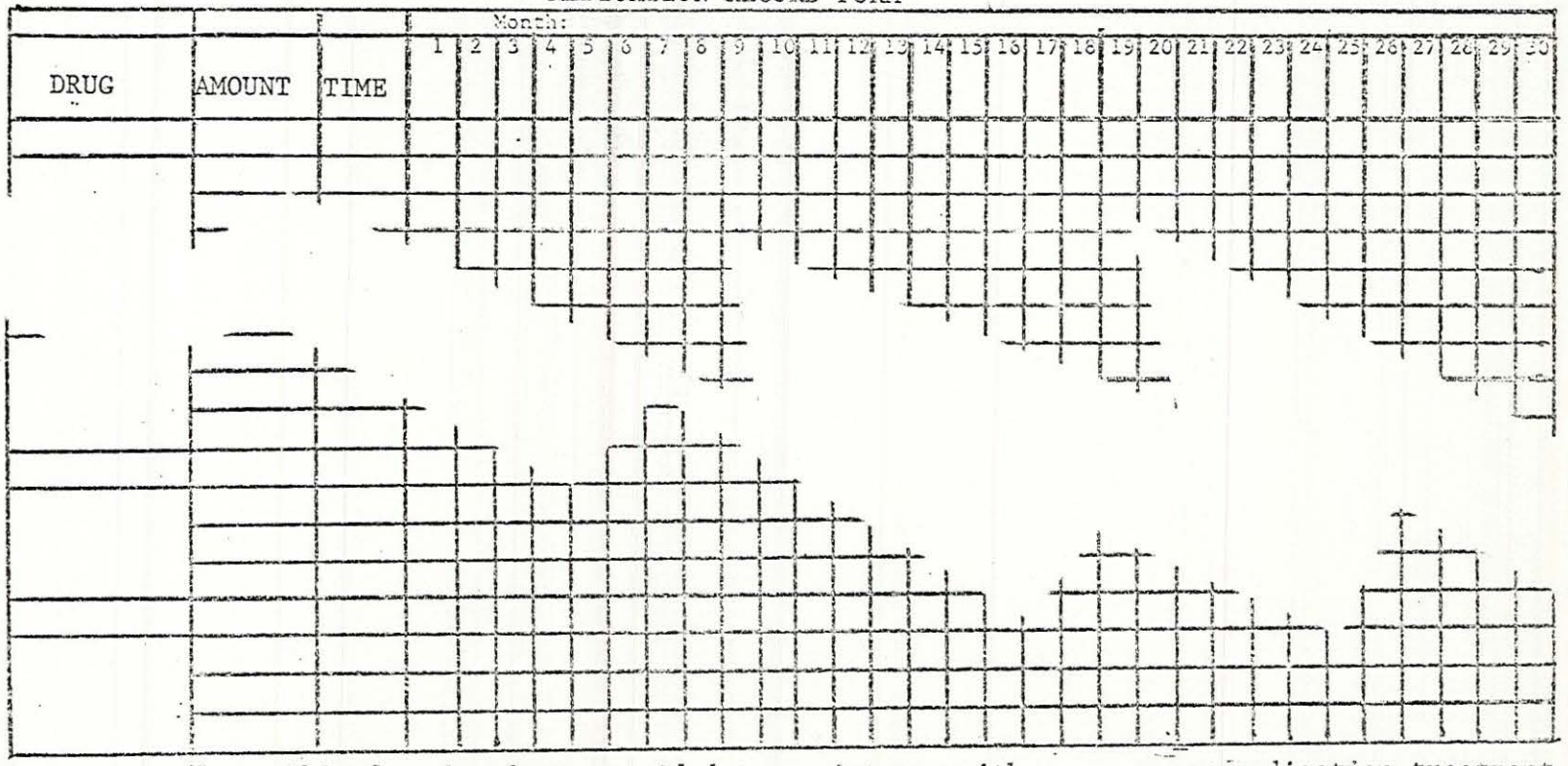
Thank you,

Gregory P. Matzen, R.Ph.

rm CM2

LIVINGSTON COMMUNITY HEALTH SERVICE
1140 Third St., Livingston, Ca.
Telephone (209) 394-7913

MEDICATION RECORD FORM



Note: This form has been provided to assist you with your proper medication treatment. If you have any questions or difficulties, please call the number above.

APPENDIX J: MEDICATION CALENDAR SHEET

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APPENDIX K

QUESTIONNAIRE DISTRIBUTED TO THE STAFF OF THE
LIVINGSTON COMMUNITY HEALTH SERVICES CLINIC

Over the last few months, you have had the opportunity to have a pharmacist provide new services and approaches toward delivery of pharmaceutical care and preventative medication. In conjunction with these programs, your comments would be appreciated on the following questions.

1) Several programs involving public health were conducted by the pharmacist (V.D., Drug Abuse, etc.) Primarily, these programs were designed as "preventative medicine". What is your opinion of having a qualified pharmacist conducting public health programs in areas such as Merced County, where there is no formal public health education?

2) Numerous patients met with the pharmacist either before or after seeing the physician to discuss any drug problems or questions (administration, side effects, etc.) Do you think this was worth the effort and time?

3) The pharmacist can serve as a resource for therapeutic selection, help monitor patients' drug therapy to prevent drug interaction, and also observe any adverse drug effects or disease complications. Did these services prove useful?

4) Another area of pharmacy interest concerned outpatient followups. This was done to assure proper patient utilization of medication, as well as to check the general health of the patient for complications. Were these services useful?

5) During this period of time, several pharmacy patient consults occurred with nine patients suffering from different disease states (diabetes, hypertension). Discussion centered on history, disease, symptomology, therapy and medical management.

6) All of these programs might be coordinated by use of a pharmacy and pharmacist contracted with the Clinic. Statistics indicate that on a national average, 7 out of 10 persons visit their neighboring pharmacy every two weeks. With the addition of a small consulting room at the pharmacy, along with access to medical records, the pharmacist could perform these duties and others with the community in coordination with the Clinic. Such a program of pharmacy involvement could help meet the idea of preventative medicine as well as providing conventional pharmacy services on a contractual basis. On the basis of expansion of medical services, would such a program be of interest to the Clinic?