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Coalition for Consumer Access to Pharmaceutical Care

**PHOTOCOPY
PRESERVATION**

Kristine,

Here is your
10:30 meeting
material for 9/16/93



AMERICAN ASSOCIATION
OF COLLEGES OF PHARMACY

August 27, 1993

Dr. Arthur Lawrence
Acting Deputy National AIDS Coordinator
Office of National AIDS Policy Coordination
Executive Office of the President
The White House
Washington, DC 20500

Dear Art:

Thank you for making arrangements for staff from the American Pharmaceutical Association (APhA), the National Pharmaceutical Association (NPhA), and the American Association of Colleges of Pharmacy (AACP) to meet with Ms. Kristine Gebbe and you to discuss the role of the pharmacy profession in AIDS education, prevention, and treatment. We look forward to developing a closer working relationship in the months and years ahead.

Together with Dr. Lucinda Maine, Senior Director of Pharmacy Affairs at APhA and Dr. Terri Smith Moore, Executive Vice President of NPhA, I look forward to the chance to meet you and Ms. Gebbe, and to discuss with you our perspectives on enhancing pharmacists roles, both in the health care system generally and specifically with regard to AIDS.

As we discussed, we will meet with you at your offices located at 750 17th St., NW, Suite 1060, from 10:30am-11:30am on Thursday, September 16. I will serve as contact for the group should there be a need for a change in schedule or location.

I have enclosed a packet of general materials which describe the coalition in which our three organizations are members. This coalition has been established to articulate the organizations' views on the role of pharmacists within the context of health care reform. I think you will find them informative, as well as offering a context within which to discuss the specific issue of AIDS.

We look forward to seeing you on September 16.

Sincerely,

C. Edwin Webb, Pharm.D., M.P.H.
Director of Government Affairs and Health Policy

CEW/

cc: Dr. Lucinda L. Maine
Dr. Terri Smith Moore



Coalition for Consumer Access to Pharmaceutical Care

2215 Constitution Avenue, NW • Washington, DC 20037-2985 • (202) 628-9195

American Association of
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American College of
Clinical Pharmacy (ACCP)

Academy of Managed Care
Pharmacy (AMCP)

American Pharmaceutical
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American Society of
Hospital Pharmacists (ASHP)

National Consumers
League (NCL)

National Pharmaceutical
Association (NPhA)

FOR IMMEDIATE RELEASE

May 11, 1993

CONTACT: Mark Robertson

(202) 944-5148

Ed Webb

(202) 739-2330

Pharmacists and Consumers Prescribe Billion Dollar Savings For Health Care System .. New Coalition Supports Avoiding Medication Related Problems Through New Legislation Affecting Pharmaceutical Care

WASHINGTON -- The formation of a new coalition, **The Coalition for Consumer Access to Pharmaceutical Care (CCAPC)**, composed of seven national professional pharmacist organizations and the National Consumers League, was announced today. The coalition supports efforts to reform the existing health care system to assure access to quality health care for all Americans at an affordable cost.

CCAPC believes the health care system must be reorganized to more effectively utilize the skills and experience of pharmacists, the most accessible of health care professionals, to improve health care delivery to our nation's citizens.

Pharmacist members of CCAPC organizations, as front line providers of health care in a variety of settings, have brought their perspective to the Clinton Task Force on

- more -

Health Care Reform and to deliberations on Capitol Hill. The coalition advocates legislation that will remove obstacles to the provisions of pharmacists' services and provide incentives so that the pharmacist, working with physicians and other health professionals, can: **identify and prevent medication errors and potential adverse drug reactions; increase utilization of cost-effective medications; and assist patients to achieve improved therapeutic outcomes with those medications.**

They also advocate the use of formulary management, drug use review (DUR) and certain prescription protocols to help achieve the best use of medications. Pharmacist initiatives of this nature could save the health care system billions of dollars by avoiding the additional risk many Americans face because of medication related problems.

The coalition believes it is critical for professional pharmacy services -- pharmaceutical care -- to be recognized as part of the solution to the three most significant problems in health care reform: high costs, insufficient access; and inconsistent quality. The CCAPC endorses the following positions to address these needs:

- Pharmaceutical products and pharmaceutical care (pharmacists' services) should be core benefits under health care reform.
- Pharmacists' services and the proper management of medications can generate significant savings to a reformed health care system.

- Quality assurance programs administered by pharmacists can significantly improve the effectiveness of medications in achieving positive patient outcomes.
- Integrated information systems that include pharmacists offer the potential for cost savings and better patient outcomes.

The organizations represented in the new coalition are:

- The Academy of Managed Care Pharmacy
- The American Association of Colleges of Pharmacy
- The American College of Clinical Pharmacy
- The American Pharmaceutical Association
- The American Society of Consultant Pharmacists
- The American Society of Hospital Pharmacists
- The National Pharmaceutical Association
- National Consumers League

Combined, the coalition's seven member organizations represent 90,000 pharmacists from the entire spectrum of the profession: community, institutional and educational settings. These pharmacists deliver pharmaceutical care associated with 1.7 billion prescriptions yearly. Pharmacists provide care to 18 million Americans each day.

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The members of CCAPC are:

**The American Association of
Colleges of Pharmacy (AACP)**

1426 Prince Street
Alexandria, VA 22314-2841
(703) 739-2330
(703) 836-8982 FAX

AACP is the national association representing the interests of the 75 U.S. colleges of pharmacy, including 4,000 faculty and the more than 30,000 students enrolled in pharmacy degree programs.

The American College of Clinical Pharmacy (ACCP)

3101 Broadway
Suite 380
Kansas City, MO 64111
(816) 531-2177
(816) 531-4990 FAX

ACCP is the national professional and scientific society representing pharmacists focusing on clinical pharmacy practice, research and education.

Academy of Managed Care Pharmacy (AMCP)

1101 King Street
Alexandria, VA 22314
(703) 838-9216
(703) 838-9217 FAX

The Academy of Managed Care Pharmacy is the national professional society of pharmacists promoting the development and advancement of pharmaceutical care in managed health care environments.

American Pharmaceutical Association (APhA)

2215 Constitution Avenue, NW
Washington, DC 20037
(202) 628-4410
(202) 783-2351 FAX

APhA is the national professional society of pharmacists representing more than 41,000 pharmacy practitioners, scientists and students.

**American Society of
Consultant Pharmacists (ASCP)**

1321 Duke Street
Alexandria, VA 22314
(703) 739-1300
(703) 739-1321 FAX

ASCP is the national professional society representing more than 5000 pharmacists providing pharmacy and consultant services to individuals residing in or served by nursing homes, home health care, prisons, mental institutions, hospices, and other long-term care facilities.

American Society of Hospital Pharmacists (ASHP)

7272 Wisconsin Avenue
Bethesda, MD 20814
(301) 657-3000
(301) 652-8278 FAX

ASHP is the national professional association representing more than 27,000 pharmacists who practice in health care systems, including hospitals, HMOs, long term care facilities and home-care agencies.

National Consumers League (NCL)

815 15th Street
Suite 928-N
Washington, DC 20005
(202) 639-8140
(202) 737-2164 FAX

NCL is a private, non-profit membership organization, founded in 1899 to bring consumer power to bear on marketplace and workplace issues. NCL investigates, educates and advocates consumer and worker rights through individual citizens, local affiliates and the national office.

The National Pharmaceutical Association (NPhA)

2726 12th Street, NE
Washington, DC 20018
(202) 529-RPhs/529-7747
(202) 529-8211 FAX

NPhA is the national professional organization representing over 6,000 minority pharmacists and pharmacy students.



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Pharmacists and the Provision of Pharmaceutical Care

The mission of pharmacists is to help make the best use of medications to achieve optimal therapeutic outcomes.

"There is strong evidence that clinical pharmacy services add value to patient care and reduce health care utilization costs."

—Report of the HHS Inspector General (1990)

Pharmaceuticals and the services provided by pharmacists are among the most cost effective methods of health care available. Medications are indispensable in preventing and treating illnesses. The pharmacist's responsibility in counseling patients and using the knowledge of pharmaceutical science to assure selection of appropriate therapy adds significant value to the prescription product. There is evidence, however, that the public is not fully realizing the full potential benefit from these resources. It is imperative that professional pharmacy services as expressed by the concept of "pharmaceutical care" be recognized as a solution to the two most critical problems in drug use management: cost and sub-optimal therapeutic outcomes. In recent years pharmaceutical care has become a more integral part of our health care system. Public policymakers, employee benefit managers, insurers, and medical professional organizations need to better understand this important trend and the benefits it provides.

What's Right and Wrong About the Use of Pharmaceuticals

While physicians and pharmacists have served patients for more than 3000 years, it has only been in this century that the care provided by these professionals has achieved such significant and dramatic advances in preventing, treating and curing illnesses and in improving the quality of life. A primary vehicle for this change has been a pharmaceutical revolution that started with antibiotics and the sulfa drugs and continues today with wonder drugs based on microbiology and biotechnology.

Prescription medicines successfully treat major acute and chronic diseases, prevent unnecessary physicians' visits, hospitalizations, surgeries and long-term institutional care and ease pain and provide symptomatic relief. When properly used, they save far more than the 7% of health care costs and 1/2% of the GNP that they cost. However, many individuals do not have insurance coverage for outpatient drug therapy and often face a difficult financial burden in assuring that their medication needs are met.

Although medication use has assumed a primary role in health care, its provision is often uncoordinated and highly fragmented. One result is that medication-related problems are associated with about 2% of the 1.6 billion prescriptions that are written and filled each year. Billions of dollars could be saved annually by improving patient compliance, reducing inappropriate drug use and medication-induced illnesses and hospitalizations, and decreasing preventable adverse effects and interactions.

The Potential for the Profession of Pharmacy to Resolve These Problems

The pharmacist has an important role to play in helping society deal with the costs of pharmaceuticals and assuring appropriate patient outcomes through patient counseling and drug therapy management. To do so, pharmacists must be allowed to move away from their traditional role which saw them primarily as dispensers of drug products and into their rightful position as a full-fledged partner with patients and prescribers in the provision of primary health care services. Many pharmacists are already working effectively with these new responsibilities. The professional services that define this new role are called "pharmaceutical care," although they have sometimes been called "patient-oriented pharmacy practice" or "clinical pharmacy."

Pharmaceutical care is a proven approach to dealing with medication costs and promoting quality therapeutic outcomes. Not only does it rest on a growing body of research that says it works, but it has the advantage of utilizing an existing and well-prepared resource, the pharmacist. As a group, pharmacists are among the most highly trained of all health professionals and are the single most knowledgeable source on the use of pharmaceutical products. And pharmacists are the most accessible health care professional for meeting patient health and medication information needs.

The elements of pharmaceutical care can be defined as follows:

- meaningful interaction among patient, physician, and pharmacist about prescribed medications and their proper use, including patient counseling and consultation between the physician and pharmacist, and
- the collection and evaluation of patient information to:
 - identify potential and actual drug-related problems
 - resolve or prevent their occurrence
 - identify opportunities to achieve similar therapeutic results with less expensive medications

Pharmaceutical care acknowledges that the responsibility of the pharmacist is not limited to dispensing of a commodity and extends beyond that point in time when the prescription order is filled.

Pharmaceutical care contemplates ongoing drug therapy management with a continuum of services provided by the pharmacist, in collaboration with other health professionals, that will achieve the desired therapeutic outcome and improve the patient's response to medications and quality of life. More cost effective health care service utilization should be a result of improved drug therapy management.

Among the specific activities pharmacists perform are:

- participating in the drug therapy decision process and selecting therapeutic objectives;
- selecting the drug product dosage form and source of supply, determining the dose and dosage schedule, and preparing the drug product for patient use;
- providing the drug product to the patient along with appropriate drug information; and
- monitoring the patient to maximize compliance and prevent adverse drug reactions and interactions.

To some extent, pharmaceutical care is delivered in every pharmacy in America right now. Yet its full potential is unrealized. The objective, however, is clear:

- Pharmacists should have a professional, caring relationship with every patient to whom they provide any component of pharmaceutical care. The patient should be viewed as a partner in the process of providing that care.

- Pharmacists must accept increased professional responsibility for assuring optimal therapeutic outcomes for their patients through the provision of pharmaceutical care.

Why Is Pharmaceutical Care Not the Current Standard

As pharmacists work with public and private health care purchasers and with medical groups to expand the availability of pharmaceutical care, there are barriers that have impeded this progress and will need to be addressed. Federal legislators have already involved themselves in the need to break down these barriers through the enactment of OBRA-90 provisions that require: mandatory drug use review and patient counseling for Medicaid patients; and government-sponsored demonstration projects relating to the provision of clinical pharmacy services. Nonetheless, more will need to be done to make pharmaceutical care widely available.

A. Pharmacists Aren't Adequately Integrated Into the System

To provide pharmaceutical care to patients requires a more effective integration of the pharmacist's practice with other components of the health care system. Essential information needed to provide comprehensive pharmaceutical care, i.e. diagnostic and laboratory data, care plans of other providers, historical information, and patient interview data, must be incorporated into the pharmacist's practice by building relationships with other members of the health care team. In doing so, pharmacists must restructure their activities to utilize the full range of technology, information systems, and supportive personnel necessary for the delivery of pharmaceutical care. Health care purchasers must insist that such systems become available so that quality and savings outcomes can be achieved.

B. Professional Empowerment Issues Need to Be Resolved

The power of pharmaceutical products is not fully unlocked by a physician handing a prescription to a patient. However, the "value-added" provided by pharmaceutical care is often blocked by formal and informal restraints on the pharmacist's role. The resolution of this lies in: development of collaborative practice with physicians; and expanding pharmacists' access to medical information systems. Also, states should seriously consider the revised Model Pharmacy Practice Act developed by the National Association of Boards of Pharmacy. The revised model act includes a number of statutory provisions that would facilitate the provision of pharmaceutical care.

C. Reform of the Payment System Is Needed

The HHS Inspector General's 1990 report summed this up well: "one of the most formidable barriers facing pharmacists...is the transaction-based reimbursement structure of [pharmacy]. The result typically is a focus on product and price rather than provision of clinical services for which there is no incentive."

The pharmacy profession is working hard to develop and implement models of reimbursement that will demonstrate the overall cost savings and improved quality of health care brought about by pharmaceutical care. Increasingly, the purchasers of care, both public and private, must share in this effort if the patient is to benefit.

Some Final Thoughts

"A vital question facing pharmacists as well as those who receive and reimburse pharmaceutical services is whether the more advanced clinical pharmacy care represented by our case-study pharmacists can become part of mainstream practice."

—Report of the HHS Inspector General (1990)

"Health care reform is about changing the basic assumptions about how care is delivered and paid for. Pharmacy will never have a better forum to argue their case for legitimizing and expanding the professional role of the pharmacist."

—R. Presnell, Florida Pharmacists Association February 1993

For more information about pharmaceutical care and how its broad implementation would benefit patients and purchasers of health care services, please contact The Coalition for Consumer Access to Pharmaceutical Care, 2215 Constitution Ave., N.W., Washington, D.C. 20037; phone: (202) 628-9195.

REFERENCES

Prospectus on the Economic Value of Clinical Pharmacy Services. Kansas City, Mo.: American College of Clinical Pharmacy. 1989; 9/1:45-56.

The Clinical Role of the Community Pharmacist. Washington, DC: Office of the Inspector General, U.S. Department of Health and Human Services. November 1990.

"Value of Community Pharmacists' Interventions to Correct Prescribing Errors." Rupp. *The Annals of Pharmacotherapy*, December, 1992; 26:1580-1584.

"How Pharmacists Can Help." Congressman Bill Brewster. Roll Call, February 1, 1993. Page 42.

"A Practical Billing and Payment Plan for Cognitive Services." Christiansen et. al. *American Pharmacy*, March 1993; NS 3313:34-39.



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The Profession of Pharmacy

In the last quarter century pharmacy has expanded its role within the health care delivery system from a profession focusing on preparation and dispensing of medications to patients to one in which pharmacists provide a range of patient-oriented services using their knowledge of the science of drugs to maximize their effectiveness.

There are approximately 190,000 licensed pharmacists in the United States with 150,000 in active practice (1992). Recent years have seen a dramatic growth in the number of women entering the profession with the most recent (1990) estimate of women as a portion of the total number of pharmacists being 29%. The proportion of women enrolled in pharmacy schools is now at 60%. The number of pharmacists per 100,000 total population is estimated at 64.4 (1990). The unemployment rate for pharmacists in 1990 was 0.2%, while the total workforce unemployment rate was over 5%. The number of pharmacists is expected to increase by 24% over the next 25 years.

Pharmacy is practiced in a wide range of settings: community pharmacies, hospitals, nursing homes, the pharmaceutical industry, mail order, managed care, and government (DVA, DOD, Indian Health Service, Public Health Service) are the largest employers. A recent survey identified 112,000 pharmacists in community pharmacy (66,000 in chains; 46,000 in independents), 40,000 in hospitals, and 21,000 in consulting, government, academic, industry and other settings.

The number of prescriptions dispensed annually is approximately 2 billion with approximately 1.5 billion dispensed at the nation's 55,000 community pharmacies. The number would be higher but for unfilled/unclaimed prescriptions. The average prescription cost is just over \$24 (compared to about \$650 for a one-day hospital stay).



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Personal and Economic Consequences of Patient Noncompliance, Adverse Drug Reactions and Medication Errors

There are hidden yet staggering costs, both personal and economic, to the health care system that result from suboptimal prescribing, adverse drug reactions and patient non-compliance. Health care professionals have focused much of their attention on the "front end" of the drug use process. Physicians strive to make the best prescribing decisions for their patients; pharmacists have crafted accurate and efficient drug distribution systems. However, our fragmented health care delivery system lacks efficient incentives conducive to appropriate drug therapy management. Pharmacist interventions to identify prescribing errors and potential adverse drug reactions, and counseling patients to promote compliance and desired therapeutic outcomes, results in an improved and more cost effective health care delivery system.

- From 14-21% of patients have failed to have one or more prescriptions filled
- It is estimated that of the 1.8 billion prescriptions that are filled annually, half are not taken properly
- Medication-related problems such as noncompliance by patients is responsible for an estimated 10% of all hospital admissions, 25% of the elderly's hospital admissions, and 23% of all nursing home admissions
- The failure to fill or refill prescriptions has resulted in an estimated cost of \$8.5 billion for increased hospital admissions and physicians visits — nearly one percent of the country's total health care expenditures
- Drug interactions and adverse drug reactions are said to account for about 7% of all hospitalizations; however the FDA has noted that reported ADRs represent only a fraction of the actual number of prescription drug-induced hospitalizations and deaths
- Forty percent of the elderly who take drugs experience adverse drug reactions; the elderly comprise only 12.5% of the population but consume 32% of all prescription drugs
- As much as one third of hospital admissions for the elderly may be the result of ADRs. A 1983 estimate of the cost of these hospitalizations and post-discharge treatment was \$4.5 billion
- About 70% of adverse effects are predictable and preventable through logical application of existing information
- A recent study of medication errors and pharmacist intervention conducted in community pharmacies found that over one-fourth of medication errors identified and corrected by pharmacists could have resulted in harm to the patient. The direct cost of medical care that was avoided as a result of pharmacists' interventions was estimated to be \$123 per problematic prescription
- Another study reported that hospital records erred 60% of the time in listing important medications that elderly patients were taking when admitted, raising a risk of serious treatment errors
- A 1981 study of 815 hospitalized patients found that 36% of them experienced new illnesses due to medical interventions performed in the hospital, almost half of which were caused by drugs



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Pharmaceuticals and Pharmaceutical Care as a Core Benefit

Position:

Pharmaceutical products and pharmaceutical care (pharmacists' services) should be included as a core benefit in a reformed health care system.

Rationale and Impact:

Access to pharmaceuticals and pharmaceutical care is a necessary component of any health care reform proposal that strives to control costs and provide quality care. Appropriately managed pharmaceutical therapy improves patients' quality of life and lowers overall health care expenditures by reducing the need for more costly services (e.g. hospitalizations, long term care, surgery).

Discussion:

Medications are used to successfully diagnose, prevent and treat major acute and chronic illnesses and slow or halt the progression of more serious conditions. Although prescription medications represent only 7 to 10 percent of the total health care dollar, when utilized properly their financial impact is far more significant.

Patients often fail to gain optimal effectiveness from pharmaceuticals under the current system because of a lack of access and, in some cases, poorly coordinated care. Also, a higher portion of prescription costs are borne out-of-pocket by consumers in comparison with other health care services. This results in access problems for those without adequate insurance coverage. In addition, the U.S. spends enormous sums of money on medicines that are used inappropriately or to treat illnesses that result from the inappropriate use of medicines, including unneeded drugs prescribed for an illness, the wrong use of correct drugs, wrong doses and dosing schedules, lack of compliance with appropriate therapy, and blind compliance with inappropriate therapy.

A pharmaceutical benefit in a reformed health care system should acknowledge that patients have differentiated needs for pharmaceutical products and services. Pharmacists, in collaboration with physicians, patients and other providers of health care services, can work to manage and improve the drug-use process and maximize therapeutic outcomes in patients according to their individual needs for care. An effective pharmaceutical care program with appropriate competitive incentives for providers is a reasonable and cost-effective component of a reformed health care delivery system.



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Managing the Economics of Pharmaceuticals and Pharmaceutical Care

Position:

Pharmacists' services and the proper management of medications can generate significant savings to a reformed health care system.

Rationale and Impact:

Medications and pharmaceutical care offer an accessible and cost-effective method for treating disease, but only when properly used. The current system lacks incentives and presents obstacles to optimal patient outcomes. The goals of economic reform for pharmaceutical products and pharmacists' services are to: 1) maximize the return on the investment made in expenditures for medications; 2) increase market-based competition in the industry while eliminating cost-shifting between market segments; and 3) alter the incentives for patients and providers to improve drug therapy outcomes. Enhanced systems of cost control and changed models of payment for services could yield considerable savings and marked improvements in patient care at a reasonable cost to payers.

Discussion:

Over the last ten years the costs of pharmaceuticals have increased at an annual rate of approximately 10%, a rate much higher than the annual increases in the consumer price index. Price controls on pharmaceuticals may reduce expenditures or slow the escalation in the cost of drugs in the short-term, but such an approach may have negative consequences on other costs of care and long-term improvements in the prevention and cure of disease. Competitive market forces should be enhanced in order to moderate the costs of this component of the medical care system and should increase quality performance by providers.

Pricing practices of manufacturers and insurers and other payors should reward quality providers, efficient purchasers and economies of scale. Anti-competitive marketing practices which arbitrarily shift costs from one market segment to another should be eliminated. This will insure consistent consumer access to the valuable primary health care services of pharmacists at an affordable cost.

Because a significant amount of money is spent each year for unnecessary drugs and the cost of treating illnesses induced by inappropriately managed therapy, pharmacists are prepared to partner with prescribers and patients to improve medication use in America. The transaction-based reimbursement system currently used for out-patient prescription coverage discourages this approach and must therefore be revamped. An alternative system, which includes incentives for patients and providers to use medications more prudently and for pharmacists to manage the costs of therapy, must be introduced.

Such a system empowers pharmacists to: identify the most cost effective drug product which will achieve the intended therapeutic outcome for the patient; insure that the drug regimen is properly selected; and manage the full course of therapy (e.g. patient education and monitoring). Efficient systems for documenting and paying for such services are currently being tested.

MARCH 1993



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Quality Assurance in the Use of Medications and Pharmacy Services

Position:

Quality assurance programs administered by pharmacists can significantly improve the effectiveness of medications in achieving positive patient outcomes.

Rationale and Impact:

Delivering quality pharmaceuticals and pharmacy services is beneficial in a health care benefit program for two basic reasons. First, emphasizing a quality oriented approach eliminates errors and the additional costs of having to correct drug use problems. Second, providing quality service increases patient and provider satisfaction with the health care benefit program which in turn has a positive effect on patient health outcomes and quality of life.

Discussion:

Quality assessment and assurance programs and the use of quality management techniques must be incorporated into a medication and pharmaceutical care benefit program to increase quality and decrease the costs of care. Quality assessment and assurance programs related to individual patient care should be implemented at local levels through the collaborative efforts of health-care practitioners rather than through centralized systems which cannot address unique patient or provider issues.

Examples of quality assessment and assurance procedures for medication use include drug utilization review, formulary systems, therapeutic drug monitoring by pharmacists and pre-authorized product interchange. Increased patient education and monitoring by pharmacists and the use of patient outcomes analyses are also integral pieces of a quality oriented medication benefit program. Increasingly sophisticated medications and technologies may also suggest the need for a reexamination of the classification system for drugs.

All pharmacists should be allowed to participate in patient care networks based on adherence to quality performance standards. Incentives for patients and providers should be built into the network to insure that quality standards are maintained. Professionals who provide direct patient care should be involved in the design and implementation of the quality improvement techniques used in a program.

Moreover, quality oriented programs must recognize local variations in epidemiology, demography, and practice standards and most importantly information related to quality assessment and assurance activities must be held in confidence by all parties.



Coalition for Consumer Access to Pharmaceutical Care

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National Consumers
League (NCL)

National Pharmaceutical
Association (NPhA)

Integrated Information Strategies

Position:

Integrated information systems that include pharmacists offer the potential for cost savings and better patient outcomes.

Rationale and Impact:

Integrated information systems that include pharmacists are needed to facilitate the delivery of efficient, high quality care. Current systems lack integration and limit effective communication of information between providers. Better patient-specific information exchange and more efficient claims/administrative management systems will decrease costs, improve the quality of care, and improve patient understanding of the care they are receiving. This must be achieved with adequate protection for patient confidentiality.

Discussion:

Provision of higher quality, more efficient pharmaceutical care requires a more effective integration of pharmaceutical care with other components of the health care system. Current legislative and regulatory mandates require pharmacists to review the appropriateness of patients' drug therapy and provide patient counseling services to improve outcomes of drug use. To meet this obligation, pharmacists must have access to pertinent patient-specific information, including: appropriate demographic information and medical history; relevant diagnostic and laboratory data; statement of therapeutic goals or desired outcomes; list of actual or potential drug-related problems; and other therapeutic or clinical monitoring parameters. In addition, the pharmacist must document recommendations on potential therapeutic options and systematically record the services provided.

Many health care providers, particularly in ambulatory care settings, deliver services to patients in isolation from others caring for the same individual. This practice leads to fragmented, duplicative and, in some cases, poor quality care. An integrated information strategy will promote efficiency and increase the quality of care.

Information exchange is also an essential component of efficient administrative (i.e. claim processing) systems. Current health care delivery systems suffer from redundant and non-standardized administration with unnecessary layers of intermediaries in claims management systems. Uniform standards for pharmaceutical care information and claims administration systems should be established which utilize electronic technologies and eliminate inefficient layers of administration. Uniform systems would increase quality assurance capabilities and ease exchange of patient-specific information between providers.



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A Statement on an Outpatient Pharmacy Services Benefit in a Reformed Health Care System

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I. Preamble

On behalf of the professional pharmacy community, the American Pharmaceutical Association, the American Society of Consultant Pharmacists, the American Society of Hospital Pharmacists, the Academy of Managed Care Pharmacy, and the American Association of Colleges of Pharmacy have joined to create the Coalition on Consumer Access to Pharmaceutical Care. The Coalition members are committed to maximizing the benefit that consumers receive from their medications and pharmacists.

An integrated approach -- coordinated among physicians, pharmacists, and other health professionals -- is essential to achieving medication therapy outcomes that improve a patient's quality of life and minimize resources. Pharmaceutical care must be coordinated as each patient moves from ambulatory care to hospital care to home care. It has been estimated that least \$36 billion could be saved annually by improving patient compliance, reducing inappropriate drug use and related hospitalizations, and decreasing preventable adverse effects and interactions.

The Coalition and over 45 additional state and national pharmacy organizations support four principles for the organization and delivery of high quality pharmaceutical care under a reformed health care system:

- (1) Pharmaceutical products and pharmaceutical care (pharmacists' services) should be included as a core benefit under health care reform.
- (2) Pharmacists' services and the proper management of medications can generate significant savings in a reformed health care system.
- (3) Quality assurance programs administered by pharmacists can significantly improve the effectiveness of medications in achieving positive patient outcomes.
- (4) Integrated information systems that include pharmacists offer the potential for cost savings and better patient outcomes.

In sum, efforts to contain total health care costs should be based on maximizing the pharmacists' role in improving the rational use of medicines in order to optimize patient outcomes.

II. Short-Term Strategies for Medications and Pharmacy Services

Current state and federal regulatory barriers inhibit the exercise of pharmacists' judgment in maximizing the cost effectiveness of expenditures for prescription drugs. This needs to be addressed with both short and long term options.

Specific regulatory issues which merit reference include: 1) differences in state provisions related to generic product selection by pharmacists; 2) fee structures under Medicaid and other federal programs (FEHBP) which produce disincentives for pharmacist intervention to improve therapy.

Therefore, all federal programs which contract with pharmacists to provide prescription and/or nonprescription medications to enrollees shall institute mechanisms which empower the pharmacist to utilize professional judgement to enhance the cost effectiveness and quality outcomes of drug therapy. Specific mechanisms should include legislative/regulatory and compensation system changes to promote:

- (1) increased generic product selection rates, including a uniform method for prescribers to specify that a specific source of supply is clinically necessary;
- (2) incentives for formulary system use and compliance;
- (3) provider incentives for improving patient adherence to therapy;
- (4) exchange of information and collaboration between patients' providers.

III. Intermediate Strategies

A. Coverage

To help Americans get the best use of their medications, all accountable health plans (AHPs), or their equivalents, or other approved third party administrators (TPA) or pharmacy benefit managers (PBM), shall incorporate into their benefit packages the following:

1. Pharmaceutical Benefits:

- a) All medically necessary prescription drugs approved by the FDA.

Coverage is for any medically accepted indication approved by the FDA, or which is accepted in officially recognized drug compendia and/or in peer-reviewed medical and pharmaceutical literature.

b) Non-prescription drugs if prescribed by a physician or other authorized prescriber.

2. Pharmaceutical Care Benefits:

a) Drug Regimen Review (DRR) to include review of the individual patient's drug therapy by a pharmacist:

1. to assure "appropriate use" of a drug and its correct dosage,
2. to minimize the potential for drug interactions and adverse reactions, and
3. to eliminate duplicate or unnecessary drug therapy.

b) Drug Information: to include the dispensing of personalized drug information to patients in order to promote their understanding of prescribed therapy and to help them follow rationally prescribed regimens; and to include dissemination of drug information to health care providers involved in a patient's care.

c) Drug Utilization Review (DUR): to include provision for appropriate, ongoing, utilization management systems for the population served by the plan.

d) Drug Formulary Systems: to include use of drug formulary management systems that promote appropriate drug therapy, cost-effectiveness, and preapproved product interchange.

3. Other Possible Program Components

a) Pharmacist Management of Therapy Under Protocol: Patient drug therapy managed by pharmacists under protocols developed jointly by physicians and pharmacists; includes initial selection of therapy following physician diagnosis, monitoring patient response to therapy, and adjusting therapy based on patient response.

b) Patient Incentives: Patient cost-sharing levels that provide incentives for cost-effective drug utilization (e.g., co-payments at point-of-service, differential co-pays for generic drugs).

- c) Preventive Services: Preventive health care services delivered by pharmacists, particularly in underserved rural or urban areas where the infrastructure for health care is weak (e.g., chronic disease screening, therapeutic management and monitoring).
- d) Case-Management: A system of case-management for patients taking high-risk and/or high cost drugs, and/or are considered "high risk" due to their age, medical condition, family history, etc.

B. Access

The pharmaceutical products and services benefits shall be made available at a wide variety of locations within an AHP's (or other approved third party payor's) service area. AHPs are encouraged to develop utilization and participation standards that afford all qualified providers the opportunity to provide these benefits within the service area.

C. Payment

A significant amount of money is spent each year for unnecessary drugs and inappropriately managed drug therapy. Patient noncompliance, adverse drug reactions and misprescribing result in many preventable hospitalizations, nursing home placements and other wasteful services.

To address this issue, pharmacists are prepared to partner with prescribers and patients to improve medication use. However, this will require replacing the transaction-based reimbursement system currently used for outpatient prescription drug coverage with a resource-based, outcomes-focused system of compensation for pharmacists' services. Such systems empower pharmacists to recommend or select the most cost-effective drug product to achieve the desired therapeutic outcome, and provide incentives to ensure that the drug regimen is effectively managed to assure patient compliance and minimize adverse events.

To achieve these objectives more completely in a reformed health care system, AHPs should incorporate appropriate mechanisms for the payment of providers of covered pharmaceutical product and services benefits:

- 1) payment to pharmacists for delivering pharmaceutical care should be based on health outcome parameters, and must incorporate systems for documenting them;
- 2) payment to pharmacies for the drug product should include a return on capital investment and costs of administrative services;

- 3) AHPs are authorized and encouraged to conduct demonstration projects testing new pharmacist payment methodologies, including both intensity-based and risk-sharing cognitive services models.

D. Data

- 1) By the second year of its plan offering, each AHP shall incorporate an automated patient information system that reflects medical and pharmaceutical care, including dispensed drugs; non-product pharmacist services (e.g., patient counseling, drug regimen review, drug therapy monitoring); and associated product costs and professional service charges. Such a system shall include, but not be limited to:
 - a) Electronic linkage of the prescriber's office to the pharmacy to instantaneously transmit prescriptions for fulfillment, and to record dispensing of the medications and other professional pharmacist services in the patient's health record;
 - b) Linkage of records from all providers to alert health-care professionals to the potential for conflicting and redundant care (e.g., to alert prescribers to the potential for interactions between medications they ordered and those ordered by other clinicians).

(The attached addendum lists the patient data elements which support the delivery of pharmaceutical care.)

- 2) By the third year of its plan offering, each AHP shall incorporate mechanisms for providing feedback of data to physicians, pharmacists, and other patient management team professionals on drug product utilization and prescribing patterns, therapeutic outcomes and adverse drug reactions. Quarterly reports shall be provided on drug costs and medical and pharmacy service utilization costs (for both drug product and non-product services) within therapeutic categories and disease states, and on cost savings that have been achieved through appropriate management of pharmaceutical care.

III. Summary

The pharmacy profession has traditionally responded to changes in our health care system

with innovative products, and perhaps equally important, innovative services that improve patient care. Recently, new pharmacy services have focused on controlling medication-related costs with the development of systems to monitor and integrate cost-effective pharmaceutical care resulting in optimal therapeutic outcomes while reducing the opportunity for adverse events.

Many successful and cost effective systems provided by the pharmacy profession have been developed, implemented, and evaluated in institutional and managed care settings. These same systems can be more widely applied to community care settings if the appropriate support systems, financial incentives and interdisciplinary communications are assured. Through the health care reform process, the Clinton Administration now has a unique opportunity to apply a sound cost-effective pharmaceutical care system nationwide.

The Coalition for Consumer Access to Pharmaceutical Care believes that implementation of its four principles in the manner outlined in this document will help the nation meet its challenges with respect to the access, cost and quality of health care.



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Testimony of Dr. John Gans, Executive Vice President

American Pharmaceutical Association

before the

President's Task Force

on National Health Reform

March 29, 1993

Washington, DC

Good afternoon. I am pleased to address the Task Force on behalf of the American Pharmaceutical Association, the American Society of Hospital Pharmacists, the American Society of Consultant Pharmacists, and four other national^{*} and more than 40 state affiliated organizations representing pharmacists in all practice settings.

- We agree that there must be fundamental change in the delivery of health care in the U.S.
- We also recognize that escalating drug prices represent a serious problem for the American public and that steps must be taken to assure Americans access to quality pharmaceuticals at a reasonable price.
- Pharmaceuticals and the services provided by pharmacists are among the most accessible and cost effective components of health care. Consequently, we urge you to include pharmaceuticals and pharmacists' services as part of the core benefit for all Americans.
- The attention to date has been on escalating drug costs and whether drugs should be part of the core benefit package. We feel this focus has been too narrow. The remainder of my comments will address how the pharmacist has, when appropriately empowered, reduced the costs, increased access and improved the quality of drug use and health care services.

* The Coalition for Consumer Access to Pharmaceutical Care is composed of the following organizations: American Association of Colleges of Pharmacy, American College of Clinical Pharmacy, Academy of Managed Care Pharmacy, American Pharmaceutical Association, American Society of Consultant Pharmacists, American Society of Hospital Pharmacists, National Consumers League and National Pharmaceutical Association.

- Rather than drawing international pricing comparisons, we think it is more relevant to examine the price differences in this country and examine how pharmacists' management of drug therapy results in costs comparable to those outside this country and improves therapeutic outcomes.
- Pharmacists in a variety of practice settings are currently empowered to work with other health care colleagues and patients to provide quality, cost effective pharmaceutical care. This requires access to relevant patient-specific information and appropriate incentives in the structure of pharmaceutical prices and reimbursement systems which are not currently available in all settings. It is clear that these models need to be extended so that the public can fully realize the benefits of the powerful, and sometimes dangerous, medications available in the U.S.
- Prescription medicines successfully treat major acute and chronic diseases and prevent unnecessary physicians' visits, hospitalizations, surgeries and long-term care. When properly used, they save far more than the 7% of health care costs and 1/2% of the GNP that they cost.
- Although medication use has assumed a primary role in health care, its provision is often uncoordinated and highly fragmented. It has been estimated that over \$30 billion could be saved annually by improving patient compliance, reducing inappropriate drug use and medication-induced illnesses and hospitalizations, and decreasing preventable adverse effects of drugs.

- The federal government recognized this fact in the passage of the Omnibus Budget Reconciliation Act of 1990, relevant provisions of which became effective on January 1st of this year. This legislation mandated pharmacists' counseling services and prospective drug utilization review for patients covered by the Medicaid program.
- Many pharmacists adopted counseling and drug use review as their standard of practice for all patients even prior to the implementation of OBRA '90. Others have moved even further by providing primary care services which seek to insure the most cost-effective, high quality patient outcomes. This level of service is called "pharmaceutical care."
- Having spoken of cost and quality, I will close with brief comments on the issue of access. Many Americans do not have insurance coverage for outpatient drug therapy. For some, this creates a difficult financial burden in assuring that their medication needs are met. This is exacerbated by cost-shifting in our current system, induced by the pricing practices of pharmaceutical manufacturers and the payment methodologies currently used by many third-party prescription programs.
- A broader question of access that should not be overlooked relates to the fact that the equivalent of the entire American population enters a pharmacy weekly. Pharmacists are the most accessible health care professional in this country and are found in rural, suburban and inner city America. Those who would reform this health care system must consider how best to utilize pharmacists as primary health care resources.

- I will close with a restatement of our position that a pharmacy benefit, not a drug benefit, should be part of the core benefit package. Only when the use of drug products is coupled with the delivery of pharmacists' services can we expect to fully realize their value as the most cost-effective component of health care.
- The profession of pharmacy has developed and evaluated services that will contain drug costs, increase access to services and improve quality of care. We are prepared to extend pharmaceutical care to all Americans if your efforts to reform our health care system result in the elimination of those barriers which restrict its provision today.
- We thank you for the opportunity to provide input to the Task Force.



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TESTIMONY OF

**PATRICIA C. KIENLE
DIRECTOR OF PHARMACY
MERCY HOSPITAL
WILKES-BARRE, PA**

ON BEHALF OF

**THE COALITION FOR
CONSUMER ACCESS TO
PHARMACEUTICAL CARE**

BEFORE THE

**SUBCOMMITTEE ON HEALTH
COMMITTEE ON WAYS AND MEANS**

April 22, 1993

Mr. Chairman, my name is Patricia C. Kienle. I am a pharmacist and the Director of Pharmacy Services at Mercy Hospital, a non-profit, 228-bed acute care facility, operated by the Religious Sisters of Mercy, located in Wilkes-Barre, PA. I am a member-elect of the Board of Directors of the American Society of Hospital Pharmacists (ASHP) and am representing the Coalition for Consumer Access to Pharmaceutical Care (CCAPC). This Coalition represents pharmacists in every setting, including those who practice in the retail or community environment, in health care institutions and systems, and in education.

The membership of the Coalition consists of the Academy of Managed Care Pharmacy, the American Association of Colleges of Pharmacy, the American College of Clinical Pharmacy, the American Pharmaceutical Association, the American Society of Consultant Pharmacists, the National Pharmaceutical Association, and ASHP.

The members of the Coalition are committed to maximizing the benefit that consumers receive from their medications and pharmacists.

PRINCIPLES OF PHARMACEUTICAL CARE

Our Coalition, and nearly 50 other state and national pharmacy organizations, is united in its endorsement of the following four principles fundamental to the organization and delivery of pharmaceutical care under a reformed health care system:

- Pharmaceutical products and pharmaceutical care (pharmacists' services) should be included as a core benefit under health care reform.
- Pharmacists' services and the proper management of medications can generate significant savings in a reformed health care system.
- Quality assurance programs administered by pharmacists can significantly improve the effectiveness of medications in achieving positive patient outcomes.
- Integrated information systems that include pharmacists offer the potential for cost savings and better patient outcomes.

We believe an integrated approach, coordinated among physicians, pharmacists and other health care professionals, allowing for the intervention of the pharmacist on issues pertaining to medications, is essential to obtaining those therapy outcomes that help a patient regain health and minimize waste of financial resources. Of equal importance, pharmaceutical care must be coordinated among health care professionals as the patient moves among the ambulatory, clinical and home care settings.

Pharmacists are prepared to join with patients and prescribers to improve medication use. Each year, a significant amount of money is spent for unnecessary drugs and inappropriately managed drug therapy.

Patient noncompliance, adverse drug reactions and misprescribing result in many preventable hospitalizations, nursing home admissions and other wasteful services.

We estimate that at least \$36 billion could be saved annually by coordinated efforts to implement these principles, leading to improved patient compliance with drug regimens, reduced inappropriate drug use and related hospitalizations, and decreased preventable adverse effects and interactions.

STRATEGY FOR ACTION

We offer two strategies to alleviate current state and federal regulatory barriers preventing Americans from making better use of the medications and pharmacy services available to them. Specifically, we recommend that federal policy address two disincentives for appropriate interaction by pharmacists to improve patient therapy; namely the differences in state provisions pertaining to options for selecting generic products and the fee structures of Medicaid and other federal programs.

As a short-term strategy, we urge that federal programs contracting with pharmacists for prescription and/or nonprescription medications develop appropriate incentives for pharmacists to use their professional judgment to enhance quality outcomes of drug therapy. These incentives should:

1. increase the use of generic pharmaceuticals, including a uniform method for prescribers to specify that a brand name medication is clinically necessary;
2. promote formulary systems, given the multiplicity and cost of pharmaceuticals;
3. encourage patient adherence to therapy; and
4. provide an exchange of information and promote collaboration among a patient's providers regardless of setting.

As part of the larger health care reform effort, we recommend that third-party administrators or pharmacy benefit managers help their beneficiaries to get the best use of their medications. To do this, the basic benefit package should incorporate coverage of pharmaceutical products and pharmacy services.

THE PHARMACEUTICAL BENEFIT

Covered pharmaceutical products should include all prescription drugs approved by the Food and Drug Administration. Coverage should be for any medically accepted indication approved by the FDA, or which is accepted within recognized drug compendia and/or peer-reviewed medical and pharmaceutical literature. Non-prescription drugs should be covered if prescribed by a physician or other authorized prescriber.

THE PHARMACEUTICAL CARE BENEFIT

The pharmaceutical care benefit should include four components. First, drug regimen review should provide an examination of the patient's drug therapy by the pharmacist. This would ensure appropriate drug use, minimize the potential for drug interactions and adverse reactions, and eliminate duplicate and unnecessary drug therapy.

Second would be providing personalized drug information to patients to promote their understanding and encourage their compliance with therapy. Information should be made available to other health care providers involved in the patient's care.

The third component of the pharmaceutical care benefit would be a continuing system of drug regimen review managed by the plan for the population served.

Fourth would be the development of drug formulary management systems that promote appropriate drug therapy, cost-effectiveness and pre-approved product interchanges.

Because it is so important that Americans have access to pharmaceutical products and services, health plans, third-party administrators and pharmacy benefit managers should be encouraged to develop utilization and participation standards that give qualified providers the opportunity to furnish these benefits.

FUTURE CONSIDERATIONS

The onset of systemic change in the delivery of health care services provides the opportunity for the consideration of additional pharmacists' services. One example would be pharmacist management of a patient's drug therapy under protocols developed jointly with physicians. Such protocols would include initial selection of therapy, following a physician's diagnosis, and monitoring patient response. Some protocols already exist for prescribing by pharmacists and other non-physicians.

A second would be the use of patient incentives to ensure compliance with therapy. These might provide for co-payments at the point-of-service, or differential co-payments for generic drugs. Other incentives would include patient education strategies and reminders to re-enforce the importance of following the physician's regimen.

A third option that could be considered is the delivery of preventive health care services by pharmacists, particularly in underserved areas where the health care infrastructure is weak or nonexistent. Such services might include chronic disease screening and therapeutic management and patient monitoring.

A fourth example, one with potential for almost immediate cost-savings, would be the development of a case management system for patients taking high-risk and/or high cost drugs or who are considered at risk owing to age, medical condition, family history or some other criterion.

REIMBURSEMENT

Pharmacists are prepared to join with prescribers and patients to improve medication use. We believe, however, the existing transaction-based reimbursement system currently used for outpatient prescription drug coverage should be replaced with a resource-based, outcomes-focused system of compensation for pharmacists' services.

Such systems would empower pharmacists to recommend or select the most cost-effective drug product to achieve the desired therapeutic outcome. These incentives would ensure that the drug regimen is effectively managed to assure patient compliance and minimize adverse effects.

Payments to pharmacists for providing pharmaceutical care should be based on health outcome parameters and include a return on capital investment and administrative costs. Under a reformed health care system, health plans should be authorized and encouraged to conduct studies testing new payment methodologies, including both intensity-based and risk-sharing cognitive services models.

DATA TRANSMITTAL

A pharmacy strategy for the future should focus on facilitating the movement of patient data to providers and plans. During the second year of the health care reform plan's existence, we recommend that it develop an automated patient information system that reflects medical and pharmaceutical care. This should include dispensed drugs, pharmacy services (including but not limited to, patient counseling, drug regimen review and drug therapy monitoring), along with associated product costs and professional service charges.

At a minimum, this system should electronically link the physician's office and the pharmacy for rapid transmittal of prescriptions, consultation, and pharmacy services. Patient health records should be linked with all appropriate health care providers to minimize drug interactions and identify conflicting and redundant care. (An addendum to this statement lists the patient data elements which support the delivery of pharmaceutical care.)

Once the data system is in place, health care plans should be required to enhance the system by making data on drug product use and prescribing patterns, therapeutic outcomes and adverse drug reactions available to physicians, pharmacists and other health care providers. Other reports could be prepared on medical and pharmaceutical services, utilization costs for drug product and non-product services within therapeutic categories and disease states, and on savings realized through appropriate management of pharmaceutical care.

CONCLUSION

The pharmacy profession has responded to changes in the nation's health care system brought about by innovative products with equally innovative services to improve patient care. Recently, new pharmacy services have focused on controlling medication-related costs through the development of systems to monitor and integrate cost-effective pharmaceutical care.

The implementation of these systems has resulted in better patient care and reduced opportunity for health and life threatening events. We would be pleased to provide you with additional information and a refinement of the above ideas.

Many of these successful and cost effective systems provided by the pharmacy profession were developed, implemented and evaluated by my colleagues within institutional and managed care settings. The pharmacy profession is now at a stage of readiness where these same systems can be more widely applied to community care settings through the use of appropriate support systems, financial incentives and interdisciplinary communications.

Through the unfolding health care reform process, Congress and the Clinton administration are at the brink of a unique opportunity to apply a sound, cost-effective pharmaceutical care system nationwide. The Coalition for Consumer Access to Pharmaceutical Care urges you and your colleagues to seize the moment by implementing the four principles found within our testimony. Be assured of the pharmacy profession's commitment to help you meet the challenge of providing accessible, quality and cost effective health care to the American people.

Addendum.

Electronic Patient Record Data Elements that Support Pharmaceutical Care

1. Patient's name, address, telephone number
2. Birthdate
3. Gender
4. Weight
5. Smoker?
6. Body characteristics that would affect dosing (e.g., body surface area, amputations)
7. Ongoing disease conditions (e.g., diabetes, alcoholism, hypertension, COPD, etc.)
8. Current diagnosis(es)
9. Intended therapeutic outcome of newly prescribed medication
10. Drug allergies
11. Documented drug interactions/reactions/hypersensitivities
12. Current medications (including starter doses and investigational drugs)
13. Recently discontinued medications
14. Recent clinical laboratory values
15. Names of physicians, addresses, telephone numbers
16. Names of other pharmacists providing care, addresses, telephone numbers
17. Names of primary caregiver(s) (if not self), address, telephone number
18. General medical history
19. Major medical/surgical procedures experienced
20. Current and scheduled diagnostic tests
21. Physical/sensory impairments
22. Patient insurance information

How Pharmacists Can Help

Rep. Brewster, the Only Pharmacist in Congress, Writes That Expanded Responsibility Can Contribute to Lower Costs, Better Care. After All, It's the Highest-Rated Profession.

By Rep. Bill Brewster

Health care reform — once considered a subject everyone talks about but no one wants to do anything about it — has become the number-one priority facing this Congress, after the economy and the deficit. In fact, some argue that unless we bring about effective health care reform, the economy will never heal.

As the only registered and licensed pharmacist in Congress, I am concerned about the lack of attention devoted to assessing the positive impact that enhanced patient counseling and proper medication use can achieve as a cost-containment tool.

Previously, most of the attention on health care reform focused on cost containment and escalating costs for hospital, physician, nursing home, and drug prices. Little attention has been directed toward outcomes measurement.

One area of health care delivery we cannot afford to overlook is the role of pharmacy services and their value as a mechanism to improve public health and through such improvement, lower overall health care costs.

Of the nearly 170,000 pharmacists in the US, approximately 112,000 are engaged in community pharmacy practice, with about 66,000 pharmacies operated by chain drug store companies which comprise the National Association of Chain Drug Stores (NACDS), and about 46,000 independent pharmacies, represented by the National Association of Retail Druggists (NARD), for independent retail drug store owners.

Pharmacists, who have been identified as the most accessible health care professionals, are educated to assume and expand their role in improving the use of medications. Consistently, pharmacists and the counseling they provide are rated the best among 25 professions in an annual Gallup survey. The public has reportedly ranked pharmacists the highest for their honesty and ethical standards.

The future role for community pharmacists has been identified as that of a "drug use counselor." This expanded role, noted by an SRI study commissioned by the NACDS, includes ensuring the accuracy and completeness of prescriptions, drug use review, monitoring patient therapy,

providing more patient counseling on the use of prescription and non-prescription medications, and overseeing drug distribution and control.

When tailored to an individual's specific needs, pharmacists' services can greatly improve medication use and reduce overall health care costs.

Yet it is alarming that only 54 percent of Americans take prescription medicines properly, according to the National Council on Patient Information and Education (NCPIE). The National Pharmaceutical Council reports up to 90 percent may take medicine improperly, and that these lapses can cause unnecessary hospitalization, higher rates of illness, and even premature deaths.

Screening by pharmacists for prescribing problems alone has been estimated to result in an overall savings of \$2.32 for each new prescription reviewed.

A study in the New England Journal of Medicine reports older people are the group most likely to take medicine improperly. One reason is that people aged 65 and older take twice as many prescription medications as do younger people. Older patients often become confused when they receive multiple prescriptions from different doctors. As a result, Americans aged 60 and older account for 40 percent of adverse drug reaction cases, according to the General Accounting Office.

In the 1990s, the Department of Health and Human Services's inspector general stated that there is strong evidence that clinical pharmacy services add value to patient care by enhancing patient compli-

ance, improving clinical outcomes, and by reducing health care costs associated with adverse drug reactions.

The inspector general's study concluded that these services are not widely provided in the community pharmacies in part because the current reimbursement structure links pharmacists' reimbursement to the sale of a product and provides no economic encouragement for the provision of expanded pharmacy services which lower costs.

Federal and state governments have recognized that pharmacy services do add value and are asking pharmacists to expand their roles by providing drug use review screening to identify and resolve drug-related problems and patient counseling. (A payment method which makes these services continually available to patients is needed.)

Pharmacists can have a great impact on lowering costs associated with prescribing problems, noncompliance, and adverse drug reactions. A pharmacy benefit plan that encourages pharmacists to be involved in improving proper medication use is a sound way to manage overall health care costs.

Pharmacists' drug use review and screening for prescription problems represent a real opportunity to improve the quality of care provided to patients while reducing overall health care costs.

Screening by pharmacists for prescribing problems alone has been estimated to result in an overall health care savings of \$2.32 for each new prescription reviewed.

It also has been estimated that problems resulting from noncompliance add \$20 billion annually to the US health care bill. It has been estimated that noncompliance with medication directions results in over 5 percent of all hospitalizations, according to NCPIE, directly costing over \$8.3 billion annually.

Pharmacists' services, including providing patients with information about the proper use of their medication, result in

Rep. Bill Brewster (D-Okla.) is a pharmacist and a member of the House Veterans Affairs subcommittee on hospitals and health care.

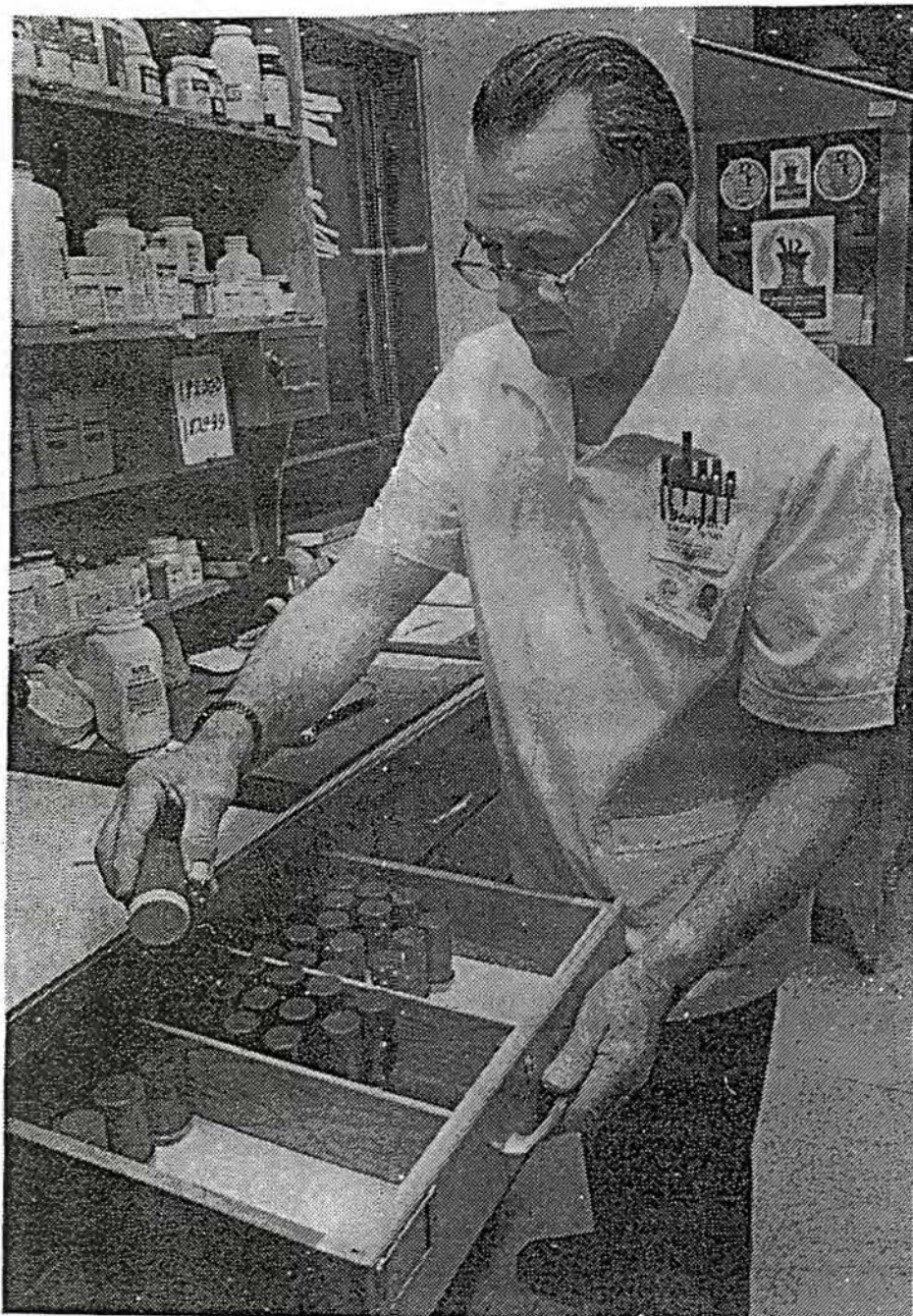


Photo by Earl Dotter

The future role for community pharmacists has been referred to as that of a "drug use counselor," writes Brewster, to include drug use review, monitoring patient therapy, providing more patient counseling on the use of medications, and overseeing drug distribution and control.

Only 54 percent of Americans take prescription medicines properly, according to one study.... And noncompliance with medication directions results in over 5 percent of all hospitalizations.

increased compliance and decreased overall health care costs.

The use of prescription drugs as a cost containment tool again was documented in a 1991 study by the Harvard Medical School. This study measured the impact of imposing a cap on and limiting access to prescription drug benefits for Medicaid patients in New Hampshire.

New Hampshire imposed a cap and achieved a 35 percent decline in prescription drug use. However the percent of patient admission to nursing homes in New Hampshire increased by 10.6 percent. After the limit or cap policy was discontinued, admissions to more costly nursing home services in New Hampshire returned to normal, or pre-cap levels.

It has been reported that 3 to 8 percent of all hospital admissions are due to adverse drug reactions, many of which are preventable. Pharmacists have the education to review and interpret drug information and to resolve medication use problems with the prescriber and other health care colleagues.

The accessibility of pharmacists, their maintenance of patient profiles which may contain prescriptions from more than one prescriber, and their education puts the pharmacist in the best position to screen, review, and resolve drug use problems; to monitor drug use; and to provide patients with medication information that is tailored to their individual needs.

The higher prices paid by consumers for prescription drugs result primarily from manufacturer price increases passed on to consumers.

As the pharmacist fulfills a greater role as a drug use counselor, we find the pharmacist increasingly being asked to do more but with no official recognition or adequate payment for these professional services.

When Congress adopted budget control measures in 1990, it imposed a mandate on pharmacists, regardless of the setting, to require counseling of all Medicaid recipients.

The belief that increased counseling will lead to enhanced drug use and perhaps lower overall costs is logical. It also is logical that Congress, recognizing the value of pharmacy services, should provide mechanisms to compensate pharmacists for these valuable services.

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ACCP Official Position Statement

Prospectus on the Economic Value of Clinical Pharmacy Services

A Position Statement of the American College of Clinical Pharmacy

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A prospectus is a formal summary or brief of a proposed venture. The purpose of this document is therefore to present an overview of the current documentation available to support the economic value of clinical pharmacy services, and to propose a course of action for future documentation of such value based on need. Although much overlap often exists among clinical, distributive, and administrative pharmacy services, this document addresses only those areas in which the predominant service provided is clinical. It was prepared by members of the Clinical Practice Affairs Committee of the ACCP and approved by the Board of Regents on April 10, 1988.

Definitions

A number of economic terms that incorporate the word "cost" appear in the pharmacy literature, such as cost effectiveness, cost benefit, cost justification, cost containment, cost impact, cost analysis, cost savings, and cost avoidance. Various authors define these terms differently, and some use them interchangeably and often inappropriately. As a result, confusion exists with regard to their proper use.¹

An economic evaluation is defined as a comparative analysis of two or more alternative services or treatments that examines both their costs and consequences.²⁻⁴ The evaluation can be one of four types: cost effectiveness, cost benefit, cost minimization, and cost utility.²⁻⁴ A cost-effectiveness analysis quantifies all costs of providing a service or treatment in monetary terms, while measuring health outcomes in nonmonetary terms, such as length of hospital stay, lives saved, or treatment success or

failure. Since health outcomes are measured in nonmonetary terms, however, the cost-effective alternative is not always the least costly. Rather, it is the one that best achieves the desired health outcome at a minimum, acceptable cost.¹⁻⁸

A cost-benefit analysis differs in that it quantifies both costs and health outcomes or benefits in monetary terms. Therefore, it requires that outcomes such as lives saved or years of life gained be measured in dollars. A cost-benefit analysis has the advantage over a cost-effectiveness analysis of allowing one to calculate a net benefit or value in dollars for each service. However, assigning a dollar value to human lives has its limitations and is objectionable to some clinicians.²⁻⁸

A cost-minimization analysis differs only slightly from a cost-effectiveness analysis. In the former, the health outcomes achieved by two or more services are first compared. If found to be identical, the preferable alternative becomes the one that is least costly. In the latter, health outcomes are achieved to varying extents and alternative services are compared by expressing cost per unit of health effect.^{2,3}

Cost-utility analysis quantifies difficult-to-measure outcomes such as quality of life by using utility values such as quality-adjusted life-years.^{2,3,9} It has only recently been applied to health care services, and has not yet been used to evaluate clinical pharmacy services.^{2,3,10}

Several other economic terms incorporate the word "cost" and should be correctly defined. A cost analysis compares only the costs of alternative services. Thus, it is only a partial and not a full economic evaluation, since it does not measure the health consequences of alternative services.^{2,3} Many studies in the pharmacy literature are cost analyses that measure cost savings or cost avoidance, often with respect to drug costs. These two terms have subtle difference in meaning. Cost savings result when dollars that were previously spent are no longer spent. Cost avoidance means

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that dollars are not spent from the outset. Whether dollars are saved or avoided is often subject to one's interpretation; as a result, it is difficult to distinguish between the two terms in many studies.

Cost justification, cost containment, and cost impact are general, often ill-defined terms that are sometimes used interchangeably and inappropriately with other economic terms. They can be a source of confusion as they fail to define the specific methodology used to evaluate a particular service. Thus, when describing the economic value of clinical pharmacy services, using more closely defined economic terms, such as cost effectiveness, cost benefit, or cost utility, is more specific and preferable.

Needs Assessment for Documenting the Economic Value of Clinical Pharmacy Services

In this era of rising health care costs, the economic value of each new and existing service is being closely scrutinized as society attempts to allocate limited health care resources wisely and judiciously. Like many other services, clinical pharmacy services will continue to be closely examined in this regard. For new and existing services to survive, clinical pharmacists will have to demonstrate that they provide quality health care at an acceptable cost to society.

Documenting the Economic Value of Clinical Pharmacy Services

Several review articles have described the economic value and acceptance of clinical pharmacy services as well as methods to justify them.^{11-14, 74} Appendix I summarizes the literature that has attempted to document the economic value of these services to date.¹⁵⁻⁷³ It includes studies that are partial or full economic evaluations, but excludes those in which no comparisons were made between alternative services or in which no cost data were provided. Similarly, studies that documented clinical pharmacy services' contributions to the quality of health care, but did not address costs, are not included. The Appendix does reference some studies in which hypothetical comparisons were made, in which patients served as their own controls. Several studies incorrectly labeled as cost-benefit analyses by their authors are correctly labeled as cost analyses in the Appendix.

While a considerable volume of literature has attempted to address the issue, the number of full economic evaluations is limited. Many of the studies are partial evaluations that document cost savings or cost avoidance but fail to quantify all costs or measure health outcomes. Those that are full evaluations still failed to address the costs of such things as adverse drug reactions or therapeutic failures.

The extent to which clinical services are tied to drug-distribution systems is difficult to ascertain in some studies. For example, most of the ones evaluating clinical pharmacy services in the emer-

gency room used drug-distribution functions to determine the economic value and justify the existence of the clinical pharmacy service.

Many of the studies have been based in family practice, ambulatory care, and long-term care.^{49-51, 68-72} Only recently, as a result of new financial incentives and pressures, has the subject been addressed in the hospital environment. Three areas that have received attention are drug therapy monitoring, pharmacokinetic dosing, and primary care services.

Drug Therapy Monitoring

Drug therapy monitoring involves (1) selective monitoring of patients' drug therapy, (2) evaluating it against predetermined criteria, and (3) consulting with the prescribing physician to alter therapy when criteria are not met. While a great deal of literature exists in this area, most of it covers cost analyses or partial economic evaluations. An obvious limitation is that, because patient outcomes are not assessed, the cost effectiveness, cost benefit, and cost utility of these services cannot be determined.

Analyses in the acute care environment primarily address drug costs; some include personnel and overhead, but many do not. The costs of adverse drug reactions or therapeutic failures have largely been overlooked. In the cost analyses conducted to date, the largest drug cost savings or avoidance has been demonstrated with the more expensive drugs, particularly antibiotics and albumin, for which projected savings have been as high as \$85,000 to \$200,000 annually.^{17, 26}

Several analyses in home health care have documented substantial patient or third-party payor savings through shorter hospitalizations.⁵²⁻⁵⁸ Most of these assumed equivalent efficacy and did not actually compare or document patient outcome data; thus they were not full economic evaluations. Studies on the use of psychiatric drugs and total parenteral nutrition (TPN) are stronger in that they have documented cost-effectiveness to some extent.^{35, 36, 38-40} In many TPN studies, however, intermediate outcomes, such as weight gain, were assessed rather than final outcomes, such as morbidity and mortality. Analyses in family practice and long-term care are the strongest, having addressed drug and personnel costs as well as patient outcomes.⁴⁵⁻⁵¹ Several documented the cost-benefit or cost-effectiveness of these services using simplified models.^{45, 47, 48, 51}

Pharmacokinetic Dosing

Numerous investigations have been conducted on the economic value of clinical pharmacokinetic services, but most suffer from some methodologic flaws. Some have shown decreased "costs" of serum drug levels based on laboratory charges rather than actual costs.^{60, 64-66}

A detailed retrospective economic evaluation assessed an individualized aminoglycoside dosing

service in burn patients with gram-negative septicemia.⁵⁹ Decreased mortality was documented in the study population, and the results convincingly demonstrated the cost benefit of the service to patients and society. Another study noted the cost-effectiveness of a service that monitored digoxin levels, showing patient savings as well as decreased digoxin toxicity and length of hospital stay.⁶³ Of interest, an evaluation of a theophylline dosing service actually revealed longer hospital stay, increased number of drug level measurements, and no improvement in quality of care.⁶⁴ The remaining studies were cost analyses, and thus were not designed to address patient outcome indicators such as drug toxicity, length of stay, or clinical outcome.^{60, 62, 65, 66}

Primary Care Services

The economic value of clinical pharmacists as primary care providers was investigated using simplified cost-benefit or cost-effectiveness models.⁶⁸⁻⁷² The results point to the economic value of clinical pharmacists as quality primary care providers in a number of settings, such as skilled nursing facilities, hypertension clinics, and anticoagulation clinics. While such results are encouraging, future studies in these and other areas must determine costs and final patient outcomes more thoroughly.

Services in which some documentation of economic value exists, but that lack sufficient documentation in the form of full economic evaluations, include ambulatory patient counseling/compliance monitoring, discharge patient counseling, emergency room services, formulary monitoring and drug review, home health care services, in-service education, medical rounds participation, and patient teaching programs. Services for which there is a total lack of publications on their economic value include cardiopulmonary resuscitation response participation, drug/poison information services, and patient medication histories.

Documenting the Reimbursement of Clinical Pharmacy Services

Reimbursement for clinical pharmacy services in hospitals has been given little attention since the advent of prospective payment programs. It has been pointed out that securing such reimbursement will not increase hospital revenue from third-party payors under many current guidelines. Instead, efforts to justify these services should be directed at the institution rather than at third-party payors.⁷⁵

Reimbursement does, however, play a key role in justifying clinical pharmacy services outside the hospital environment (e.g., family practice, ambulatory care, long-term care facilities) as well as for hospital revenue received from nonthird-party payors (e.g., literature searches for law firms, etc.). Clinical pharmacy services may be less likely to be eliminated or reduced if reimbursed directly rather than indirectly under a supplemental drug charge. If

they were directly reimbursed, however, they would be more visible to administrators and might conceivably be more likely to be cut if their economic value were not supported. The following major categories of clinical pharmacy services have been documented in the literature as receiving reimbursement⁷⁶⁻⁸²: cardiac rehabilitation unit participation; clinical pharmacokinetic services; CPR response participation; drug information services (partial reimbursement); formal education of students (various health professions including pharmacy students); inpatient admission interviews (medication histories); inpatient discharge counseling; patient teaching programs for self-administering medications; TPN or intravenous therapy team participation; and written drug therapy consultations.

Prevalence of Clinical Pharmacy Services

Based on recent national surveys,^{83, 84} the percentage of hospitals that provide various clinical pharmacy services is estimated to be as follows: drug therapy monitoring 44-94%; drug information service 75%; in-service education 88-93%; drug therapy consultations 68%; CPR response participation 25-35%; clinical pharmacokinetic services 18-50%; discharge patient counseling 17-46%; medical rounds participation 9-56%; and admission medication histories 5-17%.

The accuracy of these data can be questioned because the published surveys did not target only clinical pharmacy services, and definitions differ among surveys. Also, different reports show widely variant prevalence of some services, possibly due to differences in definitions of services or in the size of the institutions being studied. It is difficult to determine the prevalence of clinical pharmacy services in nonhospital settings due to lack of national surveys.

Future Strategies

Future documentation of the economic value of clinical pharmacy services should be based on need. This means that highly prevalent services whose value is not documented should receive the highest priority for subsequent evaluation. This approach will enable the profession to allocate personnel and financial resources toward those services that have the greatest economic value. The need to continue services that are shown to be of little economic value should be reexamined taking this information into consideration.

It is important to document the economic value of a number of clinical pharmacy services, especially those in the acute care setting. The following should be given the highest priority: drug information services; home health care services; medical rounds participation; CPR response participation; discharge/ambulatory patient counseling; and in-service education.

While a large volume of literature has reported on economic evaluations of such services as drug therapy monitoring and consultation or clinical phar-

macokinetic services, the majority of these studies are only partial or incomplete full evaluations. Comprehensive, full evaluations are required in both areas, although the priority is less than for those services listed above.

Documentation is strongest in the areas of clinical pharmacy services in ambulatory care settings, family practice centers, and long-term care facilities; however, it is not comprehensive, and more data are required. In addition, the economic value of clinical pharmacists as primary care providers in ambulatory settings will probably have to be addressed separately for each specific setting.

Better information also must be obtained as to the prevalence of clinical pharmacy services, especially in nonhospital environments. Such information may well alter the priority placed on documenting the economic value of a given service. Finally, more consistent, comprehensive, formal research methodologies must be applied when assessing the economic value of these services.^{6, 13, 85, 86}

Methodologies

Formal research methodologies for conducting sound evaluations of health care services are described in the literature and can be applied to clinical pharmacy services.^{2-9, 45, 59, 74, 87} In addition, the American Society of Hospital Pharmacists has provided funding to develop and validate a technique that can be applied universally to determine the cost impact of various institutional pharmacy services. It is hoped that the results of this study will be instrumental in developing a standard methodology. Finally, collaborative efforts between clinical pharmacists and various pharmacy faculty members, particularly pharmacy administration faculty, can facilitate the development and implementation of sound economic evaluations.

Methodologic Pitfalls in Past Studies

The following methodologic problems commonly appear in the economic evaluations conducted to date:

1. Lack of a concurrent control group. As a result, influential variables (i.e., the Hawthorne effect, certain patient demographics, seasonal variations in drug use, learning effect) are not identified or controlled.
2. Inconsistent definition or complete failure to define the service being evaluated.
3. Failure to specify the perspective from which the study is being conducted (i.e., patient, provider, third-party payor, society).
4. Use of patient charges as a measure of cost rather than determining economic costs, especially with regard to studies involving drug assays and drug charges. Most often, economic costs should be used rather than charges; however, the choice between them depends on the purpose and perspective of the study.
5. Failure to determine the cost of providing the

service.

6. Improperly determining the cost of providing the service.
 - a. Failure to determine or separate fixed and variable costs.
 - b. Failure to include indirect costs (i.e., employee benefits in salary determinations).
 - c. Failure to determine impact on other departments or health care providers.
7. Failure to determine actual as opposed to projected outcomes. As a result, studies can only postulate hypothetical impact rather than determine actual impact.
8. Not determining or incompletely determining effectiveness or benefit to patients in terms of clinically relevant outcome indicators.
9. Failure to analyze results using valid statistical tests.

Proposed Methodologies

The following are the major points to consider when developing sound economic evaluations of clinical pharmacy services:

1. Conduct a task analysis of the existing or proposed clinical pharmacy service, breaking down each task into its related components. This must consider components both internal and external to the service. Devise a method for determining the cost of each component; then report it separately so its applicability to other settings can be determined.
2. Predict how the service will influence the process and outcome of health care in the specific setting studied. Devise a method for relating the process and outcome to both economic values (dollars) and relevant, measurable health outcomes. Care should be exercised in determining the true economic costs to an institution. For example, if the frequency of a given procedure is reduced 10% by clinical pharmacy services, the reduction in cost is only the incremental (or variable) cost of the procedure and should not include fixed costs unless these are totally eliminated. Care should be used to differentiate between cost savings and cost avoidance.
3. Establish a concurrent control group, and randomly assign subjects to the control or experimental group if possible. Variability between the groups should be reduced as much as possible. Patient demographics should be similar. Patients should be followed by the same health care providers whenever possible, particularly physicians and clinical pharmacists. This eliminates the inconsistencies that naturally occur in interpreting results and making recommendations when several individuals from the two disciplines collaborate. All other pharmacy services should be provided consistently to both the study and control groups. In addition, a crossover effect where clinical pharmacy services are indirectly or inadvertently provided to the control group should be prevented.

4. If it is not feasible to establish a concurrent control group, a preceding control period for the study can be used. This design suffers from the limitations of maturation and historical effects on the subjects; however, having a control period before the implementation of clinical pharmacy services is often more practical than using a concurrent control. Whichever one is chosen will depend on the setting, which variables can be controlled, and what is logistically possible.
5. Determine the evaluation protocol and evaluating researchers. The personnel and process involved should be least disruptive to the service, yet remove any bias or subjective determination of data.
6. Define the appropriate statistical tests to be used and establish the sample size necessary to ensure adequate statistical power.
7. Interpret the statistical and clinical significance of results and reach decisions regarding the impact of the clinical pharmacy service.

Proposed Plan

The following steps should be taken in response to the need for more studies to document the economic value of clinical pharmacy services:

1. Obtain a better estimate of the prevalence of clearly defined clinical pharmacy services currently provided in institutional, ambulatory, and home health care settings. Comprehensively identify services for which third-party reimbursement is or has been received.
2. Encourage presentation at professional meetings and subsequent publication of cost-benefit, cost-effectiveness, cost-minimization, and cost-utility analyses of clinical pharmacy services.
3. Designate specific research funds for such studies.
4. Publish guidelines for proper research methodologies to be used in the evaluations.
5. Encourage collaboration between clinical pharmacists and other researchers, such as pharmacy administration faculty, in designing and implementing studies.
6. Encourage schools of pharmacy to include sound economic evaluations of clinical pharmacy services in considering faculty for promotion and tenure.

Acknowledgments

The ACCP graciously acknowledges the following individuals for reviewing this prospectus: J. Lyle Bootman, Ph.D.; Elizabeth Chrischilles, Ph.D.; Frederic Curtiss, Ph.D.; David Knapp, Ph.D.; Deanne Knapp, Ph.D.; Linda MacKeigan, B.S. Pharm.; Dev Pathak, D.B.A.; and Michael Stolar, Ph.D. Their constructive, thought-provoking comments are greatly appreciated.

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Appendix I. Studies on the Economic Value of Clinical Pharmacy Services

Clinical Pharmacy Service	Study Objective	Type of Economic Evaluation	Results Obtained	Comments
Discharge Counseling Ref. 15	To determine savings to patients as a result of discharge counseling	Cost analysis	Decr. discharge prescription charges to patients Savings in \$/pharmacist hour	Cost of providing service not addressed
Drug Therapy Monitoring & Consultation (Acute Care) Drugs: Albumin Ref. 16	To examine cost savings to hospital by substituting hetastarch for albumin	Cost analysis	Drug cost savings from switch from albumin to hetastarch	Cost of providing service not addressed No bleeding w/ hetastarch
Ref. 17	To promote the appropriate use of albumin & determine cost savings as a result	Cost analysis	Drug cost savings and decr. inappropriate albumin use	Cost of service/alternate therapies not included Operating room albumin use not included
Ref. 18	To examine cost saving to hospital by substituting hetastarch for albumin	Cost analysis	Drug cost savings from incr. hetastarch/decr. albumin use	Personnel costs included Net cost savings lumped w/ all clinical services
Antibiotics (general) Ref. 19	To determine cost avoidance to hospital from antibiotic surveillance service	Cost analysis	Drug cost avoidance demonstrated	Cost of providing service not addressed
Antipseudomonal PCNs Ref. 20	To determine cost savings to hospital by using carbenicillin for ticarcillin	Cost analysis	Net cost savings demonstrated	Personnel costs included
Aminoglycosides Ref. 21	To determine cost savings to hospital by substituting gentamicin for tobramycin	Cost analysis	Drug cost savings from switch from tobramycin to gentamicin	Cost of providing service not addressed
Ref. 22	To determine cost savings to hospital by substituting gentamicin for tobramycin	Cost analysis	Drug cost savings from switch from tobramycin to gentamicin Decreased aminoglycoside use	Cost of pharmacist time & alternative drug (when aminoglycoside not used) not included
Ref. 23	To determine cost savings to hospital by substituting gentamicin for tobramycin	Cost analysis	Drug cost savings from switch from tobramycin to gentamicin Overall drug cost savings to personnel cost ratio > 10:1	Personnel costs included
Cephalosporins Ref. 18	To examine cost savings to hospital by improving cefazolin dosing & decr. 2nd & 3rd generation cephalosporin use	Cost analysis	Drug cost savings documented Net cost savings and revenue generated reported for all clinical services	Personnel costs included Cost of alternative drugs (in place of 2nd or 3rd gen. cephs.) not included
Ref. 20	To determine cost savings to hospital by substituting cefazolin for cefamandole or cefoxitin as appropriate	Cost analysis	Net cost savings demonstrated	Personnel costs included
Ref. 24	To determine cost savings to hospital by restricting the use of cephalosporins	Cost analysis	Net cost savings demonstrated	Personnel costs included

Appendix I. Studies on the Economic Value of Clinical Pharmacy Services (continued)

Clinical Pharmacy Service	Study Objective	Type of Economic Evaluation	Results Obtained	Comments
Ref. 25	To determine cost savings to hospital through appropriate cefazolin use	Cost analysis	Net cost savings demonstrated	All costs thoroughly addressed, including personnel costs
Ref. 26	To determine cost savings to hospital by reducing cefotaxime & moxalactam use	Cost analysis	Potential cost savings shown by decr. inappropriate use	Personnel costs included
Ref. 27	To determine impact on ceph. use & cost savings to hospital w/ no service vs. newsletter vs. clinical service	Cost analysis	Drug cost savings demonstrated with clinical service (direct pharmacist-physician interaction)	Cost of providing service not included Pharmacy newsletter had minimal impact
Ref. 28	To determine cost savings to hospital by substituting cefazolin for cephalixin	Cost analysis	Drug cost savings demonstrated	Pharmacist time involved not included
Ref. 29	To determine savings to patients and hospital by using cefuroxime for cefamandole in surgical prophylaxis	Cost-effectiveness analysis	Decr. patient drug charges Decr. drug purchases/inventory Improved revenue vs. expenses Similar wound infection rates	Cost assessment included personnel costs except for clinical pharmacist's time
Ref. 30	To determine cost savings to hospital through cephalosporin review & restriction	Cost analysis	Net cost savings primarily by substituting cefazolin for cefamandole	Cost assessment included personnel costs except for clinical pharmacist's time
Corticosteroids Ref. 31	To evaluate the impact of medical education on use & cost of corticosteroids in acute COPD exacerbations	Cost analysis	Drug cost savings by reducing intravenous doses & converting to oral corticosteroids Decr. patient charges	Cost of pharmacist time on service not addressed Cost of monthly education by pharmacist included
Intravenous Therapy Ref. 32	To determine cost savings to hospital by discontinuing IV therapy when appropriate	Cost analysis	Drug & labor cost savings as a result of decr. IV admixture waste	Cost of providing service not addressed
Ref. 33	To determine cost savings to hospital & patient by reducing IV therapy use	Cost analysis	Decr. number, cost & duration of IV fluids & medications	Cost of providing service not addressed
Non-formulary Drug Use Ref. 34	To determine cost avoidance to hospital by reducing non-formulary drug use	Cost analysis	Cost avoidance (nonformulary-formulary drug costs) shown Decr. non-formulary drug use	Personnel costs included Decentralized services > success than centralized
Psychiatric Drugs Ref. 35	To determine the impact on quality and cost of health care to psychiatric patients in a day treatment center	Cost-effectiveness analysis	Quality of care $\geq$ pre-study; same mental function; improved compliance; decr. ADR, # drugs Decr. drug & labor costs	Personnel costs included; additional costs thought to be minimal, but not measured
Ref. 36	To evaluate the impact on quality and cost of health care to psychiatric patients in an acute care facility	Cost-effectiveness analysis	Decr. # of drugs & doses used Decr. LOS, time on acute care unit, readmission rate over 1 year follow-up/patient	Cost savings appear substantial but costs incompletely assessed

Appendix I. Studies on the Economic Value of Clinical Pharmacy Services (continued)

Clinical Pharmacy Service	Study Objective	Type of Economic Evaluation	Results Obtained	Comments
Theophylline Ref. 37	To evaluate the impact of medical education on use & cost of theophylline in COPD	Cost analysis	Decr. length of IV therapy, drug & pump costs/charges from early switch to po theophylline	Personnel costs included
TPN Ref. 38	To evaluate the impact on quality and cost of TPN in a neonatal intensive-care unit	Cost-effectiveness analysis	Incr. total costs but decr. daily cost/gm of weight gain Improved nutr. status (wt gain)	Personnel costs included Final outcomes (morbidity, mortality) not assessed
Ref. 39	To evaluate the impact on quality and cost of TPN in pediatric patients	Cost-effectiveness analysis	Decr. TPN charges, waste Incr. monitoring charges Improved nutr. status (wt gain)	Fees used instead of costs Final outcomes not assessed
Ref. 40	To evaluate the impact on quality and cost of TPN by using standard TPN solutions	Cost-effectiveness analysis	Incr. # of patients on TPN Cost savings due to incr. use of standard TPN & decr. waste	Outcome data not presented but medical staff audit noted improved quality
Vancomycin Ref. 23	To determine cost savings to hospital by substituting nafcillin for vancomycin	Cost analysis	Drug cost savings from switch from vancomycin to nafcillin Overall drug cost savings to personnel costs ratio >10:1	Personnel costs included
Other: Orthopedic Unit Ref. 41	To determine the impact on cost of all drug therapy, antibiotic use, & on LOS	Cost-minimization analysis	Decr. drug costs (especially antibiotics); no difference in LOS (clinical outcome)	Cost of providing service not included Randomized/cross-sectional
Cardiothoracic/vasc unit Ref. 42	To determine the impact on cost of all drug therapy, antibiotic use, & on LOS	Cost-minimization analysis	Decr. drug costs (especially antibiotics); no difference in LOS (clinical outcome)	Cost of providing service not included Randomized/cross-sectional
Streptococcal pneumonia Ref. 43	To determine the impact on the management of pneumococcal pneumonia	Cost-effectiveness analysis	Decr. total antibiotic costs Decr. LOS postulated No readmissions in either group	Cost of providing service not included
Orthopedic/Oncology Units Ref. 44	To examine decentralized services' impact on communication patterns/hospital drug costs	Cost analysis	Decr. targeted drug costs Improved communication with nurses, physicians	Personnel costs included Involved aminoglycosides, cefazolin, metoprolamide
Drug Therapy Monitoring & Consultation (Family Practice) Ref. 45	To determine net benefit to patients using cost-benefit analysis model in 3 offices	Cost-benefit analysis	Decr. physician time spent, referrals Incr. quality of care, appt. compliance rate	Detailed application of cost-benefit model Benefit varied depending on assumed incr. in quality
Ref. 46	To conduct comparative task & cost (to patient) analysis of services provided in 3 offices	Cost analysis	Total costs per prescription plus net profit Rx prices comparable to national average	Clinical services can be implemented & still keep Rx prices competitive

Appendix 1. Studies on the Economic Value of Clinical Pharmacy Services (continued)

Clinical Pharmacy Service	Study Objective	Type of Economic Evaluation	Results Obtained	Comments
Drug Therapy Monitoring & Consultation (Long Term Care)	Ref. 47	Cost-effectiveness analysis	Decr. antihypertensive drug costs, hypotensive readings, abnormal potassium levels	Cost of providing service not included AWP Rx price used
	Ref. 48	Cost-effectiveness analysis	Net cost savings to 3rd party payers; decr. hospitalization due to ADRs, improved quality	Personnel & overhead costs included
	Ref. 49	Cost analysis	Decr. prescription and OTC drug use & costs (prices) to patients or 3rd party payers	Personnel costs not included; impact of clinical services not isolated
	Ref. 50	Cost analysis	Decr. # drugs/charges, adm/disch/death rate; incr. hosp. rate; usage patterns reversed without clinical services	Fee for service, Rx charges used; cause & effect for turnover rates & services not established
	Ref. 51	Cost-effectiveness analysis	Decr. # drugs/costs, med errors Estimated decr. ADRs, decr. hosp. rate/costs as a result	Cost of providing service not included
Drug Therapy Monitoring, Consultation & Patient Teaching (Home Care)	TPN			
	Ref. 52	Cost analysis	For home TPN, pharmacy costs (except implementation costs) recovered; net patient savings Hospital-days avoided	Direct & indirect pharmacy costs & patient charges fully assessed
	Ref. 53	Cost analysis	Net savings to patient for home TPN compared to TPN in hospital; hosp-days avoided	Direct hospital costs & patient charges thoroughly assessed
	Ref. 54	Cost-effectiveness analysis	Decr. estimated # hosp-days & charges; net estimated savings to patient & society measured	Pharmacy charges used "Improved care" = decr. # of hosp-days or clinic visits
Antibiotics	Ref. 55	Cost analysis	Net savings in patient or 3rd party payer charges; clinical successes/minimal complications; hosp-days avoided	Direct hosp. costs, patient & hospitalization charges measured; cost analysis & outcome description
	Ref. 56	Cost analysis	Net savings in patient or 3rd party payer charges; treatment successful/no complications Hospital-days avoided	Actual patient charges vs potential hosp. charges compared; cost analysis & outcome description
	Ref. 54	Cost-effectiveness analysis	Decr. estimated # hosp-days & charges; net estimated savings to patient & society measured for various medications	Pharmacy charges used "Improved care" = decr. # of hospital-days or clinic visits

Appendix I. Studies on the Economic Value of Clinical Pharmacy Services (continued)

Clinical Pharmacy Service	Study Objective	Type of Economic Evaluation	Results Obtained	Comments
Miscellaneous				
Ref. 57	To describe a pharmacist-conducted training program in home self-administration of antihemophilic factor (AHF)	Cost analysis	Net savings to patients & 3rd party payers for home AHF compared to previous situation No complications with home AHF	Cost of pharmacist time not included; other costs assessed; 3rd party reimbursement obtained
Ref. 58	To describe a pharmacist-conducted training program for adrenalectomy patients	Cost analysis	Decr. health care charges to patients &/or 3rd party payers	Cost of pharmacist time not included; 3rd party reimbursement obtained
Pharmacokinetic Service				
Aminoglycosides				
Ref. 59	To evaluate the impact of individualized gentamicin dosing on patient outcomes using cost-benefit analysis	Cost-benefit analysis	Kinetic group: decr. mortality incr. LOS, infection duration Benefit: cost ratio = 8.7:1 using 6% discount rate	Detailed application of cost-benefit model Incr. quality/cost-benefit to patients & society Retrospective study
Ref. 60	To determine cost savings to patients and the hospital by individualized dosing service	Cost analysis	Decr. patient drug charges Savings to hospital by decr. personnel & supply costs	Personnel costs included Drug & lab charges used to calculate patient savings
Ref. 61	To evaluate the impact of aminoglycoside dosing to the hospital & patients using cost-benefit analysis	Cost-benefit analysis	Patient outcomes similar Benefit: cost ratio = 1.13:1 Benefit mainly when switched from tobramycin to gentamicin	Simplified application of cost-benefit model Thorough cost assessment Prospective study
Ref. 62	To document the need for a computerized aminoglycoside dosing service	Cost analysis	Potential savings to patients Potential for more optimal use of serum drug level data	Conducted to illustrate need for a dosing service
Digoxin				
Ref. 63	To determine the impact of digoxin level monitoring on quality/cost of patient care	Cost-effectiveness analysis	Net cost savings to patients from decr. digoxin assays Decr. LOS, digoxin toxicity	Personnel costs included Decr. inappropriately drawn or unnecessary dig. assays
Ref. 64	To determine the effect of theophylline level monitoring on quality/cost of pt. care	Cost-effectiveness analysis	No improved quality of care Incr. LOS, # of drug levels, pt. charges in kinetic group	Personnel costs included Service not cost-effective under the study conditions
General				
Ref. 65	To determine the impact on the use & cost of serum drug level monitoring	Cost analysis	Decr. # of unnecessary drug levels Net patient charge savings	Personnel costs included Lab charges rather than costs used
Ref. 66	To determine the impact on the use & cost of serum drug level monitoring	Cost analysis	Appropriate use of serum drug levels incr. significantly Net patient charge savings	Personnel costs included Lab charges used; included physician education

Appendix I. Studies on the Economic Value of Clinical Pharmacy Services (continued)

Clinical Pharmacy Service	Study Objective	Type of Economic Evaluation	Results Obtained	Comments
Medical Rounds Participation Ref. 67	To conduct a cost-effectiveness analysis of 3 methods of identifying possible drug-related problems (PDRP)	Cost-effectiveness analysis	Cost/PDRP highest for rounding > chart review > pt. drug profiles; but more clinically sign. problems found on rounds	Personnel costs included More information obtained, better rapport established by rounding
Primary Care Ref. 68	To evaluate the impact of a clinical pharmacist prescriber on quality & cost of care in SNF patients	Cost-effectiveness analysis	Decr. mortality, hosp. rate, # of drugs; incr. discharges to home/lower levels of care Potential net patient savings	Personnel costs included Prescribing supervised by family practitioner
Ref. 69	To evaluate the impact of a clinical pharmacist & nurse clinician on quality/cost of care in ambulatory care clinic	Cost-effectiveness analysis	Significant improvement in BP control/medication compliance Decr. # of drugs, clinic visits Net patient savings	Personnel time included Involved rheumatology & renal clinics
Ref. 70	To evaluate clinical pharmacist's management of strep throat infections in an HMO	Cost-minimization analysis	Efficacy same, personnel time & cost per case less Potential savings to patient	Limited cost assessment Hypothetical manpower costs used
Ref. 71	To evaluate cost-effectiveness of clinical pharmacist in a medication refill clinic	Cost-effectiveness analysis	Correct refill decisions made (judged by physicians); cost per visit less than for MD	Personnel costs included Measured outcome = correct refill decision
Ref. 72	To conduct cost-benefit analysis of clinical pharmacist-managed anticoagulation clinic	Cost-benefit analysis	Incr. % therapeutic PT ratios Decr. admissions for bleeding or clotting; patient savings Benefit: cost ratio = 6.55:1	Simplified cost-benefit model applied Justified clinical pharmacist position
Comprehensive clinical services Ref. 73	To conduct a comparative time and cost analysis of clinical services in 3 hospital settings	Cost analysis	Conducted more extensive adm medication histories than MDs Time & cost data varied depending on patients/hospital	Clinical activities: adm drug histories, drug therapy monitoring, drug info. & discharge consults

Abbreviations: adm = admission; ADRs = adverse drug reactions; AHF = antihemophilic factor; antiHTN = antihypertensive; appt = appointment; AWP = average wholesale price; BP = blood pressure; cep = cephalosporins; COPD = chronic obstructive pulmonary disease; decr = decreased; dig = digoxin; disch = discharge; HMO = health maintenance organization; hosp = hospital or hospitalization; hosp-days = hospital-days; incr = increased; info = information; IV = intravenous; LOS = length of stay; LTCF = long-term care facility; med = medication; nutr = nutritional; PDRP = possible drug-related problems; po = oral; PT = prothrombin time; pt = patient; Rx = prescription; SNF = skilled nursing facility; TPN = total parenteral nutrition; w/ = with; wt = weight; 2nd &/or 3rd gen cephs = second &/or third generation cephalosporins.

VALUE OF COMMUNITY PHARMACISTS' INTERVENTIONS TO CORRECT PRESCRIBING ERRORS

Michael T. Rupp

OBJECTIVE: The purpose of this analysis was to estimate the economic value created by community pharmacists who routinely screen for and correct prescribing-related problems during the course of their dispensing activities.

DESIGN: Three expert judges evaluated the documented interventions of community pharmacists practicing in five states.

RESULTS: The judges agreed that 28.3 percent of the identified problems could have resulted in patient harm had the pharmacist not intervened to correct the problem. The direct cost of medical care that was avoided as a result of pharmacists' intervention activities was estimated to be \$122.98 per problematic prescription, or \$2.32 per each new prescription order that was screened during the study.

CONCLUSIONS: Clinical pharmacy services can and do create significant value by enhancing the achievement of positive patient outcomes and by avoiding negative outcomes. Research to develop reliable methods for measuring and monitoring the value of clinical pharmacy services must continue. Mechanisms must be created to encourage and reward pharmacists who consistently provide services that add measurable value to patient care.

Ann Pharmacother 1992;26:1580-4.

FROM JANUARY TO SEPTEMBER 1990, reactive interventions that were performed by community pharmacists to correct the prescribing-related problems they identified during the dispensing process were documented. Observations were performed at 89 community pharmacies in five states (Indiana, New Jersey, Ohio, Texas, and Washington) by specially trained observers over a total of 113 five-day observation intervals. (Some pharmacies had multiple observers during the study.)

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This study was supported in part by a grant from the American Pharmaceutical Association (APhA) Foundation. Portions of this research were reported in *Prescribing Problems and Pharmacist Interventions in Community Practice: A Multicenter Study* (final report to sponsor, APhA Foundation, February 1991) and presented at the 138th annual meeting of the APhA, March 10, 1991, in New Orleans, LA.

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Pharmacists in the study were primarily men (71.4 percent) with a median age of 38 years. All pharmacists held the baccalaureate degree in pharmacy as their only professional degree. Pharmacists' practice settings included 49 chain and 40 independently owned pharmacies.

Pharmacists intervened to resolve prescribing-related problems in 1.9 percent of the 33011 new prescription orders that were screened and dispensed during the study. Prescription orders that were insufficiently complete with respect to essential information (i.e., "errors of omission") accounted for 45.6 percent of all documented prescribing problems. Frank prescribing errors (i.e., "errors of commission") accounted for an additional 36.4 percent of problems that required pharmacist intervention. Remaining interventions were split between prescriptions that contained drug interaction problems (7.6 percent) and a broad category of other problems (10.4 percent), which included suspected fraud or abuse. A complete description of the prescribing problems and pharmacists' intervention activities that were documented during the study has been reported elsewhere.¹

This article reports the results of an analysis to estimate the impact on patient health status of the interventions that pharmacists performed to correct the prescribing problems they identified. An indirect estimate is made of the value of pharmacists' intervention activities during the delivery of prescription drugs in the community practice setting.

Methods

To estimate the potential impact on patient health of prescribing problems that were reported during the study, a panel of three judges evaluated the documented interventions. The two primary evaluators were a board-certified internist (M.D.) who had previously earned an undergraduate degree (B.S.) in pharmacy, and a clinical pharmacist (Pharm.D.) who had completed postdoctoral residencies in both pediatric pharmacy and clinical pharmacy practice. A third evaluator served as a tiebreaker for instances in which the two primary evaluators disagreed. This person was a Pharm.D.-trained clinical pharmacist and drug information specialist. Each of the three evaluators functioned independently from their counterparts.

For each intervention that pharmacists performed to correct prescribing problems, observers recorded the following information using a standard reporting format: (1) descriptive characteristics about the prescription order, the prescriber, and the patient; (2) a description of the intervention, including the nature of the problem, the actions taken by the

pharmacist, and the names of all drugs involved; (3) all prescription medications that the patient was taking at the time of the intervention; (4) sources of information that the pharmacist consulted during the intervention; and (5) the outcomes of the intervention and the final disposition of the prescription.

Results

For each documented intervention, the two primary evaluators completed an evaluation form (Appendix I). The evaluation form contained four questions. The purpose of the first question was to distinguish prescribing problems that could have resulted in patient harm in the absence of pharmacist intervention from those that could not. If, in the judges' opinion, adverse health consequences could not have resulted from the problem (i.e., "no"), then no further evaluation was performed. If the evaluator judged that the problem could have resulted in patient harm, then evaluation of the intervention continued to question 2 on the form.

POTENTIAL FOR PATIENT HARM

Evaluators' responses to the first question, "Could this event have resulted in adverse health consequences to the patient if the pharmacist had not intervened?" are illustrated in Figure 1. Both primary evaluators responded "yes" for 128 of the 623 problematic new prescription orders (20.6 percent) in which pharmacists intervened during the study. In 414 instances (66.4 percent), both evaluators responded "no" to this question. Evaluators disagreed for the remaining 81 interventions (13 percent).

To measure the strength of agreement between the two primary evaluators, the Kappa statistic of agreement was calculated.² The value of Kappa was found to be 0.68, indicating that a moderately strong agreement existed between the two primary evaluators in their assessment of the potential for patient harm resulting from the documented prescribing problems.

The 81 interventions for which the two primary evaluators disagreed as to the potential for patient harm were subsequently submitted to the third evaluator. This evaluator judged that patient harm could have resulted in 48 (59 percent) instances, agreeing more often with the physician (79 percent) than with the other pharmacist (51 percent). Thus, for 176 interventions (28.3 percent), two of three expert evaluators agreed that the prescribing problem that necessitated pharmacist intervention could have caused harm to the patient had the pharmacist not corrected the problem. The value of Kappa for this agreement was calculated to be 0.88, indicating a relatively strong agreement among the three judges in their assessment of potential patient harm.

TYPE OF PATIENT HARM

In question 2 of the evaluation, the judges were asked to specify the adverse health consequence that they considered most likely to have resulted from the documented prescribing problem in the absence of the pharmacist's intervention. Evaluators' assessments of the type of patient harm they expected to result from prescribing problems are summarized in Figure 2. The solid bars represent agreement between the two primary evaluators on the type of patient harm they expected to result from the 128 problems for which they agreed that patient harm was possible. The broken bars represent agreement by any two evalua-

		Pharmacist Evaluator				Pharmacist and Secondary Evaluator	
		No	Yes			No	Yes
Physician Evaluator	No	66.4%	9.2%	Physician and Secondary Evaluator	No	66.4%	4.5%
	Yes	3.8%	20.6% (n = 128)		Yes	0.8%	28.3% (n = 176)
(n = 623)				(n = 623)			
Primary Evaluators				All Evaluators			

Figure 1. Possible patient harm from prescribing problems.

Prescribing Problems (%)

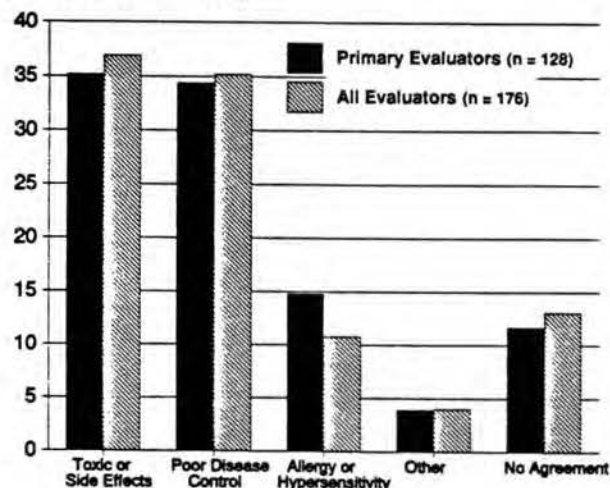


Figure 2. Type of harm expected from prescribing problems.

tors for the 176 interventions in which two of the three agreed that patient harm was possible.

The two distributions in Figure 2 are very similar. "Toxic or Side Effects" of the drugs involved and "Poor Disease Control" were the two types of patient harm that evaluators cited most frequently as anticipated consequences of the documented prescribing problem. "Allergy or Hypersensitivity" to the prescribed drug represented a distant third in terms of anticipated adverse patient health consequences. Among adverse health consequences classified as "Other" in Figure 2 were several instances in which harm was expected to a developing fetus or a nursing infant, rather than to the patient directly. Finally, there was no agreement between the two primary evaluators as to the type of harm expected from 15 of the 128 problems (11.7 percent) for which adverse patient health consequences were anticipated. Similarly, no agreement could be reached for 23 of the 176 prescribing problems (13.1 percent) that two of the three judges agreed were potentially harmful.

The Kappa value of agreement in question 2 was 0.82 between the two primary judges, and 0.79 among all three. These values indicate a strong agreement among evaluators on the type of patient harm that would be expected to result from potentially harmful prescribing problems.

PROBABILITY OF PATIENT HARM

In question 3 of the evaluation, the judges were asked to estimate the probability that the patient harm they speci-

fied in question 2 actually would have occurred had the pharmacist not intervened to correct the prescribing problem.* Values of zero and one were included in the scale for anchoring purposes only. Evaluators were instructed to answer "no" to question 1 if they judged the probability of patient harm to approach zero.

The two primary evaluators were very similar (t -test, $p > 0.05$) in their estimates of the probability that patient harm would have resulted from the 128 prescription orders for which they agreed that harm was possible: the physician evaluator assigned a mean probability of 0.783 (SD 0.180), and the clinical pharmacist assigned a mean probability of 0.776 (SD 0.135). Although not directly comparable, the third evaluator's mean assessment of probability that patient harm would have occurred was 0.617 (SD 0.169) for the additional 48 cases in which she agreed with one of the two primary evaluators that patient harm was possible.

MEDICAL CARE REQUIRED TO TREAT PATIENT HARM

In question 4 of the evaluation, the judges were instructed to estimate the intensity of medical care that would be required to treat the patient harm they had specified in question 2, assuming that it occurred. This was accomplished by selecting one of five responses reflecting different intensities of medical care. Thus, question 4 was intended to be an indirect measure of the severity of patient harm that may have resulted from the prescribing problem.

The two primary evaluators' estimates of the intensity of medical care required to treat the prescribing problems for which they and one of the other two evaluators agreed that patient harm was possible are summarized in Figure 3. Also illustrated in this figure are the third evaluator's responses for the 48 prescribing problems that she evaluated.

As the data in Figure 3 demonstrate, agreement between the two primary judges on question 4 of the evaluation was significantly lower than that obtained on the previous three questions. For example, the primary pharmacist evaluator estimated that 34.1 percent of the documented prescribing problems would have required emergency medical attention and subsequent hospitalization. In contrast, the physician evaluator selected this response for only 23.3 percent of the cases. The physician estimated that emergency medical attention alone would be required in 12.5 percent of the cases, yet the primary pharmacist evaluator selected this response for only 2.9 percent of problems. The two primary evaluators were similarly split in the proportion of prescribing problems for which they anticipated the need for urgent care or a scheduled office visit, 21 vs. 46, and 42.1 vs. 15.9 percent for the physician and pharmacist, respectively. Both primary evaluators estimated that 1.1 percent of prescribing problems for which patient harm was possible would have required only self-care.

Estimated Value of Pharmacists' Interventions

The estimated value of pharmacists' interventions was limited in the analysis to the projected direct costs of medi-

Problematic Prescriptions (%)

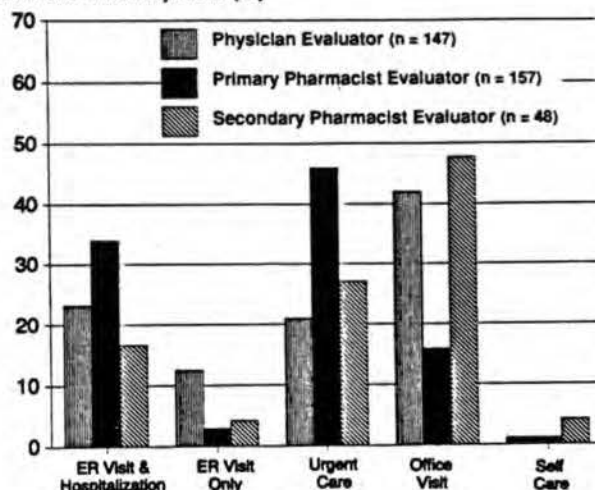


Figure 3. Medical care required to treat patient harm.

cal care that was avoided as a result of the pharmacists' actions. Not included in this estimate, although clearly relevant to prescribing errors and the costs of their negative sequelae, were costs attributable to losses in patient productivity, psychosocial costs of pain and suffering to patients or their families, and costs arising from possible litigation against physicians or pharmacists.

Estimates of the costs of medical care were made for each level of care in question 4 of the evaluation form using information from authoritative sources. For purposes of the analysis, the category "Self-Care" was assumed to be associated with no direct costs of medical care.

The most severe prescribing problems were those for which the judges anticipated the need for emergency medical attention followed by hospitalization of the patient. The cost of this level of care was estimated to be \$2001 and includes two components: an emergency room visit and a hospital stay. The cost of an emergency room visit was placed at \$110, based on the average hospital and physician charges for an emergency room visit requiring an intermediate level of service.^b The cost of hospitalization was estimated to be \$1891. This estimate was based on an average adjusted cost of \$591 per day for a semiprivate room in a nongovernment, not-for-profit hospital^c with a 3.2 day length-of-stay.^d

The cost of the next level of care, an unscheduled physician contact (i.e., "urgent care"), was estimated to be \$60. This estimate was based on the average charge for a patient visit to a freestanding ambulatory care facility.^e The cost of a scheduled physician office visit was estimated to be \$40. This estimate was based on the median fee charged to established patients by office-based physicians during

*For an explanation of subjective probability measurement and the psychometric research that has been done to link semantic terms with estimated probabilities, see Von Winterfeldt D, Edwards W. *Uncertainty and its measurement*. Cambridge: Cambridge University Press, 1986:90-136.

^bDerived from analysis of insurance claims data provided by Lincoln National Administrative Services Corporation, Ft. Wayne, IN, February 1, 1991.

^cEstimated hospital room cost derived from AHA Hospital Statistics, 1989-90. Chicago: American Hospital Association, 1989:13.

^dEstimated length-of-stay was based on the mean length-of-stay for Medicare's diagnosis related group categories 447-451, which include allergic reactions and poisoning and toxic effects of drugs. For an explanation of this system, see Lorenz E, Jones M. *The physician's DRG working guidebook*, 1991. Alexandria, VA: St. Anthony Publishing, 1990.

^eFrom ACC Factor III: *The Ambulatory Care Industry in 1990*, a survey conducted for the National Association for Ambulatory Care by First Source Research, 1990.

the spring of 1990 for an office visit that required an intermediate level of service.³

Using the above valuation procedure, evaluators' estimates of the medical care required to treat patient harm were associated with an estimated cost of treatment. Two independent estimates of the cost of treating the adverse health consequences of prescribing problems were then calculated for each of the 176 new prescription orders for which two of the three evaluators agreed that patient harm was possible. These cost estimates were then multiplied by the evaluators' estimates of the probability that patient harm actually would have occurred in the absence of pharmacist intervention. This procedure generated two probability-adjusted estimates of the direct cost of medical care that was avoided because of the pharmacist's intervention for each of the 176 new prescription orders. The results of this analysis are summarized in Table 1.

The total mean estimated value of pharmacists' reactive interventions during the study was \$76 615. If distributed across the 623 problematic new prescription orders that required intervention, the mean estimated value created each time a pharmacist intervened to correct a prescribing-related problem was \$122.98. When the total value of pharmacists' interventions is distributed across all 33 011 new prescriptions that were screened and dispensed during the study, the mean value that pharmacists added to each new prescription order by screening for prescribing problems was estimated to be \$2.32.

Discussion

As a result of efforts to contain the spiraling costs of healthcare, providers are increasingly being challenged to justify their role in the healthcare delivery system. In a recent editorial on this subject, Joseph A. Califano, former secretary of the Department of Health, Education, and Welfare, called for elimination of what he termed the "pharmacists' monopoly" over the distribution of prescription drugs. His rationale for this sweeping strategy was that "today, virtually all prescriptions can be filled by anyone who can read and count."⁴

The results of our analysis suggest that eliminating the pharmacist from the delivery of prescription drugs may be very shortsighted, both for ensuring the quality and safety of care, as well as for containing the costs of that care. The results of this and previous studies indicate that approximately 2 percent of new prescription orders in the community setting contain at least one prescribing-related problem that requires active intervention by the pharmacist to resolve. Of these, more than 28 percent are prescribing errors that are potentially injurious to patients if left undetected and uncorrected.⁵

If these estimates accurately reflect current prescribing practices in the community setting, then simply being able to "read and count" is clearly insufficient to fulfill the professional responsibilities associated with delivering prescription pharmaceutical care to consumers. Rather, the person who fills this role is—or at least should be—an essential provider of quality assurance in the delivery of safe and appropriate prescription care to consumers.

Evaluating any healthcare service is an indeterminate undertaking under the best of circumstances. Estimating the economic value created by an activity that may have

Table 1. Estimated Value of Pharmacists' Interventions^a

	TOTAL VALUE	VALUE PER INTERVENTION ^b	VALUE PER Rx SCREENED ^c
Minimum	\$27 401	43.98	0.83
Mean	76 615	122.98	2.32
Maximum	125 828	201.97	3.81

Rx = prescription.

^aValue refers to the estimated direct cost of medical care avoided because of pharmacists' interventions, and is represented in US dollars.

^bn = 623.

^cn = 33 011.

prevented some undesirable consequence from occurring is fraught with even greater uncertainty. Although researchers have used a variety of approaches to measure the impact, both clinical and economic, of clinical pharmacy services and related activities, no single approach has been widely embraced.⁶⁻¹⁰ Still, decisions about pharmacists' clinical activities, their relative value, and the risk of eliminating them from the bundle of goods and services that make up contemporary healthcare, must—and will—be made.

In 1990, the Office of the Department of Health and Human Services Inspector General Richard P. Kusserow released a report titled *The Clinical Role of the Community Pharmacist*.¹¹ The objectives of the study upon which this report was based were: (1) to examine the current level of clinical services available in community pharmacy settings, (2) to identify barriers that limit the availability of such services, and (3) to suggest actions that can be taken to reduce barriers and improve pharmaceutical care for ambulatory patients.

Several conclusions of the Inspector General's report are particularly relevant to the analysis presented here. First, the report stated "there is strong evidence that clinical pharmacy services add value to patient care and reduce healthcare utilization costs." Second, despite this recognized potential, the report also observed that clinical services "are not widely provided in community pharmacy settings." Finally, the report concluded that "in the community pharmacy setting, significant barriers exist that limit the range of clinical services generally provided," one of the most formidable of which is a transaction-based reimbursement structure which links pharmacists' reimbursement "to the sale of a product rather than provision of services."¹¹

Many consumers and financiers of prescription healthcare would suggest that screening, drug therapy monitoring, and related extradistributive clinical activities are inseparable parts of prescription drug delivery. They argue, therefore, that these services are not legitimately disaggregated from the distributive activities associated with drug delivery. Indeed, most pharmacists would probably agree that screening prescription orders for errors is a professional responsibility of every pharmacist to every patient.

Despite this philosophical consensus, however, the degree to which prescription screening and related clinical activities actually are performed by those involved in prescription drug distribution, particularly in the community setting, varies tremendously between different drug-delivery systems, and even among different pharmacy practices.¹ Thus, these "value-added" clinical services are still largely discretionary in the community setting in practice, if perhaps not in principle.

Summary

Available evidence strongly suggests that many clinical pharmacy services can, if performed competently and consistently, create significant value by enhancing the achievement of positive patient outcomes and/or by avoiding negative outcomes. Nevertheless, much of the evidence in support of the value of clinical pharmacy services is still preliminary, and widely accepted methods for measuring this value remain elusive. Once such methods are widely available, this value can be measured and monitored by consumers and payers to ensure that sufficient value is being created to justify exchanging value (i.e., paying) for the services. Where the value of clinical pharmacy services can be clearly demonstrated, mechanisms can be, and should be, created to encourage and reward pharmacists who consistently perform these services, and to distinguish them from those who do not. $\approx$

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EXTRACTO

OBJETIVO: El propósito de este análisis es estimar el valor económico creado por los farmacéuticos de comunidad, quienes rutinariamente manejan y verifican problemas relacionados a actividades de prescripción diarias.

DISEÑO: Tres jueces expertos evaluaron las intervenciones documentadas de farmacéuticos de comunidad que practican en cinco estados.

RESULTADOS: Los jueces concluyeron que 28.3 por ciento de los problemas que fueron identificados pudieron resultar en daños a pacientes si el farmacéutico no hubiese intervenido en corregir el problema. El costo directo de cuidado médico que se evitó como consecuencia de la intervención del farmacéutico fue estimado en \$122.98 por cada problema relacionado a una prescripción, ó \$2.32 por cada nueva prescripción que fue evaluada durante el estudio.

CONCLUSIONES: Los servicios ofrecidos por la farmacia clínica pueden y están creando un valor significativo aumentando la probabilidad de éxito en la terapia indicada por el médico, así como evitando resultados

Appendix I. Pharmacist Intervention Report Evaluation

EVENT I.D. _____ EVALUATOR I.D. _____

- Could this event have resulted in adverse health consequences to the patient if the pharmacist had not intervened? (check one)
☐ no (if no, stop here) ☐ yes (if yes, please continue)
- What adverse health consequence do you consider *most likely* to have resulted from this event if the pharmacist had not intervened? (check one)
☐ toxic or side effects of the drug(s) involved
☐ inadequate control of patient's condition
☐ allergy/hypersensitivity reaction
☐ other (specify) _____
- Based on the available information, what is your estimate of the probability that this event *would* have resulted in the adverse health consequence specified above? (circle one)

	Very Unlikely	Somewhat Unlikely	Neither Likely Nor Unlikely	Somewhat Likely	Very Likely	
0	0.1	0.3	0.5	0.7	0.9	1.0

- What intensity of healthcare would be needed to treat the adverse health consequence specified above, *assuming* that it did occur? (check one)
☐ emergency medical attention (hospitalization likely)
☐ emergency medical attention (hospitalization unlikely)
☐ unscheduled physician contact (urgent care)
☐ scheduled physician contact (office visit)
☐ self-care (specify) _____

Comments: _____

I.D. = identification.

negativos innecesarios. Las investigaciones en desarrollar métodos confiables para medir y evaluar el valor de los servicios de la farmacia clínica deben continuar. Se deben crear mecanismos para estimular y recompensar a aquellos farmacéuticos que consistentemente proveen servicios que añaden un valor significativo al cuidado de pacientes.

DAISY RIVERA DE ALMENTERO

RESUME

OBJECTIF: L'objectif de cette étude était d'estimer la valeur économique des interventions des pharmaciens communautaires qui évaluent les problèmes reliés à la prescription et qui les corrigent de manière routinière pendant leurs activités normales de distribution.

DEVIS EXPERIMENTAL: Les interventions écrites des pharmaciens communautaires travaillant dans cinq états furent évaluées par trois juges experts.

RESULTATS: Les juges étaient d'accord pour dire que 28.3 pour cent des problèmes identifiés auraient pu être dommageables pour le patient si le pharmacien n'était pas intervenu pour corriger ledit problème. Les coûts directs des soins médicaux qui furent évités par les interventions des pharmaciens furent évalués à \$122.98 par prescription problème, ou \$2.32 pour chaque nouvelle prescription évaluée durant l'étude.

CONCLUSIONS: Les services cliniques pharmaceutiques se révèlent être très utile pour améliorer la qualité de vie des patients et aussi pour leur éviter des problèmes potentiels. Des études ayant pour but de développer des méthodes fiables pour mesurer et monitorer la valeur des services cliniques pharmaceutiques doivent continuer à s'effectuer. Des mécanismes doivent être créés pour encourager et récompenser les pharmaciens qui offrent constamment des services qui améliorent la qualité des soins médicaux des patients.

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