

## **AACP Commission to Implement Change in Pharmaceutical Education**

"The Responsibility of Pharmaceutical Education for Scholarship, Graduate Education, Fellowships, and Postgraduate Professional Education and Training"

### **Position Paper 4**

#### **I. Scholarship**

##### Introduction

The responsibility of pharmaceutical education for research and scholarship is derived directly from the missions of the profession and of pharmaceutical education (1). In adopting the mission of pharmaceutical education, AACP endorsed the following concepts:

The profession is a major part of the system that discovers, develops, and distributes drug entities and drug products. It creates and disseminates knowledge related to drug entities, drug products, and drug distribution systems. The major outputs of the pharmacy profession are pharmaceutical care, knowledge, drug entities, and drug products. The primary personnel in the profession that produce these outputs are practitioners, educators, researchers, and those involved with the manufacture and distribution of drug products (1).

Further, the mission of pharmaceutical education provides that pharmaceutical education is responsible:

- for generating and disseminating new knowledge about drugs and about pharmaceutical care systems;
- for generating new knowledge about drugs, drug products, drug therapy, and drug use through the conduct of basic and applied research.

Scholarship is an essential component of the mission of pharmaceutical education. While, as will be discussed below, not all schools and colleges have the responsibility to offer graduate programs as components of their individual missions, all faculty have a responsibility to generate and disseminate knowledge through scholarship.

##### Scholarship Defined

Boyer (2) redefined scholarship in terms of four separate but overlapping functions:

- the scholarship of discovery;
- the scholarship of integration;
- the scholarship of application; and
- the scholarship of teaching.

Scholarship of *discovery* is similar to research as the term has been used in pharmaceutical education. It is the development of knowledge in the traditional sense of research in the pharmaceutical sciences.

Scholarship of *integration* involves the association of isolated facts into perspective both within and across disciplines.

Scholarship of *application* involves the engagement of knowledge developed through scholarships of discovery and/or integration with the vast audiences served by the academy. It includes service activities tied to the scholar's special field of knowledge.

Scholarship of *teaching* means assuring the work of the professor becomes consequential because it is understood by others. As a scholarly endeavor, teaching both educates and entices future scholars. The scholarship of teaching demands that the teacher be informed and fully conversant with the knowledge of his or her field. As a scholarly and intellectual activity, teaching is rigorous and time-consuming, and requires serious, continuous study.

Notwithstanding Boyer's definition, the Commission uses both terms, research and scholarship, in this paper. When it uses research, it refers to the traditional research of the pharmaceutical sciences (the scholarship of discovery). When the Commission uses scholarship, it refers to all those activities related to the discovery, analysis, synthesis, integration and application of knowledge. Scholarship is the advancement of knowledge. Knowledge is advanced in pharmacy through a variety of methods:

- traditional research in the pharmaceutical (physical, chemical, biological, clinical and behavioral) sciences;
- well-constructed, critical analyses of existing knowledge;
- developing and evaluating new methods of teaching (such as computer-assisted instruction);
- curricular research, development, and evaluation; and
- independent, creative efforts as well as collaborative projects with other scholars inside and outside of pharmacy.

Knowledge is of little value unless it is disseminated. Knowledge is disseminated through a variety of means including:

- presentations at conferences and meetings;
- archival publications;
- refereed publications;
- nonrefereed publications; and
- effective teaching (see Commission's Background Paper II).

As they assess faculty competence, pharmacy schools and their faculties must individually recognize and place a value on the various ways of advancing and disseminating knowledge.

#### Independence, a Criterion of Scholarship

The Commission believes that independence is a necessary criterion that faculty should seek to achieve in their scholarly efforts. Independent scholars identify and pursue thoroughly an area of scholarly inquiry. They become identified with their chosen areas of inquiry because of the expertise that they have achieved. They employ the scientific method to advance their line of inquiry.

Independence is compatible with collaboration in scholarly activities. Indeed, opportunities for collaborative scholarship appear to be increasing whereas those for solo scholarship appear to be diminishing.

Independence in collaboration means that the independent participant in a collaboration brings his or her own unique contribution to the project, a contribution that, without it, the project would suffer. Indeed it is possible that independent scholars, throughout their careers, may contribute the vast majority of their scholarship in collaboration with other scholars.

While it is important that faculties demand independence of their scholars, it is just as important that this independence not be confused with simply demanding single authorship or first authorship of papers. While sole or first authorship is one indicator of independence, faculties must seek other evidence of independent scholarship as collaborative efforts become increasingly common.

#### Scholarship as an Academic Responsibility

All pharmacy school faculty must be committed to the educational mission of the school or college, and all full-time faculty must be committed to scholarship. It follows, then, that schools and colleges of pharmacy have a responsibility to ensure that their full-time faculty engage in scholarly activities. This view was expressed by the 1987 AACP Committee on Academic Affairs (3) which said:

College administration has the responsibility of developing an environment which fosters scholarly pursuits among faculty. Such an environment is one which sensitizes faculty to the “essence” and “spirit” of being an academician. It promotes the formulation of new knowledge and nurtures the integration of this knowledge into modern educational service and other programs. In such an environment, faculty are truly academicians and thereby serve as role models for future scholars.

Scholarship ensures the continued intellectual vitality of faculty; it ensures that faculty will be capable of dealing with change in science and practice; and it ensures that students are exposed to scholarly philosophies and principles. While most professionals prepared by pharmaceutical education are not scientists, all need to use scientific knowledge and scholarly principles in solving problems. An understanding of scholarship is absolutely necessary if students are to embark on a professional career of life-long learning.

As schools and colleges of pharmacy begin to implement the recommendations contained in the Commission's Position Paper and Background Papers I and II, their core and affiliated faculty will change. This change will come from acquiring faculty with expertise in sciences not traditional to the pharmaceutical sciences (e.g., immunology), additional faculty in the pharmaceutical sciences (including social and behavioral sciences), and new clinical faculty. The challenge to schools and colleges of pharmacy will be to structure rewards and incentive programs and systems that encourage and value scholarship activities by all faculty.

The challenge may be most pronounced with clinical faculty, and it is complicated by the fact that scholarly activities of clinical faculty may be viewed and defined differently than scholarly activities of basic science faculty. Clinical faculty must maintain practices in order to teach and do research. Practice consumes time that is otherwise available to other types of faculty for research and service. Because the majority of scholarly activities of clinical faculty is collaborative, time is required to develop the collegial relationships necessary for collaborative research. Consequently, the challenge to administrators and faculty is to structure systems so that scholarly activities of clinical faculty are defined, recognized, nurtured and rewarded.

While all faculty have a responsibility to be role models for students, the responsibility to be practitioner role models is most pressing for clinical faculty. Scholarship practiced by full-time clinical faculty should serve as examples for part-time faculty and preceptors as well as for students. Merely “keeping up with the field” must not suffice for scholarship. Part-time faculty who serve as externship, clerkship, and residency

preceptors should be encouraged to practice scholarship and to serve as scholarly role models for their students.

## **II. Preparing Scholars**

### **Graduate Education**

#### Introduction

Graduate programs are post-baccalaureate and post-Pharm.D. educational programs intended to produce scholars capable of conducting independent research in the pharmaceutical sciences.

Pharmacy practice is changing and these changes are influencing pharmaceutical education (see the Commission's Position Paper and Background Papers I and II). The changing nature of practice and its impact on pharmaceutical education will influence graduate pharmaceutical education. One element of this change is the growing number of students enrolled in entry Pharm.D. programs. This factor may involve competition for existing resources and reductions in the recruitment of pharmacists into graduate education. Such issues must be addressed by individual schools in their planning activities. There must be a balance between resources provided to clinical teaching and research and resources allocated for basic science teaching and research.

The mission of the profession contained in Background Paper I (1) says:

The profession assures its continuing service to society by recruiting, educating, and training future members of the profession: practitioners, researchers, and educators.....It supports systems to assure the quality of the profession's outputs of care, knowledge, and drugs. It continually analyzes and evaluates health care needs in order to maintain or alter the nature and scope of care, research, and education that practitioners, researchers, and educators provide.

In the mission for pharmaceutical education, AACP (1) says that pharmaceutical education...

promotes the pharmaceutical sciences by fostering graduate education and research within its schools and colleges. Pharmaceutical education is responsible for both professional education and graduate education for research. The latter focuses on preparing students to discover new knowledge, primarily by use of the scientific method. The goal is to prepare scholars to perform independent, creative research that addresses important questions related to the discovery and use of drugs.

#### The Mission of Graduate Education

*The mission of pharmaceutical education includes that of graduate education; the mission of graduate education in pharmacy is to prepare scholars who are well qualified to advance and disseminate knowledge in the pharmaceutical sciences.*

While all schools and colleges of pharmacy have the responsibility to nurture scholarship among their faculty and students, the responsibility to maintain graduate educational programs in the pharmaceutical sciences is not one that rests on each school or college of pharmacy. However, because the mission of pharmaceutical education includes the responsibility to prepare scholars and faculty, the enterprise of pharmaceutical education must ensure that adequate numbers of graduate programs of sufficient quality exist to fulfill its mission.

Graduate education is critically important to the mission and enterprise of pharmaceutical education. Its pursuit requires enormous human, physical, and financial resources. Quality graduate programs benefit society, the profession, individual schools, and individual faculty. However, poorly conceived, funded, and operated graduate programs can drain and divert valuable resources that should be applied elsewhere.

### Curricular Outcomes

Planning for graduate programs should include the development of outcome competencies, curricular content, and educational process. Planning should be guided by the department's vision of the type of scholar it desires to prepare.

To Do Research — Many of the outcomes and competencies outlined in Background Paper II (1) apply to graduate education as well as to professional education (the thrust of Background Paper II). Of the general outcome statements for professional education adopted by AACP from the University of Michigan Professional Preparation Network Project, three apply directly to graduate education:

- Conceptual Competence — Understand the theoretical foundations of the discipline
- Technical Competence — Ability to perform skills required in the discipline
- Integrative Competence — Ability to meld theory and skills in the laboratory/classroom setting

In graduate education, these competencies are focused on the performance of scholarship and using the scientific process. In professional education, students need to learn *about* science; in graduate education, they need to *use* scientific principles and process in the discovery of new knowledge.

Supporting these general outcomes are those more specific to preparation of independent scholars and educators in the pharmaceutical sciences. Many of the specific outcomes such as critical thinking, problem solving, and communication abilities are required for graduate education as well as professional education. The focus of graduate education, however, is quite different, and, therefore distinct outcomes and competencies are required. The intent is to discover a set of ideas or principles from a specific set of well-designed research studies.

Claude Bernard's ideas about the experiment expressed in 1865 (*An Introduction to the Study of Experimental Medicine*) still apply today. He wrote, “Man does not limit himself to seeing; he thinks and insists on learning the meaning of the phenomena whose existence has been revealed to him by observation. So he reasons, compares facts, puts questions to them, and by the answers which he extracts, tests one by another. This sort of control, by means of reasoning and facts, is what constitutes an experiment, properly speaking; and it is the only process that we have for teaching ourselves about the nature of things outside us. In the philosophic sense, observation shows, and experiment teaches.”

Graduate programs should focus on teaching students how to do research and how to use research tools in their disciplines to address important problems. These experiments should lead to new ideas and principles which materially advance our understanding of both pharmaceutical science and pharmacy practice. Some competencies which are required include:

- ability to identify an important area of research (areas where knowledge is lacking);
- ability to assess and evaluate the experimental evidence supporting or refuting a concept or an idea of how a system works;
- ability to develop a research methodology; to design an appropriate research project that provides valid and reliable answers;
- ability to analyze and organize data so that they are readily understood; and
- ability to present and defend the results of the experiment in both written and verbal communications.

The background for attaining some of these abilities will require specific courses relevant to the discipline which enable the student to develop the requisite conceptual and technical competencies needed to initiate meaningful research. However, the success of a researcher is most often determined by the abilities demonstrated in actually performing research with the guidance of an experienced mentor. Therefore, the experimental portion of graduate education must be the major part of the program.

To Teach — The mission of pharmaceutical education includes the preparation of pharmaceutical educators as well as the preparation of researchers. Consequently, graduate programs have a responsibility to develop future educators for the profession. Graduate programs that use graduate students as teaching assistants must facilitate their teaching competence. Teaching assistantship experience can be a valuable tool to train teachers.

The 1991-92 AACP Committee on Academic Affairs (4) discussed the issue of graduate students as future academicians. The Committee said:

Pharmaceutical education should teach future academicians to be teachers, researchers, and practitioners. Therefore, it is imperative that pharmaceutical education emphasize the importance and value of teaching excellence in the training of graduate students as future academicians. Graduate students should not just be placed in the classroom and/or teaching laboratory, but should be taught to teach well. If structured and managed properly, the process of mentoring should instill an attitude that good teaching is important. Each college should assume responsibility for this emphasis in its graduate programs and not just rely on university orientation programs. Administrators should ensure that each department communicates to its graduate students the importance of good teaching.

To Behave as Scholars — In addition to competencies and outcomes specific to do research, graduate education must also prepare men and women who possess the values necessary to be scholars. These values include openness and respect for truth and human and animal subjects; respect for students, colleagues, and institutions; and respect for the process of science and society.

### The Enterprise of Graduate Education

The Need for Planning — Because graduate programs affect the entire school or college, planning for graduate education is a part of its more global strategic plan. Strategic planning must continually assess the environment in which the school operates and periodically reevaluate its mission. With regard to graduate programs, planning must address the potential competition for resources, space, faculty, and students between graduate and professional programs. Such planning becomes critical as schools begin to plan for revising their curriculums in accordance with Background Paper II, and planning must facilitate the

distribution or reallocation of resources within schools or colleges. Planning must assess the vitality and viability of graduate programs and deal with the difficult choices in those cases where graduate programs are judged to be weak. By the same token, planning must assure that resources are not removed from financially healthy and academically sound graduate programs. Weakening graduate programs through the inappropriate allocation or reallocation of resources to professional programs mortgages the future of the profession.

The decision to offer, maintain, modify, or terminate a graduate program by any school of pharmacy must be a part of the strategic plans of individual schools, and such decisions must be reflected in their mission statements. These decisions must be reassessed periodically, and all faculty must contribute to the strategic planning process. In light of the Commission's call that all schools commit themselves to creating their plans to offer the Pharm.D. degree as the entry degree for pharmacy practice, it is all the more important that individual schools and colleges of pharmacy also address their plans for continuing, modifying, terminating, or initiating graduate programs.

Each school must, in planning, answer these general questions:

- Should it begin a graduate program?
- Should it maintain its existing graduate program?
- Should it expand its existing program?
- Should it modify its existing program?

The answers to these questions must be supported by firm data and analyses. Should the answers to those questions be "yes," then schools must develop specific plans including a) the mission of the program, b) desired outcomes of the program, c) goals, and d) strategies. After these crucial planning activities are complete, departments/schools must address:

- Disciplines to cover
- Talents and interests of faculty
- Size of each disciplinary program (number of faculty and number of students)
- Type of students to recruit
- Recruitment strategies
- Financial resources
- Space
- Equipment
- Collaborative arrangements and agreements

Should the answer to these questions be that a school will not maintain a graduate program, then the institution must ensure that this does not imply an intent to relinquish its commitment to scholarship. Even though a school may not have a graduate program, its faculty still have responsibility to engage in scholarship.

The Commission encourages faculties, as they engage in strategic planning concerning their graduate programs, to give special attention to developing goals for the recruitment of foreign and domestic students, students with pharmacy and nonpharmacy backgrounds, and women and minority students. Plans should include strategies for meeting these goals with periodic assessments to determine progress.

Quality — The quality of graduate education in U.S. schools and colleges of pharmacy has been addressed by numerous AACP committees. An early, comprehensive assessment of faculty scholarship and research was developed by the AACP Argus Commission in 1980 (5). The Study Commission on Graduate Education (“Lemberger Commission”) (6) gave considerable attention to quality of graduate education, arrived at a number of conclusions, and offered an array of appropriate recommendations to improve the quality of individual graduate programs. Because of their importance to graduate education, they are repeated in Appendix A.

The Commission believes that all schools that offer—or plan to offer—graduate education programs must implement the Lemberger Commission's recommendations, particularly the use of outside peer review evaluation.

Additionally, all schools should recognize that the scholarly productivity of faculty has a direct bearing on the quality of graduate education. Graduate program faculty must develop, maintain, and demonstrate a track record of research and scholarship in their fields of expertise. In evaluating the quality of graduate programs, faculty and external reviewers should examine the scholarly activities of graduate program faculty. Continued direct involvement in graduate education should be dependent on evaluations of individual faculty member's research and scholarly activities. The Lemberger Commission recommended that graduate program faculty must employ contemporary criteria of quality. It is important, therefore, that pharmacy schools and colleges periodically review their graduate program faculty to ensure that they are productive scholars.

Size of Graduate Programs — Size of graduate programs in terms of the number of graduate students and faculty is an important determinant to the overall success and quality of any program. A critical mass of students in graduate courses is necessary for effective learning to occur. Many smaller graduate programs encourage their students to take graduate courses in other disciplines or departments to achieve this critical mass. In these cases, cross-disciplinary interactions are a benefit.

Specific decisions relative to the overall size of a school's graduate program and the size of specific disciplinary elements of graduate programs should be made and periodically reassessed by the faculty. The Commission believes that there may be a few graduate programs within the enterprise of pharmaceutical education that are too small to offer graduate education of consistent quality. While it is recognized that there is value in small programs, there is also benefit to be gained by participation of students in programs with larger numbers of students and a critical mass of faculty. It would be inappropriate for the Commission to list specific numbers of faculty, types of equipment, or available resources that would distinguish programs that would be too small from those that would be adequate. It would be equally inappropriate for the Commission to list a minimum number of graduate students. Faculty must realistically determine their ability to deliver quality graduate education on a consistent basis. Such determination must be made with the assistance of outside review and analysis. Faculty may be too close to their programs to reach unbiased conclusions.

Resources — The availability of sufficient resources is a major consideration of faculties' plans to begin, maintain, expand, or discontinue graduate programs. Resource demands vary among graduate programs. For example, chemistry departments require costly equipment and instrumentation in order to sustain a productive research and educational enterprise. Other disciplines require animals for their research and costs of maintaining animal facilities continue to increase. Additional resources required for an effective graduate program include library holdings and literature-searching capabilities; laboratory space; conference and study facilities; and computer resources.

Financial resources are also needed to support graduate students. The high salaries of many entry-level pharmacy positions compete with graduate programs in attracting qualified pharmacy students into graduate study. The reasonable solution—to increase stipends to graduate students—will strain already limited

graduate program budgets. Governmental and institutional support for graduate programs in the form of training grants and fellowships has not kept pace with the increased costs of graduate education and the cost of living.

Research grants awarded to graduate faculty are the most significant source of funding for graduate education. The Commission believes that the future of graduate education in the pharmaceutical sciences depends on the ability of pharmaceutical scientists to sustain their research through highly competitive external research funding. That is, individual faculty who desire to supervise graduate students must generate sufficient funding for these students from the faculty member's own research grants. This is independent of the entry degree offered by schools; it exists today when the B.S. degree is offered by many schools and it will exist in the future when the Pharm.D. will be offered by all schools. Indeed, moving to a Pharm.D. entry curriculum will require additional faculty in the basic as well as clinical sciences; such faculty should be encouraged to attract research grants resulting in additional funds to support graduate programs. However, it must be recognized that the national availability of research funding is highly competitive and is likely to be increasingly constrained for the foreseeable future. This demands that newly recruited faculty be sufficiently well trained so as to be competitively successful in their quest for research support.

The Commission foresees an ominous problem related to budget pressures on schools and faculty. As budget pressures increase, more faculty are requested to support their salaries on grant monies so that money saved can be utilized to recruit more faculty. This practice has been evolving in graduate programs in all the sciences. The results can present a dilemma to deans, program administrators, and faculty. As more faculty are compensated with funds from the grants that they acquire, pressures related to conflict of commitment will inevitably arise. That is, a faculty person who is supported mainly on his or her research enterprise may be expected to be less responsive to requests to perform teaching and service duties related to the institution which has little to do with his or her salary.

These are issues that schools must face squarely in their strategic planning activities; creative approaches to their resolution must be developed.

The American Foundation for Pharmaceutical Education and the Pharmaceutical Manufacturers Association Foundation have supported graduate education in the pharmaceutical sciences. The Commission commends this support but adds that in times of increasing costs of maintaining the graduate education enterprise, AFPE and PMAF must expand their funding sources. The Commission urges the pharmaceutical industry, which supports these Foundations and which recruits and utilizes the scholars produced by pharmaceutical graduate education, to increase its level of support. If the enviable track record of pharmaceutical graduate education is to be maintained, additional resources to support equipment purchases, research projects, and graduate student stipends must be obtained.

Initiating Graduate Programs — If departments within pharmacy schools follow the Commission's recommendations and periodically reassess their plans regarding graduate education, it is quite possible that some departments that do not currently sponsor graduate education may elect to do so. The Commission suggests that there are prerequisites that schools should possess prior to initiating graduate programs:

- There must be a critical mass of faculty available to the departments to support teaching and research.

- There must exist in the departments or schools organized research programs that are based on plans with identifiable objectives.
- Faculty must be committed to and involved in scholarship. Faculty must be doing research and publishing.
- Research in the departments/schools must be supported by steady and continuing flows of external funding which are of sufficient magnitude to sustain research over a period of time.
- The schools or colleges must have access to resources in equipment, funding, and nonpharmacy school faculty who could support incipient programs by teaching graduate courses and engaging in collaborative research.

Recruitment of pharmacy students into graduate education — Appendix A contains a brief analysis of the growth of graduate pharmaceutical education and the enrollment of pharmacists in such programs. The data show a real growth of pharmacists enrolled in graduate programs. Despite the numerical growth in students with U.S. pharmacy degrees who enrolled in Ph.D. programs, there is considerable concern within pharmaceutical education that this growth is not keeping pace with the overall growth of graduate education and of pharmaceutical education. Indeed, the percentage of students with U.S. pharmacy degrees enrolled in Ph.D. programs has fallen as these programs have grown. This concern is related directly to the ability of graduate pharmaceutical education to fulfill its mission of providing adequate numbers of scholars for the faculties of U.S. pharmacy schools.

Some pharmaceutical educators have also expressed concern that the increasing numbers of students who enroll in entry-level Pharm.D. programs will dampen the desire these students may have to enter graduate education. The extra amount of time students must spend in their Pharm.D. curriculums may serve as a disincentive to spend additional time and money in graduate study. Moreover, there is reason to believe that while students may initially be excited about research, their excitement changes when they enter their clinical rotations and see opportunities in clinical practice and clinical research. Both concerns may be valid. But they are all the more reason why greater effort must be expended to recruit promising professional degree students into graduate study.

As more students enroll in entry Pharm.D. programs, schools and colleges of pharmacy should consider the development of Pharm.D./Ph.D. programs in much the same way that some medical schools offer M.D./Ph.D. programs to their students. Several pharmacy schools currently offer these programs, and their experience should be analyzed carefully.

The Commission believes that the interest of U.S. pharmacy students in post-entry-level education and training is not diminishing; on the contrary, it may be increasing even as more students enroll in entry Pharm.D. programs. The problem for graduate pharmaceutical education appears to be one of competition. As the pharmacy profession has grown and expanded, challenging practice opportunities requiring post-entry-level education and training have likewise grown and expanded. As a result, the number and types of residencies and fellowships providing students with challenging career opportunities have increased. Given these facts, the absolute growth in enrollments of U.S.-trained pharmacists in graduate education is encouraging. Also encouraging is the apparent growing interest by U.S. pharmacy school graduates in post-entry-level professional education and training.

Over the years, strategies have been developed that are successful in recruiting students into graduate study. Among these strategies are the following:

- Stress scientific inquiry and problem solving in the curriculum. The professional curriculum outlined in the Commission's Position Paper (Background Paper II) (1) focuses on the process of scientific inquiry and problem solving rather than exclusively on the transmission of facts.
- Permit and encourage promising students to select courses focused on research and scientific inquiry.
- Actively recruit promising students to engage in undergraduate research.
- Inform students early in their educational experience about research, how people are trained to do research, and how people are trained to become faculty.
- Mentor promising students. Students with unique abilities should be informed of their potential to become scholars. Promising students should be identified early and provided with continuous mentoring regarding the promise of careers in research and teaching.
- Encourage curricular flexibility. The professional curriculum should be flexible to accommodate the desires of students to pursue courses in science and research. Medical education has demonstrated the value of curricular flexibility in permitting selected students to take leaves of absence to pursue research and then complete their medical education at later times.
- Track promising students after they enter practice or other post-entry-level educational and training programs to ensure that they are aware that rewarding and challenging careers in graduate study still await them.
- Develop nontraditional graduate education programs for mid-career practitioners. Society is in an era of multiple careers. After successful careers in one area of the profession, many pharmacists are seeking challenging careers in other segments of pharmacy. Graduate program administrators should consider ways to attract these promising practitioners into graduate study. In this regard, some disciplines, such as pharmacy administration may be more successful than others in attracting midcareer practitioners.
- Provide realistic, competitive stipends to graduate students.

Several schools of pharmacy have developed baccalaureate programs in the pharmaceutical sciences (which do not qualify recipients for licensure) so that students interested in pursuing graduate study may do so without completing the practice segments of their pharmaceutical education. The Commission believes that this option should be studied and analyzed carefully. Schools and colleges that currently offer such programs should perform the necessary analyses to assist other schools that may be considering it.

In addition to these specific strategies, the Commission reminds faculty that they exert an enormous influence on student attitudes regarding the role of faculty in research and teaching. Most would agree that faculty who are excited and proud about their research, scholarship, and teaching transmit this excitement and joy to their students. Indeed, most research scholars can identify one or more former teachers whose infectious excitement was instrumental in their early career decisions.

Changing environment — The changing environment of pharmacy practice and the growth of clinical faculty will provide opportunities for graduate faculty to conduct collaborative research with clinical faculty in pharmacy, medicine, and other health professions.

The Commission's previous reports have outlined the effects that the changing health care picture is exerting on pharmacy practice and pharmaceutical education. Expansion of the curriculum to include material in sciences not currently within the curriculum will provide opportunities for faculty renewal in these sciences and collaborative research with those scientists recruited to do research and teach in them. The traditional boundaries among the disciplines in the pharmaceutical sciences and between the pharmaceutical sciences and other sciences are blurring. Faculty must be aware of and sensitive to this blurring of boundaries. Faculty should be poised to take every advantage of opportunities to expand the horizons and the missions of their graduate programs.

### Conclusion

Graduate education is critical to the ability of the enterprise of pharmaceutical education to fulfill its mission. While all full-time faculty must practice scholarship, it is recognized that not all schools will offer graduate education. However, the enterprise of pharmaceutical education must ensure that sufficient graduate education occurs within pharmaceutical education so that the level of new knowledge generated and disseminated and the numbers of scholars produced are sufficient to contribute to society and sustain the enterprise and the profession.

Graduate education is undergoing major challenges. Schools with graduate programs should engage in detailed and dedicated planning to ensure that their individual missions are updated, understood, and achievable and that contemporary benchmarks of quality are being attained. This planning should assess schools' weaknesses and strengths as well as identify targets of graduate student enrollments including pharmacist-nonpharmacist mix and strategies to recruit graduate students.

### **Clinical Fellowships**

#### Introduction

Offering clinical fellowships is one of two strategies utilized by the pharmacy profession to prepare scholars (graduate education is the other). Compared with graduate education, offering clinical fellowships is relatively new and still maturing. As a growing source of clinical scholars for pharmaceutical education, the enterprise must give more attention to the direction, quality and support for clinical fellowships.

#### Definition

Clinical fellowships in pharmacy were first defined by a consortium of professional organizations (ACCP, ACA, ACCP, APhA, and ASHP) as:

directed, highly individualized postgraduate training programs designed to prepare participants to become independent researchers.

In 1988, The American Association of Colleges of Pharmacy adopted this definition. Subsequently, ACCP and the American College of Clinical Pharmacy developed guidelines for clinical fellowships (7). Most fellowships are a minimum of two years in length; candidates generally possess a Pharm.D. degree and have completed a post-Pharm.D. clinical residency. Current guidelines (approved by ACCP and ACCP) stipulate that at least seventy-five percent of the fellowship training should be devoted to scholarly work.

## Need

Because schools and colleges of pharmacy are seeking clinical faculty with scholarship skills, clinical fellowships are evolving as a principal method of preparing clinical faculty to engage in scholarship. The increasing demand for clinical faculty is fueling a corresponding demand for clinical fellowship positions. It is critical, therefore, that as schools and colleges of pharmacy plan, they consider matters relative to developing, modifying, or terminating clinical fellowship programs.

A major concern expressed by some faculty regarding the Commission's recommendation concerning the Pharm.D. as the sole entry degree relates to the survival of the post-baccalaureate Pharm.D. programs that are offered by 47 schools and colleges of pharmacy. These programs have served the profession well and are likely to have the resources necessary for supporting quality clinical fellowships and residencies. The Commission urges schools with post-baccalaureate Pharm.D. programs to refocus their programs to provide clinical fellowships, residencies, and nontraditional programs for practitioners. The cadre of productive clinical faculty and the clinical research enterprise that has developed in many post-baccalaureate Pharm.D. programs must be preserved, and their momentum of scholarship and clinical training must be maintained.

## Resources

Support for clinical fellowships is obtained in much the same fashion as support for graduate education - through individual research grants obtained by clinical faculty. In addition, a number of clinical fellowships are supported by the pharmaceutical industry through institutional grants directly to pharmacy practice departments or through the American Society of Hospital Pharmacists' Research and Education Foundation and the American College of Clinical Pharmacy. The specific breakdown of support from these various sources is unclear; however, the Commission believes that the future expansion of clinical fellowships lies in the ability of clinical faculty to generate external grant support for their research and scholarship.

## Goals and Outcomes

The development of clinical scholars is the major goal of clinical fellowships. Those who complete clinical fellowship programs must be able to design research studies, conduct research, analyze results, and disseminate findings through presentations and publications.

Many fellowship programs require fellows to teach in didactic or experiential portions of baccalaureate or Pharm.D. programs. This is important and desirable because many fellows become full-time or affiliate clinical faculty after completing their fellowships. Thus, the development of teaching skills should be a goal of clinical fellowship programs. Finally, because the fellows are expected to provide consultative services in the areas of their fellowships (e.g., cardiology, infectious diseases), they must be able to develop practices in the areas of their specialties upon completion of their programs.

## Scholarship

Because the goal of clinical fellowships is to prepare individuals to engage in scholarly activities, faculty with a demonstrated record of research and scholarly productivity must be heavily involved in the planning and implementation of these programs.

The stated goal of fellowships is to prepare participants to become independent researchers. The Commission interprets this goal as meaning that pharmacists trained in fellowship programs are prepared to make independent contributions to collaborative research projects as well as being able to conduct research on their own. The vast majority of clinical faculty practice and teach in environments that are conducive to collaborative research. The Commission's views regarding the independence of scholarship apply here (see page 3).

### Quality

The guidelines for clinical fellowships developed by AACP and ACCP (7) can be used by fellowship directors to assess and improve the quality of their programs. While individual pharmacy faculty currently assume most responsibility for the quality of clinical fellowships, the Commission suggests that individual schools and colleges of pharmacy take greater responsibility in this area and ensure that clinical fellowships conducted within their purviews undergo periodic internal and external reviews. Many of the recommendations of the Study Commission of Graduate Education (6) apply to clinical fellowship programs.

As in the case of graduate education, the quality of clinical fellowships depends upon the research and scholarly activities of clinical faculty. The AACP/ACCP Guidelines emphasize that clinical fellowship preceptors must have records of research and scholarly accomplishments; they must be active in clinical research; they must maintain research relationships with other scientists; and they must maintain an expertise in the pharmacotherapeutic area of the fellowship. Assessments of the quality of clinical fellowship programs must include assessments of the research and scholarly activities of fellowship preceptors.

The quality of clinical fellowships also depends on consistency within programs. They must have stable funding over time to ensure a continuing, uninterrupted flow of fellows. Schools and colleges must ensure a consistent core of clinical faculty who can serve as mentors. A critical mass of well-qualified faculty and mentors is just as critical to the vitality of clinical fellowship programs as it is to graduate programs.

Responsibility — Currently, the American Society of Hospital Pharmacists and the American College of Clinical Pharmacy support fellowships through grants, maintain rosters of active fellowship programs, and have been instrumental in the development of this type of training. Because clinical fellowships are intended to prepare scholars, and because clinical fellowships are becoming a major source of clinical faculty, the enterprise of pharmaceutical education must assume greater responsibility for their development, quality assurance, productivity, and growth.

*The enterprise of pharmaceutical education must exert the leadership to prepare its future clinical faculty.*

The Commission believes that the responsibility for fellowships must be shared by pharmacy practitioners and faculty. Unlike residencies, however, primary responsibility for fellowships should reside with pharmaceutical education. Schools and colleges of pharmacy should devote increased fiscal and human resources to developing and maintaining clinical fellowships, and pharmaceutical education must take responsibility for identifying new funding sources to support clinical fellowships. Collaboration between education and practice is needed to identify disciplines in which clinical fellowships are needed, future directions for fellowships, and strategies by which quality should be assessed and assured.

The Commission encourages clinical, social, and basic science faculty and faculty from other health care professions to collaborate in the development of rigorous, clinical-research training programs. Mentoring of fellows must be a significant component of these programs. Clinical faculty can serve as catalysts for such cooperative efforts, and they should provide the leadership to initiate these activities.

### **III. Postgraduate Professional Education and Training**

#### **Residencies**

##### Introduction

Pharmacy practice residencies are organized, postgraduate experiences in defined areas of practice that enable entry-level practitioners to enhance existing competencies and/or acquire additional competencies that exceed entry level. In medicine and podiatry, the vast majority of professionals who enter practice do so after completing residencies. Dentistry is currently discussing whether it should require all graduates to take postgraduate residencies by the year 2000. In other professions, such as optometry and pharmacy, a relatively small, but growing, number of graduating professionals enter postgraduate residency training programs.

The number and scope of pharmacy practice residencies are increasing as a result of the growing demand for practitioners with residency training. The Commission believes that the number and type of pharmacy practice residencies will continue to grow and expand as the profession responds to the changing health-care needs of society. The profession's active support of residency training allows it to remain as a viable force in health care and positioned well to meet the complex medication needs of society. The pharmacy profession is becoming more differentiated and specialized. Residencies provide one means of preparing practitioners to enter differentiated or specialized practices efficiently. Consequently, the Commission believes that the enterprise of pharmaceutical education must actively support residency training within the profession.

##### Benefits

Pharmacy practice residencies offer several major benefits to the profession (including pharmaceutical education) and society. Professional roles are expanding as the changing health needs of society demand practitioners with differentiated or specialized skills related to drug therapy. Residency training is an efficient way to explore and develop new roles and to prepare suitable numbers of practitioners to meet patients' needs.

Residency training in pharmacy has contributed to the advancement of the profession. Because of the unique combination of resident, preceptor, and practice site, residencies have made it possible for ideas to be tested and innovations in practice to spread. Typically, residents contribute to the further development of the practices in which they are being trained by experimenting with innovative practice strategies and new services and assessing their results. Residencies are playing important roles in establishing pharmaceutical care as the practice philosophy in many residency practice sites.

The objectives of many residency programs include developing teaching skills in residents. Consequently, they assist in precepting pharmacy students in clinical settings thus enhancing the effectiveness of clinical faculty. As such, residents serve as educators and role models for students in externship and clerkship rotations.

##### Responsibility

Typically, organized post-entry-level training in the health professions - including pharmacy - has been a primary responsibility of practitioners. In the 1960s, a major practitioner organization in pharmacy, the American Society of Hospital Pharmacists, developed an accreditation system for pharmacy practice residencies. Notwithstanding the leadership of practitioners (including academic health center directors of pharmaceutical services) in the development and promulgation of residencies, pharmaceutical educators—especially clinical faculty—have played and continue to play critical roles in the development and

expansion of residency training. The vast majority of clinical residencies are affiliated with schools and colleges of pharmacy.

The Commission believes that this balance of shared responsibility between the practice and educational components of the profession is appropriate and essential for the continued vitality of pharmacy practice residencies. Because residency training prepares the resident for practice roles, it is proper that the practice part of the profession assume prime responsibility for the quality, direction, and funding of residency training. However, the Commission believes that pharmaceutical education has critical leadership responsibilities as well. Pharmaceutical education must assure that well-qualified pharmacy faculty are involved in the planning, development and/or conduct of residency training. Moreover, all schools of pharmacy must be devoted to and involved with residency training. Administrators and faculty must support existing residency programs by collaborating with program directors and program preceptors and stimulating and catalyzing the development of new residencies.

Responsibility for financial support for present pharmacy practice residencies varies. Funding infrequently comes from a single source; programs are usually supported through partnerships of schools, hospitals, government agencies, and/ or from combinations of grants and contracts. Increased funding for residencies is key to their continued development and expansion. Because of the joint responsibility between education and practice for residency training, practitioners (through practice organizations) and educators (through AACP) must join in concerted efforts to identify new sources of financial support.

While residency training has made significant strides over the years, the Commission believes that the profession is poised for enormous expansion in the responsibilities that it will assume, and residency training must support that expansion. Pharmaceutical education has a leadership role in facilitating this expansion by:

- increasing the number of residency programs;
- strengthening existing residency programs;
- identifying new areas of practice that may benefit from residency training;
- developing pilot residency programs in new practice areas to demonstrate their feasibility;
- promoting residency training to students and practitioners as career options;
- promoting the concept that experienced practitioners may acquire additional practice competencies through residency training.

The profession has indicated that residency training should be expanded into such areas as community practice and long-term care practice. While efforts have been made to stimulate this expansion, it has progressed slowly. The Commission believes that individual schools and colleges of pharmacy should exercise their leadership to support and promote such programs.

The need for practitioners with residency training will change as health care systems and delivery change. Identifying opportunities and need for expansion in areas where reduction should be considered requires planning which must be part of the profession's strategic planning, and pharmaceutical education must be a major participant in such efforts.

## **Mid-Career Education and Training**

### Introduction

Profound changes in the health care system are offering pharmacists challenging opportunities to enhance the level and scope of their services. As a consequence of this change, more practitioners and practitioner educators are seeking formal programs that prepare them for new practice and educational roles.

Until recently, the concern of pharmaceutical education regarding mid-career education and training focused primarily on continuing education. This strategy is no longer adequate in a dynamic profession such as pharmacy. The magnitude and rapidity of change occurring in the health field is creating situations in which practitioners (many only recently graduated) are demanding new practice competencies which were not provided to them in their formal, professional education. This is creating challenges and opportunities for pharmaceutical education. The Commission elaborated on this trend and opportunity in its Position Paper (1):

Pharmaceutical education shares in the opportunities brought on by change. Mid-career pharmacists who wish to sharpen their existing competencies or develop new areas of competence may constitute a new or significantly expanded market for educational service and possibly an important source of revenue for colleges and schools who are revising their curriculums.

While the previous statement addresses the potential economic value of serving the educational needs of mid-career pharmacists, there are powerful and profound professional reasons as well. Pharmacy is positioned well to assume many new service and care roles as the health care system continues to change and expand. Such opportunities may be open only for short periods of time before other professional groups “lay claim” to them. Pharmacy must have the means to prepare and produce sufficient numbers of competent practitioners to assume responsibility in these practice areas. Consequently, the Commission believes that pharmaceutical education must play a role in helping the profession respond to such needs. It is a responsibility that helps to ensure the future success of the pharmacy profession.

### Financial Support

Financial support of mid-career education and training largely has been subsidized by schools and colleges of pharmacy and the pharmaceutical industry. Most state-supported universities do not receive funding for practitioner education and training. Policies of many universities do not provide incentives for schools and colleges to involve themselves in any substantial way in practitioner education and training. Recent FDA and Congressional investigations have caused the professions and the pharmaceutical industry to reexamine the latter's role in supporting such programs. While little data are available on the level of pharmaceutical industry support of mid-career education and training in pharmacy, the Commission believes, based on its own observations, that it is substantial. The Commission is concerned about this situation because it believes that the role of pharmacists in exerting an ever-increasing influence in the drug-use process could be compromised through bias introduced into manufacturer-supported programs. The Commission is also concerned that, even if content is controlled by practitioners and educators, manufacturers that support mid-career education and training generally support only those programs that address areas in which they have products.

The first of these concerns is relatively easy to deal with in that health-care professionals and the industry are recognizing that content of educational programs must remain within the control of the former. The second concern—one in which a manufacturer will support a clinical fellowship, mid-career residency, certificate program, or continuing education program only in those areas addressed by that company's

products—highlights a failure to plan for the future of postgraduate professional education and training. With this dearth of planning, the Commission is concerned about the issue of who influences the direction of postgraduate education and training. For example, a particular company may have a product line of oncology agents and may wish to sponsor several clinical fellowships in pediatric oncology. In the absence of any practitioner/educator-developed plan that addresses the need for pharmacists with clinical fellowship training in the various disciplines, the direction established by manufacturer preference will continue. Practitioners and educators must face the issue that they have the responsibility to identify the areas in which the range of postgraduate professional education should be focused.

The major beneficiaries of practitioner education and training are the practitioners themselves and the patients they serve. Consequently, some argue that society, through its state-supported university systems, should support practitioner education and training. However, in view of the enormous financial shortfalls that are affecting higher education, the Commission is not enthusiastic that such support will be available even in the distant future. It is, therefore, left to practitioners and their employers to bear the true cost of their education and training. As pharmaceutical education begins to design, develop, test, and market new strategies to deliver programs to practitioners, it is critical that practitioners and their employers be made aware of their financial obligations for such initiatives.

### Mid-Career Residencies

Traditionally, pharmacy practice residencies have been considered a means of training recent graduates for practice roles not fully covered in their professional education. The Commission believes that changes occurring in health care and the profession will stimulate mid-career professionals to seek training experiences that will equip them to engage in new practice roles. Mid-career residencies may be one way to achieve this objective.

Such training experiences are not fully developed in pharmacy, although they have been used successfully in medicine. The Commission offers the concept as a potential strategy for retraining practitioners for alternate directions in their careers.

While traditional pharmacy residencies are typically one year in length, mid-career residencies may be shorter, the same, or longer depending on the nature of the competencies to be achieved. Such programs offer several advantages to the practices or settings in which training occurs (hospital pharmacies, long-term care pharmacies, etc.). Residents typically provide service as they are trained; and, because mid-career residents have substantial practice experience, this may benefit their host institutions. As experienced practitioners, residents may contribute to the further development of the residency program as well as the practice in which they are training.

The training of mid-career pharmacists in a residency format provides reasonable opportunity for practitioners to change the focus of their pharmacy careers. It also provides a means for the profession to shift critical manpower resources as demand shifts. The Commission suggests that AACP, ACCP, APhA, ASHP and other interested practitioner organizations join together to establish pilot mid-career residencies and to assess their broad feasibility and beneficial outcomes.

### Certificate Programs

Certificate programs have been defined by AACP (8) as:

structured and systematic postgraduate educational and training experiences for pharmacists that are generally smaller in magnitude and shorter in duration than degree programs, and that impart knowledge skills, attitudes, and performance behaviors designed to meet specific practice objectives.

In 1989, AACP and the American Council on Pharmaceutical Education cosponsored a conference on certificate programs (9). The conference highlighted the importance of certificate programs to the future of the profession; they provide practitioners with the opportunity to acquire new practice competencies in order to participate in some expanding part of the profession.

The acceptance of pharmaceutical care as the mission of pharmacy practice should prompt large numbers of practitioners to seek programs that allow them to acquire the competencies and skills needed to provide pharmaceutical care. Pharmaceutical education should assume shared responsibility with other elements of the profession for meeting this demand. While groups other than schools and colleges of pharmacy may produce and deliver certificate programs, the expertise for developing programs of high educational quality resides largely within pharmaceutical education.

Guidelines that can be used to develop and assess the quality of such programs are included in the reports of the AACP Committee on Professional Affairs (8) and the Conference on Certificate Programs (9). These guidelines appear in Appendix B. The ACPE “Criteria for Quality and Interpretive Guidelines” for continuing education programs also should serve as important guidelines for producers of certificate programs.

The Commission urges certificate program producers to use the outcomes, competencies, and teaching processes discussed in Background Paper II as a guide in planning and developing their programs.

#### Nontraditional Degree Programs

As more pharmacy schools and colleges begin to offer the Pharm.D. as the entry degree, increasing numbers of practitioners with bachelors degrees have become interested in obtaining the Pharm.D. degree. Practitioners' motivations are basically three:

- the desire to have a doctoral degree;
- the fear of being disenfranchised or discriminated against in the professional employment market in favor of practitioners with Pharm.D. degrees;
- the desire to acquire competencies equal to entry-level Pharm.D. competencies to improve the level of care that they can provide.

The Commission believes that practitioners' desires for doctoral credentials for appearance's sake, while sincere, do not constitute desires to which pharmaceutical education should respond. However, the desires of practitioners to be competitive with their professional colleagues and to acquire current entry-level competencies are appropriate demands that pharmaceutical education can and should seek to meet.

Several pharmacy schools have developed and offer programs in nontraditional formats to practitioners through which they may take appropriate didactic and experiential courses and receive the Pharm.D. degree. Idaho State University and the University of Illinois at Chicago Colleges of Pharmacy offer such programs to practitioners/students nationally and four schools and colleges (the University of Kentucky, Purdue University, the University of Arkansas and Southeastern University of the Health Sciences) offer their programs to practitioners/students within their states or metropolitan regions. The Commission understands that other pharmacy schools are contemplating such programs. The two schools that offer their programs nationally have full enrollments and waiting lists of practitioners/applicants (10).

Assurance of quality is a major concern expressed by educators and practitioners about nontraditional educational programs. Schools and colleges of pharmacy that offer nontraditional educational programs (even those that do not lead to a degree) must ensure the educational quality of their offerings. The American Council on Pharmaceutical Education accredits entry-degree programs. Those entry-degree programs offered in nontraditional formats come under ACPE quality review and must meet the same standards and guidelines as do traditional programs. The Commission urges that the Council continue its efforts to ensure the quality of such nontraditional offerings.

The Commission believes that practitioners' interest in academic programs that provide new competencies will increase rather than diminish. Consequently, those schools that have established ways to offer academic courses in nontraditional formats (nontraditional Pharm.D. programs) are positioned to continue offering didactic and experiential courses which may not lead to a degree but will enable practitioners to continue to advance in their chosen segment of pharmacy practice. Such offerings are likely to be important for the future delivery of pharmaceutical care.

#### Distance Learning Methodologies

Traditional pharmaceutical education is based on student teacher interactions which take place in classrooms or in patient care areas. Nontraditional education demonstrates that learning—the acquisition of competence—can occur in other venues. In several areas, such as nursing, engineering, teacher education, and library science, major progress has occurred in the delivery of education where the teacher and student are separated by considerable distances (distance learning).

The Commission believes that distance learning will become an important element of undergraduate, professional, and post-entry-level education in the future. Technologies exist to teach sophisticated didactic material to widely-scattered student populations. Techniques can be developed to provide experiential education in situations where students and preceptors are separated by distance. The Commission believes that it is possible for experienced practitioners to derive educational value from practice even though preceptors (teachers) are not always physically present when practitioners and patients interact. The strong interest of practitioners in nontraditional learning suggests that educators should develop and test various methodologies of delivering experiential education from a distance. The Commission recommends that AACP include this as a GAPS priority area.

#### Continuing Education

Traditional noncurricular continuing education (C.E.) continues to play an important role in assisting practitioners to keep up with developments in areas where practitioners already have competencies. In contrast, curricular educational programs (such as certificate programs and programs offered through nontraditional formats) provide new competencies to practitioners. The American Council on Pharmaceutical Education's continuing education, provider-approval program seeks to ensure that providers of continuing education deliver quality programs to practitioners.

Schools and colleges of pharmacy, state pharmaceutical associations and societies, national pharmaceutical associations and societies, and pharmaceutical manufacturers plan, develop, and deliver continuing education programs. Because of the plethora of continuing education providers, some schools of pharmacy have reduced their C.E. offerings or have withdrawn from offering C.E. all together, although faculty continue to be involved in delivering C.E. offered by nonacademic providers.

The Commission believes that continuing education is still an important element of postgraduate professional education and training, although programs which have a curricular approach and which are designed to provide new practice competencies, such as certificate and nontraditional academic programs, are assuming greater importance. However, pharmaceutical education shares with other elements of the profession the responsibility to ensure educational quality in traditional C.E. The practitioner demand for C.E., generated by state laws or regulations requiring C.E. for relicensure, has created a “seller's market” for C.E. in which an uncoordinated mass of C.E., sometimes of marginal quality, bombards practitioners on a daily basis. Despite ACPE's efforts to ensure the quality of C.E. through its provider approval program, the Commission is concerned that matters of form overshadow matters of substance too frequently in traditional C.E. offerings.

### Assessment of Practice Competence

In accepting the Commission's Background Paper II, AACP adopted a definition of entry level and of entry-level competencies. Moreover, the Scope of Practice Project (conducted by AACP, APhA, ASHP and NABP to define practice functions), currently underway in the profession, will identify specific, contemporary competencies for general practice. Thus, it is reasonable to expect that practitioners who were educated with entry-level competencies defined at an earlier time might wish to determine whether they possess these contemporarily-defined competencies.

There are a number of ways in which practitioners may acquire new competencies that are in keeping with contemporary practice requirements (e.g., certificate programs, continuing education, mid-career training, habit of lifelong learning). The need is for a system or systems to permit practitioners to demonstrate that their competence is equivalent with that defined for contemporary practice. Such a proposed system would provide a credential in the form of a certification that the recipient has fulfilled the requirements, met the criteria, and passed the appropriate examinations to indicate that their abilities are at a defined competence level.

However, equivalent competence does not translate into an equivalent degree. Only academic institutions may award degrees; professional bodies cannot. Moreover, systems of certifying current competence can be far more valuable for practitioners, employers, and the public than degree designation because degrees are awarded at a point in time and cannot be renewed or upgraded. Competence can be updated and certified periodically as practice changes demand.

Any system that assesses and recognizes practitioner competence must be based on a valid and reliable method of assessing capability. That such systems are possible is verified by the existence of specialty certification mechanisms which use experience and examinations as assessment tools. Pharmacy has its Board of Pharmaceutical Specialties which the profession recognizes as capable of assessing and certifying the competence of applicants in specialty practices.

The Commission believes that the profession, with the active support of pharmaceutical education, should design and test a system to assess the competence of experienced practitioners and credential those who meet contemporarily defined levels. Some initial work has already been done through GAPS projects. AACP should include this as a priority area for a future GAPS funding cycle.

The profession should also test the feasibility of developing and promoting a portfolio system documenting and maintaining practitioners' experience. Such a system would permit practitioners to update their experience file when they assume new responsibilities or are recognized for contributions to their practices or profession. The experience file would serve a function similar to the curriculum vitae for academics—as a chronology of all important professional activities that constitute professional experience. Software could be developed to standardize experience profiles of pharmacists. The profession's endorsement (and perhaps implementation) of such a system could greatly assist practitioners seeking new practice opportunities.

Independent efforts of practitioner organizations to certify abilities of practitioners as equivalent to contemporary competence raises justifiable concerns within pharmaceutical education. Educators will demand that any such process is valid and reliable. That assurance can only be achieved by the involvement of pharmaceutical educators in the planning, development, implementation, and assessment of any such program.

### Conclusion

The enterprise of pharmaceutical education has profound responsibilities in the broad range of programs that comprise postgraduate professional education and training. As the pharmacy profession expands to provide care in the variety of patient-care environments, the demand for postgraduate professional education and training will continue to intensify. The success of the profession in meeting its obligations to care for the pharmaceutical needs of the population will depend, in large measure, on the speed and degree of pharmaceutical education's response.

### **VI. Recommendations**

1. Each school or college of pharmacy must include faculty scholarship in its mission statement and each has a responsibility to foster scholarly activities among faculty and to assess scholarly outcomes.
2. In addition to established procedures for assessing independent scholarship among faculty, procedures for faculty evaluation must provide for ways to assess faculty members' independent contributions to collaborative projects.
3. Each school or college of pharmacy must have a faculty development plan in which established faculty members mentor new faculty especially with regard to scholarship expectations for promotion and achieving tenure.
4. Schools and colleges of pharmacy that have graduate programs must assess the quality of such programs on a regular basis utilizing procedures which include internal and external reviews.
5. Schools and colleges of pharmacy that have graduate programs must implement the recommendations of the Study Commission on Graduate Education (See Appendix A).
6. Schools and colleges of pharmacy that have graduate programs must provide for periodic reviews of the research and scholarly activities of the faculty involved in such graduate programs.
7. AACP must join with interested practitioner organizations to promote clinical fellowships as a viable method of preparing clinical scholars, to develop a procedure for identifying areas of need for clinical fellowships, and to develop a quality assurance system for clinical fellowships.
8. AACP, ACCP, ASHP, APhA, and other interested pharmaceutical organizations must initiate the development of mid-career residencies by establishing pilot programs and assessing their outcomes.
9. AACP must include distance learning technologies and development of methods to assess contemporary competence as priority areas in future GAPS projects.

### **References**

1. Entry-Level Education in Pharmacy: A Commitment to Change, Commission to Implement Change in Pharmaceutical Education, American Association of Colleges of Pharmacy, Alexandria, VA, 1992.

2. Boyer, Ernest L., *Scholarship Reconsidered: Priorities of the Professoriate*, Princeton University Press, Lawrenceville, New Jersey, 1991.
3. Bootman, J.L., Chair Report of the Committee on Academic Affairs, *Am.J.Pharm.Ed.*, 51, 451-454, 1987.
4. Vanderveen, R.P, Chair Report of the 1991-92 AACP Academic Affairs Committee (in press).
5. Kinnard, W.J., Miya, T.S., Weaver, L.C., White, A.I., and Wolf, H.H., Faculty Scholarship and Research: Their Importance to the Future of Pharmacy Education. The 1980 AACP Argus Commission Report, *Am.J.Pharm.Educ.*, 44, 393-404, (1980)
6. The Study Commission on Graduate Education, "Graduate Education in the Pharmaceutical Sciences: The Quest for Quality," The American Association of Colleges of Pharmacy, Alexandria, Virginia, 1989.
7. Guidelines for Clinical Fellowship Training Programs, developed jointly by the Research Affairs Committee of the American College of Clinical Pharmacy and the Section of Teachers of Pharmacy Practice of the American Association of Colleges of Pharmacy. Approved by the AACP Board of Directors, July, 1988.
8. Popovich, N.G., Chair Report of the Professional Affairs Committee, *Am.J.Pharm.Educ.*, 52, 415-427 (1988).
9. Chalmers, R.K., Chair Report of the AACP/ACPE Conference on Certificate Programs, *Am.J.Pharm.Educ.*, 54, 80-83 (1990).
10. Personal communication, Culbertson, V.L., College of Pharmacy, Idaho State University; Flynn, A.A., College of Pharmacy, The University of Illinois at Chicago.
11. Meyer, S.M., and Sherman, M.S., *Profile of Pharmacy Students*, American Association of Colleges of Pharmacy, Alexandria, Virginia, 1991.

## Appendix A

The conclusions of the Study Commission on Graduate Education (“Lemberger Commission”)

- That there be greater flexibility in undergraduate/entry level professional education to allow students to prepare for graduate education.
- That the AACP facilitate discussions with the American Council on Pharmaceutical Education related to expanding flexibility in undergraduate/entry level professional education programs to allow better preparation of students for postgraduate work.
- That faculties undertaking to prepare pharmaceutical scientists must meet and maintain contemporary criteria of quality in the conduct of their graduate programs.
- That faculties involved in graduate education evaluate their program(s) on a regular basis and that:
  1. the self-evaluation should result in a set of objectives and a timetable for achievement;
  2. the self-evaluation process should include an external review component; and
  3. schools should make public the data of the most recent self-evaluation.
- That a national database for guidance of graduate program personnel undertaking self-evaluation be generated and updated periodically and that this database be discipline specific.
- That the AACP serve as coordinator of periodic data collection and dissemination regarding the status of graduate programs in the pharmaceutical sciences and that the Association's *Graduate Programs in the Pharmaceutical Sciences* be expanded to include guidelines for student assistance in selecting a graduate program and a listing of schools which have undertaken self-evaluation including the date of the most recent review.

## Appendix B

The overall size of the enterprise of graduate education has grown in U.S. pharmaceutical education in terms of students and faculty. For example, the number of Ph.D. degrees awarded in 1988-89 was 44.4 percent greater than the number awarded in 1979-80. Full- and part-time enrollments in Ph.D. programs increased from 1245 students in 1980 to 2155 in 1990, a 73 percent increase (9). Despite this growth, the percentage of full-time and part-time students with pharmacy degrees from U.S. pharmacy schools who were enrolled in Ph.D. programs declined from 32.4 percent in 1980 to 27.2 percent in 1990. Interestingly, the percentage of students with pharmacy degrees (both U.S. and foreign) grew from 49.8 percent in 1980 to 57.9 percent in 1990. Moreover, the number of full-time and part-time students with U.S. pharmacy degrees enrolled in Ph.D. programs in U.S. pharmacy schools actually grew from 436 in 1980 to 543 in 1990, a 24.5 percent increase.

## **Appendix C**

### **Guidelines for Certificate Programs**

[developed by the ACPE and AACP Conference on Certificate Programs (8) and the AACP Committee on Professional Affairs(7)]

- Certificate programs must have competency-based, outcome objectives.
- Input from practitioners must guide the development of program objectives and content.
- Outcomes must be measurable.
- Programs must contain both didactic and experiential components, although simulation may be explored as an efficient substitute for experience.
- Content must be current, reliable, and related to the stated objectives.
- Programs must be accessible and contain self-paced characteristics.
- Programs must contain appropriate rigor in relation to the program objectives.
- Programs must be at a length and cost appropriate with program objectives.
- Program and participant evaluations must be related to stated objectives.
- Program quality must be maintained by periodic self-studies and external reviews.

H:\commissi\commis4.bkd  
5/28/92