

**The Role of Dual-Degree Program in Colleges and Schools of Pharmacy:
The Report of the 2008-09 Research and Graduate Affairs Committee**

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According to the Bylaws of AACP, the Research and Graduate Affairs Committee shall provide assistance to the Association in developing its research, graduate education, and scholarship agenda. This assistance may include facilitating colleges and schools in formulating and advancing legislative and regulatory initiatives and nurturing collaborative activities with organizations sharing an interest in issues related to the pharmaceutical sciences.

AACP President Victor Yanchick charged the committee with defining the role of dual degree programs within colleges/schools of pharmacy and asked the committee to consider what roles, if any, the Association should play in promoting, recruiting, and describing these programs to prospective students. Additionally, what role should the Association play in documenting the enrollments and graduations from these programs?

Introduction

While post-PharmD residency education and training continues to be a common and popular pathway for approximately 20 percent of PharmD graduates, a significant number of colleges/schools of pharmacy are offering and pharmacy students are choosing alternative educational pathways to expand their post-PharmD career options in both pharmacy and the healthcare industry. These alternative educational pathways are dual or joint degree programs.

Dual degree programs allow students to combine the competencies developed through the PharmD degree program with a new set of competencies developed through their concurrent enrollment and completion of other professional or graduate degree programs. The educational outcome of most dual degree programs is expanded students' expertise in disciplines that are valued in more non-traditional areas of pharmacy practice. Additionally, enrollment in dual degree programs offers the participating student increased interaction with other health and non-healthcare professionals in activities such as pharmacy and health care systems management, public/population health and healthcare, health care policy and advocacy, jurisprudence, and research in areas such as drug discovery, drug development, outcomes research and clinical trials.

In the 2005-06 edition of the AACP publication, *Pharmacy Student Admission Requirements (PSAR)*, a total of 32 colleges/schools were listed as anticipating offering a total of 42 dual degree programs in cooperation with non-pharmacy colleges/schools. In the 2009-2010 edition of *PSAR*, 41 schools were listed as anticipating offering a total of 51 dual degree programs with a separate

non-pharmacy program. In the 2005-06 *PSAR*, 26 colleges/schools of pharmacy were listed as offering a PharmD/PhD dual degree program, and in 2009-10 *PSAR*, this had increased to 30 colleges/schools, about half of those colleges/schools of pharmacy which offer the PhD degree.¹

In the 2001-2002 *PSAR*, 18 colleges/schools were listed as offering the most popular dual degree program, the PharmD/Masters of Business Administration (MBA). The number of PharmD/MBA programs listed increased to 30 in 2005-06 and to 36 by 2009-2010. Although the number of students enrolled or graduated from PharmD/MBA programs since their introduction around 1980 is not known, the increase in the number of colleges/schools of pharmacy offering this dual degree programs has significantly increased over the past decade.

Pharmacy colleges/schools have offered dual degrees for over 25 years, yet there is little information on the numbers of students who have enrolled in and eventually completed these programs. Individual colleges/schools may have detailed information on the careers of those students who completed their dual degree programs, but the information has remained proprietary. Thai and Draugalis published a demographic study of PharmD/MBA programs in 2002 and provided the first look at the structure of these programs.² An AACP Council of Deans and Council of Faculties Task Force on Dual Degree program obtained additional information on the enrollments and numbers of graduates from dual degree programs in 2005.³ Recent papers in the *Journal* by faculty from the University of South Carolina on their PharmD/MBA dual degree program and the University of Kentucky on their dual degree programs has given the academy the first information on why students choose to enroll in dual degree programs and what they find most valuable about participating in these programs.⁴⁻⁶

Recommendation 1: The AACP Institutional Research Enrollment and Graduation Surveys should collect enrollments and graduation data from all formally recognized college/school of pharmacy dual degree programs. The number of students enrolled and graduating from the PharmD program component should be reported as usual. The number and type of dual degrees awarded should be reported only after both degrees have been awarded and reported to AACP as a separate dual degree category.

Suggestion 1. Colleges/Schools of pharmacy should collect data from all students, including dual degree students, on their career choices (eg. employer, residency site, graduate school, etc.) after graduation.

Dual, double, joint and combined degree programs

There does not appear to be any official Federal Government Department of Education definitions for the terms dual, joint, double or combined, so the websites of a number of different universities were examined to determine if a common definitions were available that distinguished between dual, double, joint, or combined degrees. In summary, there is little consensus in definitions and in several cases, the uses of the terms in describing programs were contradictory. Some universities use the terms interchangeably in program descriptions. When a distinction between dual and joint degrees is made, the dual degree program is defined as students working for two different and distinct degrees in parallel at the same or different universities, completing both degrees in less time than it would normally take to complete them separately (sequentially). This requires that the cooperating programs have agreed upon a curricular structure which allows students to be simultaneously enrolled in two different degree programs. Students pursuing a dual degree must successfully apply and be admitted to each degree component separately. In dual degrees involving the PharmD program, most often the non-PharmD component is offered by another school/college within the university, but in some

instances, the non-PharmD component is offered by a school/college in another university.⁴ When a student completes a dual degree program, they receive a distinct degree from each participating school/college of the program, either at the same time, or at different times when the requirements for each degree are completed.

At several institutions, the term joint degree is defined differently than a dual degree program. In these cases a joint degree refers to a single degree awarded by a university or universities for completion of a unique combined degree program worked out between two or more disciplines, either within one university or among multiple universities. There appears to be only one such program offered by a colleges/school of pharmacy, whereupon completion of the program, the student receives a single PharmD/MBA joint degree.⁷ In all other programs, students receive two degrees upon completion of the requirements of the respective degrees. Thus, for the remainder of this report, the term dual degree will be used.

The structure of dual degree programs

Dual degrees, particularly in medicine, have been experiencing considerable growth over the past few decades. The oldest formal dual degree program is the National Institutes of Health (NIH) Medical Scientist Training Program (MSTP) which leads to a MD/PhD. This program was instituted in 1964 to encourage medical schools to educate and train a cadre of physician scientists. At present 40 MSTP programs are funded at 45 degree granting institutions, and an additional 75 MD/PhD programs, modeled after the MSTP are offered at medical schools using internal and external funds.⁸ Thus, almost every medical school program offers this dual degree tract.

The MD/PhD programs are highly competitive, partly due to the fact that admission to the program provides six years of financial support, including a stipend, tuition allowance, travel money, and money for equipment and supplies for the PhD component of the program. While there is some variation in the structure of the programs, in most the student takes two years of medical/graduate level coursework, interrupts medical school for 3-4 years of PhD research work, and then returns to complete clinical education/training in medical school. The vast majority of PhD research in the program is carried out in laboratory-based biomedical science fields. This focus on biomedical science is reflected in the type of research MD/PhD graduates generally pursue upon entry into academia, the most common career pathway.^{9,10}

In addition to the MD/PhD dual degree, medical schools offer an increasing number of dual degree programs. In 1997, eight medical schools offered the MD/MBA.¹¹ In 2009, the Association of American Medical Colleges (AAMC) web site listed 50 medical schools that offered the MD/MBA option. Additionally in 2009, 23 medical schools offered the MD/JD, and 77 offered the MD/MPH.¹² The MD/MPH dual degree program, the most common dual degree program after the MD/PhD program, use several different approaches to completing both degrees more quickly than the traditional sequential degree pathway.¹³⁻¹⁵

In colleges/schools of pharmacy, application to the non-pharmacy degree component of dual degree programs such as the MBA, Masters of Public Health (MPH), and Masters of Public Administration (MPA) occurs after a student has been admitted into the PharmD program and has satisfactorily completed at least a semester of the PharmD program of study. In PharmD/MBA dual degree programs, the already enrolled PharmD student applies to the cooperating School of Business and is admitted to the MBA program if they meet that program's admission requirements. Application to the MBA degree program can occur during the first or second professional year of the PharmD program. As with any general rule, there are exceptions. For

example, the Campbell University PharmD/MBA dual degree program allows students who have completed a baccalaureate degree to seek enrollment in the MBA program before admission to the PharmD program.¹⁶ The completion of a baccalaureate degree does not appear to be a general requirement for non-PhD dual degree programs, but delaying application until the end of the first or second year allows a student to accumulate enough credits equivalent to a baccalaureate degree.

How the curricular pathways of the traditional PharmD and non-PharmD component degree programs are modified to allow for completion of the requirements of both of the advanced degrees in less time differs amongst dual degree programs. Some dual degree programs require summer session coursework for the non-PharmD degree component or the non-PharmD degree components are completed by taking evening or weekend coursework concurrently with PharmD coursework taken during the daytime.^{4,6} Some programs use a stop-start process, whereby the student stops progress in the PharmD program for a year, usually after the third professional year.^{17,18} During the year of the suspended PharmD curriculum, the student takes a full load of courses in the non-PharmD degree component. When the student resumes the final PharmD professional year, they take one or more courses in the non-PharmD component, and in the case of some PharmD/MPH dual degree programs, utilize elective Advanced Pharmacy Practice Experiences to complete a required Public Health experiential requirement. At universities where the non-PharmD degree component does not offer summer session or evening coursework, the PharmD student completes the non-PharmD degree within one year after the completion of the PharmD rather than the more common two year requirement. Concurrent completion of both degrees within the typical four-year professional PharmD degree curriculum appears to be most dependent on the availability of evening or weekend coursework from the non-PharmD component. The use of the stop-start curricular model appears to be due to the desire of the non-PharmD degree component to immerse students totally within their structured curriculum for at least one complete academic year.

Another characteristic of formalized dual degree programs which facilitates completion of both degrees in a shorter time period is the ability accorded dual degree students to utilize selected coursework from the non-PharmD component as PharmD curriculum electives and selected PharmD coursework as electives in the non-PharmD component. There are a number of areas where pharmacy practice or health care overlap with business, public health, public administration, or clinical research and pharmacy students enrolled in a dual degree programs should have one or more pharmacy faculty role models whose expertise is recognized by the non-pharmacy program. Having pharmacy elective courses accepted as fulfilling the course requirements of the non-pharmacy degree component contributes to the recognition that these dual degree programs are more than just a convenient pathway to another degree, but a planned combination of educational experiences that can provide the graduate with an extra set of competencies that are complementary to, or synergistic with, those of the PharmD program.

The structure of PharmD/PhD dual degree programs is more variable than PharmD/Masters degree dual degree programs. Admission to a PhD program is often through the university's graduate school not the college/school of pharmacy and a separate admission applications must be made to each component. Some PharmD/PhD programs require completion of a baccalaureate degree or its equivalent before admission into the program. Other graduate schools do not allow concurrent enrollment in professional and graduate programs. Colleges/schools of pharmacy have negotiated formalized PharmD/PhD dual degree programs with the graduate school, while others which offer a PharmD/PhD dual degree pathway simply allow students to fulfill graduate school course requirements as PharmD program electives, thus potentially shortening the time required for completion of the PhD after completion of the PharmD degree.¹⁹⁻²³ In the pathway programs,

the students are not enrolled in the graduate school until the student receives the PharmD degree.²⁴

There may be advantages to students enrolled in a formalized dual PharmD/PhD structure if they are charged graduate school tuition, usually lower, rather than the professional degree tuition. Of course, this may be a disadvantage to the college/school if it retains professional tuition to fund its operation. The provision of teaching or research assistantships may also be made available to students in a formalized program. There may be some outside impetus for formalizing PharmD/PhD programs given that the National Institute of General Medical Sciences of the National Institutes of Health offers a pre-doctoral (F31) individual training grant for up to three years for students who have completed a baccalaureate degree and are presently enrolled in a formal combined PharmD/PhD program and are now in their dissertation phase. Unfortunately, this training grant, as it is now structured, cannot be used for supporting a PharmD degree or the PhD program component after the student has completed their PharmD.²⁵ Given that all PharmD/PhD programs now available have students earn their PharmD degree prior to the PhD dissertation research component of the dual degree, it would appear that no present PharmD/PhD dual degree programs are eligible. However, those dual degree students who receive the PharmD may be eligible to apply for a Postgraduate F32 award for the PhD portion of the program.²⁶

As with the PharmD/MBA and PharmD/MPH dual degree programs, PharmD/PhD dual degree programs are designed to decrease the time required for students to complete both degrees than would be required if done sequentially, but unlike other professional and even some non-research thesis MS degrees, a PhD program requires completion of an original research project acceptable to the student's advisor and examination committee. A completion time for the research component cannot be predicted or guaranteed.

Suggestion 2: Colleges/schools of pharmacy which offer or plan to offer PharmD/PhD dual degree programs should work to have the programs formally recognized by the university's graduate school so that the PharmD/PhD students are eligible to apply for financial or tuition support available to graduate students.

Graduate certificate programs

An alternative pathway to dual degree programs to obtain advanced education/training in a specific discipline is the graduate certificate program. Graduate certificate programs are university-recognized, graduate school approved programs of study as contrasted with a certificate one earns after completing a continuing education course, or a program designed to teach a new skill such as how to administer immunizations which results in the awarding of a certificate of completion. Graduate certificate programs require a smaller number of university approved graduate courses to complete than that required to complete the Masters degree. In some cases, students who complete a graduate certificate program may decide to continue on to complete the degree requirements for a Masters in the same area as the certificate. Often some of the certificate courses can be used to partially fulfill the degree requirements.^{27,28} Because of the confusion between a graduate certificate program, a certificate for completing a short continuing education program, or the concept of certification, graduate certificate programs are not common in colleges/schools of pharmacy. However, they do have value in providing knowledge and skills that can assist students in focusing on a career option, and they have the potential of developing interest in continuing on to a graduate degree in the area of the certificate or related discipline. Graduate certificate programs can be combined with the PharmD during the professional degree curriculum so that students can graduate with a combined PharmD/Graduate certificate.

Suggestion 3: Colleges/schools of pharmacy should explore offering graduate certificate programs in the pharmaceutical sciences and practice areas where the specialized knowledge and skills needed to practice cannot be fully covered within the PharmD curriculum. The coursework, didactic and laboratory should be of sufficient rigor that it would be acceptable for graduate program credit.

Dual degree programs as preparation for academic positions

There is general agreement within the academy that there is a need for PhD-level faculty members who have completed a PharmD program.²⁹ Given that most entering PharmD students already have three or more years of a college education, the majority with a BS degree, convincing students to pursue a 4-5 year PhD program after completing a 3-4 year pre-pharmacy curriculum followed by the 4 year PharmD is a daunting task given the time commitment and the availability of challenging and high paying opportunities upon completion of the PharmD degree and licensure. Several colleges/schools offering the PharmD/PhD have developed financial packages, reduced tuitions or teaching/graduate assistant programs which reduce the potential for excessive debt upon completion of both degrees to attract current PharmD students to enroll in their PharmD/PhD programs.^{20,21} To maximize the potential of reducing the time required to complete a PharmD/PhD program, a student must commit to starting the program early, preferably in their first PharmD professional year. Thus, students should be recruited and admitted into PharmD/PhD dual degree programs concurrently with students being recruited and admitted into the PharmD program. Students who express interest in research 1-2 years after entering the PharmD program lose some of the time saving advantages of a dual degree program along with potential financial support.

Should or could the admissions criteria for the PharmD/PhD student differ qualitatively from those of a PharmD student if colleges/schools recruited and admitted students directly into a PharmD/PhD dual degree program along with an entering PharmD class? Presently, it appears that students interested in entering a PharmD/PhD program must separately apply to and be accepted into the PharmD program, the PhD program, and in some institutions, the PharmD/PhD program. An argument for these separate admissions criteria is that not all PharmD/PhD students will complete the PhD requirements and therefore must meet admission qualifications to reenter or remain in the PharmD program if they withdraw from the dual degree program. Currently, approximately 30 percent of MD/PhD students enrolled in the MSTP withdraw from the program, despite the generous financial support.³⁰ Thus, an attrition rate equal to or exceeding that should be expected for PharmD/PhD students to withdraw from the PhD degree portion of PharmD/PhD programs even when there are financial consequences. If there is no difference in the admissions criteria for a PharmD or PharmD/PhD program, will it be possible to selectively recruit students into the dual degree program. If a student's stated interest or experience in providing "patient care" is weighted more heavily than "interest in research" as an admissions criteria, students interested in a PharmD/PhD program could be disadvantaged in being separately admitted to the PharmD program. There is good evidence demonstrating the MD/PhD graduates choose academic careers at a significantly higher rate than those graduates with a MD degree.^{30,31} Therefore, if academic pharmacy desires more faculty with both PharmD and PhD degrees, it will need to actively recruit students directly into PharmD/PhD programs. This may require admissions criteria into the PharmD/PhD programs to be slightly different than those for the PharmD program.

Suggestion 4: Colleges/schools of pharmacy should actively recruit and directly admit students who have completed the appropriate academic requirements into their PharmD/PhD program at the same time other students are directly admitted into the PharmD program.

Of the Masters-level dual degree programs with a non-pharmacy component, the PharmD/MPH or similarly structured dual degree programs appears to provide the PharmD student the best preparation for a career within academic pharmacy. Most MPH programs provide advanced coursework in statistics, epidemiology, and data analysis that would enhance the research potential of an individual with a PharmD who wished to pursue an academic career in pharmacy. The lack of scholarship by PharmD faculty whose primary post-PharmD training comes from residency training is well documented.^{32,33} Several colleges/schools of pharmacy are attempting to remedy this deficiency by combining residencies with a MS degree program that provides advanced coursework in several disciplines common to MPH programs, and programs associated with Academic Health Centers with Clinical and Translational Science Awards (CTSA) often offer a Masters of Clinical Research (MCR) program to prepare clinical scientists.^{34,35}

Dual degree programs as preparation for non-traditional pharmacy and healthcare roles

The 2005 COD/COF Taskforce on dual degree programs survey asked the participating programs to select from a list of reasons, those that were most important for offering a dual degree. More than one selection was permitted. The reason chosen most often was “Prepare dual degree graduates for alternative non-academic pharmacy careers.”

In studies of dual degree programs conducted at the University of South Carolina and the University of Kentucky, graduates and students enrolled in dual degree programs listed the following advantages to dual degree programs:⁴⁻⁶

- Interaction with students outside the college/school of pharmacy
- Improved problem-solving, leadership, communication and writing skills.
- Exposure to the business side of health care.
- Ability to set themselves apart from other pharmacy graduates.

A common finding in both the South Carolina and Kentucky dual degree programs is the interest of the students in looking for career opportunities outside of traditional pharmacy practice, including the pharmaceutical industry. This is consistent with the primary reason given by colleges/schools of pharmacy offering dual degrees. The combination of a health care degree with a business degree provides students with more education and training to move into health care management positions either within pharmacy, or within profit, not-for-profit, or governmental healthcare organizations. Students completing the University of South Carolina PharmD/MBA indicated less interest in entering a traditional residency, presenting pharmacy practice with somewhat of a dilemma in identifying and preparing leaders for the future using the traditional post graduate experience, the residency.

A survey of health-system pharmacy directors, managers, practitioners, pharmacy students and employers conducted by the 2004 American Society of Health-system Pharmacists (ASHP) designed to assess the leadership situation in health-system pharmacy indicated that there will be a large exodus of pharmacy directors (4000-5000) through retirement in the next decade.³⁶ The survey also indicated a lack of interest on the part of managers and students in moving into these leadership positions in the future. In her 2006 ASHP Harvey A.K. Whitney address, Sara J. White amplified her concerns about the lack of new leadership in health-systems pharmacy and stated, “If an organization cannot fill a vacant pharmacy leadership position with a pharmacist, it will likely fill it with a materials manager, a nurse, a physician, an M.B.A., or an M.H.A., as it must have pharmacy leadership.”³⁷

Despite White's concern that pharmacy leadership positions might be assumed by other health professionals and non-pharmacists with a MBA or Masters of Health Administration (MHA), she recommended the ASHP-accredited residency as the primary pathway to these pharmacy leadership positions, despite the fact that the contemporary residency is designed to improve the medication use process and provide the resident more experience in direct patient care. While there are 1 and 2-year practice management residencies, and several of the 2-year residency programs combined with a Master's degree, the number of pharmacists who complete these management focused programs is considerably smaller than the number of students currently enrolled in and graduating from PharmD/MBA and PharmD/MPA programs.^{3,38} The MBA degree component may not focus specifically on health care administration/management, but MBA or MPA electives taught by pharmacy faculty can provide the PharmD dual degree student with sufficient background in pharmacy and healthcare to prepare graduates for management and leadership positions either within a traditional pharmacy practice or a larger healthcare provider environment. Given the growth in interest and availability of PharmD/MBA and PharmD/MPA dual degree programs, graduates could be specifically recruited to further develop their business, finance, and management skills in community, managed care, long term care or institutional pharmacy through a specialized residency program which takes advantage of their expanded set of experiences and competencies gained through these dual degree programs.

Recommendation 2: The AACP Board of Directors, through the Association's membership on the ASHP residency Commission on Credentialing (COC) for Residency Accreditation, should recommend that the COC develop a new one-year accredited residency program for the graduates of PharmD/MBA and PharmD/MPA programs to specifically prepare these dual degree graduates to assume management and leadership positions in community, managed care, long term care, or institutional pharmacy.

Preparing pharmacy students to become competent in the informatics is another area of practice that demands academic pharmacy's attention.³⁹ Despite the accreditation requirement for specific competencies in the area of informatics, it appears that most programs do not provide adequate or appropriate instruction in the field of pharmacy informatics which has been defined as "the scientific field that utilizes a systems approach to medication-related data and information – including its acquisition, storage, analysis, and dissemination – in the delivery of optimal medication-related patient care and health outcomes."⁴⁰ In order to develop faculty expertise, to teach to the outcome competencies in the professional degree program and to provide leadership in the area of medical/pharmacy informatics, the AACP Technology in Pharmacy Education and Learning Special Interest Group urged colleges/schools of pharmacy to develop residency and graduate degree programs in informatics. The development of PharmD/MS dual degree or a PharmD/Graduate Certificate program in informatics would be an important first step in developing both faculty and student expertise in this important area. Given the lack of informatics expertise in the academy, the development of dual degree or graduate certificate programs with other disciplines on campus will be necessary at most colleges/schools of pharmacy for the foreseeable future. This would also provide an opportunity to develop research collaborations between pharmacy faculty and other faculty across the university.

Another dual degree program that prepares students for non-traditional healthcare roles is the PharmD/MPH. The MPH degree component of a PharmD/MPH dual degree provides the cachet needed for pharmacists to enter public health positions at the local, state and federal level. Many federal agencies with a public health and epidemiology focus such as the Center for Disease Control (CDC) or the Agency for Healthcare Quality are almost devoid of staff with a pharmacy background. The possession of a PharmD/MPH would provide increased preparation for

pharmacists to join these organizations in a staff position. While an increased role for PharmD/MPH graduates in the public health arena may remove these individuals from individual patient care, improving public health is consistent with the mission of the pharmacy education and the profession.

Promotion of dual degree programs by colleges/schools of pharmacy

Preparing students for academic and non-traditional non-academic pharmacy-related careers are the primary reasons for offering dual degree programs. Since many potential and current pharmacy students are not familiar with non-traditional or academic pharmacy careers, it would appear that colleges/schools of pharmacy offering dual degree programs would need to promote these programs along with the career options open to their graduates to both prospective and current pharmacy students. To determine how institutions with these programs promoted them to prospective students, the AACP staff liaison to the committee examined the AACP *PSAR*, the PharmCAS web site of the participating institutions and the college/school web sites to determine what information was provided for potential and current students who might be interested in career opportunities other than traditional practice. While a lack of information on the programs within publications or web sites may not totally reflect the promotion of these programs to students, most college/school of pharmacy web sites do provide extensive information on their stand alone PharmD and graduate degree programs in the pharmaceutical sciences (MS, PhD) and the careers which are available to those graduates.

Examination of the *PSAR* revealed that only one-third of the colleges/schools that claim to offer a dual degree program included it in their *PSAR* narrative. Most colleges/schools which did refer to the availability of a dual degree programs simply stated that the programs were available. A few institutions provided a brief narrative on the goals of the programs.

The PharmCAS web site provides institutions participating in the centralized on-line application service a standard template for providing information to students on their professional degree program along with an active link to the college/school web site. Some PharmCAS participating colleges/schools listed available dual degree programs, while a few referred students to their web site for more information. Only one school provided a link to the specific web pages promoting and explaining the dual degree programs.

A college/school web site is often the first experience a prospective student has with an institution. Although there are large differences among web sites in terms of look and ease of navigation, most colleges/schools of pharmacy have web sites that allow prospective students, either professional or graduate, to find information on the admissions process and curricula of the PharmD program and the research focus of the graduate programs and the faculty. Dual degrees such as the PharmD/MS and PharmD/PhD where both degree components are offered by the college/school of pharmacy are generally easy to locate. However, finding information on dual degree options when the second degree component is available through another college or school such as Business or Public Health was often frustrating. Some colleges/schools list these dual degree options under the PharmD program, some under Prospective Students, and some don't list them at all on the pharmacy college/school web site. The 2009-10 *PSAR* Table 4, titled *Dual-Degree Programs Anticipated for 2009-10* was used by staff liaison to the committee to identify institutions who potentially offered dual degree programs.¹ Interestingly, the staff liaison had difficulty locating any information on a significant number of PharmD/MBA programs that were ostensibly being offered on the respective pharmacy web site. In cases where no information on the dual degree program was available on the pharmacy college/school web site, detailed descriptions of the dual degree program, including the curriculum was found on the School of

Business' MBA web site.⁴¹⁻⁴³ In some cases, the availability of the PharmD/MBA was listed on the pharmacy college/school web site, but program outcomes, career options and details for admission and curriculum were found on the School of Business web site.

While a few colleges/schools of pharmacy do an excellent job in promoting the advantages of dual degree programs with non-pharmacy components to prospective students, the majority of institutions simply list the availability of the dual degree program and the majority of information on the programs is found on the web site of the non-pharmacy degree component. This lack of information on dual degree options, particularly on providing the rationale and/or potential career outcomes of pursuing two concurrent degrees raises some interesting questions. Is it due to the fact that no one on the administrative staff or faculty was given the responsibility for the promoting the programs and/or advising potential dual degree students? Alternatively is there a lack of interest on the part of the college/school administration and/or faculty in promoting the program to students. That might occur if the dual degree program is viewed as potential competition with the college/school's own graduate programs. Another possible reason is that a significant number of faculty members are not supportive of non-traditional career options for their graduates. Or, the dual degree program was the idea of the non-pharmacy degree component (e.g., Business School) and the college/school of pharmacy faculty passively went along with the idea giving all the responsibility for promoting the program the partnering college/school.

The impact of dual degree programs on institutional culture

In a study of MD/MBA students at 6 medical schools, Sherrill attempted to analyze the career choice behavior of students choosing this dual degree path given that the traditional medical school culture of clinical superiority does not encourage business training, and may in fact discourage it.⁴⁴ The role of the traditional culture of a profession or segments of a college/school faculty in influencing student career choices should not be underestimated. Even though the college/school may offer a new degree pathway due to internal (eg, student) or external market demand for specially trained pharmacists (eg, business), there might not be faculty buy-in. Sherrill suggests that by offering dual degree programs such as the MD/MBA, the medical school is recognizing an exception to the traditional approach to medical education and thus is not only influencing student's career choices, but also the legitimacy of the role of the physician executive. Thus, whether intended or not, when a college/school offers a dual degree program which is designed to prepare graduates to assume non-traditional roles, it is stating that it values individuals who pursue less traditional roles in the profession.

The acceptance of non-traditional career pathways is not only an issue in professional education. In a recent editorial, Bruce Alberts, editor of *Science* states that attitudes about career paths for PhD graduates and postdoctoral fellows are changing, with interests in a broader range of career choices.⁴⁵ Alberts, a respected scientist who served as President of the National Academy of Sciences before being appointed editor-in-chief of the journal *Science*, states the following about these PhD science students and postdoctoral fellows:

One senses that we are reaching a tipping point, where students who prefer to work in the world of public policy, government, precollege education, industry or law will no longer be viewed as deserting science. Faculty and students can then begin to talk honestly about a whole range of respected, science-related career possibilities. This is crucial, because we must promote the movement of scientists into many occupations and environments if our end goal is to effectively apply science and its values to solving problems.

As a simple exercise, substitute the word pharmacy for science, and pharmacists for scientists in the preceding quotation, and insert the word healthcare before problems.

Given the expansion of dual degree programs over the past decade, it is assumed that colleges/schools of pharmacy initiating these programs have done so after study, discussion, and approval of their faculty members who realize that they are not only incorporating a change into their educational model, they are signaling to students an acceptance of non-traditional careers either inside or outside the profession. College/school faculty may not realize what sociopolitical impact they are engendering when they offer a new dual degree program, but only view it as simply offering another curricular pathway. This may explain why a significant number of colleges/schools which offer dual degree programs fail to promote them to prospective students, and leaves that promotion to the non-pharmacy degree component.

While the previous discussion focused on the cultural impact of offering a dual degree on students and the profession, offering dual degree programs has the potential to stimulate interprofessional and interdisciplinary education, research and practice, which can also impact the culture of the faculty as well as students. Interprofessional and interdisciplinary education, research and practice are important components of a pharmacy research and education as illustrated by the following Policy Statements approved by the AACP House of Delegates.⁴⁶

Colleges/schools of pharmacy should work to advance learners' human cognition, ethical developments, and behavior. Meaningful strategies include teaching and assessing ethics, cultural competency, intra- and inter- professional teamwork and community engagement with underserved populations.

AACP endorses the competencies of the Institute of Medicine for health professions education and advocates that all colleges and schools of pharmacy provide faculty and students meaningful opportunities to engage in interprofessional education, practice and research to better meet health needs of society.

Some may interpret interprofessional and interdisciplinary to only pertain to education, research or practice amongst health professionals such as pharmacy, nursing, and medicine. In the South Carolina and Kentucky experiences with dual degree programs, students rated the opportunity to interact with students from disciplines outside of pharmacy as a valuable benefit of the program. Students indicated that they improved skills such as problem solving, communication, and leadership in these interdisciplinary programs. Dual degree programs by their nature provide interdisciplinary education and teamwork opportunities for students who are enrolled in the programs. There is little evidence faculty in colleges/school of pharmacy have taken advantage these programs potentially have to offer in stimulating interprofessional and interdisciplinary research and/or teaching, but that may be due to the fact that most of these program are quite new.

Policy Statement: AACP encourages its member institutions to support the development of dual degree programs that provide pharmacy students increased educational and research opportunities resulting in an expansion of academic or non-traditional pharmacy/healthcare career options.

Conclusion

The numbers of dual degree programs offered by colleges/schools of pharmacy have been rapidly expanding. Despite this growth, there has been very little information regarding the impact of these programs on the students who enroll and graduate from them, and more importantly on what impact these dual degree programs have had on the culture of the institution. Offering a dual

degree program should involve more than the passive act of providing pharmacy students with another curricular option. The type of dual degree offered and the involvement of pharmacy faculty in the dual degree requires changing the culture of an institution. This is apparent to those faculty who have attempted to negotiate changes in the professional curriculum to allow some flexibility for students who are enrolled in dual degree programs, whether they be internal such as the PharmD/PhD, or external with another college/school such as the PharmD/MBA. Increased information on the numbers of students enrolled and graduating from dual degree programs, and more importantly their career paths after graduation will contribute to a more objective discussion of their role in pharmacy education.

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