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Going Global: The Report of the 2009-2010 Research and Graduate Affairs Committee

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INTRODUCTION

According to the Bylaws of the American Association of Colleges of Pharmacy (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 Jeffrey N. Baldwin charged the committee to examine the roles that AACP and its member institutions currently perform or should play in the future in the development of pharmaceutical sciences and pharmacy practice educators and scientists in developing and developed countries. Specifically, the committee will address the following:

- Review the present roles US colleges/schools of pharmacy play in working with developing and developed countries to initiate, change, and improve their education and training of pharmacists and/or pharmaceutical scientists.
- Examine and determine whether there is a role for AACP to develop a coordinated plan for working with countries that need and request the cooperation of US college/school of pharmacy faculty and students in improving the development, manufacture and/or distribution and use of medications, including vaccinations and nutritional agents, and/or initiating or improving the education of personnel to carry out these activities.
- Determine the potential scope of programs for which AACP could obtain funding from federal agencies and/or philanthropic organizations to support the expanded efforts of US colleges/schools of pharmacy to jointly work with countries that need and request help in the areas such as faculty development, curriculum change, pharmaceutical care and research expansion.

BACKGROUND

The issues addressed by the committee are activities, which could be subsumed under the more general topic of global health either by individual AACP member institutions or the Association. The primary objectives of the charges are to examine whether AACP and its member institutions can improve a non-US country's healthcare infrastructure through pharmacy education and the resulting change in pharmacy services (individual and population-based medication management), including the discovery, development and manufacture of needed medications.

What is global health? Given that this term is used in a number of different contexts, the Consortium of Universities for Global Health (CUGH) developed the following definition.[1]

> Global health is an area for study, research, and practice that places a priority on improving health and achieving equity in health for all people worldwide. Global health emphasizes transnational health issues, determinants and solutions; involves many disciplines within and beyond the health sciences and promotes interdisciplinary collaboration; and is a synthesis of population-based prevention with individual-level clinical care.[2]

The CUGH held its first annual meeting at the National Institutes of Health (NIH) in Bethesda, MD in September 2009. At that meeting the results of a survey of 55 universities that could be identified as having formal programs or initiatives in global health were presented.

Thirty-seven responding institutions reported a rapid growth in global health programs, significant increases in enrollment/participation of undergraduate and graduate students in global health programs in the past three years, and a large increase in the number of student organizations focused on global health. The respondent institutions also reported "formal significant" relationships with 97 countries on five continents and Oceania supporting 302 student training programs, with Africa the most heavily represented.[3]

Global health has also been the topic of two Institute of Medicine reports, one issued in 1997 and one released in December 2008 containing specific recommendations for the US government and other nonprofits, including universities.[4,5] Chapter 4 of the 2008 report, "Invest in People, Institutions, and Capacity Building with Global Partners" is particularly germane for universities and their colleges, which are considering relationships with non-US institutional partners to specifically build the research infrastructure of the partner institution and health workforce of the developing country in which it is located. Based on lessons learned from existing partnerships in health and other fields, the report suggests institutional partnerships should:

1. Be a long-term financial commitment (5-10 years or more) with a focus on sustainability and creating self-reliance.
2. Be based on trust, ethical principles, transparency and equity in exchange and ownership, where all partners find the relationship mutually advantageous and respect and understand differences in cultures and perspectives.
3. Have leadership commitment from the Ministries of Health and Higher Education.
4. Focus on strengthening the institution and not a particular individual.
5. Incorporate an interdisciplinary approach that goes beyond the medical (pharmacy) school.
6. Define goals and metrics of success at the beginning of the partnership.
7. Reach agreement at the start regarding the ownership of data, specimens, and intellectual property, as well as how information should be shared, given the existing information-sharing infrastructure.

What is driving this expansion in interest and support of global health programs and experiences, particularly in developing and underdeveloped countries? The Center for Strategic & International Studies (CSIS) explored this question and has identified three root causes.[6] They are:

1. Significant changes in American higher education that places greater emphasis on and resources for internationalization, in response to students' greater awareness of the world starting at an earlier age and facilitated by the global media, and
2. Heightened public visibility of the global health agenda, both as a matter of US foreign policy and a part of a larger movement for greater global equity, and
3. Expansion of resource flows: US government, foundations, corporate and private philanthropy have generated new opportunities for universities, and potential career paths for students.

In the health sciences and in pharmacy specifically, a majority of entering students already have a B.S. degree or three or more years of preprofessional study.[7] Some of these entering pharmacy students may already have had a "study abroad" experience as part of their undergraduate degree program. Others have traveled outside the US with family or on high school-sponsored trips. Most have had service experiences either in high school or during college prior to entering pharmacy. It is not surprising that students are expecting or even demanding the opportunity to obtain some of their education and practice experience "abroad" while concurrently providing healthcare service to populations in need. At colleges/schools of pharmacy, which are part of higher education institutions with a religious affiliation, students may also desire to serve a mission experience in a foreign country utilizing their pharmacy knowledge and skills.

University administrators, faculty, and students may view global health initiatives as opportunities for expanded research, education, and service, but US involvement in global health is also a strategic global foreign policy initiative. Preventing the spread of diseases through vaccinations and medications, or improving the health of newborns and children through preventative therapies or supplements, while altruistic, is also in the best interests of the US, specific countries, and the world. The CSIS paper states that US global health initiatives can be viewed through four lenses, global health as foreign policy, as charity, as investment, and as public health. It is the combination of these outcomes that garners support from the American public to contribute to or their representatives in Congress to allocate financial resources to support global health.

Another important reason for the dramatic expansion of university-driven global health initiatives is financial. Funding for global health initiatives has dramatically increased over the past two decades, increasing from $5.6 billion in 1990 to $21.8 billion in 2007, with increases accelerating since 2000.[8] This growth has primarily been driven by the US government, private foundations, and US-based non-governmental organizations (NGOs). The Bill & Melinda Gates Foundation exceeds all private

foundation giving, making up nearly 4 percent of all global health assistance in 2007. NGOs contribute substantially to the overall spending, although much of their expenditure is in the form of drugs donated by pharmaceutical companies which value their donations at market prices, so the magnitude of some NGO expenditures may be exaggerated.

The US federal government's "United States Global Leadership against HIV/AIDs, Tuberculosis, and Malaria Reauthorization Act of 2008" was signed into law and provides five additional years (2009-2013) of funding ($48 billion), with the *President's Emergency Plan for AIDS Relief* (*PEPFAR*) the major beneficiary of the legislation. The NIH, through its Fogarty International Center for Advanced Study in the Health Sciences supports clinical training for qualified health professionals in developing countries.[9] The Fogarty Center's *Pathways to Global Health Research Strategic Plan: 2008-2012* focuses on non-communicable diseases and continues to address the unfinished infectious disease agenda. As stated in the plan, the "Center seeks to capitalize on the rising tide of private and public funding devoted to health by building new strategic alliances and partnerships."[10]

Given this rapid increase in interest by the US government and US Higher Education in improving education, research, and service to improve global health, what has and should be the role of US academic pharmacy in working with developing and developed countries to initiate, change, and improve their education and training of pharmacists and/or pharmaceutical scientists?

Pharmacy and Global Health. While much attention on the increase in interest in global health has been focused at the larger public and private universities, and in particular at their schools of medicine and public health, pharmacy colleges/schools in all university settings have been quite active for a number of years in global pharmacy research, education, and service activities. A survey of global involvement by AACP member colleges/schools was initially conducted in 2001 by Dr. Joseph Dean, (then dean of the Samford University McWorter School of Pharmacy), and more recently by Dr. Rosalie Sagraves of the University of Illinois at Chicago in 2007 and 2010.[11,12] The 2007 survey revealed that of the 63 colleges/schools of pharmacy that responded, 39 had active global/international programs and of these, 29 respondents had formal agreements with foreign institutions to facilitate activities such as faculty and student exchanges, research, graduate and postdoctoral education and training, clerkships/experiential rotations and clinical practice. The remainder of the responding colleges/schools had various informal agreements with international institutions and agencies. The respondents to the 2007 survey requested that AACP establish a Special Interest Group (SIG) in the area of global pharmacy education, and during their February 2008 business meeting, the AACP Board of Directors approved the establishment of the Global Pharmacy Education SIG. Thereafter, the SIG had programming at the 2008 and 2009 AACP Annual Meetings and has a program planned for the 2010 Annual Meeting in Seattle.

In the 2007 survey, an overwhelming majority of respondents indicated that US colleges/schools of pharmacy would increase their level of global/international involvement. The 2010 survey results bear that out. Although the results are preliminary, there has been an increase in the number of colleges/schools with formal affiliations agreements with foreign institutions. The most frequent topics of these agreements involved experiential rotations, research collaborations, and faculty and student exchanges. A majority of the respondents indicated an increase or no change in their level of global/international affiliations over the past year. Only one institution indicated a decrease in this area. Of the 38 respondents who indicated that they had student participation in elective experiential rotations in other countries, 35 reported approximately 300 student participants, while another 230 students were unable to participate because of limited space or funding. A significant majority of the respondents indicated that they anticipated more student participation in the future.

Another measure of academic pharmacy's involvement in global health has been the significant number of international students who have come to US colleges/schools of pharmacy for graduate study leading to the Ph.D. degree in the pharmaceutical sciences. In the 1970s, approximately one out of four Ph.D. degrees granted by a college/school of pharmacy went to a non-US resident. During the past decade, approximately one out of every two Ph.D. students was a non-US resident. Many of these Ph.D. graduates have obtained US citizenship and remained in the US to work in the pharmacy Academy or pharmaceutical industry, while others have gone back to their home country, retaining their connections to their major professors often through collaborative research. Additionally, thousands of Ph.D. pharmaceutical scientists educated outside the US have served in postdoctoral positions or as visiting scientists in the laboratories of US colleges/schools of pharmacy pharmaceutical sciences faculty over the past five decades. These close and extensive relationships formed through graduate and postdoctoral study by non-US students and scientists with faculty in US colleges/schools of pharmacy, combined with the extensive globalization of research, manufacture, and distribution of medications by the pharmaceutical industry, places most pharmaceutical scientists into the larger global health community. A contemporary

measure of the "globalization" of the pharmaceutical sciences will be displayed in November 2010 at the combined meeting of the International Pharmaceutical Federation's (FIP) Pharmaceutical Sciences World Congress and the American Association of Pharmaceutical Scientists (AAPS) under the theme "Improving Global Health through Advances in the Pharmaceutical Sciences."[13]

Another academic pharmacy response to the increasing globalization of the pharmaceutical sciences was the creation of the Globalization of Pharmaceutics Education Network (GPEN), Inc. in 1996 by the Department of Pharmaceutical Chemistry at The University of Kansas School of Pharmacy along with several cooperating international institutions.[14] The founders of GPEN believed that graduate students and postdoctoral fellows needed increased exposure to science and culture at a global level. The GPEN biannual meetings, which rotate between an US and a non-US higher education site, are forums for graduate students and postdoctoral fellows from over 40 US and international higher education GPEN member institutions to present their work and interact with their colleagues from across the globe.

US academic pharmacy was also an early participant in the international spread of clinical pharmacy practice. The First International Congress on Clinical Pharmacy Education was held in July 1976 in Minneapolis, MN prior to the 1976 AACP Teacher's Seminar in the same city.[15] There were participants from 20 different countries at that first international conference. The American College of Clinical Pharmacy has continued international or global outreach by sponsoring an International Congress on Clinical Pharmacy every five years along with the European Society of Clinical Pharmacy.[16] In 1997, Dr. Joseph Dean played a significant role in initiating the Asian Conference on Clinical Pharmacy. The 10th anniversary of the Asian Conference will be held in July 2010 in Singapore.[17]

The US-Thai Consortium. The best example of US academic pharmacy's cooperative involvement in global education and health is The US Consortium for the Development of Pharmacy Education in Thailand (The US-Thai Consortium). The US-Thai Consortium was founded in May 1994 when 9 US colleges/schools of pharmacy and AACP signed a Memorandum of Agreement (MOA) with eight Thai faculties of pharmacy and the Committee for Pharmacy Manpower Development of the Thailand Ministry of University Affairs.

The mission of the consortium was to foster a formal link, on an institutional basis, in recognition of the long-term development plan of the Ministry of University Affairs to enhance the academic, research, and clinical programs of their Faculties of Pharmacy and Pharmaceutical Sciences, both in existence at the time and planned for the future. The long-term goal of the program was the expansion of the number of pharmacy schools and pharmacy faculty members in Thailand, and the subsequent training of additional pharmacists for practice, thereby strengthening both pharmacy education and practice to improve the health and welfare of the Thai people.

The Thai Ministry of University Affairs funds the program via Royal Thai Fellowships and travel grants to competing Thai faculty. United States faculty and students, supported jointly by their respective schools and Thai host schools, travel to Thailand to teach, participate in seminars and workshops, and to learn firsthand about pharmacy education and practice in Thailand.

Since its inception, three new Faculties of Pharmacy have been established in Thailand and approximately 200 Thai faculty members have received either the Ph.D. and/or Pharm.D. degree from US-Thai Consortium members. Many short-term exchanges of Thai and US faculty, graduate students, practitioners, and student pharmacists have taken place and faculty-to-faculty basic research and clinical practice collaborations have been established.[18]

In July 2008, the MOA was renewed for an additional fourteen years with consideration in 2022 to extend it again to 2037. The new MOA includes thirteen US colleges/schools of pharmacy, the AACP and 12 Thai faculties of pharmacy. A Consortium Conference is ordinarily held every one to two years with alternating venues in the US and Thailand to offer educational seminars and workshops, highlight student/faculty research, foster student/faculty exchanges and collaborations, and address business affairs of the Consortium. In the interim, business affairs are addressed via a steering committee comprised of elected delegates from US and Thai schools. The US-Thai Consortium is an excellent example of a coordinated plan for working with countries that need and request the cooperation of US colleges/schools of pharmacy to improve their educational system and subsequently, their healthcare system. AACP played an initial role in convening the Consortium and was and remains a full member, but the education of Thai faculty and the subsequent relationships developed between US and Thai colleges/schools and faculty have not involved AACP staff or fiscal resources except for attending US-Thai Consortium meetings held in the US.

Future Roles for AACP in Global/International Education. Given the considerable and successful involvement of many colleges/schools of pharmacy in global/international education, is there a need or role for AACP beyond the activities of providing a forum for Global Pharmacy Education through the SIG? The best answer at this time is that "it depends" on the activity. The committee

examined the three separate areas where AACP might play a role. They are:

- Student international or global experiences
- Development of professional degree curriculum and teaching methodologies at non-US colleges/schools of pharmacy
- Cooperative faculty/faculty relationships for the coordination and/or development of research between US and non-US pharmacy faculty

US Student Global Educational Experiences. As indicated in the *2007 Survey of US Colleges/Schools of Pharmacy Concerning International Education and Research Relationships* and the *2010 Survey of Current Global Affiliations of US Colleges and Schools of Pharmacy*, an increasing number of colleges/schools of pharmacy permit or arrange for students to serve one or more elective international experiential rotations. Some colleges/schools sponsor short service or "mission" experiences, which are designed to provide medical assistance to underserved individuals in underdeveloped countries. The committee did not discuss these latter "mission" experiences nor did they consider them part of a global education experience but more of a service experience. There was no disagreement that these mission activities can have a very positive impact on students.

The demand for international or global experiential rotations appears to be primarily driven by student interest, which in turn is often driven by a desire to provide pharmaceutical and medical services to the underserved. The increase in visibility of global health on the university campus, including the formation of global health institutes or centers also contributes to increased awareness of opportunities for international healthcare experiences. For those students whose colleges/schools are located within a university with a global mission, offices for global education or global health are often available to assist and support undergraduate and health professions students to travel abroad to participate in clinics along with other health professions students. Other experiential rotation experiences have developed as a result of formal and informal relationships developed between the US and foreign institution(s), often initially through faculty-faculty relationships. Occasionally, these relationships involve reciprocal exchange of students from both countries.

Experiential rotations of 8 weeks or less duration are termed short-term study abroad experiences. Short-term global learning experiences for all students are fairly new, increasing from 3.3 percent of all undergraduate student study abroad experiences in 1996-97 to 55.4 percent of undergraduate students studying abroad in 2006-07.[19] This rapid rise in short-term study-abroad experiences has given rise to best practice recommendations for these experiences.[20] These *Standards of Good Practice for Short-term Education Abroad Programs* (the Standards) developed by The Forum on Education Abroad, while primarily focused on undergraduate students, contain a number of standards that are germane to any college/school of pharmacy that sponsors a study abroad program or permits its students to fulfill part of their educational requirements abroad. The Standards are divided into 9 major categories and each of these into subcategories. A selected list of recommendations from the Standards that are applicable to pharmacy educational experiences follows:

- The program has a clearly-defined purpose and clearly-defined academic and/or experiential goals.
- The program fosters discipline-specific and/or interdisciplinary learning outcomes appropriate to the curriculum, site, and program goals.
- The student learning outcomes and overall student experience are assessed at the program's conclusion so that subsequent programs are improved based on assessment.
- When offered for credit, internships and field research have appropriate academic and field supervision.
- The program provides orientation for students prior to departure and upon arrival includes discussion of the academic program, health and safety issues, adjustment to the host culture, and information about the host location and society.
- The program informs students of its student code of conduct, disciplinary processes and consequences of violations prior to the beginning of the program, and consistently applies them during the program.
- The sponsoring institution provides adequate administrative support for the program and its students.
- Students are housed in safe, clean, and culturally-appropriate lodgings, and are provided with appropriate orientation to their housing situation.
- The organization considers and responds to local environmental, economic, and cultural consequences of its presence (or disappearance) in the design and management of its programs.
- The program has contact information at the location to assist with emergencies and health and safety issues, including the police, US overseas representative, physicians, hospitals, and mental health professionals.

Colleges/schools of pharmacy, which offer or allow international rotations, could probably meet most of the Standards, but others could use assistance from peer institutions through a mechanism coordinated by AACP.

One major concern expressed by the committee members was the supervision of students at sites that are only used occasionally during an academic year. Occasional experiential site utilization results in a lack of continuity of learning and supervision and a potential lack of continuity of healthcare service provided at the site. More importantly, the probability of student rotations having a positive impact on the "host" country's pharmaceutical and healthcare services is lessened if only a few students fill that site each year. If international sites were utilized by students either from one or multiple institutions with more continuity throughout the year, it would be feasible to have the site visited by US faculty to assist in the development of the local preceptor(s) and site, and having a continual presence of US students having a positive impact on pharmaceutical and healthcare services is much greater. There are examples of several colleges/schools of pharmacy that send students to the same international site which results in year round staffing of the site with an agreed upon syllabus and assessment tools for the students.

Placing all US student pharmacists who desire an international experience in fewer selected sites around the world would facilitate the development of country/culture specific orientation course materials, syllabi and assessment tools for the clinical rotation, along with the development of continuous clinical service at these sites. AACP, through an *ad hoc* committee or committees of the Global Pharmacy Education SIG, could serve an important role in developing a model for global practice experience sites, develop orientation materials specific for participating host countries, and develop a standard assessment template for foreign preceptors. As more and more students express interest in an international experience, new global sites could be developed using some of the best practices learned at the initial group of selected sites. AACP could also act as a contact point for countries that would be interested in having US students serve an experiential rotation, or alternatively, AACP could serve to proactively contact appropriate Ministries of Health and/or Education to determine if there is an interest in having US students assist in providing pharmaceutical services to their citizens as part of their educational experience.

Recommendation 1: AACP should develop a clearinghouse, which would facilitate qualified experiential education global sites developed by one or collaborative of US colleges/schools of pharmacy, to offer experiential education opportunities to student pharmacists from other US colleges/schools of pharmacy.

Recommendation 2: The AACP Global Pharmacy Education SIG should coordinate the development of a best practices model for Advanced Pharmacy Practice Experience global/international experiential rotations, coordinate the development and distribution of orientation materials for specific countries, and develop a standard assessment tool for foreign-located preceptors.

Recommendation 3: The AACP office should act as a contact point for countries that are interested in hosting US student pharmacists to serve experiential rotations within their healthcare system and as an active facilitator in opening up new opportunities for students to participate in educational experiences in underdeveloped countries.

International Students in the US. A small number of US colleges/schools of pharmacy currently host international student pharmacists on short experiential rotations. In some cases, these are the result of US students completing experiential rotations in other countries and then having US institutions reciprocate by hosting students from those countries. Other international students may wish to come to the US to experience our form of healthcare, pharmacy services, and patient care. However, the Health Insurance Portability and Accountability Act of 1996 (HIPAA) regulations prohibit non-US students from direct patient care and only allow them to observe or be involved in simulation exercises. While some reciprocal programs have a long history, there may be other non-US students who wish to experience US pharmacy education and practice on a short-term basis and US colleges/schools of pharmacy who would be willing and able to host these students.

In addition to the educational programs sponsored by US colleges/schools of pharmacy for international pharmacy students and pharmacists, the International Pharmaceutical Student's Federation (IPSF) coordinates a Student Exchange Program with the American Pharmacists Association-Academy of Students of Pharmacy (APhA-ASP), which is a member organization of IPSF.[21] Twenty-two colleges/schools that responded to the 2010 Global Pharmacy Survey indicated APhA-ASP/IPSF activity at their institution. Forty-one colleges/schools responded to the question concerning the hosting of international professional degree pharmacy and Ph.D. students, faculty members and practitioners. While 41 respondent institutions hosted a total of 119 foreign student pharmacists, two of these schools were responsible for 64 students and 20 indicated they had hosted no professional degree pharmacy students. This may be reflective of the current difficulties in placing international students in direct patient care environments.

The APhA-ASP/ISPF Student Exchange Program has prepared a "How to Create a Host Site" document for sites interested in hosting foreign students. The APhA-ASP/ISPF has put some effort into promoting student exchanges, but increasing the number of international students taking part in these 4-12 week exchange programs must more actively

involve appropriate faculty and staff at the student's host institution for it to be successful. The ISPF program assumes international students can pay all their expenses for the experience, which usually takes place during the summer recess when most students are no longer on campus. If that is the case, few students from underdeveloped countries will be able to take part in the IPSF program. It also asks the APhA-ASP/IPSF Student Exchange Program Committee to make the arrangements in finding one or more work sites for the exchange student and finding free rooming accommodations. This requires quite a lot of effort from students who will also be working during the summer. If the APhA-ASP/IPSF student exchange program is to play a larger role in promoting US/non-US student exchanges, it needs to work closely with experiential education programs at colleges/schools of pharmacy.

Recommendation 4: Colleges/schools of pharmacy that encourage their students to participate in international educational experiences should host students from countries that accept their students. A committee of AACP Global Pharmacy Education SIG members, students active in APhA-ASP/IPSF, and representatives from the National Association of Boards of Pharmacy should produce a set of guidelines and best practices for hosting foreign students to ensure they receive an optimal educational experience during their rotation in the US while complying with all the laws and regulations governing pharmacy practice.

Professional Degree Development and Teaching Methodologies. The US-Thai Consortium is an outstanding example of how US colleges/schools of pharmacy partner with academic colleagues from Thailand and the Ministry of University Affairs and the Ministry of Public Health to assist in preparing over 200 new Thai pharmacy faculty and participate in ongoing faculty and practitioner development programs in Thailand. The success of the US-Thai Consortium is also due in great part to the cooperation of the Thai Government through the Ministry of University Affairs and the funding it provides to Thai faculty and students who wish to pursue Ph.D. and/or Pharm.D. degrees at US Consortium member institutions. It is apparent the expanded role of the pharmacist in direct patient care and medication therapy management are roles that other non-US countries would like to emulate, but some of those countries will not have financial resources to support the education of their present or potential faculty at US colleges/schools of pharmacy. Would there be a role for AACP to play in these situations in attempting to procure funding from US government and/or non-governmental agencies?

Other countries may have the financial resources and the desire to educate a larger cadre of Pharm.D. and PhD faculty in the US, but are only interested in obtaining assistance in developing a US-type curriculum for their individual private institution or multiple government-sponsored institutions within their country. Presently, US colleges/schools of pharmacy are providing assistance through faculty exchanges, professional development activities either in the US or abroad, or by providing course syllabi and teaching materials (notes, slides, examinations) to non-US pharmacy programs. While many pharmacy faculty members are interested in assisting their non-US colleagues in producing a rigorous educational experience, they are reluctant to "give away" their syllabi or course materials that they have produced for their own students. Viewing syllabi and teaching materials as intellectual property is understandable, but much curricular material is not unique nor does it have any inherent monetary value, unless it is part of a publication (i.e., textbook) for purchase. Selling syllabi or teaching materials could produce some income for an individual faculty member or college, but selling curricular materials to a foreign pharmacy school may inhibit growing collegial relationships with the purchaser that could have an even greater value in areas such as future research collaborations.

A growing practice in higher education is the concept of open courseware, where faculty members make their course syllabi, teaching materials, and in some cases their examinations, publicly available. The Open Courseware Consortium, which has university membership from all over the world, grants membership to those institutions that publish at least 10 courses under the institution's name in an open courseware format.[22] The most extensive use of open courseware by a US institution is the Massachusetts Institute of Technology. Using open courseware cannot result in the user being granted a degree from the institution nor a course grade, but what it can do for faculty members who make it available is peer recognition, and the potential to be approached by foreign institutions who might use them as consultants. Pharmacy faculty members presently describe their courses and their educational methodologies in the open-access *American Journal of Pharmaceutical Education* although they presently do not provide enough information for someone to use their courses. By placing course syllabi and course materials on an open courseware site, non-US pharmacy schools, particularly those in developing or non-developed countries would have access to up-to-date information and have as a contact a faculty member who could serve as an educational consultant. Recognizing that it would be very difficult to have all faculty from one institution commit to placing their course syllabi and teaching materials in an open courseware format, it might be worthwhile to provide a site on the AACP Web site that would link interested foreign faculty to

course syllabi and courseware made available by interested individual faculty from multiple colleges/schools of pharmacy.

For faculty who wish to restrict sharing of their curricular materials to underdeveloped or transitional economy countries, there is Pharmabridge, a voluntary initiative supported by the FIP.[23] Pharmabridge was founded in 1999 and much of its activity has been in the transfer of donated books and written materials to underdeveloped countries. Pharmabridge also identifies training sites for pharmacists from underdeveloped countries to learn about pharmacy practice in developed countries. Registration as a Pharmabridge participant is free.

Suggestion: The AACP Council of Faculties should discuss the interest of US pharmacy faculty members in providing a single point of Internet contact for international faculty and students to access course syllabi and courseware made available in an open courseware format.

International Faculty Research Activities. Many US academic pharmacy's international activities are associated with faculty-faculty research. Many of these research collaborations are between US faculty and their former Ph.D. students, or between US and non-US pharmacy faculty who have developed research relationships through interests in common research problems. Several close US-Thai faculty research relationships have developed over the years of extensive faculty-student and faculty-faculty interactions. Given that research collaborations are often individual faculty driven, there does not appear to be a major role for AACP to play in this area.

Increasing the Visibility of Pharmacy and the Pharmaceutical Sciences in Global Health. Committee members believed that despite academic pharmacy's long-term and significant involvement in global pharmacy education and research, and the globalization of the pharmaceutical industry, the profession of pharmacy and the pharmaceutical sciences appear to have a relatively low profile amongst US government agencies that fund global healthcare education and research, or provide assistance to developing countries to improve their healthcare infrastructure. A partial explanation for this lack of awareness might be that many of the early pharmacy global relationships have been with economically developed countries. More recently, many countries looking for US pharmacy assistance have come from the economically developing sector such as Southeast Asia or countries from the oil-producing Middle East, which have been able to fund to a significant degree their involvement with US colleges/schools of pharmacy and therefore have not approached US government agencies for financial support. That is no longer the situation, with increasing numbers of US colleges/schools of pharmacy reaching out to countries in areas of the world such as Central America and Sub-Saharan Africa.

As important as increasing visibility with US governmental agencies is that of increasing visibility of academic pharmacy with non-governmental organizations (NGOs). NGOs provide considerable aid to developing countries, but a significant part of that aid is in the form of donated services or donated drugs and medical supplies. Of the top 20 NGOs with the highest cumulative overseas health expenditures from 2002-2006, nine received over 80 percent of their revenue from in-kind contributions. Given the large contribution of drugs to NGOs for their overseas health expenditures, these NGOs could certainly use assistance in assuring that drugs are shipped, stored, and used appropriately. Some NGOs act as subcontractors for the US government's investment in development assistance for global health. For example, Management Sciences for Health (MSH), which has a significant pharmaceutical management component, receives considerable support for their work on behalf of the United States Agency for International Development (USAID). Whether colleges/schools of pharmacy could obtain funding for the support of the work that NGOs do needs to be explored.

Recommendation 5: AACP and its members, both institutional and individual faculty members, need to develop a coordinated strategy to promote the potential contributions of academic pharmacy, pharmacy practice, and the pharmaceutical sciences in enhancing global health to appropriate governmental and non-governmental organizations.

Suggestion 1: It would be worthwhile approaching some of the major NGOs to determine if they have a need for pharmacy services that could be provided by pharmacy faculty and/or student pharmacists, including those student pharmacists enrolled in Pharm.D./M.P.H. dual degree programs

CONCLUSION

Interest and involvement of US Higher Education in global learning and global health continues to grow. The same can be said for academic pharmacy, which has been significantly involved in graduate education of non-US citizens for decades. Additionally, pharmacy faculty members have been engaged in research projects with their international colleagues for as long. Despite the significant involvement of AACP member institutions, individual faculty members and student pharmacists in global pharmacy education and research, there does not appear to be a concomitant recognition of these activities by agencies, both governmental and non-governmental that financially support the expansion of these activities. AACP can play a role in expanding the involvement of

student pharmacists in global healthcare, but it also needs to concurrently expand its efforts in publicizing the important work that it is already being done with the express purpose of identifying financial support for expanding that work.

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