CONNECTING GLOBAL/INTERNATIONAL PHARMACY EDUCATION TO THE CAPE 2013 OUTCOMES: A REPORT FROM THE GLOBAL PHARMACY EDUCATION SPECIAL INTEREST GROUP

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ABSTRACT

The Center for Advancement of Pharmacy Education 2013 Educational Outcomes (CAPE 2013) provides many opportunities for United States (US)-based colleges/schools of pharmacy (C/SOPs) to incorporate global/international pharmacy education (G/I PE) in curricula. This paper provides background information, in addition to operational definitions, benefits/rationale for G/I PE and the current status of G/I PE in the US. Key aspects of planning goals for G/I PE are proposed. Pedagogical considerations including G/I PE student competencies, curricular plans and design suggestions are provided. Competency-based activities and topics such as horizontal, vertical and spiral integration of G/I PE across curricula, experiential activities, and programmatic initiatives are reviewed with reference to specific domains/subdomains in the CAPE outcomes. An assessment plan is established for each domain and related activity to ensure achievement of curricular outcomes. Where appropriate, the discussion and recommendations are congruent to those provided by related Special Interest Groups (SIGs) from the American Association of Colleges of Pharmacy (AACP).

I.   INTRODUCTION

The Center for the Advancement of Pharmacy Education (CAPE) Educational Outcomes identify the goals of the curriculum within the profession of pharmacy and serves to support colleges and schools of pharmacy in efforts of curricula planning, delivery and assessment. The most recent guidance document, released in 2013 (henceforth referred to as 'CAPE 2013'), provides four domains and 15 subdomains across a wide area of priorities.[1] As stated in CAPE 2013, the new outcomes are "*aspirational and emphasize increased program expectations, motivating educators and students alike to strive for the highest level of professional preparation.*"[1] In addition, CAPE 2013 stresses the affective domain to ensure graduates have personal attributes necessary to "*transform their knowledge and skills into positive outcomes in all professional settings.*" It is therefore imperative to establish an understanding of the connections between CAPE 2013 and global health/international pharmacy education (G/I PE).

The overall goal of this paper is to discuss the fit of G/I PE within CAPE 2013 and to provide educators with mechanisms to incorporate G/I PE into curricular content with an outcomes-focused approach. In order to achieve this goal and to provide the necessary implementation process, the current status of G/I PE in the US is reviewed and essential G/I terms are defined. Educational outcomes related to G/I PE are identified and learning activities with a G/I focus in areas such as didactic, elective, and experiential education courses are described. Topics such as horizontal, vertical and spiral integration of G/I PE across curricula, experiential activities, and programmatic initiatives are discussed with reference to specific subdomains in the CAPE 2013 outcomes. Relative to these domains and subdomains, possible activities for curricula implementation are suggested to provide an enhanced view of G/I education within college/school of pharmacy (C/SOP) curricula. Each domain and activity is linked to an assessment plan to ensure achievement of curricular outcomes. Where appropriate, the discussion and recommendations are congruent to those provided by related Special Interest Groups (SIGs) from the American Association of Colleges of Pharmacy (AACP), such as the Curriculum and Assessment Special Interest Groups (SIGs).

A.   Definitions

An understanding of related areas of study is key to framing a discussion of global health and education. An area closely related is that of **public health**, which is widely defined in its truncated form as "*the science and art of preventing disease, prolonging life and promoting physical health.*"[2] Traditionally, public health has focused on disease prevention. This focus has been primarily within the realm of infectious disease. In recent years, the focus has shifted to recognize the important emergence of chronic disease. Another related concept to global health is that of **international health,** or "*the application of the principles of public health to problems*

and challenges that affect low and middle-income countries and to the complex array of global and local forces that influence them."[3] With a focus on developing nations, international health also has emphasized work in infection, sanitation, and maternal/fetal health.

Global health shares many areas of commonality with these two fields but remains a distinct entity. In 2009, a standard definition of global health was proposed as "*an area for study, research, and practice that places a priority on improving health and achieving equity in health for all people worldwide.*"[4] The key to global health is a focus on issues that have the potential to affect everyone in the world. This means that global health activities may be achieved on local and national levels in the US and abroad. Global health similarly takes a broad view of health in both infectious and chronic diseases and in both prevention and treatment of disease. Interdisciplinary work is encouraged not only from within health professions, but also from across the spectrum of other fields. The focus of the work involves both population-level prevention and individual-level clinical care.

Within this paper, the term **G/I PE** refers to the concept of global health education as it applies to the profession of pharmacy. As discussed in later sections, G/I PE includes a broad range of activities. Student involvement in G/I PE may be accomplished in both the didactic and experiential curricula as well as through research activities or service projects. Some of these involvements can be accomplished through G/I Advanced Pharmacy Practice Experiences (G/I APPEs), G/I education and training, or international APPEs. At the C/SOP and university levels, G/I PE includes the provision and delivery of the aforementioned activities, and the formation of national and international partnerships with organizations, schools, and other entities. To further enhance understanding of the context of the topics in this paper and related areas of study, operational definitions of frequently used terms are provided in **Table 1**.

B.   Rationale/Benefits for G/I Education

G/I education is similar to G/I PE but includes areas of education beyond the profession of pharmacy. Across the health professions, G/I education has emerged as a priority as well. Medicine, nursing, dentistry, and other health professions offer many forms of G/I education, including curriculum tracks or concentrations, certificate programs, dual graduate degrees, and residency and fellowship training. Within pharmacy, G/I PE activities have been identified by AACP as a growing priority in higher education, with a significant number of programs already offering experiences in this area.[5] The AACP Global Pharmacy Education (GPE) SIG has also submitted two white papers on current practices in G/I APPEs.[6,7] Although standards from the Accreditation Council for Pharmacy Education (ACPE) do not explicitly require G/I PE, these standards do state commitment to "*a global perspective on pharmacy education and patient welfare*" and mandate that elective APPEs offered outside the US are held to the same quality

assurance standards as those offered domestically.[8] The International Pharmaceutical Federation (FIP), in partnership with the World Health Organization (WHO), has stressed the importance of pharmacist training by establishing a GPE Taskforce to "*enable the sustainability of a pharmacy workforce that is relevant to local needs*."[9]

From a more practical standpoint, the wider job market has demonstrated that other businesses and organizations also are adopting an increasingly global mindset. A survey of 352 firms, organizations and agencies across several employment sectors revealed that employers identify a variety of qualities in their applicants that are enhanced by global experiences. These qualities include: curiosity, willingness to take risks, a non-judgmental attitude, and a broad worldview.[10] Additionally, global health funding through US government, corporate, and private sources has expanded, which may allow for new opportunities for students and faculty to increase their research and expand on drug development across the globe.[11] These expanded resources for G/I activities are supported by public pools and demonstrate a significant return on investment.[12] The National Institutes for Health (NIH) estimates that "*every U.S. dollar spent on global health research and development, 64 cents go directly to domestic-based researchers and product developers, generating jobs, research and technological capacity, and additional investment, according to health advocacy groups*."[13] A broad range of benefits to stakeholders include strategizing solutions to common global issues in education, practice, drug development, research, and disease. Many aspects of collaboration occur between these stakeholders, including but not limited to government, ministries of health, non-government organizations (NGOs), and educators. Stakeholders may include agencies, organizations, or individuals such as educators and practitioners united to further professional enrichment and development as well as to enhance cultural sensitivity and humility. The benefit to students is an introduction to and emphasis on a global view in professional and personal life. These valuable benefits further translate into increased social responsibility, cultural sensitivity and global citizenship. Studies have also shown that in addition to enhancing clinical skills, learners engaged in international opportunities are more likely to care for diverse patient populations and to demonstrate increased interest in volunteerism, humanitarianism and public health.[14-17] Thus, G/I education has become increasingly a component of many university strategic plans as public interest grows.

C.   Global Emphasis in Pharmacy Curricula

Multiple pharmacy profession organizations and leaders have declared the importance of globalization within pharmacy education and the profession. Examples include FIP's development of the FIP Education Initiative (FIP*Ed*) and corresponding statement, "*...pharmacy education should be locally determined, socially accountable, globally connected, and quality assured in order to meet the given health needs of communities*"[18] and ACPE's recent development of the International Services Program, whose mission is to "*promote, assure, and*

advance the quality of pharmacy education internationally to improve patient care through safe and effective medication use."[19]

Pharmacists are currently the third largest group of health professionals in the world after nurses and physicians. In the US and many parts of the world, expansion of pharmacists' professional roles has led to the need for curricular reform across all aspects of the educational training process. To promote comprehensive education development and achievement of competencies, FIP partnered with the United Nations Educational, Scientific, and Cultural Organization (UNESCO) and the WHO to establish a task force focusing on G/I PE in the United States and six other countries (United Kingdom, France, Germany, Australia, Canada, and Singapore).[20,21] While similarities were found in curricula, opportunities for post-graduate training and licensure requirements, promoting the goal of G/I PE, the task force noted some differences in the number of prerequisite years, clinical training, prescriptive authority, continuing education, and re-licensure requirements as well as professional titles. Thus, more worldwide effort may be required to further advance G/I PE and establish common competencies.[20,21]

In a 2014 survey of 55 pharmacy schools in the US, 24 programs (43.6%) indicated global health topics were included within their required didactic curriculum. Common topics included: cultural competency (81.8%), complementary and alternative medicine (50%), global health non-communicable disease (40.9%), and human immunodeficiency virus (HIV; 40.9%).[22] Electives were offered by 57.7% of programs. Experiential learning and medical outreach initiatives were offered by 78.8% and 65.4% of programs respectively, all of which were G/I in scope.[22] While the survey sample may not be representative of all US pharmacy schools, the survey raises awareness of G/I PE, provides information about curricular content and contact hours and emphasizes the need to establish core competencies related to G/I PE.

The G/I PE activities described in this paper are designed to align with CAPE 2013 and will assure that schools are meeting and aligning themselves with the profession's global vision and responsibility and resulting curricular reform needs.

II.   METHODS

This paper was written in response to a call from AACP and the CAPE Editorial Board for AACP SIGs to provide papers on how their content area is reflected in CAPE 2013. Volunteers for drafting of a concise paper proposal were solicited via the GPE SIG listserv and a CAPE manuscript working group was created. A one-page proposal on our coverage of the relation of G/I PE to CAPE 2013 was formulated and submitted to the CAPE Editorial Board in February 2015. Acceptance of the proposal and reviewer feedback was received in April 2015. An outline for the full paper was developed based on feedback from the reviewers and topics considered important by the writing group. Subgroups were formulated for major sections, and a literature

search was conducted to collect pertinent literature from a variety of sources. Databases used include PubMed, Embase, MEDLINE, ERIC and Google Scholar. Search terms included, but were not limited to "*curriculum development*," "*global pharmacy*," "*global health education*," "*pharmacy*," and "*learning outcomes*." Based on this search, the outline was refined, draft sections were created, reiteration of each section was done over three months and the paper was finalized based on the collective experience of its authors, which spans all aspects of G/I PE. Further, the paper refers to the CAPE 2013 papers submitted by the Curriculum SIG and the Assessment SIG, with an attempt to bridge to the paper written by the Public Health SIG, where timing of drafts permitted.

III.   G/I PE PLANNING GOALS

The GPE SIG's first white paper on G/I PE focused on institutional and site considerations, and identified key planning goals for global education.[6] Key aspects of the paper related to the infrastructure required for success, including identification of administrative champions of such efforts. Key institutional planning goals for G/I PE identified in this white paper include:[6]
- Development of vision and mission for G/I education and training opportunities
- Adoption of G/I education as part of the institution's strategic plan
- Identification of champion(s) and leadership (e.g. director/assistant dean of international outreach)
- Creation of embedded opportunities to promote understanding of global citizenship, global health issues and cultural competency into the curriculum
- Concise identification of how G/I training and education meets standards developed by ACPE, CAPE or respective professional bodies in the home country
- Collaboration with university offices in charge of international studies
- Establishment of a continuous quality improvement program for G/I training and pharmacy education initiatives
- Celebration and emphasis of programmatic outcomes of G/I educational initiatives

When considering the implementation of G/I PE learning activities, the reader is encouraged to consider these planning goals. Many elements of the above goals, such as programmatic goals, curricular details and assessment are presented in this manuscript.

IV.   PEDAGOGICAL CONSIDERATIONS

A.   Introduction

For C/SOPs to be successful in G/I PE, clear definitions and priorities for internationalization/globalization as well as local, national, and G/I interconnections of the curriculum must be in place.[23] The need for standards and recognition of associated curricular

content may be linked to increasing complexities in health care delivery in an interconnected and interdependent world. Other health professions articulate global standards for professional education. In nursing[24,25] and medicine; indeed, Chase and Evert commented that "*despite the longstanding recognition that medicine and health transcend geographic boundaries, integration of this idea into US medical education and practice has been slow*."[26] Thus, pedagogical considerations should start with identification of core competencies for achievement by G/I PE. A concerted effort should be made to ensure that these competencies are integrated throughout the curriculum and assessed to ensure student mastery.

B.   G/I PE Student Competencies

Prior to the identification of CAPE 2013 outcomes tied to G/I PE activities, the working group developed a set of G/I PE student competencies. These competencies were formed by consensus agreement among the authors, who have vested interest and experience in the area. Recommended competencies were created to establish an ideal framework for a globally competent pharmacist, and to further align with the outcomes identified in CAPE 2013. It is important to note that these competencies, despite the use of the term 'global,' can be achieved both in international and domestic settings. Therefore, at the end of a curriculum embedded with G/I PE topics and concepts, globally-competent pharmacists should be able to:

a. Play a role in advancing population health and patient-centered care according to local needs of communities.
b. Employ prevention and treatment strategies for communicable and non-communicable diseases globally.
c. Demonstrate awareness of the necessity to strategically steer the pharmacy community toward accountability in achieving predetermined global health goals.
d. Identify connections between local cultural challenges and global health ramifications.[25]
e. Develop cultural competency to address the needs of a diverse global community.
f. Display empathy, humanistic communication and ethical decision-making within the global healthcare infrastructure.
g. Develop a widened world view, sense of global citizenship and social responsibility of health and disease locally, nationally and internationally.
h. Address the needs of pharmacy education and practice globally, as identified by accepted professional standards.
i. Identify causes, challenges, impacts and mechanisms to address global health disparities.[26]
j. Articulate the complexities of global governance and different models of healthcare delivery.
k. Adapt to different roles of the pharmacist within changing global healthcare systems.

It is important that these competencies are addressed within the context of the entire curriculum and as part of the core competencies required to meet specific educational outcomes for each program type. Thus, common educational outcomes such as professionalism, citizenship and leadership, communication, medication therapy management, public health, health systems, and critical thinking and research can be embedded and aligned with the above G/I PE core competencies. Didactic and experiential learning activities are developed to address these competencies and assessments are administered to ensure that students meet them. As a result, these G/I PE core competencies become a seamless part of delivering the whole curriculum.

C.   CAPE 2013 Outcomes

i.   In relation to G/I PE

CAPE 2013, in combination with other professional standards, such as the 2016 ACPE Standards, enables C/SOPs to plan for curricular G/I PE integration. Activities within the G/I PE realm could apply to nearly all CAPE 2013 domains/subdomains in some fashion. However, this working group identified those domains most strongly aligned with the subject area at hand. In addition to domain identification, suggested relationships to G/I PE student competencies, learning objectives, and example learning activities are provided in **Table 2**. These outcomes, associated activities and assessments are described in greater detail below and in section IV. The goal of the following sections is to share suggestions for designing a G/I PE curriculum and to demonstrate that G/I PE activities tied to the CAPE 2013 outcomes will allow for curricular integration, progressive learning, and assessment. Ultimately, this will lead to a pharmacy graduate who is able to meet the evolving demands of the profession. The graduate will possess both cognitive and affective skills and attributes called for by the CAPE 2013, and have a widened world-view of the many facets involved in professional practice.[1]

Integral to all pharmacy educational outcomes and G/I PE is the role of the *Learner* (subdomain 1.1). Students are required to master and reflect on multiple curricular areas and make appropriate decisions in order to deliver globally effective and competent care. Within domain 2, subdomains for *Health and wellness* (2.3) and *Population-based care* (2.4) were chosen to focus on providing pharmaceutical care and preventative health measures in the community (e.g. primary care clinics abroad, domestic travel clinics, provision of vaccinations). Domain 3 details a number of skill sets necessary to the provision of patient care, of which *Problem solver* (3.1), *Educator* (3.2), *Interprofessional collaboration* (3.4), *Cultural sensitivity* (3.5), and *Communicator* (3.6) were thought to be most important within G/I PE through working with and addressing challenges associated with interacting with different cultures/languages, providing care in alternative healthcare settings, and adapting to differing roles of the pharmacist within other healthcare systems. Lastly, within Domain 4, subdomains for *Self-awareness* (4.1), *Leadership* (4.2), and *Professionalism* (4.4) were felt to be necessary for the development of a

globally competent pharmacist, which requires challenging and nurturing his/her affective domain to ensure continual growth, reflection and respect for the changing community, nation and world.

ii.   In relation to other outcomes

It is recognized that many schools and programs may have curricula aligned with other outcomes, such as C/SOP-based outcomes. Schools or programs both within and outside the United States may also have their curricula, or specific learning activities, aligned with the Global Competency Framework recently put forth by FIP, and designed to support the educational development of pharmacy practitioners worldwide.[27] Recognizing that, CAPE 2013 is designed to serve as a guide for other programs, rather than a prescription.[1] As such, this article provides the reader with a wide range of suggested activities, which are not only tied to CAPE 2013, but can also be tied to individual school outcomes, or the FIP Global Competency Framework. The Curriculum SIG has provided an example of cross mapping of outcomes in their CAPE 2013 paper. With that as a guide, an example of cross mapping of competencies to CAPE 2013 G/I outcomes, using competencies of the FIP Global Competency Framework, is provided in **Table 2**.[27,28]

D.   Curricular Plan and Design

Incorporation of G/I PE content within a C/SOP curriculum should be done strategically and systematically with thoughtful consideration of alignment with broad-based programmatic goals, desired competencies and learning objectives. With CAPE 2013 serving as a curricular guide, G/I PE content can be implemented at many levels and settings within a curriculum.

i.   Programmatic goals

While the most common use for CAPE 2013 will be as a guide to incorporate didactic content and design learning and assessment of student activities, these outcomes allow C/SOPs to demonstrate achievement of higher-level goals, such as accountability to the profession, or aligning with the mission of the university, school, department, or program, which increasingly have global language included.[22] Likewise, having a global understanding and calls for G/I activities are increasingly common among university and school strategic plans. Many schools, such as the University of Colorado and the University of Iowa, have examples of global goals as part of their strategic plans.[29,30]

Identification of a global focus in the institution's mission statements and strategic plans can lead to the establishment of programmatic goals and activities for C/SOPs, which can be accomplished in a variety of ways. Some examples of G/I activities and their relation to the achievement of programmatic goals include:

- G/I external partnerships / "calls of profession":
  G/I external partnerships already established, such as the US/Thai Consortium for Pharmacy Development[31] and the University of Washington's partnership to develop a new pharmaceutical care curriculum for a partnering program in Ethiopia[32] are excellent examples of G/I programmatic activities meeting the "calls of the profession" and demonstration of social responsibility.
- International/global health program / mission statements:
  The University of Wisconsin recently developed an interprofessional global health program. The program includes international activities that meet not only international needs but also the university's local mission through students' application of international learning to improve local needs. These local improvements are addressed in a comparative manner through global education and experiences.[28]
- Program development / strategic plans:
  The development of innovative educational programs may be created in response to school and university strategic plan initiatives. An example of one created in alignment with university and school strategic plans is the University of Colorado's International Trained PharmD (ITPD) program.[33] While designed to meet school-based outcomes, this program also aligns with suggested G/I PE CAPE 2013 domains and subdomains, such as 2.3, 2.4, 3.2, 3.4 and 3.5, described in **Table 2**.

As demonstrated, the broad design of CAPE 2013 allows for use in achieving many educational goals, including programmatic ones. Programmatic goals are best designed by C/SOPs first envisioning G/I student competency goals for graduates. Next, the identification of G/I PE learning outcomes and related activities should take place with consideration for sequencing and integration across the curriculum, ensuring learning takes place in a planned and progressive manner.[28] A good strategy is to thoughtfully map the curriculum so that specific G/I PE concepts and topics are introduced, emphasized and reinforced, with students challenged regularly at both the course and programmatic level.

G/I PE among US C/SOPs range widely, with required, elective, didactic and experiential courses taking place across curricula. A recent survey demonstrates activities focusing on cultural competency, complementary alternative medicine, ethical issues in global travel, foreign languages, non-communicable diseases, global health pharmacy regulations, infectious diseases, nutrition, refugee healthcare and tropical diseases exist in many C/SOPs. Detailed examples of reported G/I PE activities occurring across all levels and categories of pharmacy curricula are provided in **Table 3**.

ii.   Didactic curriculum

Educational content may be provided within the didactic curriculum in a variety of settings and within required and non-required activities. This content also may be included within a subsection of a course such as infectious disease or as part of a health care administration course. International medication issues may be addressed during lectures on global and world health issues, such as global burden of disease or structure, and overviews of healthcare delivery systems. Other opportunities for potential inclusion may involve lecture series or elective courses discussing related issues, such as public health, cultural competence, health literacy, access to care, and underserved populations. These curricular experiences can be taught within a C/SOP, within another health sciences school, or as an interprofessional course. Simulation-based training and team-based learning are two models by which interprofessional training can occur either before or in place of G/I travel.[34] Evaluation and assessment of the G/I didactic curriculum may be focused on knowledge, skills, attitudes, or even perceived confidence. **Table 3** provides a list of G/I health-related topics, which are covered as part of courses offered at different US based schools.

C/SOPs may wish to identify suggested content for creation of a G/I health track with emphasis on topics such as human rights, international law, ethical and social determinants of health, and policy and trade.[25] A focus on foreign language development is increasingly common, with some C/SOPs offering medical Spanish elective courses or, in the case of Butler University, a Doctor of Pharmacy degree with Medical Spanish Emphasis, which combines medical Spanish courses with required service learning, a language immersion trip, and an APPE.[35] Some C/SOPs offer dual degree programs in pharmacy and global studies, allowing additional opportunities for G/I PE. One example is the University of Southern California's Doctor of Pharmacy/Master of Science in Global Medicine.[36]

Many universities/colleges partner to provide global certificate programs, which may or may not be associated with S/COPs but may still be accessible to student pharmacists. Examples include:
- University of Iowa: Building Our Global Community Certificate Program for Faculty and Staff[37] and Global Health Studies Certificate for students[38]
- University of Wisconsin-Madison: Global Health Certificate for students[39]
- University of Southern California: International Travel Medicine Review Certificate Course[40]
- University of Kentucky: Graduate Certificate in Global Health[41]
- University of Florida College of Environmental and Global Health: Certificate Program in One Health[42]

iii.   Experiential curriculum

International immersion experiences as part of introductory pharmacy practice experiences (IPPEs) or advanced pharmacy practice experiences (APPEs) may provide important exposure of G/I health issues to student pharmacists. These experiences offered at the advanced level may represent a type of capstone educational experience. One example is a rotation experience offered by the Global Awareness Institute.[43] Pharmacy students from C/SOPs work on a team to explore the medicinal plants and traditional health practices in the Amazon. This experience can demonstrate a direct connection between the plant sciences, medicinal chemistry, and traditional medicinal practices. Prior to student travel, extensive training and orientation is provided to prepare for the trip. After students return, reflections are written to detail learning and observations.

Other G/I experiences of shorter duration also could be used to expose student pharmacists earlier in professional education. For example, the University of Maryland Baltimore provides G/I experiences to students in the schools of Law, Social Work, Dentistry, Pharmacy, Nursing and Medicine. Interprofessional teams of students from each school are matched with a faculty pair and granted the opportunity to participate in short term (2 to 3 weeks) research or practice experiences in a foreign country with which the faculty has prior connections. The University supports faculty and student teams through Global Health Interprofessional Council grants awarded each year based on pre-determined candidate criteria.[44]

For international experiences to be successful and implemented, the faculty, school, preceptors, and administration must buy into a culture of global citizenship. With a rapidly changing world, it is imperative that students and preceptors, who may not have had this type of training in pharmacy school, be consistently exposed to C/SOPs' expectations for culturally sound interactions with patients. Studies have shown that the curriculum is likely to change when faculty with prior G/I experiences are involved. It also helps when specific staff is designated to assist schools in coordinating G/I experiences.[45] A constructive alignment approach may be helpful to prepare preceptors for the experiences. This involves identifying the learning outcomes specific to the experience in question; choosing relevant activities for the student to achieve the pre-determined learning outcomes, such as appropriate case-based scenarios reflective of critical thinking and problem solving capabilities; assessing learning using rubrics; and ultimately assigning a grade on the experience.[46, 47]

As students complete these experiences, changes in cultural awareness and sensitivity scores can be assessed to determine if learning has taken place, or if competence has been achieved.[48-50] Improvement in pre-determined learning outcomes should be assessed using rubrics, reflective journals, real life case scenarios, or other clearly predefined criteria.[51] Further details on how to implement or host G/I experiences can be found in the GPE SIG white papers.[6,7]

Importantly, G/I PE experiential activities can be accomplished domestically, such as in local refugee clinics, migrant, immigrant, or Native American populations, or other settings.[34,52] Experiential opportunities for G/I exposure could be accomplished through Objective Structured Clinical Examinations (OSCEs) or training laboratories or 'labs.' This experience can be set up locally as a prelude to an actual trip to help coach and prepare students or faculty intending to travel to a foreign country. It also could be set up to expose students to real life situations, to consider when interacting with patients of a different cultural background within the United States. Scenarios, cases and interactions will simulate the culture, language, economic realities, and climate conditions that could affect drug choices and influence the social construct upon which recommendations are made. Oregon Health and Science University has provided a successful interprofessional G/I health experience for pharmacy and other health profession students through a program centered on serving the refugee and recent immigrant population of its local community. The elective course starts with classroom didactic and simulation education, followed by clinic application activities. Students take part in group discussion and reflective activities. This program demonstrates that goals of cross-cultural knowledge and patient understanding can be achieved locally.[53]

iv.   Co-curriculum

Co-curriculum activities corresponding to G/I PE include such activities as attendance at meetings with global health focus, or collaboration and presentation of non-required research at both local and international locations, or with international researchers. Informal mentoring may take place by pharmacy faculty for students interested in G/I health topics. Service learning projects or independent learning opportunities not for credit may be facilitated as able. These may include: health fairs at churches, private multilingual schools, refugee camps, or ethnic communities in the United States. Frequently, participation in medical brigades can 'fit' in this category. Partnerships or involvement with non-governmental, governmental, faith based and private foundation activities also may be encouraged.[34]

v.   Curricular planning/design

As with any curricular change, careful planning and evaluation is essential. The AACP Curriculum and Assessment SIG colleagues offer CAPE papers which include tools to accomplish curricular change.[28,54] The reader is encouraged to refer to these papers for additional guidance. Planning or design related to G/I PE activities is described below.

a.   Levels of taxonomy

In general, strategies should be implemented within curricular plan and design to transition the students to the higher level of both the six levels of Bloom's Taxonomy[55,56] of Cognitive Learning and the fivel levels of Krathwohl's Taxonomy[56,57] of Affective Learning. Additional taxonomies, such as those of Fink and Miller are described by the AACP Assessment SIG.[56]

Tables 4 and 5 are examples of how to align learning objectives related to core competencies of G/I PE with the appropriate level of both Bloom's and Krathwohl's Taxonomies. Overall. students should be oriented to Bloom's and Krathwol's Taxonomy of learning. Incorporation as part of courses and integrating them vertically and horizontally will ensure students are demonstrating the knowledge at the highest cognitive level while also exhibiting the respective attributes, attitudes and behaviors under the affective domain. **Table 4** is an example summary which can be expanded on of how G/I PE core competencies can potentially be achieved across the six levels of Bloom's Taxonomy from introducing knowledge of global citizenships to applying knowledge to provide education in a foreign language to delivering culturally sensitive healthcare. **Table 5** addresses the core competencies from the perspective of meeting Krathwohl's Taxonomy of learning[57] within the affective domain from identifying the rationale/benefits of G/I APPEs to incorporating global health issues and applying them in therapeutics or by exhibiting motivation for service activities and enrolling in G/I APPEs. So, it is critical that we influence in our students the valuing stage of Krathwohl's taxonomy to help them start building an appreciation for global issues. To influence this, the curriculum and faculty teaching global content should allocate the time and effort to to create the contextual knowledge and appreciation of the discipline and link for example global health to what is happening locally and nationally. A major aspect also is to clearly identify the role of pharmacists in addressing global health issues (e.g. decreasing antibiotic resistance or decreasing disease burden). While these are offered as examples, it is important that the incorporation of G/I PE topics and activities should be aligned with whatever model the remainder of the curriculum is using.[54] G/I PE activities should offer learning throughout a curriculum, and allow for progressive scaffolding from knowledge based learning to application, regardless of the model chosen.

b. Curricular integration considerations

As our Curriculum SIG colleagues describe, horizontal integration of a curriculum involves the integration of activities from different disciplines, either with multiple disciplines focusing on a common theme, or an interdisciplinary approach providing a shared understanding of a topic. Additionally, vertical integration of curricular content demonstrates progression over time.[28] Spiral integration incorporates both horizontal and vertical integration with an evolution of complexity at various stages in the curriculum. The guidebook for developing curricula across US medical schools suggests that G/I courses can typically begin with didactic required courses in the first and second years, progress to didactic elective courses in the third and fourth years, followed by higher-level activities, such as international research, participation in global meetings and clinical experiences in later years.[34] The wide offerings of G/I PE activities allow for both horizontal and vertical curricular integration. **Figure 1** demonstrates this, with a mix of multidisciplinary horizontal integration, coupled with vertical integration of G/I PE activities and may also be an example of spiral integration.[28]

V.   ASSESSMENT

A.   Introduction

As with other aspects of curricula designed to provide graduates competent to provide patient-centered care, C/SOPs aiming for graduates to provide globally-considered patient-centered care should ideally implement these G/I PE learning elements into the curriculum in a fully integrated manner, with assessment provided throughout to assure graduates are able to achieve that goal.[54] The AACP Assessment SIG, in a 2013 paper, provides a thorough foundation on assessment, ranging from overall best assessment practices, to the rationale for assessment cycles, and to best practices in regards to CAPE domains.[54] In this section, the methods to apply these concepts to the implementation and assessment of G/I PE activities are described.

B.   Assessment Best Practices

Assessment should begin with choosing areas to assess that have a purpose, are measurable, value-based, relevant, and promote change. In the case of G/I PE activities, C/SOP missions and strategic plans citing global goals support facilitation of G/I PE learning activities to create purposeful, value-based promotion of change.[54]

The AACP Assessment and Curricular SIGs suggest in their 2013 papers, that in order for students to demonstrate competencies in chosen areas, implementation of learning activities should be integrated throughout the curriculum, with methods addressing knowledge and skill and in progressing rigor.[28,54] Just as activities must have planned alignment throughout the curriculum, the assessed activities must occur in multiple modes and contexts. **Tables 2 and 3** list G/I PE activities, while **Table 6** outlines related assessment activities. The assessment of said activities may range from knowledge-based, such as quizzes and exams, to reflection, and ultimately to application, often in clinical or experiential settings.

Ideally, learning should be active. Thus, assessment of learning should include assessment of the ability of the student to apply knowledge in either the didactic or experiential settings. In the continuum of suggested G/I PE activities, multiple methods of assessing knowledge application are provided, from formulary projects, to demonstrations of communication in a foreign language, to community service projects and to the demonstration of clinical skills in a G/I APPE. CAPE 2013 outcomes focused on the patient and the learner on continual development, are therefore designed to allow for the assessment of application-based skills.[54]

Learning should be collaborative. The CAPE 2013 outcomes provide for this specifically through *Interprofessional collaboration* (subdomain 3.4). Examples of this include collaborating with patients and caregivers in communication challenges or collaborating with other healthcare

providers in the community or clinical settings. Collaboration also may occur at an organizational or institutional level.

Finally, assessment of performance needs to provide explicit criteria, feedback and opportunity for self-assessment. Assessment of many G/I PE activities can be accomplished using rubrics, either through rubrics specifically designed for G/I-specific activities, or rubrics designed for general activities. Examples of G/I-specific rubrics are provided in **Appendices 1 and 2**, and self-assessment reflection activities in **Table 2**.

C.   Measuring Learning

The AACP Assessment SIG's paper provides a full account of the many ways students should be assessed to meet the CAPE 2013 outcomes. One recommendation cited is to assure that both qualitative and quantitative assessments are taking place. In the G/I PE examples provided, it is clear that such assessments are possible (e.g. quantitative - exams on global disease burden; qualitative - reflection on a service learning project). Likewise, direct and indirect measurements should take place within a curriculum; G/I PE activities allow for both (e.g., direct - project on national formularies; indirect - views on differing pharmacy roles among countries). G/I PE activities also can be formative (e.g. feedback-related, such as feedback on reflection or clinical skills) or summative (e.g. final evaluation, such as a final exam in a global health course). Finally, the CAPE 2013 outcomes, when tied to overall courses or activities, also can provide assessment and documentation of programmatic goals.[54]

D.   Considerations for Choosing Appropriate Assessment

When choosing assessments for G/I PE activities, C/SOPs should assure activities are tied to the overall mission and goals of the C/SOP for many reasons, including acceptance among faculty members and students. Next, measures chosen should be valid and reliable. Thus, faculty members' implementation of activities should ensure validity and reliability through proper research and review with others. Cost to both the school and/or students must be considered when designing and implementing G/I PE activities. If G/I PE goals are a part of a C/SOP's mission, it is possible the cost of G/I activities may be accepted. This paper provides a variety of G/I PE activities at the local and international levels in this paper, allowing for C/SOPs to achieve G/I PE goals in the face of varying cost parameters. Finally, design of G/I PE activities and resulting measures should be part of a larger curricular conversation to determine if activities will be stand-alone courses, required or elective, curricular or co-curricular.[54] Examples of all are provided in this paper. Methods of assessing G/I PE activities in relation to each chosen G/I PE subdomain of CAPE 2013 are described below and in **Table 6.**

Three case studies describing a student's experience of G/I elements of the curriculum are provided. These case studies are meant to highlight the various CAPE 2013 outcomes and assessment methods that may be encountered in the curriculum. To encourage a continual progression of assessment, each case is expanded on further to recommend additional modes of assessment. Below is a case example where the CAPE assessment principles are reflected in didactic and experiential education:

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Case study A:

Mary, a pharmacy student in her last didactic year of school, takes a global health elective and becomes interested in global initiatives after doing a research project on the ethics of donating expired medications to Kenya. During rotations, she decides to go on a medical mission to Haiti to work in a pediatrics clinic with an interdisciplinary team. As preparation for the mission, she uses Rosetta Stone® so that she can educate patients in Haitian Creole and does a presentation on Haitian formulary medications. After the mission, she writes a reflective paper about her experiences and leads a fundraising event to purchase medications for future missions. She notices that her cultural competency skills on the IAPCC-R have improved from the experience.

Exploration of case study A – learning activities:

Case study A encompasses numerous CAPE 2013 subdomains such as 1.1 (*Learner*) through Mary's global health APPE and research elective, 2.4 (*Population-based care*) through her interaction with a pediatric population, 3.4 (*Interprofessional collaboration*) through working with the interdisciplinary team, 3.5 (*Cultural sensitivity*) through her improvement on IAPCC-R scores, 4.2 (*Leadership*) with her leadership role in fundraising, 4.1 (*Self-awareness*) in her reflection of the medical mission experience, and 4.4 (*Professionalism*) on her ethical dilemma research project. The assessment methods employed are reflection papers and the IAPCC-R, which mainly address 3.5 and 4.1.

Taking case study A further - assessments:

Additional methods for assessment may be gateway exam prior to the global APPE, or those evaluating interprofessional collaboration (e.g., AHPQ, CPAT) and professionalism (e.g. peer assessments, P-MEX) (see **Table 6**). This case study illustrates the breadth of activities and opportunities for assessment.

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i. Subdomain 1.1 (Learner)

Subdomain 1.1 (*Learner*) states an intention to develop, integrate, and apply knowledge from the foundational sciences (i.e. pharmaceutical, social/behavioral/administrative, and clinical sciences) to evaluate the scientific literature, explain drug action, to solve therapeutic problems, and advance population health and patient-centered care. The achievement of subdomain 1.1 imparts a synergistic role in advancing pharmacy education with other subdomains identified by the GPE SIG. In alignment with subdomain 1.1, the development and application of foundational science knowledge is a critical piece in the successful fruition of G/I PE activities.

Several assessment activities are described in the AACP CAPE Assessment SIG paper, which are useful methods that can be further molded to evaluating outcomes from a G/I perspective.[54] "Mile marker" or benchmark examinations are described as annual comprehensive evaluations to assess "*student learning and retention at each level of the didactic portion of the curriculum.*"[54,58] Supplementing an examination with an OSCE (observed structured clinical examination) may help with the establishment of benchmarks. A global health perspective may be tailored to mile marker examinations to assess knowledge of foundational sciences. The mile marker exam may be administered prior to a patient care experience in a foreign country to ensure familiarity of key foundational science principles that would likely be encountered in a G/I activity (e.g., foreign language skill aptitude; cultural customs; for a certain endemic area, for example, topics such as pathophysiology of malaria or pharmacology of anti-malarial drugs may be reviewed). Lastly, the student portfolio may demonstrate the individual student's progression and selection of artifacts, which most strongly present a G/I PE focus.

The Gateway examination gauges the student's level of learning and readiness for APPEs.[59] Assessment of foundational knowledge prior to the global health-related activity would identify gaps of knowledge and provide opportunities to address these gaps. As a result, learners will be better suited to apply knowledge, to critically think and to demonstrate problem-solving abilities. In addition, administration of assessments upon completion of activities can test the amount of retention and level of knowledge, which have resulted from the experience. The improvement seen pre- and post-activity also may provide insight on how the activity has widened the learner's world-view. Activities may fulfill dual roles in service as annual evaluations and assurance of a level of knowledge aptitude prior to progressing through the curriculum. Examinations may be molded to be specific to each activity (e.g., content, purpose, timing, frequency of exams).

The *Learner* subdomain provides opportunities to assess student achievement of learning in various settings including didactic learning in the classroom and participation in global health events. Learner-focused assessment in the classroom can occur by monitoring performance on quizzes or exams, which emphasize health/wellness topics. Evaluations also can occur at a team or individual level. Students may create presentations or papers on topics of interest or controversy (e.g., vaccination, medication cost, importation issues) or may develop brochures and handouts. These resources provide a dual benefit of creating a learning opportunity for the student as well as allowing the student to educate others. Student course evaluations may communicate students' perceptions of learning with a course or experience.

Global health events, both in the United States and abroad, and in pharmacy or with interprofessional arenas, may provide opportunities to fulfill the *Learner* subdomain. C/SOPs should purposefully document number of events and number of students participating in these

events. The quality of experiences should be assessed with quality indicator metrics and surveys (e.g. patient satisfaction; preceptor/site/student evaluation). Student performance should be assessed by preceptors at global health events as articulated in the AACP Assessment SIG paper.[54] Reflection activities such as essays and group discussions are encouraged.

G/I health topics taught in US-based classes may occur during required or elective and interprofessional global health courses. Topics covered can be wide-ranging and may include determinants of health, disease management, or issues related to providing disaster relief.[60-62]

C/SOP should be encouraged to document the number of students completing global health courses, seminars, and community service projects; document the number of students who conduct research or receive funding; and periodically assess publications and establishment of new G/I partnerships.[61]

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Case study B:
Prior to the global health APPE, Mary is required to participate in a patient simulation exercise on educating on the importance of an immunization for a young pediatric patient to a caregiver. An OSCE is used to assess her performance during the patient simulation exercise. After passing the OSCE, Mary partakes in the global health APPE experience, during which she records the number of patients and caregivers who were counseled on immunizations, medications, and lifestyle modifications.

Exploration of case study B - learning activities:
The patient simulation exercise features CAPE 2013 subdomain 1.1 (*Learner*) in the assessment of her knowledge and ability to educate a caregiver, 2.3 (*Health and wellness*) in encouraging appropriate immunizations, 2.4 (*Population-based care*) for pediatrics, and 3.6 (*Communicator*) in her counseling approach.

Taking case study B further - assessments:
The *OSCE* was the primary method of assessment in this case, but the OSCE can be applied to numerous activities and subdomains as seen in **Table 6**. In addition, Mary do*cumented program-wide elements of impact such* as the number of people counseled.
In addition to recording programmatic elements such as number of people counseled, *quality indicators in relation to health measures* can be evaluated such as pneumococcal vaccination status in patients who smoke cigarettes or statin use in ASCVD patients. Other assessment methods are evaluations completed by the peer or preceptor during the simulation exercise or during the APPE (subdomain 3.6, 4.4). A patient satisfaction survey can also be administered to the patient and/or caregiver (subdomain 2.3, 4.4) regarding the interaction with Mary and the patient counseling experience.

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ii. Subdomain 2.3 (Health and wellness)

Assessment methods of global health opportunities may be divided into two main categories, namely the program-wide impact and learner-focused assessment in regards to abilities and participation, as outlined in the CAPE Assessment SIG Paper.[54] Assessment methods also may be further characterized by the type of setting (e.g. global health events, classroom settings).

Program-wide assessment of impact on the *Health and wellness* subdomain may stem from global health opportunities that promote health and wellness. These opportunities can include community outreach events, such as brown paper bag events and health screenings, or interdisciplinary mobile clinics, such as Remote Area Medical and Mission of Mercy, in either US-based or non-US settings. During these events, information pertaining to the number of events, number of patients served, types of services offered, number of healthcare professionals and students participating, and specific health outcomes of the event can be provided and assessed (e.g. screenings, immunizations). Pre- and post-tests can be used to assess knowledge of the patient populations targeted with the health screening. Additionally, surveys can be used to assess patient satisfaction with the services provided. Students, who participate in G/I PE as part of an IPPE or APPE, can be asked to complete evaluations of the site experiences or of the preceptor. Fulfillment of subdomain 2.3 also may occur during discussion of globally pertinent areas and may be assessed through reflection essays and quizzes.

iii. Subdomain 2.4 (Population-based care)

Assessment of this subdomain should focus on the identification of the needs of the population and population-based strategies for health promotion and disease prevention. Methods of assessment for subdomain 2.4 may overlap with subdomain 2.3. In addition to subdomain 2.3, the following avenues for assessment may be considered.

The description of interventions and related health outcomes as a result of the following activities is central for assessment of population-based care. A formulary review of the international experience site's formulary in which each drug's mechanism of action, dosing, side effects, and monitoring parameters are studied may be used to evaluate population-based care. Students will have the opportunity to become familiar with international drugs, make recommendations for each medication's safety and efficacy, and issues related to medication access. Drug monographs can be created on medications of interest and drug utilization reviews can be performed on high-risk or over-prescribed drugs. These and other G/I activities related to subdomain 2.4 can be assessed in G/I experiences abroad or in US-based courses with assignments focusing on the study of world regions or in US-based immigrant care.[63, 53, 60] Conducting a medication use evaluation (MUE) of different G/I sites and comparison of MUEs can reveal the various nuances of evidence-based medicine of different populations.

Services and activities for population-based care can be assessed with rubrics and qualitative feedback in evaluations completed by preceptors and stakeholders who provide health care for the population. Preceptors can determine the learner's ability to create and implement services and project, such as a clinical pathway or protocol. Thus, assessment pertains not only to the knowledge of drugs, but also of the applicability and feasibility of the pathway (e.g. cost, care,

access) in a setting that may be resource-limited. Discussion of the activity can foster innovative ideas that are tempered with realistic expectations.

In the classroom setting, population-based care topics taught in public health or global health courses can be assessed using quizzes/exams, evaluations of team or individual activities: presentations or papers topics of interest and controversy (vaccination, medication cost, importation issues, etc.). As mentioned in subdomain 1.1 (*Learner*), benchmark examinations or OSCEs may be used to assess concepts of population-based care prior to caring for the population. Checklists or agendas may help guide learning regarding the components of healthcare systems. As mentioned previously, student evaluations of the course and instructor can also be used to guide the evolution of the G/I PE course.

Case study C:

In preparation for her global health APPE abroad, Mary plans to create a drug formulary based on medications that are available through local resources and the donated medications that her team plans to bring for the medical mission. She conducts research to find out what is available at the APPE site and through the supply of donated medications. By analyzing the list, she creates the formulary and a guide for potential therapeutic substitutions. Her preceptor uses a rubric to review the work for clinical appropriateness and accuracy, and provides formative feedback in an evaluation.

Exploration of case study C - learning activities:

The case study highlights CAPE 2013 subdomain 2.4 (*Population-based care*) through the creation of a formulary tailored to a patient population and geographical area. Mary also demonstrates subdomain 3.1 (*Problem solver*) and 4.2 (*Leadership*) because she identified not only the available medications for use, but also created a guide to proactively resolve therapeutic substitution concerns.

Taking case study C further - assessments:

The assessment method used for 2.4 is a review of the formulary based on a rubric, but other activities for assessment could include projects such as drug monographs, drug utilization reviews comparing medication use patterns in different populations, and knowledge-based classroom assessments prior to the APPE. A prime opportunity to assess Subdomain 4.1 (*Self-awareness*) can be a *reflective paper* on Mary's process of creating the formulary and the challenges encountered, and her plan for self-improvement. Upon completion of the APPE experience, she can also update the reflective paper on the implementation and effectiveness of the formulary. In addition, the preceptor can hold *debriefing sessions* to discuss the role of the formulary and her performance on the APPE.

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iv. Subdomain 3.1 (Problem solver)

Abroad, students may encounter difficult situations where problem-solving skills are critical to resolve the issues. OSCEs of difficult situations such as drug allotment with a limited formulary or an inability to speak to patients due to language differences may be used. In the classroom, minute papers where the students write a short synopsis of the topic can be used for higher-thinking issues. Additionally, at the end of each class, the muddiest point can be executed where

students write down topics of confusion. The faculty can provide in-depth clarification on common areas of confusion. Pro and con grids can help identify advantages and disadvantages of topics presented by faculty or instructors and explore solutions to difficult situations. Students also can employ concept maps to draw diagrams of nodes arranged in hierarchical order to see the problem in a bigger picture. Case-based questions relating to global principles may be used to assess skills in hypothetical or real situations relating to the lack of resources and sustainability. Process analysis where students record sequential steps to resolve a problem may be helpful for students to analyze critical thinking methods.

Students participating in IPPE/APPEs may experience situations where it is necessary to demonstrate an ability to care for patients of different backgrounds in a variety of complex situations. Examples may include experiences with selection of drugs in a limited formulary. Students may be asked to describe what recommended guidelines articulate as being a preferred drug and what the preferred drug for the given situation likely would be. Students may be asked to find innovative ways or communication when patients or other healthcare providers are unable to communicate due to language differences for example.[53] These situations require that students demonstrate or exhibit flexibility and accommodation to a variety of circumstances.[63] A case-based approach is noted to be a best practice in assessment and can be helpful for learners to demonstrate their ability to care for patients in challenging situations, such as in the face of a limited formulary or inability to speak to patient due to language differences. Oregon Health & Science University engaged a creative model to assist the underserved, such as refugees and recent immigrants, by providing care through an interprofessional elective of medical, nursing, nutrition, pharmacy, physician assistant, and public health students. Student teams met with clients, who communicated their health concern to the students. Guidance to address the health concern was provided to the client and students wrote a reflection of the experience, which was analyzed as a whole to key themes.[54,62] This real-life case-based service learning experience identified and served the needs of a population. Similar activities can applied as an innovative example of problem solving to a G/I situation. Student portfolios can serve as a helpful mechanism to document and assess the learner's ability to reflect and exhibit attitudes such as "*flexibility and accommodation to a variety of circumstances*."[54,61]

v. Subdomain 3.2 (Educator)

Strategies for evaluating the learner's didactic abilities may involve audience feedback using survey ratings, performance ratings from preceptor or audience, OSCEs and student portfolios.[54] These tools can examine the student's learning objectives, activities planned during instruction, how the objectives are achieved, ability to tailor education to audience, and methods to evaluate audience comprehension. When global health competencies were assessed in medical education, learning objectives and corresponding educational approaches were not always matched or

outlined.[64] Students and evaluators should reflect on and assess the learning objective involved in global health activities involving education and accomplishing competencies.

Learning objectives may draw from a learning needs assessment of the audience, which aim to fulfill a knowledge gap of the audience. The learning need assessment process should be appraised in regards to the relevance and applicability to the global health experience. In particular, the population may have learning needs endemic to a geographical area (e.g. commonly encountered health issues endemic to the area, such as HIV/AIDS or malaria) or unique to a society. Opportunities for education may include a presentation for the patient population, in-service for team members, counseling, or communication of drug information. Evaluation of the learning needs assessment can be longitudinal, beginning prior to and continue post-completion of the educational activity. Students can glean benefits of longitudinal feedback, which can not only result in improvement as an educator, but also heighten *Self-awareness* (subdomain 4.1) for improvement. Portfolios can be employed to chronicle this process and for reflection on the didactic process.

The learning needs assessment will guide in composing learning objectives, which can be assessed by the preceptor using formative feedback and performance ratings to evaluate whether objectives meet the standard. Similarly, the effectiveness of learning objective achievement and didactic approach can be assessed using performance ratings or survey ratings from audience evaluations, OSCEs, and reflection essays as part of student portfolios.

Tools that are reviewed for subdomain 3.6 (*Communicator*) may also be applied for this subdomain 3.2 (*Educator*).

vi.   Subdomain 3.4 (Interprofessional collaboration)
G/I activities demonstrate achievement of subdomain 3.4 *Interprofessional collaboration*. Most global health activities are interprofessional in nature and a variety of assessment tools have been developed to measure attitudes, knowledge and skills, behavior, organizational practice, and satisfaction.

Attitudes to health professions can be assessed through several measures. The Attitudes to Health Professionals Questionnaire (AHPQ) is a 20-item test and measures two major domains: caring and subservience.[65] Additionally, the test developed by Heinemann et al. consists of 20 items and measures quality of care, costs of team care, and physician centrality.[66] Team functions and collaborations also have separate assessments that can be used. The Interprofessional Team Functioning Survey is a 31-question test that assesses team structure and organizational systems, tasks and outcomes, and communication and team meetings.[67] The Interprofessional Collaborative Competencies Attainment Survey is a 20-item test that measures the domains of communication, collaboration, roles and responsibilities, collaborative patient, conflict

management, and team functioning.[68] The interprofessional collaboration scale assessing communication, accommodation, and isolation may be used to measure interprofessional collaboration among healthcare groups in G/I settings.[69] Collaboration also may be assessed with the Collaborative Practice Assessment Tool (CPAT) which measures teamwork on eight domains[70]

Perceptions may be an important aspect of assessment of fulfillment of subdomain 3.4. Interdisciplinary education perceptions can be measured by an 18-item test created by Cameron *et al.*[71] Satisfaction with the collaborative efforts may be measured in a 6-item test with the Collaboration and Satisfaction about Decision Care (CSACD).[72]

Other assessments of interprofessional collaboration include analyzing the number of interprofessional events, locations of these events, number of interprofessional partnerships, quantity of other healthcare or non-healthcare disciplines included, total hours dedicated to these projects, and funding for these events. Additionally, preceptor and student evaluations may be completed to assess these collaborations.

vii.   **Subdomain 3.5 (Cultural sensitivity)**

Instruments are available to measure cultural competency in the curriculum and individual level. The Tool for Assessing Cultural Competence Training (TACCT) was developed by the American Association of Medical Colleges to determine the areas in the medical curriculum in which cultural competency skills are learned.[73] On the individual level, the Inventory for Assessing the Process of Cultural Competence Among Health Professionals (IAPCC-R) is a 25-item survey instrument that measures cultural competence among pharmacists, student pharmacists, and other healthcare professionals. The IAPCC-R is based on the five constructs of Campinha-Bacote's model of cultural competency, including cultural awareness, cultural knowledge, cultural skill, cultural encounter, and cultural desire. It takes approximately 10-15 minutes to complete.[74] Other validated instruments include the Clinical Cultural Competency Questionnaire (CCCQ), a 63-item test, and the California Brief Multicultural Competence Scale (CBMCS), a 21-item tool designed to measure cultural competency skills in healthcare professionals. Both instruments have been tested in pharmacy students.[75] The Wesleyan Intercultural Competence Scale (WICS) measures the cultural competency skills of students in study abroad or medical mission experiences in 16 different situations.[76] The Implicit Association Test is a 10-item test that measures a person's implicit biases that might influence their cultural sensitivity.[73]

Language instruction for students may enhance cultural sensitivity skills as classes focus not only on the phonetic language itself, but also on the specified country and culture. Rosetta Stone® is perhaps the most commonly used language-learning software available in a variety of languages. Users are able to learn language through audio and video guides in a step-wise

fashion until they are comfortable conversing with the software program.[77] Babbel is a program which offers a free version that may be used in language learning similar to Rosetta Stone®.[78] Pharmacy school curricula offer further language instruction that may either be longitudinal in design or in a modular fashion. Others may offer the course in a study-abroad fashion. Some programs offer language certification classes, usually accomplished in one or two day events, to cover the basics of the language. Additionally, many programs offer language instruction that is specific to healthcare providers which includes the country's alternative medicine and traditional beliefs in the course. Spanish for Healthcare Professionals is the most common course that pharmacy students have taken to learn about the dialects and culture of another country.

viii. Subdomain 3.6 (Communicator)

Communication skills are a pervasive and crucial element of many G/I activities. The G/I scenario is distinct in that honing communication skills can be challenging as success lies in not only the ability to tailor communication, but also in cultural sensitivity. Assessment of communication skills can include rubrics that measure language quality, fluency, pronunciation, and patient interaction. Measurement of non-verbal communication skills such as facial expressions, body movement, and eye contact can also be assessed using rubrics as well. Peer evaluations can be done for presenting students in classroom sessions, and self-reflection papers or evaluations can also be completed. A communication skills assessment using a mock-patient interview can be used to assess students' verbal and non-verbal skills. Most online language courses contain a portion for correct pronunciation and dialect with online audio-quizzes for students to master. Additionally, motivational interviewing skills may be assessed through rubrics or with observed structured clinical examinations. Assessment methods reviewed in subdomain 3.2 (*Educator*) may overlap with 3.6 as opportunities to provide education can include a presentation for the patient population, in-service for team members, counseling, communication of drug information, etc.

ix. Subdomain 4.1 (Self-awareness)

Reflection activities done via written or oral report provide opportunity to assess self-awareness skills. Students are asked to examine how the global health experience will affect future pharmacy practice. A method to capture this is a patient case write-up on international experiences wherein students describe how a particular patient interaction affected their global health experience. Students are asked to describe the patient history of present illness, medical findings, and compare and contrast the treatment of the patient in the international country as opposed to domestically. It is recommended that students develop a portfolio of work to document experiences. Additionally, especially during medical mission trips, debriefing sessions are a strategy to increase self-awareness among peers. As individuals discuss mission trip aspects such as team dynamics, outreach activities, and recommendations for areas of improvement for the mission, they are able to reflect on their knowledge and abilities.

Suggested best practices for assessment may involve the instructor helping guide self-awareness with the identification of learning needs, development of a learning plan, and application of different assessment strategies.[79] Suggested attitudes and abilities that may be considered for assessment are those that "*promote equity and access to healthcare for all, appreciate diversity and promote health across cultures and health belief systems, demonstrate professionalism regardless of context, appreciate contributions of various disciplines to health, exhibit flexibility and accommodation to a variety of circumstances, and value sustainable solutions to promote health now and for generations to follow.*"[61]

Other assessment tools pertaining to self-awareness may be referred to in Appendix D of the Assessment SIG CAPE paper on the Oddi Continuing Learning Inventory, Motivated Strategies for Learning Questionnaire (MSLQ), Self-Directed Learning Readiness Scale, Metacognitive Awareness Inventory, Metacognitive Activities Inventory (MCAI) and Coopersmith Self-Esteem Inventory Adult Form (CSEI).[54]

x.   Subdomain 4.2 (Leadership)

Servant leadership, a core principle in global health, is the belief coined by Robert Greenleaf in 1970 where a person puts themselves in equal footing as the 'servant' and serves others first.[80] In the G/I PE model, students must meet the service aspect to meet the needs of the team and the patient population that they are serving. Only when this is done will the student possess leadership skills to have a positive impact on others. Many leadership opportunities may be organized such as disease state screening events, international missions, or research projects.

Global health experiences are usually costly events. As a result, fundraising initiatives may be a good option to generate money to support the event and build leadership skills. Students should be given the opportunity to brainstorm desired fundraiser initiatives, locations, and participant recruitment for the event. Metrics to evaluate success of the fundraiser include the number of participants involved, number of advertisements/flyers distributed, and money generated from the event.

The Leadership SIG CAPE paper highlights the student portfolio as a method for assessment as it can include a leadership development plan and a longitudinal capture of progress towards the plan. Self-analysis of the student's performance in leadership complemented with the preceptor's comments can assist the learner in developing leadership skills. In addition, case-in-point teaching is described as an immersive, reflective teaching method employing the discussion of leadership experience in light of leadership theory and practices. These methods may be viewed with a global health lens when considering fundraising initiatives, the implementation of a service, or in teamwork scenarios. Program evaluation in relation to leadership opportunities can be assessed with surveys on student satisfaction and teaching effectiveness.[81-83]

xi. Subdomain 4.4 (Professionalism)

Peer assessments may be used to provide feedback on professional attributes such as respect, communication, and responsibility. The Professionalism Mini-Evaluation Exercise (P-MEX) is a 24-item test to assess professionalism and is commonly used to assess behavior in students and residents.[84] The American Board of Internal Medicine developed a Praise/Early Concern Card where members give feedback regarding a critical event. Other ways to assess professionalism include the Barry Challenges to Professionalism Questionnaire that assesses professionalism knowledge[85] and the Ginsburg Professional Lapse Assessment to assesses perceptions of professional challenges in clinical settings.[86] An assessment tool listed for evaluating professionalism from the Assessment SIG CAPE paper that may applied in the G/I setting include the Professionalism Assessment Tool (PAT). The PAT is a 33-item Survey conducted by self-report and uses the modified Miller's Taxonomy and spans five domains of professionalism such as reliability, responsibility, accountability; lifelong learning and adaptability; relationships with others; upholding principles of integrity and respect; and citizenship and professional engagement.[54, 87] Qualitative measures for assessment include focus group interviews (e.g. debriefing sessions), OSCEs, and reflective journaling.[54]

E. Assessment Cycle

Once assessment best practices are considered, C/SOPs implementing G/I PE initiatives should consider the assessment cycle, as thoroughly described by the AACP Assessment SIG. A key feature of an assessment cycle is the interplay between the curriculum, educational strategies, and assessment. Commonalities of assessment cycles described include beginning first with identifying the competencies and outcomes desired for the students, or when applicable, programs.[54] Achievement of core competencies for globally aware student pharmacists (G/I student competencies) can be assessed through delivery of G/I PE activities and related assessment methods tied to CAPE 2013 outcomes, as provided above and in **Tables 2 and 3** and **Table 6**. Upon completion of implementation and assessment of G/I PE activities, the resulting data must be gathered and analyzed, and evidence-based improvements made. An example of assessment of G/I PE activities is by use of the Kern model.[54]

- STEP 1 - Identification of problem/broader need:
  Calls of the profession and university strategic plan goals
- STEP 2 - Targeted needs assessment:
  ACPE self-study for accreditation, focusing on inclusion standards related to G/I PE–identified CAPE Outcomes; implementation of survey.
- STEP 3 - Goals and objectives:
  Identification of G/I PE Core competencies (broad), and CAPE 2013 Outcomes G/I PE-Domains/subdomains, or other specific G/I learning outcomes (narrow)

- STEP 4 - Educational strategies:
  Content and methods as suggested in Tables 2 and 3
- STEP 5 - Implementation:
  Address any university, cultural, legal or other obstacles; introduce and administer G/I PE activities in the curriculum.
- STEP 6 - Evaluation and feedback:
  Use rubrics and other tools at the individual level; conduct self-study and strategic plans at programmatic level

VI.   CONCLUSION

Global health is an emerging priority across many organizations, professions and governments. G/I education, whether didactic or experiential, domestic or international, is increasing in prevalence across health professional curricula in support of these larger trends. Accordingly, globalization of pharmacy education is a worthy endeavor with the potential to address the common issues faced in pharmacy education and practice. While emphasis in schools and colleges of pharmacy has been mainly placed on preparing pharmacy students prior to G/I APPEs, for establishing a global culture in a curriculum, concepts and topics with global perspectives should be introduced and reinforced. In addition, skills and attitudes should be fine-tuned and nurtured throughout the curriculum and students challenged to demonstrate them at a higher level of both the cognitive and affective domain.

G/I experiential activities can be instrumental in providing opportunities for students to further achieve and fine-tune skills-based outcomes in patient- and population-based care, communication skills, and cultural sensitivity. In addition, students can benefit significantly from a global emphasis throughout the curriculum by gaining an understanding of different perspectives and having the opportunity to make a difference on a local and global level. Finally, pharmacy programs with G/I initiatives in their strategic plans can use the above activities and assessments to demonstrate achievement of internal goals/initiatives. CAPE 2013 allows for the incorporation of G/I PE activities and assessments throughout curricula with an outcomes-focused approach.

VII.   REFERENCES

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VIII. TABLES
- Table 1: Definitions of operational terms
- Table 2: Selected CAPE 2013 outcomes relevant to G/I PE
- Table 3: Examples of G/I PE in pharmacy curricula
- Table 4: Bloom's Taxonomy of Learning targeted to meet G/I PE core competencies
- Table 5: Krathwohl's Taxonomy of Learning targeted to meet G/I PE core competencies
- Table 6: G/I PE assessment methods

IX. FIGURES
- Figure 1**:** Example of GI/PE curricular integration

X. APPENDICES
- Appendix 1: Rubric example: Cultural competency presentation
- Appendix 2: Rubric example: Global Health reflective paper

TABLES

Table 1: Definitions of operational terms

Term	Definition
Global health	An area for study, research, and practice that places a priority on improving health and achieving equity in health for all people worldwide.[4] Global health emphasizes transnational health issues, determinants, and solutions. It involves many disciplines within and beyond the health sciences and promotes inter- disciplinary collaboration and is a synthesis of population-based prevention with individual- level clinical care[45]
Globalization	A process that encompasses the causes, course, and consequences of transnational and transcultural integration of human and non-human activities.[88] Globalization refers to the act of extending activities to other parts of the world for integration and development in economics, migration, trade and other areas (such as health).
Internationalization	Behavior that crosses national borders and intended to create value in organizations.[89] Generally includes international trade, relations, treaties, alliances and other agreements that occur specifically between nations and governments.
International health	The application of the principles of public health to problems and challenges that affect low and middle-income countries and to the complex array of global and local forces and influences.[3]
G/I APPE	An elective educational experience which US students and international US-based students studying in a pharmacy program in the United States can complete across national borders.
Global APPE	Experiences of students and/or educators across borders, which address training related to global health.
International APPE	Experiences of students and/or educators outside US borders that might not involve global health issues; experiences with more emphasis on pharmacy practice, systems of healthcare and cultural sensitivity.
G/I education and training	An experience in which students studying in a pharmacy program, US or non-US-based, can complete across national borders.
Cultural competence	A set of congruent behaviors, attitudes, and policies that come together in a system, agency, or among professionals and enables that system, agency, or those professionals to work effectively in cross-cultural situations. Operationally defined, cultural competence is the integration and transformation of knowledge about individuals and groups of people into specific standards, policies, practices, and attitudes used in appropriate cultural settings to increase the quality of services; thereby producing better outcomes.[90]
Cultural sensitivity	Understanding the needs and emotions of your own culture and the culture of others[91]

Note: APPE: Advanced Pharmacy Practice Experience; G/I: global/international; US: United States

Table 2: Selected CAPE 2013 outcomes relevant to G/I PE

G/I PE student competency	CAPE 2013 domain/subdomain and description	G/I PE example learning objectives	Examples G/I PE learning activities	Example mapping to other competencies *(e.g. FIP Global Competency Framework[27])*
(a), (b)	1.1 (Learner) Develop, integrate, and apply knowledge from the foundational sciences (i.e., pharmaceutical, social/behavioral/ administrative, and clinical sciences) to evaluate the scientific literature, explain drug action, solve therapeutic problems, and advance population health and patient-centered care	-Describe differences in disease burden across different parts of the world -Discuss how evidence-based medicine integrates within alternative healthcare models	-Small group project (paper or presentation) on disease burden of different geographic areas -Journal club demonstrating use of evidence-based medicine in alternative healthcare settings or modalities -Completing a "mile marker" or benchmark exam at the end of the course	Continuous Professional Development (CPD)
(b), (c)	2.3 (Health and wellness) Design prevention, intervention, and educational strategies for individuals and communities to manage chronic disease and improve health and wellness	-Identify vaccinations as appropriate to the patient and geographic area	-Knowledge-based quiz on appropriate vaccinations for geographic area -Health screening event on HIV/AIDS	Health promotion
(b), (c)	2.4 (Population-based care) Describe influence of population-based care on patient-centered care and influence development of practice guidelines and evidence-based practices	-Discuss the procurement/use of pharmaceuticals in resource-constrained areas	-Create a sample formulary for a resource-constrained area, based on research of available medications and resources	Health promotion

Table 2 (Continued): Selected CAPE 2013 outcomes relevant to G/I PE

G/I PE student competency	CAPE 2013 domain/subdomain and description	G/I PE example learning objectives	Examples G/I PE learning activities	Example mapping to other competencies *(e.g. FIP Global Competency Framework[27])*
(b), (d), (h), (i)	3.1 (Problem solver) - Identify problems; explore and prioritize potential strategies; design, implement, and evaluate a viable solution.	-Identify barriers to accessing care due to geographic setting.	-Write a one-minute paper reviewing a synopsis of the topic with ideas for solutions. -Create a concept map on different healthcare systems around the world.	-Medication therapy -Patient consultation and diagnosis -Organization and management competencies -CPD -Self-management
(c)	3.2 (Educator) Educate all audiences by determining the most effective and enduring ways to impart information and assess understanding	-Understand the provision of care at a level of health literacy appropriate to a given scenario.	-Counsel patient through use of an interpreter in a local refugee clinic.	-Medicines information and advice -Patient consultation and diagnosis
(c), (d)	3.4 (Interprofessional collaboration) Actively participate and engage as a healthcare team member by demonstrating mutual respect, understanding, and values to meet patient care needs	-Understand pharmacist responsibilities within various healthcare settings.	-Conduct group reflection on professional roles in simulated clinical experiences. -Implement interprofessional team-functioning survey	-Human resource (HR) management -Professional and ethical practice -CPD
(d), (e), (f)	3.5 (Cultural sensitivity) Recognize social determinants of health to diminish disparities and inequities in access to quality care	-Identify ways that culture, race, nationality and religion may impact delivery of pharmaceutical care.	-Present an overview on influences of culture, potential barriers to healthcare. -Learn foreign language. -Cultural sensitivity survey	-Communication skills

Table 2 (continued): Selected CAPE 2013 outcomes relevant to G/I PE

G/I PE student competency	CAPE 2013 domain/subdomain and description	G/I PE example learning objectives	Examples G/I PE learning activities	Example mapping to other competencies *(e.g. FIP Global Competency Framework[27])*
(f)	<u>3.6 (Communicator)</u> Effectively communicate verbally and nonverbally when interacting with an individual, group, or organization	-Discuss methods for approaching language barriers during counseling.	-Assign reflection papers on lessons learned from IPPE encounter of non-English speaking patients, including assessment of steps for continued learning.	-Communication skills
(g)	<u>4.1 (Self-awareness)</u> Examine and reflect on personal knowledge, skills, abilities, beliefs, biases, motivation, and emotions that could enhance or limit personal and professional growth	-Identify problems within a healthcare situation and use available resources to solve problems.	-Require reflective papers on patient interactions with cultural and/or ethical implications.	-Self-management -Professional and ethical practice -CPD
(i)	<u>4.2 (Leadership)</u> Demonstrate responsibility for creating and achieving shared goals, regardless of position	-Identify initiatives for promoting global health and pharmacist contributions.	-Development an innovative pharmacy service or grant. -Implement student portfolio to analyze and self-critique role as a student group leader on a global APPE.	-HR management -Communication skills
(h), (j), (k)	<u>4.4 (Professionalism)</u> Exhibit behaviors and values that are consistent with the trust given to the profession by patients, other healthcare providers, and society	-Demonstrate appropriate and ethical provision of pharmaceutical care in pharmacy practice experiences abroad	-Discuss the use of counterfeit and/or expired medications overseas.	-Professional and ethical practice

Note: IPPE = Introductory Pharmacy Practice Experiences; APPE: Advanced Pharmacy Practice Experience; CAPE: Center for Advancement of Pharmacy Education; CPD: continuing professional development; FIP: International Pharmaceutical Federation; G/I PE: global/international pharmacy education; HIV/AIDS: human immunodeficiency virus/acquired immune deficiency syndrome; HR: human resources; IPPE: Introductory Pharmacy Practice Experience

Table 3: Examples of G/I PE in pharmacy curricula

Type of G/I PE and reference	-Year of school -Required/elective -Didactic/ experiential/other	Topics	Assessment/activities
Medical mission [92]	-P4 -Elective -Experiential (advanced)	Attitudes, values, culture, communication, disease states, presentations to faculty, roles on a mission trip, health and disease promotion, systems management (formulary, roles, etc.), counseling, medication management, nutrition and blood glucose management, IPE setting (observation of other roles)	Pre-trip meetings (IAPCC-SV completed), disease state and medication presentations by students, introductory medical Spanish, reading assignment, pharmacy operations in country, daily reflection, daily discussions, quality improvement needs assessment assignment post trip
Course [93]	-P2 [2+2] -Elective -Didactic	Governance, social determinants/ disparities, global health priorities, health and human rights, MDGs, macroeconomics, resource limited settings (essential medications), public health emergencies/ disaster relief, global medicines safety and quality, funding in global health, PEPFAR, careers in global health, skills (research, grant, management)	Team Based Learning (TBL), team projects, online learning (quizzes), class presentations, final exam
Course [94]	-P3 -Elective -Experiential prerequisite	Culture, travel prep, patient care, disease states, novel readings on Kenya (linguistic), in country pharmacists teaching	Care plans, quizzes, reflection papers, formulary management exercise, course assessments, novel reading

Table 3 (Continued): Examples of G/I PE in pharmacy curricula

Type of G/I PE and reference	-Year of school -Required/elective -Didactic/ experiential/other	Topics	Assessment/activities
Experiential [95]	-Not Applicable (N/A) -N/A -Experiential	Dispensing, health care systems, primary care, personal development (extrapolated)	N/A; telephone survey of multiple programs with international experiences
Site visits and meetings [53]	-Interprofessional -Elective -N/A	Refugees, immigrants, and underserved populations, nutrition, oral health, mental health, history/ culture, access to health care facilities, linguistics	Reflective papers
Public Health [96]	-N/A -Elective -Experiential (advanced)	Pharmaceutical care, counseling, cultural competence, community resources, medication assistance programs	Written assignments, role play, direct patient care, reflective writing, community outreach activities
Public Health [97]	-P3 -Required -Didactic (poster project)	Smoking cessation, pregnancy and drug abuse, prescription drug abuse, Hepatitis B, traveler's health and vaccines, prenatal health	Rubric
Public Health [98]	-P4 -Elective -Experiential (advanced; discussion series)	Discussion, journal article reviews (1-2 per student): population public health, prevention over treatment, epidemiology, health services, governance, culture	Comments, reflections
Course [99]	-N/A -Elective -Didactic	International pharmacists presented (electronically) views and roles in infrastructure, cultural, practice, economics, practice in healthcare systems, positive outcomes in practice and obstacles	Journal reflection (including career goals/leadership),

Table 3 (Continued): Examples of G/I PE in pharmacy curricula

Type of G/I PE and reference	-Year of school -Required/elective -Didactic/ experiential/other	Topics	Assessment/activities
Experiential [100]	-P4 -Elective -Capstone	Differences in practices, satisfaction	N/A; Survey of students on experiential education program, reflective paper, design a future G/I experience

G/I PE: global/international pharmacy education; IAPCC-SV: Inventory for Assessing the Process of Cultural Competence Among Healthcare Professionals-Student Version; IPE: interprofessional education; MDG: Millennium Development Goals; N/A: not available or unknown; PEPFAR: President's Emergency Plan for AIDS Relief; TBL: team-based learning

Table 4: Bloom's Taxonomy of Learning[55] targeted to meet G/I PE core competencies

Cognitive taxonomy	Sample strategies
Knowledge: recalls learned material	Introduce essential knowledge in global citizenship. Introduce global health related issues. Define cultural sensitivity. Identify standards of practices in different G/I PE areas. Review prevention and treatment strategies for non-communicable diseases. Recognize value of empathy and ethical decision-making within global healthcare. Describe different models of healthcare delivery.
Comprehension: understands meaning	Use integration exercises to simulate unique cultural situations. Explain local cultural challenges and global health ramifications.[101] Discuss differences in standards of practice among G/I PE areas. Recognize local healthcare needs of the community. Identify opportunities to strengthen existing or implement new clinical services. Distinguish between stereotypes and generalizations.[102] Identify patients who would benefit from an interpreter.[102] Describe the role of government policies in regards to culturally sensitive health care.[102]
Application: uses rules, methods, concepts, principles, laws or theories in new situations	Address unique global issues. Tailor language to the appropriate audience and in a culturally sensitive manner. Address discrepancies in diverging standards of practice among G/I PE areas. Apply clinical thinking skills to limited drug formulary. Conduct learning needs assessment for education opportunities. Apply knowledge in problem-based and case-based learning. Conduct motivational interviewing. Suggest prevention and treatment strategies. Tailor recommendations to local needs of communities. Use culturally sensitive methods of patient-interviewing.[102] Show empathy toward patients with various socioeconomic challenges.[102]

Table 4 (Continued): Bloom's Taxonomy of Learning[55] targeted to meet G/I PE core competencies

Cognitive taxonomy	Sample strategies
<u>Analysis</u>: breaks down a larger situation into its components to understand its structure	Analyze learning needs assessment for education. Compare and contrast different clinical practices in G/I PE areas. Write a one-minute paper reviewing a synopsis of the topic. Research and review medications and resources in a given area. Draw concept map. Assess need for motivational interviewing. Compare different models of healthcare delivery. Assess own biases, stereotypes, and level of cultural sensitivity.[102]
<u>Synthesis</u>: create something new	Offer solutions to address gaps identified in learning needs assessment. Write a one-minute paper with suggested solutions. Create a formulary for a resource-constrained area, based on research of available medications, available resources, etc. of a given area. Present an in-service. Provide education in a foreign language. Create an educational handout. Create case-based questions. Recommend potential solutions to challenges in relation to global health disparities.[62]
<u>Evaluation</u>: judge the value based upon known criteria	Conduct an analysis of a patient case: students solve real-life therapeutic problems to simulate application in practice. Write a reflection essay on medical mission, patient interaction, interprofessional experience and leadership. Conduct self-evaluation on education, or rotation performance. Conduct a peer evaluation on teamwork skills, patient satisfaction, on a presentation. Assess concept maps to resolve problems. Evaluate health system missions, policies, procedures related to patient-centered culturally sensitive health care.[102]

G/I PE: global/international pharmacy education

Table 5: Krathwohl's Taxonomy of Learning[56] targeted to meet G/I PE core competencies

Affective taxonomy	Strategies
Receiving: pays attention to input	Emphasize the rationale/benefits of G/I PE. Emphasize the role of pharmacists in global health. Link global health to what is happening locally and nationally. Introduce relevant patient scenarios to demonstrate value of content early. Emphasize how this prepares for use of the knowledge in patient care rotations. Encourage assertiveness of student engagement and discussion in class.
Responding: willingly participates	Emphasize student responsibility for learning. Provide exercises in the student handout and in in-class interactive sessions. Create a 'safe' classroom for inquiry by emphasizing the low risk of participation and potential harm if student is wrong in the controlled classroom environment of the course.
Valuing: attaches worth to input and participation	Introduce and emphasize oath of the pharmacist, honor code, professional responsibility. Illustrate how use of this material is essential to the student as a professional. Emphasize the role of the pharmacist in addressing global health issues
Organization: adopts value internally	Predictive clinical decision-making is used to build internal valuing of use of this knowledge to improving the health of patients in general and addressing global health issues.
Characterization: incorporates into daily ways	Expectations that global issues are applied in the study and application of therapeutics in the curriculum presented to students at the end of the course. Exhibited motivation for service activities and enrolling in G/I APPEs Increased interest in pursuing residencies and careers in global education and global health. Pursuing Masters in Public Health

G/I PE: global/international pharmacy education

Table 6: G/I PE assessment methods

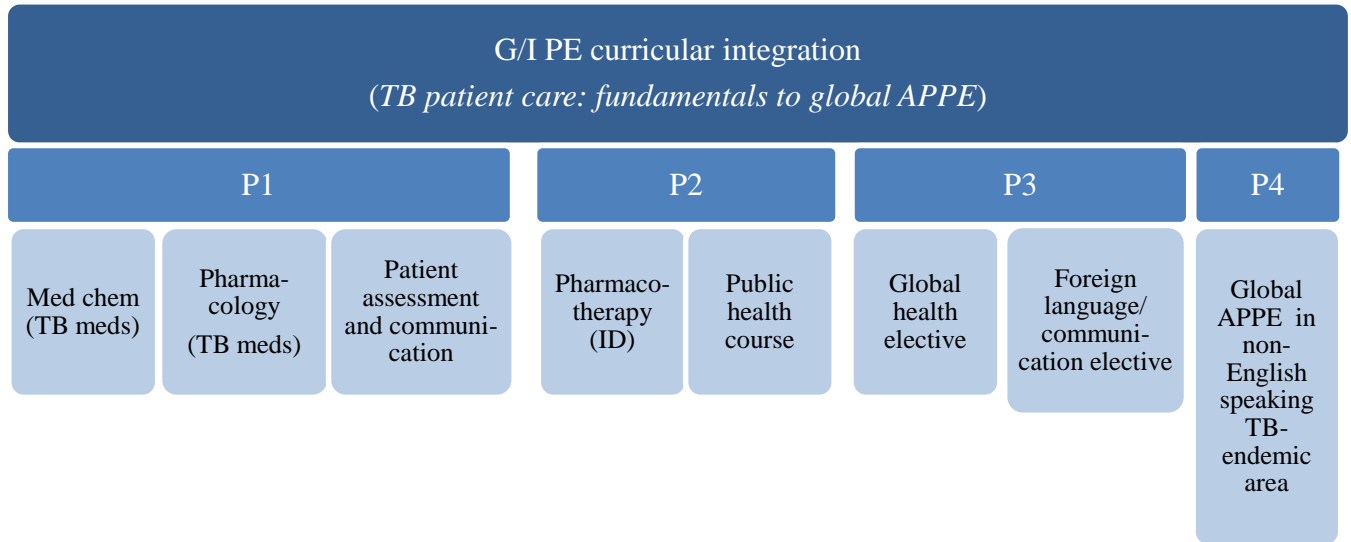| CAPE 2013 subdomain	Assessment method examples
1.1: Learner	"Mile marker" or benchmark examination Gateway examination prior to APPE OSCE for problem-based learning experience Student portfolios

2.3:
Health and wellness
	Program-wide assessment of impact:
	    Number of events, courses and participants
	    Number of patients served
	    Number of screenings/immunizations
	    Number of abnormal readings, interventions, and referrals
	    Funding for G/I PE events, programs and courses
	    Patient satisfaction surveys
	    Quality of preceptor and site
	Learner-focused assessment of student abilities:
	    Classroom (progress testing on health/wellness topics)
	    Evaluation of team or individual activities or products
	    Presentations/papers
	    Student evaluations
	    Global health events (number of events or hours by students)
	    Quality indicator metrics
	    Surveys
	    Student evaluations
	    Reflections[54,60]

2.4: Population-based care	Formulary review Drug monographs, drug utilization reviews Population-based strategies for health promotion and disease prevention Classroom assessments (quizzes/exams; papers/presentations; evaluations)
3.1: Problem solver	OSCEs Minute papers Muddiest point Pro and con grids Concept maps Case-based questions Process analysis
3.2: Educator	OSCEs Simulated patient counseling/education encounters Health education presentations, brochures, and handouts for portfolio

Table 6 (Continued): G/I PE assessment methods

CAPE 2013 subdomain	Assessment method examples
3.4: Interprofessional collaboration	Interprofessional Team Functioning Survey[54] AHPQ[64] Interprofessional Collaborative Competencies Attainment Survey[68] CPAT[69] CSACD[71] Other: APPE experiences (preceptor/student evaluations); programmatic (number of interprofessional events/G/I interprofessional partnerships/funds/publications)
3.5: Cultural sensitivity	TACCT[72] IAPCC-R CCCQ WICS[75] Implicit Association Test[72] Foreign language certifications (e.g. Rosetta Stone, Babbel)[76,77] SPEs with patients at various literacy levels and from cultural backgrounds SOAP notes[54] Community service activities[54]
3.6: Communicator	Rubrics for counseling activities Motivational interviewing Foreign language skills Assessment of patient-counseling skills and on-verbal communication OSCEs
4.1: Self-awareness	Reflection essays of G/I PE community events or APPEs Patient case presentations Debriefing sessions
4.2: Leadership	Capstone project Fundraising initiatives Event planning/organization
4.4: Professionalism	Peer assessments P-MEX[83] Praise/Early Concern Card Barry Challenges to professionalism Questionnaire[85] Ginsburg Professional Lapse Assessment[85]

AHPQ: Attitudes to Health Professionals Questionnaire; APPE: Advanced Pharmacy Practice Experience; CAPE: Center for Advancement of Pharmacy Education; CCCQ: Clinical Cultural Competence Questionnaire; CPAT: Collaborative Practice Assessment Tool; CSACD: Collaboration and Satisfaction about Decision Care; G/I: global/international; IAPCC-R: Inventory for Assessing the Process of Cultural Competence Among Health Professionals; OSCE: Objective Structured Clinical Examination; P-MEX: Professionalism Mini-Evaluation Exercise; SOAP: subjective, objective, assessment, plan; SPE: simulated patient encounter; TACCT: Tool for Assessing Cultural Competence Training; WICS: Wesleyan Intercultural Competence Scale

FIGURE

Figure 1: Example of G/I PE curricular integration
Multidisciplinary horizontal; vertical from P1-P4; spiral from didactics to experiential with both horizontal and vertical integration*

G/I PE curricular integration
(*TB patient care: fundamentals to global APPE*)

P1			P2		P3		P4
Med chem (TB meds)	Pharma-cology (TB meds)	Patient assessment and communi-cation	Pharmaco-therapy (ID)	Public health course	Global health elective	Foreign language/ communi-cation elective	Global APPE in non-English speaking TB-endemic area

*P1-P4 indicates the first-fourth professional pharmacy education years
G/I: global/international; PE = pharmacy education; TB: tuberculosis; ID: infectious diseases; APPE: Advanced Pharmacy Practice Experiences

APPENDICES

Appendix 1: Rubric example for assessment of presentation on cultural competency*

Content	Score	Comments
Provided a compelling introduction to the culture	☐ Agree (5) ☐ Mostly agree (3) ☐ No (0)	
Provided a sufficient overview of the cultural group	☐ Agree (5) ☐ Mostly agree (3) ☐ No (0)	
Adequately described the communication styles present in the culture and their impact on healthcare	☐ Agree (5) ☐ Mostly agree (3) ☐ No (0)	
Adequately described other cultural generalizations and how they impact healthcare (e.g., diet, beliefs)	☐ Agree (5) ☐ Mostly agree (3) ☐ No (0)	
Adequately described possible barriers to healthcare that are relevant to the cultural group	☐ Agree (5) ☐ Mostly agree (3) ☐ No (0)	
Demonstrated a high level of understanding of the material	☐ Agree (5) ☐ Mostly agree (3) ☐ No (0)	
Demonstrated a positive, accepting attitude toward the culture	☐ Agree (5) ☐ Mostly agree (3) ☐ No (0)	
Answered questions thoughtfully and professionally	☐ Agree (5) ☐ Mostly agree (3) ☐ No (0)	
Total format, presentation style score (out of 15)		
Total content score (out of 40)		
Total score (out of 55)		

*Rubric above does not contain the "format, presentation style" component of the assignment.

Appendix 2: Rubric example for assessment of global health reflective paper

	Level of Achievement				
Criteria	**Unacceptable**	**Below Average**	**Average**	**Anticipated**	**Outstanding**
Global Health	1 Point: No global health issues are noted	2 Points: Focus is predominately on the individual with minimal correlation to global health	3 Points: Global health concerns and issues are noted but there is no rationale or insightfulness on its impact	4 Points: Global health concerns and issues are noted but minimal rationale or insightfulness into the impact	5 Points: Identifies an important issue in that is impactful to the understanding of global health
Ethical Issues / Cultural Considera-tions	1 Point: No ethical, cultural issues or reasoning noted	2 Points: Identifies minimal ethical, cultural dilemmas and does not describe how situations are handled	3 Points: Identifies and considers some ethical, cultural dilemmas; some discussion is noted but does not consider implication	4 Points: Recognizes some components to an ethical, cultural dilemma; Discusses insightful situations but only considers some implications	5 Points: Identifies and considers relevant components to an ethical, cultural dilemma; Discusses insightful issues regarding the ethical or cultural scenario
Written Skills / Reflection	1 Point: Unable to describe experiences, issues in a clear and concise manner	2 Points: Describes situations, issues in a superficial manner, lacking insight	3 Points: Describes situations, issues in a clear manner but improvement in the understanding; insight is needed	4 Points: Describes situations, issues and experiences in a clear, organized, and effective manner	5 Points: Describes situations, issues in a clear, concise, insightful manner that is well thought out