

SPECIAL ARTICLE

Process and Performance Outcomes of a Nontraditional Postbaccalaureate PharmD Program Geared Toward Internationally Trained Pharmacists

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Established in 2003, the fully accredited international postbaccalaureate doctor of pharmacy (IPBP) program has attracted internationally trained pharmacists from approximately 25 countries and 6 continents, mostly residents of the United States, to attain the doctor of pharmacy (PharmD) degree at the Western University of Health Sciences. While recent trends in the IPBP applicant pool have shown a decline from its peak numbers in 2009 (222 applicants) for the 20 available seats each year, the quality of students remains high. Benchmark measures assessed for this group of students include the internal assessment entrance examination, admissions scores, academic assessments from didactic blocks, and scores on the North American Pharmacy Licensure Examination (NAPLEX), all of which indicate this quality. Moreover, graduates from the program not only consistently demonstrate excellence in the pharmacy curriculum and board examinations, but also go on to establish themselves as competent practitioners and educators. While the long-term future of the program is unknown, the status of the program and its graduates provides ample evidence of its value and ensures its continued success going forward.

Keywords: International, IPBP, PharmD, performance measures, retrospective analysis

INTRODUCTION

The International Postbaccalaureate PharmD (IPBP) program, established in 2003 at the Western University of Health Sciences (WesternU) College of Pharmacy, is one of the few schools in the nation to offer this option. The program attracts pharmacists from approximately 25 countries, most of whom are immigrant residents in the United States but have been unable to obtain licensure for practice. Typically, the path to pharmacist licensure in the United States for a foreign educated pharmacist is to pass the National Association of Boards of Pharmacy (NABP) sponsored Foreign Pharmacy Graduate Equivalency Examination (FPGEE) with a score of 75; complete the Internet-based testing of the Test of English as a Foreign Language (TOEFL) with a passing score of 21 in each of the 4 sections (reading, listening, speaking, and writing); and fulfill internship hours in a pharmacy as designated by the state boards of pharmacy around the nation.

Upon successful completion of the first 2 requirements (ie, the FPGEE and TOEFL), the NABP will award a Foreign Pharmacy Graduate Examination Committee

(FPGEC) certificate.¹ Most states in the United States accept the FPGEC certification along with other required documents to issue an intern pharmacist license to the applicant. In California, the state board of pharmacy requires FPGEC certification, a Social Security number, and the intern license, which permits the applicant to obtain 1500 hours of experiential internship. Upon completion of the internship hours, the applicant is eligible to take the California Practice Standards and Jurisprudence Exam (CPJE) and the NAPLEX, both of which must be successfully completed to receive a pharmacist license.² Because of changes in the qualifying guidelines of the NABP in 2003, many international pharmacy graduates were precluded from FPGEC certification, thereby creating a greater demand for this program.

For the WesternU College of Pharmacy, several reasons led to the initiation of its program: (1) the significant shortage of pharmacists in 2003 and future projections of continued shortage through 2020;^{3,4} (2) the existence of a relatively large population of foreign-trained pharmacists living in the United States working as pharmacy technicians or clerks but precluded from taking the Foreign Pharmacists Graduate Examination Committee (FPGEC) certification because of the new NABP eligibility requirements; (3) the vision of building a student body that represents diversity in culture,

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ethnicity, work, and educational experiences; (4) the growing interest from international pharmacy graduates for clinical training (as provided in PharmD programs accredited by the Accreditation Council for Pharmacy Education) to either work in the United States or return to their native country to advance clinical pharmacy education and practice, primarily by entering academia.

The conceptual framework for the program began during 2001-2002, when a group of Korean pharmacists approached the college administration asking to consider establishing a formal program that would allow them to earn the PharmD from WesternU. In 2003, the IPBP program was started as the Mid-Career Postbaccalaureate PharmD (MCPD) program, with a focus on recruiting Korean pharmacists who met the admissions criteria established by the college. Twenty additional seats were created for the program. A steering committee led by the newly installed director of special programs was established, with participation from faculty members interested in program development. The original design allowed students to directly matriculate into the second year (P2) of the 4-year, block-based program at the beginning of the academic year.

The block system of curricular delivery was pioneered and implemented in 1996 at the WesternU College of Pharmacy During Year 2 (P2) of the curriculum. Each block is 18 days on average, during which students focus on only one block, allowing for mastery of the subject before moving on to the next block. Since IPBP students matriculated into the P2 year, they completed their training in 2.5 years (instead of 3 years), which consisted of 1.5 years of didactic blocks and one year of experiential education. During the fourth (P4) year, a 16-week advanced elective component (mandatory for the traditional PharmD student) was initially waived for this group in recognition of their advanced standing as pharmacists, thereby allowing them to graduate early. However, in 2005, the duration of the program was extended to 3 years to allow students to experience a full 1.5 years of experiential curriculum with the 120 students in the traditional program. This change ensured that IPBP students would graduate with their traditional counterparts. Also in 2005, in order to accommodate a growing international pool of applicants, the MCPD program was renamed the International Post-Baccalaureate PharmD (IPBP) program.

DESIGN OF THE PROGRAM

The IPBP program offers training opportunity for domestic and international graduates with a bachelor's degree in pharmacy or its equivalent who seek to obtain a PharmD degree. Applicants interested in learning about this program are directed primarily to the university's

prospective student website. Prior to an offer of admission, the applicants undergo a rigorous admissions process. After completing an applicant file, college faculty members evaluate eligibility for an interview on campus. Admissions criteria, including a mandatory baccalaureate pharmacy degree or its international equivalent, are listed in Table 1. Invitation for an interview is based on achieving a minimum file score (>30/40 points). The file scoring is based on the content of the file, which includes a personal questionnaire, letters of reference, personal essay, resume, and grades.

If selected for an interview, an applicant is eligible to receive online access to study guides in preparation for a 4-hour entrance examination termed the internal assessment (IA) examination, administered on the day of the interview. Applicants have approximately 5 months to prepare for this examination. Except for the IA examination, the overall process of IPBP admission mirrors the standards of admission for traditional students. Thus, an applicant may not be admitted because of unavailability of seats, poor file scores during initial file review, not achieving the score cutoff for admission based on interview, written essay, and the Health Sciences Reasoning Test HSRT performance, or a failing score on the IPBP entrance examination.

In preparation for the IA examination, comprehensive study guides are made available to each applicant. Since the IPBP students bypass the first (P1) year, which is mostly pharmaceutical sciences blockwork, faculty members of that department create study guides that include pharmaceuticals, pharmacokinetics, pharmacogenomics, immunology, medicinal chemistry, and pharmacology. The IA examination and the study guides serve 2 purposes: to assess the knowledge base of applicants via a multiple-choice examination, and to acclimatize the new students to block materials covered during the P1 year in preparation for entry into the P2 curriculum.

Table 1. Summary of International Postbaccalaureate Doctor of Pharmacy (IPBP) Admissions Requirements

Bachelor of science (BS) in pharmacy or its equivalent
Foreign coursework evaluation
Minimum overall GPA of 2.5 on a 4.0 scale
Passing the college's internal assessment (IA) examination
Communication skills evaluation (verbal and written)
Letters of recommendation (3)
Personal questionnaire
Proof of legal United States residency (eg, visa, green card)
Test of English as a Foreign Language (TOEFL)—required for all applicants from nonEnglish speaking countries; minimum score requirement: 79 on the Internet-based test

The condensed guide consists of approximately 550 pages of copyrighted information on the above topics and includes practice tests and workbooks to assist in preparation for the examination. Additionally, an online welcome guide provides instructions on the format of the examination. Study guides are available only via the online WesternU Blackboard (Blackboard Inc., Washington, DC) system and are valid for 2 years. After applicants have been selected for interviews, they receive a computer access code to download block materials. Along with the study guides, the participating faculty member also submits a question bank, which is can be used for the IA examination. The question bank, managed by the program coordinator, is updated on a regular basis.

During one day, IPBP applicants take the IA examination, complete a 45-minute writing exercise, and undergo the 30-minute interview. During the 2013-2014 admissions cycle, the 50-minute HSRT was added to assess the critical-thinking component of the admissions criteria. The IA examination consists of 200 multiple-choice questions on all topics above and is divided into 2 parts, with a 10-minute break in between the parts. A passing score of 120 is considered acceptable. Failure to reach the passing score results in immediate rejection of the application from further consideration. Performance on the IA examination accounts for 25% of the final score; thus, a better score in the examination helps improve the overall admissions status of the applicant. The IA examination scores serve as an assessment tool to predict the performance of admitted students on the didactic component of the curriculum. The writing exercise and interview are conducted in a manner similar to the traditional PharmD admissions process. Thus, criteria for evaluation of IPBP students for admission is the same as that used for the traditional PharmD program. Writing samples are graded by an independent third-party grader based on a set of objective criteria developed by the admissions committee. This component accounts for 30% of the overall evaluation. The interview, conducted in a discussion-based format, allows evaluation of communication abilities, professional motivation, and critical-thinking skills. The interview team consists of one faculty member (serving as team leader) and either a student, alumnus, preceptor, or invited guest. Interviews are conducted without access to the applicant's file to prevent bias. The interview score accounts for 40% of the overall evaluation. Usually within 2 weeks of the interview, all candidates are informed of their status and their IA examination scores. A 2-week timeline is given to all admitted applicants to secure their seats with a \$500 deposit. A list of alternate applicants is developed, which is used only if seats remain unfilled.

The IPBP students begin their studies during the second year (P2) of the regular PharmD program. However, before the start of the second year, all IPBP students enroll in a month-long mandatory orientation block. This introductory, team-taught 4-credit orientation block acclimates students to the block system of instruction at the college, provides guidance for successful transition into the second year of the regular PharmD program, and, provides supplemental practice-based knowledge to allow them to be on par with their peers in the traditional program.

Normally, IPBP students have gained pharmacy knowledge and experience outside the United States, thus the orientation provides important informational topics relevant to the US pharmacy practice model. Topics such as the US drug distribution system, drug information, literature evaluation, biostatistics, the structure of the US health care system, and health care issues are comprehensively covered. Additional educational lectures and workshops are provided to include medical terminology, top 200 prescribed drugs, nonprescription medications, immunization certification, Objective Structured Clinical Examination (OSCE) exercises, and pharmacokinetics workshops. Didactic lectures, skills workshop and assessment, team-based learning to augment lecture and skills development, and examinations are used during the block.

The university's institutional review board (IRB) provided approval prior to conducting the analysis of data for this study. All statistical analyses were conducted using Stata v13.0 (Stata Corp LP, College Station, TX).

ASSESSMENT OF THE IPBP PROGRAM

Since 2003, approximately 200 students have graduated from the college's IPBP program. The program continues to be in demand, although the number of applications has decreased in recent years. As shown in Figure 1, the number of applications increased during the initial years of the program as knowledge of its existence spread. The highest number of applications (222) was received in 2009. Thereafter, a steady decline has been observed, with the most recent year (2013) reporting 107 applications. This trend is similar in comparison to the decline in the applicant pool of the traditional PharmD program (data not shown) and is reflective of current nationwide trends.⁵ We speculate that the reasons behind the decrease could include the recent introduction of the PharmD model of education in other countries,⁶ a perceived decrease in the demand for pharmacists nationwide, and our stringent admissions standards that have dissuaded applicants from applying or re-applying.

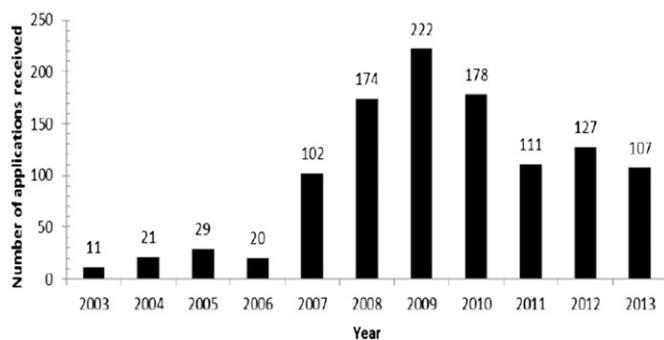


Figure 1. IPBP applicant pool trends 2003 - 2013.

To date, the IPBP program has attracted students from more than 25 countries and 6 continents, making it the program with the largest number of international students on the WesternU campus (Table 2). While ancillary services are easily available for foreign students, many of the IPBP students are already either permanent resident/citizens of the United States who do not need these services. To this end, the campus international student officer facilitates all student visas and organizes the optional practical training component, a federally sanctioned experiential program available upon graduation.

Approximately 70% of IPBP students (evaluated from the class of 2011 through the class of 2016) had permanent residency or citizenship status at the time of matriculation. The remaining students are either spouses of foreign workers already residing in the country legally or arriving directly from foreign countries (30%). As stated earlier, most of these students have been part of the work force in this country as pharmacy technicians or clerks but have been unable to practice as a pharmacist because of regulatory changes. Therefore, as attested by students within this program over the years, acceptance into the IPBP program has created opportunities that would not have otherwise been available to them.

Assessment of the Interview Process

During the early years of the program, the IA examinations were considered simply as a Pass/No Pass grade with the intent of acclimatizing the IPBP student to the blockwork offered during the P1 year of the program. However, considering the depth and intensity of the block materials and the examination, college faculty members approved a policy to allow the examination grade to account for 25% of the total admissions grade in 2007.

Performance on the IA examination for the past 6 years (classes of 2011-2016; n=120) has averaged at 156/200 with a range of 124 (lowest) to 195 (highest) during any given year (Table 3). An analysis was conducted to evaluate if performance in the IA examination was a predictor of performance in the didactic curriculum in the P2 and P3 years for the IPBP students. There appeared to be positive correlations between academic performance at WesternU and the IA examination score ($r=0.44, p=0.001$). In other words, students who scored high on the IA examination were more likely than those with lower IA examination scores to do well in the curriculum.

Regarding GPA and didactic performance, students with a high GPA performed better academically than those with lower GPA ($r=0.32, p=0.02$), at the time of admission. Entering GPA only accounts for 5% of the overall admissions grade, intentionally set low because of lack of objectivity to compare GPAs earned from institutions outside the United States. Demographic data such as age, gender, marital status, family responsibilities, commute time—ie, factors that potentially could affect didactic performance and GPA—were not included in the analysis. Communication skills represents a major component of the interview process—70% of the admissions grade. The heavy emphasis on communication skills is a deliberate approach to ensure that, despite English being their second language, IPBP student pharmacists have the skills to master the curriculum and

Table 2. International Postbaccalaureate Doctor of Pharmacy (IPBP) Student Pharmacist Demographics (2011-2016)

Average Age	29
Countries of Origin	24 (Bangladesh, Brazil, Canada, China, Cuba, Egypt, Ghana, India, Ireland, Iran, Israel, Jamaica, Japan, Korea, New Zealand, Nigeria, Philippines, Russia, Saudi Arabia, South Africa, Taiwan, UK, Vietnam and USA)
Permanent Resident or US Citizen (%)	70
Test of English as Foreign Language (TOEFL; Internet-based testing) scores (average)	92.6 (1.2)

Table 3. International Postbaccalaureate Doctor of Pharmacy (IPBP) Entrance Examination Performance Scores and Comparison of Communications Component with Traditional PharmD Program (average scores for classes of 2011-2016)

Class of 2011-2016	Internal Assessment Examination (200 points), mean (SD)			Interview Score (120 points) mean (SD)	Essay Score (50 points) mean (SD)
	High	Medium	Low		
IPBP Program (n=119)	184 (5.8)	156 (4.7)	130 (6.8)	105 (3.3)	46 (1.4)
Traditional PharmD (n=720)	N/A	N/A	N/A	109 (3.3)	46 (0.6)

IPBP = International Post-baccalaureate PharmD program
PharmD = Doctor of Pharmacy

provide quality service to their patients. Thus, this component is distributed as 40% verbal and 30% written. As shown in Table 3, scores from the oral communication component were similar when compared to the traditional program [105 (IPBP) vs 109 (traditional) out of 120]. Similarly, the essay component indicated proficient writing skills of the IPBP students (46/50 for both programs). Thus, our data show that overall communications skills for IPBP students were on par with traditional students. Overall, English communication skills appeared to be strong for the IPBP students. Additionally, most students were bilingual (ie, English and another language), which could be a valuable asset based on the patient population they serve.

Assessment of the Summer Orientation Block

The summer orientation block helps in preparing incoming IPBP students prior to the start of the school year. Offered as a team-taught course, this block begins with (4-week duration) general topics such as computer configuration and practice experience information. Additionally, the University Learning Enhancement and Academic Development (LEAD) office provides a primer on stress management and test-taking strategies. The bulk of block materials covers a quiz on the top 200 drugs prescribed in the United States, an overview of the US health care system; pharmacy calculations; research methods/biostatistics; drug information; SOAP (Subjective Objective Assessment Plan) notes; OSCEs; health fair activities such as patient screening, immunizations, self-care therapeutics, and sterile techniques; interprofessional education (IPE) introduction; and an overview of the experiential education component. Assessments are conducted as appropriate on the block contents. On the final day, students are formally welcomed by the dean of the college at a special luncheon with IPBP alumni, faculty members, and staff. Overall performance tracking of students from classes of 2012 through 2016 show an average percentage score for the summer orientation block to be 86.7% (range

84.4-88.7%) thus demonstrating the high caliber of the IPBP students.

At the end of the block, all students are provided with a survey questionnaire, which allowed them to evaluate the quality of the block and of the facilitator/instructor, based on a Likert scale (1=poor, 5=excellent). Feedback received on the orientation block from students in the classes of 2010 through 2016 showed positive feedback for this program (Table 4), with mean and standard deviation [mean (SD)] for the following evaluation factors: evaluation scores for organization of the block [4.4 (0.2)], use of interactive sessions [4.5 (0.1)], clarity of instruction and grading [4.4 (0.1)], and overall quality of the block [4.4 (0.1)] receiving high marks. These all indicate student enthusiasm and satisfaction. Other evaluation criteria, such as the block facilitator performance, clarity of the block presentation, effectiveness in addressing student concerns, approachability, and availability also received high marks over the years (Table 4). Individual instructors also were evaluated for the learning objectives of the block, offering content that extends knowledge of a topic, the ability to facilitate understanding, approachability, and fairness of quizzes and examinations. Scores traditionally ranged from 4.3 to 4.8, reflecting student satisfaction with the overall quality of the teaching faculty members.

Finally, a qualitative component of the survey asked students to evaluate the block as a whole and suggest improvements. Comments such as, “excellent faculty,” “well-organized,” “great planning,” and “useful information” were commonly provided by students. In addition, personal comments reflecting gratitude toward the program (eg, “Thank you for starting this program,” “. . . be able to fulfill my dream,”) also were consistently reported in the survey. Suggestions to improve the block, such as “extending the duration,” “need for sterile products lab,” “provide OSCE sessions,” were evaluated by the admissions and curriculum committees and implemented as necessary. Overall, the block met its objective of orienting the IPBP students before fall classes in the P2 year.

Table 4. International Postbaccalaureate Doctor of Pharmacy (IPBP) Student Evaluations of Summer Orientation Block (Class of 2010-2016)

Comments	Summary Scores* mean (SD)
The block was well organized	4.4 (0.2)
The block utilized interactive sessions (eg, case presentations, team assignments, lab work) to enhance learning	4.5 (0.1)
Clear instructions on the criteria for grading assignments were provided	4.3 (0.2)
The facilitator clearly presented the block plan	4.8 (0.2)
The facilitator was effective in addressing student concerns	4.8 (0.2)
The facilitator was approachable for asking questions	4.8 (0.3)
The facilitator was available throughout the block (eg, office hours, by appointment or by e-mail)	5.0 (0.07)

*Likert scale: 1=poor-5=excellent

Academic and NAPLEX performance comparisons between IPBP and traditional PharmD students

Using academic records (n=548) from the WesternU College of Pharmacy classes of 2010, 2011, 2012, and 2013, we compared academic performance between the IPBP (n=76) and traditional PharmD (n=472) cohorts in terms of the average percent of block grades, and cumulative GPA at the end of the P2 Year, and the end of the P3 Year. The IPBP students performed better than traditional students in average percent of block grades [88.0% vs 86.8% ($p=0.02$)], with a cumulative GPA of 3.37 vs 3.27 ($p=0.05$) at the end of their P2 years, respectively. However, we observed no better academic performance among IPBP cohorts than traditional students at the end of the P3 year.

Pass rates, total scores, and area scores for NAPLEX, were also compared for the classes of 2010 through 2013 for both tracks. As shown in Table 5, while there was no difference in the NAPLEX pass rates for the programs, IPBP cohorts consistently achieved a 100% pass rate on this examination. The IPBP cohorts outperformed their traditional counterparts in average total scaled score, 115.1 vs 107.6 ($p<0.001$), in area 1 scores, 13.6 vs 13.1 ($p=0.013$), and in area 2 scores, 13.5 vs 12.5 ($p<0.001$), respectively. No significant difference was noted in area 3 scores.

FUTURE OF THE IPBP PROGRAM

While the downturn in the applicant pool for the IPBP program appears to parallel the trends observed in the traditional program, the reasons for this phenomenon are unclear. We speculate that many countries around the world now following the US PharmD model are rapidly changing their structure from 4-year to at least 6 years of pharmacy education. This change in the education model may have dissipated interest in the IPBP program because

foreign graduates of pharmacy immigrating to this country theoretically would be able to complete licensure requirements without having to receive additional years of pharmacy education. Other factors that may be playing a role in the current downward trends are the high standards for admission into the IPBP program, in that applicants can apply for several years without securing a seat. This also may be compounded by other factors such as limited job opportunities, high cost of education, and personal and life issues. Notwithstanding these issues, the college is still able to retain 20 highly qualified students in the IPBP program each year, and this trend is expected to continue.

CONCLUSION

The IPBP program has been successful at WesternU, as evidenced by its 11 years of history. Quality

Table 5. International Postbaccalaureate Doctor of Pharmacy (IPBP) NAPLEX Performance Scores and Comparison with Traditional PharmD Program (Classes of 2010-2013)

Class of 2010 – 2013	Traditional PharmD (n=414)	IPBP (n=71)	<i>p</i> Value
NAPLEX	97.6	100	=0.37
Passing (%)			
Total Scaled Score			
mean (SD)	107.6 (1.6)	15.1 (13.4)	< 0.001
AREA 1 Score mean (SD)	13.1 (1.1)	13.6 (1.0)	= 0.013
AREA 2 Score mean (SD)	12.5 (1.4)	12.5 (1.4)	< 0.001
AREA 3 Score mean (SD)	13.1 (1.8)	13.5 (2.2)	= 0.14

maintenance is the main reason for the success of the IPBP program. Assessment data demonstrates IPBP students outperform traditional students in the didactic component of the program. The group has collectively receives a 100% pass rate for the NAPLEX examination. The program consistently produces practitioners who go on to assume important positions in pharmacy practice and academia. The long-term future of the program is unknown; however, the reputation of the program and its graduates provide evidence of its value to ensure the continued success going forward.

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