Association of Faculties of Pharmacy of Canada

Background Paper

The "Entry-Level" Doctor of Pharmacy (Pharm.D.) Degree Issue for Schools of Pharmacy in Canada

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Entry-Level PharmD Issue in Canada Background Paper

Executive Summary

In 1989, the American Council on Pharmaceutical Education (ACPE), the accrediting body for pharmacy degree programs in the US, issued notice of intent to change its standards for the two existing programs leading to the professional degrees in pharmacy (i.e. the B.Sc. and the Pharm.D.). This notice involved the proposal to converge the two existing program standards into the framework of a new doctor of pharmacy program which would then become the only professional degree standard eligible for accreditation for schools of pharmacy in the US. After July 1, 2000 application for accreditation by ACPE of the

professional pharmacy degree program will only be accepted for US schools offering the "entry-level" Pharm.D. program.

Since Canadian institutions--economic, educational, cultural, and many others, are profoundly influenced by US policies and practices, this major change in pharmacy education in the US must now be closely examined and debated by all members of the pharmacy community in Canada in order to determine whether a similar change should be proposed for schools of pharmacy in Canada.

The academic preparation and resulting credential necessary for the practice of pharmacy has evolved in both Canada and the US from apprenticeship training arrangements, to trade diploma programs, and finally to 3, 4, 5 and now 6 year university degree programs over the past 75 years.

The arguments driving the debate and eventual decision to move to the Pharm.D. curriculum as the first degree in pharmacy have focused on several related themes. There are demand side reasons that conclude that existing or near future pharmacy practice in Canada needs more highly educated graduates in order to serve society in reducing the prevalence of drug-related problems and ensuring optimal use of public and private expenditures on pharmaceuticals. There are supply-oriented arguments that state the pace of change across the profession to a higher standard or quality of pharmacy practice (i.e. pharmaceutical care) needs to increase and that process could be facilitated by an educational system that only supplies Pharm.D. trained graduates to the profession. Finally there are assertions that Canadian pharmacists should receive comparable academic preparation to US pharmacists from a North American harmonization and continental trade in goods and services perspective.

The veracity of these positions is difficult to measure. Several studies have attempted to compare differences in the job functions, attitudes and job satisfaction of pharmacists holding either B.Sc. or Pharm.D. qualifications. The results are equivocal for the typical work settings of most pharmacists. Clearly, a change in the education preparation of pharmacy graduates in Canada would have significant implications for universities, for students, and for the profession. Most provinces and universities have formal review procedures that would have to be followed in order to make a change in the degree requirement for pharmacy education.

Issue for Discussion: Should Canadian schools of pharmacy convert existing B.Sc.degree programs (typically 5 years of post-secondary education, e.g. "1+4" or "2+3") into "entry-level" Doctor of Pharmacy degree programs (typically 6 years of post-secondary education, e.g. "2+4")? The Pharm.D. degree would probably then become the only educational credential available in Canada to prepare students to enter the practice of pharmacy? Further, the post-B.Sc. Pharm.D. program, as is currently offered at two universities in Canada would probably be discontinued or significantly modified.

What Has Prompted Discussion on this Question at this Time?

In 1989, the American Council on Pharmaceutical Education (ACPE), the accrediting body for pharmacy degree programs in the US, issued notice of intent to change its standards for the two existing programs leading to the professional degrees in pharmacy (i.e. the B.Sc. and the Pharm.D.). This notice involved the proposal to converge the two existing program standards into the framework of a new doctor of pharmacy program which would then become the only professional degree standard eligible for accreditation for schools of pharmacy in the US.

From 1989 to 1996, ACPE developed several versions of the proposed revision to its accreditation standards regarding the new Pharm.D. framework and carried out numerous consultations with professional and academic organizations in pharmacy in the United States in order to receive comment and recommendation on the new standards.

At the conclusion of its consultation process in June 1997, ACPE approved its new standards for the professional program in pharmacy leading to the Doctor of Pharmacy degree. The new standards will be effective starting July 1, 2000 and provide for a transition period to June 30, 2005 for all schools to comply with the new standards.

After July 1, 2000 application for accreditation by ACPE of the professional pharmacy degree program will only be accepted for US schools offering the "entry-level" Pharm.D. program.

Since Canadian institutions--economic, educational, cultural, and many others, are profoundly influenced by US policies and practices, this major change in pharmacy education in the US must now be closely examined and debated by all members of the pharmacy community in Canada in order to determine whether a similar change should be proposed for schools of pharmacy in Canada.

Chronology of Pharmacy Education in the United States

- 1920-30s—two and three year programs leading to a Ph.C. or Ph.G.
- 1940s—four year B.Sc. programs become the universal standard for entry to practice.
- 1950—*The General Report of the Pharmaceutical Survey* recommended the pharmacy curriculum be extended to six years leading to the Pharm.D. degree.
- 1950s—Ohio State University introduces a five year B.Sc. program (most other schools remain with the four year program).
- 1950s—USC and UCSF introduce entry-level Pharm.D. programs.
- Early 1960s—American Association of Colleges of Pharmacy adopt the five year program as the entry level degree policy.
- 1960s-1980s—wide spread availability of post-B.Sc. Pharm.D. programs.
- Mid 1970s—Univs. of Nebraska and Michigan introduce entry-level Pharm.D.
- 1980s—slow implementation of more entry-level Pharm.D. programs (B.Sc. still dominates as first professional degree by approx. 2:1 margin).
- 1990s—ACPE notice to revise standards to accredit only professional pharmacy programs awarding the Pharm.D. as the first degree credential greatly accelerates pace conversion for US schools of B.Sc. curricula into Pharm.D. programs as shown below:

Degree Program Offerings	Number of Schools (1996)	Number of Schools (1998)
Only B.Sc. as first degree	23	5
Both B.Sc. and PharmD as 1st degrees	17	19
Only entry level PharmD	40	56
Post-B.Sc. PharmD programs	57	57
Total Pharmacy Schools	80	80

Source: American Association of Colleges of Pharmacy. Vital Statistics, 1996 and 1998.

- Late 1990s—large number of remaining post-B.Sc. Pharm.D. programs likely reflect last entering classes of traditional post-B.Sc. Pharm.D. programs and implementation of "non-traditional" Pharm.D. programs geared to mid-career B.Sc. pharmacist wanting to enhance professional academic credentials.

Chronology of Pharmacy Education in Canada

- Pre-1930s—entry to practice via apprenticeships and programs affiliated with provincial universities.
- 1930-1950s—introduction of four year university B.Sc programs for entry to pharmacy practice, apprenticeships still exist in some provinces up to 1940s.
- 1930-1970s—technology school pharmacy diploma programs still in place in some provinces.
- 1960s—introduction of five year B.Sc. pharmacy programs
- 1960-1980s—2 year post B.Sc. Masters of Pharmacy programs available for pharmacists seeking to advance management/clinical academic credentials especially for hospital pharmacy.
- Late 1960s-1970s—hospital pharmacy residency programs introduced.
- 1980-1990s—entry to pharmacy practice only via B.Sc. pharmacy degree, all schools now standardized on five year program (i.e. 1+4 or 2+3).
- early 1990s—first post-B.Sc. Pharm.D. programs start at UBC and Toronto.
- 1990s—post B.Sc. diploma in community pharmacy practice introduced at Laval University.

- 1990s—community pharmacy residency programs reintroduced at two sites in Canada.
- 1994—first CCAPP accreditation surveys done for B.Sc. programs in Canada.
- 1998—AFPC publishes *Educational Outcomes for a Baccalaureate Pharmacy Graduate in Canada.*
- 1999—CCAPP approves standards for post-B.Sc. Pharm.D. programs.

International Adoption of the Pharm.D. Degree

The United States is the only western country that has moved to a universal acceptance of the six year Doctor of Pharmacy degree from all its universities as the sole credential for the professional program in pharmacy. The Pharmacy Examining Board of Canada is familiar with the use of Pharm.D. or D.Pharm. credential awarded for pharmacy studies in a few other countries in the world. PEBC considers the standard of pharmacy education and pharmacy curriculum in these countries to be marginally comparable to that in North American schools of pharmacy even at the B.Sc. level.

Supporting Arguments in Favour of the Entry-Level Pharm.D. Replacing the B.Sc.

The decision reached by ACPE in 1989 to revise its accreditation standards for US schools of pharmacy was prompted by its concern that public and academic interests were not being met by an accreditation process that accepted two distinct programs (i.e. curricula) for the professional degree study in pharmacy. While ACPE could have revised its standards around a B.Sc. framework, it chose the Pharm.D. curriculum and credential as the preferred educational approach for the professional degree program in pharmacy. This decision to go a six year curriculum seemed destined given the significant number of entry-level Pharm.D. programs in place in the US by the early 1990s. Accordingly, it is not surprising that other alternatives such as the B.Sc. program plus a one year residency, the B.Sc. program with a one year practice internship administered by the regulatory bodies (e.g. comparable to the articling year in law), or clinical master's degrees have never been closely examined. Similarly, a thorough top to bottom review to determine the optimal undergraduate course content possible within a five year time span has had little favour as schools try to "…protect the basic pharmaceutical science foundation of the curriculum".

A review of the professional literature, ACPE announcements, and opinions expressed by the schools of pharmacy that had introduced entry-level Pharm.D. programs reveals a number of consistent themes that were put forth to support the move from a five year B.Sc.-based pharmacy education to the six year entry-level Pharm.D. Many of these same arguments will be used by proponents in Canada to advance the issue as well in this country. The following assertions are frequently made to support the need to move to the entry-level Pharm.D. professional degree for pharmacy:

"Demand" Arguments:

1. *Existing pharmacy practice in Canada needs more highly educated graduates in order to serve society in reducing the prevalence of drug-related problems and ensuring optimal use of public and private expenditures on pharmaceuticals.*

Or (if 1. above is not true, then)

2. *Near term future (i.e. within 5 to 10 years) pharmacy practice in Canada will probably need more highly educated graduates.*

"Supply" Arguments(closely aligned with appeals to professional image/determination):

3. *The pace of change across the profession to a higher standard or quality of*

pharmacy practice (i.e. pharmaceutical care) needs to increase and that process could be facilitated by an educational system that only supplies Pharm.D. trained graduates to the profession.

And that,

4. *This increased supply of more highly educated graduates will lead to an enhanced perception of the value of the pharmacist in the eyes of the public.*

Pragmatic or Geographic Arguments:

5. Canadian pharmacists and pharmacy practice will not be able to have a different educational qualification once all of the US pharmacy schools have converted over to the entry-level Pharm.D. A retention of the B.Sc. program will impede the mobility of future Canadian graduates wanting to practice pharmacy (or study in residencies or fellowships) in the United States. This NAFTA/reciprocity/entry-to-practice harmonization rationale is occasionally stated as, "we don't have a choice—we just have to do it".

Profession and Faculty Self-Interest Issues (i.e. subplot themes):

6. Increase the sense of professional dignity and status of the pharmacist comparable to the other "doctor-titled" providers in the health care system (i.e. physicians, dentists).

And,

7a. A new pharmacy degree program will offer an opportunity to gain access to new financial resources for the faculty or school (i.e. increased tuition fee structure).

7b. The entry-level Pharm.D. will maintain or enhance the status of the pharmacy school as a professional/doctoral unit within the university.

7c. To be the first university in Canada to offer an entry-level Pharm.D. program

Commentary on Supporting Arguments

The literature and learned opinions of professional leaders over the past 20 years indicate that, in the United States context, it has been exceedingly difficult to prove the validity of arguments 1 to 5. The training programs for pharmacists have evolved from diploma and apprenticeship credentials into four and five year B.Sc.degrees and eventually into the six year entry level Pharm.D. over a period of 75 years in response to actual and anticipated practice changes. In a sense, one could argue that this change is just the next step in the natural evolution of the educational process for pharmacists in North America. It is quite probable that it will take the pharmacy practice performances of a generation of entry-level Pharm.D. graduates to provide the evidence to verify the claim that a need truly existed or that the public perception and professional image of the pharmacist was raised above that attainable with a B.Sc. education. The nature of the entry-level debate during the 1990s, therefore, has largely turned on emotive appeal, professional vision and destiny, and the personal conviction and credibility of academic and professional leaders supporting the change.

While the universities in Canada have initiated the entry-level Pharm.D. dialogue at this time in response to their interpretation of the health care and economic environments facing the profession, each member of the pharmacy community in Canada (i.e. community pharmacy employers, hospitals, regulatory bodies, professional associations, accreditation bodies, industry, government agencies, public and private sector drug benefit programs, etc.) must offer their expert insight to support or refute the specific claims made about the entry-level Pharm.D. issue.

Comparison of the B.Sc. Entry-Level Pharm.D. and Post-B.Sc. Pharm.D. Curricula

The entry-level Pharm.D. question tends to be often reduced to an appraisal of the degree title only. However, the issue actually comprises two clearly related but distinct considerations. The first issue, and perhaps the more important educational concern, is the nature and extent of the curriculum and learning outcomes changes to be proposed for the professional pharmacy program. Undergraduate pharmacy curricula in Canadian schools of pharmacy are under constant review and major curricular revisions tend to be introduced every 8 to 10 years. Many of the curriculum enhancements (e.g. depth and breadth of content areas, student assessment methods, experiential clerkships, instructional approaches, etc.) that are contemplated within this issue are achievable through modifications to the present undergraduate pharmacy program B.Sc. structure.

The second question then, becomes the actual degree title awarded at the completion of the program. If Canadian schools were to follow the US standards for the entry-level program, the curriculum for the professional program in pharmacy will require a minimum of four academic years. These programs *infer* that the pre-pharmacy study to enter the program will be minimum of two years. The resulting six years of post-secondary education is deemed in the US to be sufficient to have earned and be awarded a doctoral titled degree in the US (n.b. some precedents had already existed with the J.D. degree, juris doctor, for law studies). It should be noted, however, that there are several degrees at the bachelor's level awarded in Canada after six or even seven years of post-secondary education (e.g. law, social work, secondary teacher education--although the specific requirement may vary across universities and across provinces) and that professional master's degrees (e.g. speech/audiology, library studies, journalism) typically total six years of university education. Further, some allied health disciplines (e.g. optometry, chiropracty) award a doctor-titled degree after six or seven years of university education.

Figure 1 summarizes the curricular content areas of the three existing professional programs in pharmacy as defined by the relevant accreditation standards. Figure 2 summarizes the nature of the structured experiential (clerkships) training components of the three existing degree programs as defined by the relevant accreditation standards in Canada (CCAPP) and the US (ACPE). From these two figures, the curricular differences in course content and experiential clerkships in the three programs are readily apparent.

The additional academic year for the entry-level Pharm.D. program compared to the B.Sc. program is used to offer an additional term (approx. 12-15 weeks) for further depth/breadth of classroom content knowledge and skills development as well as for an additional term of experiential clerkships. The experiential clerkships in the entry-level Pharm.D. program have a predominant community pharmacy emphasis. The first year of classroom teaching in the post-B.Sc. Pharm.D. provides considerably greater depth of instruction in pharmacotherapeutics, pharmacokinetics, pathology, and clinical research/critical appraisal than that in the entry-level Pharm.D. The experiential clerkships in the post-B.Sc. have a predominant advanced practice acute care emphasis.

Most will acknowledge that the entry-level Pharm.D. program is a more comprehensive program than the five year B.Sc. program and produces a graduate that is generally more skilled and ready to start practice. Others have commented that the Canadian B.Sc. program plus a one year residency produces a pharmacist that is comparable to the entry-level Pharm.D. of US schools. Most good post-B.Sc. Pharm.D. programs prepare graduates that are considerably better advanced clinical practitioners than the entry-level version, especially for acute care practice.

Figure 1. Course Content Curricular Requirements as Defined by CCAPP (B.Sc. and post B.Sc PharmD programs) and ACPE (entry-level PharmD program)

B.Sc in Pharmacy

Pre-pharm science (1 yr)

Professional Progr (3.5yr)
Includes:

- Biochemistry
- Biostatistics
- Physiology
- Pathology
- Anatomy
- Microbiology
- Immunology

- Pharmaceutics
- Physical chemistry
- Biopharmaceutics
- Pharmacokinetics
- Medicinal chemistry
- Pharmacology
- Toxicology
- Pharmaceut. Analysis

- OTC/self-care
- Therapeutics
- Drug information
- (clin) Pharm Practice
- Pharm. Management
- Law/ethics
- Social/behav pharm.

Entry Level Pharm.D

Pre-pharm science (2 yr)

Professional Prog (3 yr)
Includes:

- Biochemistry
- Biostatistics
- Physiology
- Pathology
- Anatomy
- Microbiology
- Immunology
- Molecular biology

- Pharmaceutics
- Physical chemistry
- Biopharmaceutics
- Pharmacokinetics
- Medicinal chemistry
- Pharmacology
- Toxicology
- Pharmacognosy

- OTC/self-care
- Pharmacotherapeutics
- Drug information
- Pharmacy practice
- Pharm Management
- Law/ethics
- Social/behav pharm.
- Pharm/Hlth economics
- History of pharmacy
- Drug administration
- Epidemiology
- Pediatrics/Geriatrics
- Nutrition
- Health Promo/prevntn
- Physical assessment
- Clin. Lab. Medicine
- Disease state mgmt
- Outcomes documentn.
- Parenteral compounding
- Clin. Pharmacokinetics

B.Sc.(Pharm.) req'd

Professional prog (1 yr)
Includes:

- Adv. Pharmacotherapy
- Adv. Pharmcokinetics
- Clin. Pharmacokinetics
- Biostatistics
- Clinical Research
- Phys. (patient) assessment
- Pathology
- Pharm. Management
- Evidence-based medicine
- Critical appraisal
- Health care systems
- Teaching techn. (varies)
- Pharmaceutical care

Post B.Sc Pharm.D

Figure 2. Experiential Training (Clerkship) Requirements of the Three Degree Programs as Defined by CCAPP, ACPE and Specific Canadian University Programs

B.Sc.(Pharm.)	Entry-level Pharm.D.	Post-B.Sc. Pharm.D.
Pre-final year (~4 wks) • Not defined	Pre-final year • Introductory practice experiences (duration and type not defined)	
Final year (12 weeks minimum) • Community pharmacy • Hospital pharmacy • Long term care	Final year (24 to 30 wks) • Core rotations: -inpatient (acute care, chronic, preventive care, general medicine) -ambulatory (esp. community pharmacy) -non-patient care experiences (e.g. research and mgmt.) -drug information -managed care -home health care • Selective rotations: -not defined	Final year (48 wks) • Core rotations (acute care emphasis): -general medicine -intensive care -infectious diseases • Core rotations (other): -ambulatory care -drug information • Elective rotations (often acute care emphasis): -research (may be core) -psychiatry -pediatrics -neurology -emergency medicine -cardiology -transplantation -industry -government -community pharmacy -administration
Total: 0.5 academic year	Total: 1 academic year	Total: 1+ academic year

Concerns Voiced About the Entry-Level Pharm.D. Program

The arguments expressing concern or opposition with proposals to introduce the entry-level Pharm.D. program in Canadian schools of pharmacy are of two types.

1. **Professional or Societal Need:** These views essentially dispute the validity of the claim that a professional or societal need exists at this time for more highly educated pharmacists trained in six year Pharm.D. programs. It is argued that the nature of pharmacy practice in most practice sites (both community and hospital pharmacies) is well-addressed by the knowledge level and competencies of the current B.Sc. graduate. This view does not argue against continuing to make incremental improvements in the B.Sc. program, but it does not accept the need for a major change leading to the entry-level Pharm.D.

   These views also dispute the claim that the pace of change in practice quality and standards (e.g. greater skills in identifying and resolving drug related problems, ensuring optimal use of public and private expenditures for pharmaceuticals, etc.) can be accelerated through a supply of a new type of graduate. They would state that practice change in Canada is largely influenced by professional and economic incentives, market structures in community pharmacy, and the motivation and personal commitment of current B.Sc. pharmacists. The validation of professional or societal need has also been hampered by the absence of formal national workload or workforce planning data for pharmacists and the paucity of good studies documenting the clinical or economic impact of pharmacists' interventions on population health in Canada.

   It is also stated that an improved public image of the pharmacist has to be earned through the provision of competent, patient-focused pharmacy services and that it can not be achieved solely through a change in the educational process or the doctor title. It is also difficult to predict how other doctor-titled health professionals will change their level of respect for pharmacists with this change. Finally, the pharmacy regulatory bodies in Canada and the US are better positioned to judge whether Canadian pharmacists will be faced with a mobility problem if they do not possess a Pharm.D. credential for licensure.

2. **Implementation and Resources Issues and Other Peripheral Effects:** These concerns are often voiced as questions regarding the ability of Canadian schools to make this change; the impact on current and future students and current pharmacists; predictions of undesirable consequences on particular segments of the profession; and questions to which there are no clear answers at this time. These issues include:

   Implementation, Resources and University Issues:

   - Do Canadian schools of pharmacy have the resources and complement of faculty to teach a six year program? Canadian schools have an average of about 27 fulltime and part-time faculty (range: 13 to 46 faculty across the nine schools), while US schools have about 47 full and part-time faculty. While Canadian undergraduate enrolment per school is smaller than the US average, this fact alone does not account for the proportionately much lower faculty totals in Canada.

   - Would Canadian schools have to reduce student enrolment levels per class if they went to the entry-level Pharm.D. in order to maintain the required programmatic quality?

   - Do Canadian schools have access to sufficient numbers and breadth of good quality clerkship sites and clinical instructors in hospitals and community pharmacies whose practices could support the level of teaching expected for Pharm.D. students? Should Canadian schools attempt to develop an experiential clerkship year that is modeled on the current post-B.Sc. PharmD (i.e. an acute care orientation with several "medical specialty" opportunities) or rely largely on primary care/community pharmacy clerkships augmented by selected general pharmacy practice experiences in hospitals?

- Would Canadian universities and ministries of advanced education approve a "doctor-titled" degree after only six years of post-secondary education?

- Would Canadian schools of pharmacy be able to raise tuition fees to the point necessary to obtain the additional resources required for Pharm.D. teaching?

- Could two or three schools implement an entry-level Pharm.D. program without effecting the B.Sc. programs at the remaining schools in Canada?

- What type of academic program would be necessary to train advanced clinical practitioners or clinician scientists to replace the existing post-B.Sc. Pharm.D? Clinical PhD? Fellowships?

- Should Canadian schools of pharmacy introduce four year B.Sc. programs in pharmaceutical science that would be suitable preparation for those students interested in graduate studies but would not be eligible for licensure as a pharmacist?

- Could a reduction be anticipated in the numbers (and disciplinary area preferences) of future Canadian pharmacy graduates wanting to pursue graduate work in the pharmaceutical sciences outside of clinical pharmacy and pharmacy practice fields?

Student Impact:

- Increased tuition fees
- Additional year of university education and loss of one year potential income earning with no assurances of increased salaries to compensate.
- Potential for great variability in quality of clerkship sites and likelihood of having to consider more remote or rural clerkship locations away from the University.
- Will the longer time to earn the degree drive some of the applicant pool into other health programs (e.g. medicine, dentistry)

Impact on Current Pharmacists and Pharmacy Operations:

- Would current pharmacists have access to suitable "non-traditional" Pharm.D. programs at Canadian schools of pharmacy to improve their academic credentials at a reasonable cost and allowance for prior learning and current work commitments (i.e. as have been set up in US schools)?

- What effect would a reduction in the total number of Canadian pharmacy graduates have on workforce supply to meet the needs of labour markets for community and hospital pharmacies? Are technologies (or other personnel) available that could be introduced to maintain productivity in technical/dispensing functions if the numbers of graduating pharmacists from Canadian schools was reduced?

- Would the Pharm.D. credential increase prevailing pharmacist salaries across Canada?

- Would the professional reputation of current post-B.Sc. Pharm.D. graduates be "degraded" by an influx of entry-level Pharm.D. graduates?

- Would career or practice opportunities for current B.Sc. pharmacists be impeded by the lack of the Pharm.D. credential?

- How would the provincial regulatory bodies revise Pharmacy Acts to reflect the new entry to practice degree title? And would these changes effect the ability of current B.Sc. pharmacists to gain relicensure

over the long term? Would there be a reduction in the number of non-Canadian/non-US educated pharmacists applying for licensure (registration) in Canada.

- How concerned should Canadian schools of pharmacy and regulatory bodies be about establishing educational and licensing standards that enhances the opportunity for Canadian pharmacists to practice in the US?

- How would pharmacy technician roles change if pharmacists from entry-level Pharm.D. programs engaged in higher quality pharmaceutical care services? What changes might be required in technician training programs?

- Would entry-level Pharm.D. graduates be more likely to become dissatisfied with the profession if pharmacies did not provide practice opportunities that utilized the increased level of education of the pharmacist?

- Will a more highly trained pharmacist necessarily ensure increased levels of reimbursement for pharmacist services from the public or third party payers or open up an array of new reimbursable services for pharmacies?

Literature Measuring the Effect of Entry-Level Pharm.D. Graduates in Practice

In order to support or refute some of the arguments put forward about the impact of these graduates on practice, a number of studies have attempted to assess or compare the effect of graduates holding an entry-level Pharm.D. credential against those with other educational qualifications in pharmacy. As schools of pharmacy in California have been graduating "entry-level" first degree Pharm.D. pharmacists since the early 1960s, several of these studies have looked for professional qualities that might distinguish California school graduates from practitioners holding other educational credentials from non-California universities.

A study published in 1984 compared the practice patterns and job satisfaction of a sample of first pharmacy degree Pharm.D. graduates (classes of 1973, 1978 and 1982) from two California pharmacy schools with a sample of post B.Sc. Pharm.D. graduates (same class years) from schools in seven other states (Carroll, Erwin and Beaman, 1984). The authors reported that the California graduates were more likely to be working in community and hospital pharmacies in staff rather than clinical positions. The post-B.Sc. Pharm.D. graduates from the other schools had a greater probability of employment as a "clinical" pharmacist, a pharmacy school faculty, or in a director of pharmacy position in a hospital. The data from a job satisfaction questionnaire indicated that California graduates had lower job satisfaction and that this could be attributed to the higher level of drug distribution responsibilities expected of community and hospital staff pharmacists.

Data from a sample of 1970-1981 entry-level Pharm.D. graduates from the University of California at San Francisco (UCSF) surveyed to identify practice patterns, attitudes and job satisfaction was reported in 1985 (Koda-Kimble, Herfindal, Shimomura, Adler, and Bernstein) and revealed somewhat different findings than the Carroll et al. study. Sixty-three percent of respondents were satisfied with their choice of pharmacy as a career. Sixty-four percent of respondents identified themselves as hospital pharmacists with 19% in community pharmacy and 7% in university faculty positions. The authors did not indicate whether this response pattern was representative of the distribution of pharmacists in California but it is probable that hospital pharmacists were over-represented in the respondents by a significant margin.

Ried and McGhan (1986) also reported on practice patterns and job satisfaction of California pharmacists holding either the B.Sc degree or Pharm.D. degree from data collected in a 1982 survey. Although not clear from the paper, it is assumed that those reporting having earned a "Pharm.D." are graduates of "entry-level", 6 year programs rather than post-B.Sc. programs. For respondents who reported to be "practicing" pharmacists, 87% of the B.Sc.graduates

were in community pharmacy with 13% in hospital pharmacy. Fifty-six per cent of the Pharm.D. graduates were in community pharmacy and 44% were in hospital practice. With reference to work activities performed (i.e. prescription processing, patient care, management, teaching, etc.), the authors noted that the Pharm.D. and B.Sc. level pharmacists' estimates of the amount of work time spent in various job activities was similar when age and gender were statistically controlled. They concluded that if the Pharm.D. was the universal entry level degree, then pharmacists would spend about the same amount of time in the activities they are now performing as B.Sc. level practitioners. They also reported that the level of job satisfaction did not appreciably differ among holders of the two degrees and that the factors most significant in influencing job satisfaction were the activities associated with the specific job and not the fact that the responding pharmacist had one degree or the other.

Cox and Carroll (1988) attempted to broaden this analysis by comparing the practice patterns and job satisfaction of state of Georgia B.Sc. pharmacists against entry-level Pharm.D. graduates from two California schools of pharmacy. The statistical analysis attempted to control for gender and age as it was suggested that these two variables could influence work activities and job satisfaction. In a breakdown by the two primary practice settings, 74% of Pharm.D. respondents worked in hospital pharmacy, while 73% of the B.Sc. respondents practiced in community pharmacy. In community pharmacy practice, both Pharm.D. and B.Sc. pharmacists spent the greater proportion of their work time involved in drug distribution. Interestingly, Pharm.D. respondents (i.e. California graduates) devoted significantly more time in this area while the B.Sc. respondents (i.e. Georgia pharmacists) spent more time in direct patient care than the Pharm.D. pharmacists. In hospital pharmacy practice, again both Pharm.D. and B.Sc. pharmacists devoted most of their time to drug distribution activities. Pharm.D. respondents, however, devoted more time than B.Sc. graduates to direct patient care in the hospital setting. Both Pharm.D and B.Sc. respondents expressed satisfaction with their jobs and no significant difference was reported between hospital and community pharmacists.

The views collected from a survey of 422 pharmacists in Kentucky on the importance of the major practice activities performed by most pharmacists and their perceived level of competence to perform these activities upon graduation was reported by Smith, Coons and McQuinn (1990). Pharm.D. graduates were not well represented in the survey and, for those with this degree, the proportion with entry-level to post-B.Sc. was not indicated. Seventy-one percent of respondents practiced in community pharmacy and 24% indicated hospital practice. With the exception of compounding, respondents indicated the importance of 19 other practice activities exceeded their level of competence to perform these activities upon graduation. The largest discrepancy in congruence between importance and perceived competency for respondents was in management activities.

The study that probably comes closest to addressing the primary question of the effect of educational qualifications on practice was reported by Barnett and Matthews (1992). They surveyed 1979-1988 graduates of Mercer University (Georgia) holding B.Sc., post-B.Sc. Pharm.D. and entry-level Pharm.D. degrees to examine employment characteristics, work activities and job satisfaction. Fifty-four percent of B.Sc. respondents reported working in community pharmacy with 19% in hospital practice and 27% in other settings (e.g. industry, nursing homes, government, academia, etc.). Forty-six percent of the entry-level Pharm.D. graduates worked in community pharmacy, 30% in hospital pharmacy and 24% in other types of practice. Only 12% of the post-B.Sc. Pharm.D. degree respondents worked in community pharmacy while 47% worked in hospitals and 41% in other settings. Pharmacists holding any one of the three degrees spent a similar amount of time in direct patient care (22-28%) and drug information (14-18%) activities. Also, the proportion of time in drug distribution for B.Sc. graduates (43%) was similar to the entry-level Pharm.D. graduates (38%). Post-B.Sc. Pharm.D. holders spent much less time in drug distribution tasks (23%) than pharmacists with the other two degrees and considerably more time in teaching (13%) and research (11% of the time) than the others. No significant difference in job satisfaction opinions was observed between the three degree options.

B.Sc. (classes of 1985 and 1986) and entry-level Pharm.D. (classes of 1988-90) graduates of the University of Illinois at Chicago were surveyed to determine practice area, practice activities and attitudes (Fjortoft and Lee, 1995). Work setting distribution of graduates in this study was similar to the Barnett and Matthews results with fifty-one percent of B.Sc. respondents working in a community pharmacy setting and 40% in hospital pharmacy.

Thirty-seven percent of Pharm.D. graduates were working in community pharmacy with 42% in hospital practice. When all practice settings were considered, B.Sc. holders spent more time in prescription processing activities than Pharm.D. graduates (55% vs 44% of time). Pharm.D. graduates spent more time in clinical activities than B.Sc. pharmacists (30% vs 20% of time). B.Sc. pharmacists spent about 5% of their time teaching colleagues and students, while Pharm.D. respondents allocated 10% of their time to teaching. In hospital pharmacy, Pharm.D. graduates devoted 34% of their time to prescription processing and an average of 36% of their time in clinical activities. For all respondents, the B.Sc. and Pharm.D. graduates were comparable in terms of professional commitment and extrinsic (derived from e.g. wages, hours, working conditions) job satisfaction. However, Pharm.D. pharmacists derived more intrinsic (e.g. job content) job satisfaction from their work. For community pharmacists alone, no differences were seen between B.Sc. graduates and Pharm.D. graduates in commitment or job satisfaction.

Whether any of these studies are instructive to Canadian pharmacy education in this issue is debatable. All studies suffer from the usual limitations of survey methodology (e.g. sample size, sample representation, validated instruments, etc.). In addition, changes to the professional environment over the time span of several of these studies also restrict their usefulness. Several of the studies involved pharmacists who graduated during the early years of the "clinical pharmacy" movement but none of them can claim to include pharmacists whose practice environment has been shaped by the a "pharmaceutical care" model of practice or any of the other major economic, business or pharmacy trends of the 1990s. The only conclusions that can reasonably be drawn from these studies are that the job activities and professional satisfaction of B.Sc. and entry-level Pharm.D. pharmacists are not significantly different in most practice settings, and that post-B.Sc. Pharm.D. pharmacists generally have different practice roles than entry-level Pharm.D. graduates.

Process for Degree Requirement Change and Timeline

The path for any Canadian Faculty or School to convert the professional program for pharmacy from a B.Sc. to the "entry-level" Pharm.D. degree would involve a lengthy and complex process. Many levels of approvals and consultations would be required in the planning process. For most schools of pharmacy in Canada this process would normally involve:

- Curriculum committee program design at the school level (students and external professional members are frequently represented on this committee)
- School/Faculty council approval (usually includes some external members)
- University Senate or Senior Academic council curriculum committee approval
- University Senate or Senior Academic council approval (usually includes some public representatives)
- Provincial government Ministry of (Advanced) Education or University Presidents' coordinating council for new degree program review

External consultations, planning coordination, and curriculum input to support the above approval activities would be required from the following sources:

- Provincial pharmacy regulatory authorities (define educational qualifications for pharmacist registration)
- NAPRA and PEBC (set national educational standards for entry to practice and examinations)
- CCAPP (sets accreditation standards for the academic program in pharmacy)
- AFPC (provides curriculum guidance to pharmacy Faculties and Schools)
- Professional organizations, employers, and individual pharmacists

It is clear that in most Canadian provinces, a proposal to change the degree credential to enter the practice of pharmacy would have to be supported by sound academic planning arguments. The case would have to be founded on evidence that demonstrates significant societal benefit or need in terms of the health care role of pharmacists and

the limitations of the present design for the pharmacy curriculum. Certainly, policy-makers and administrators in higher education and government are aware of "credential inflation" occurring in some occupations in the health care field as well as in others, so that an initiative solely based on professional or school "self-interest" is not likely to succeed.

Should such a decision be made, the planning and implementation time horizon to change the degree program in pharmacy from a B.Sc. to an "entry-level" Pharm.D. curriculum is highly variable. In the US, ACPE gave schools of pharmacy eight years to comply with the new degree requirement once the accreditation standards were approved. The actual time period from the ACPE original notice of intent to change the standards to the eventual termination of any remaining B.Sc. programs will be about 11 to 13 years. Indeed, the Pharm.D. conversion in the US will have taken close to 40 years if one considers the implementation of the first entry-level programs in the early 1960s as the start of the process.

The systematic planning and implementation process for any Canadian school embarking upon such a change would likely take eight to ten years from the decision date to the graduation of the first class of the new degree. While the academic program itself would consume six years of this period, a lead-in period of an additional two to four years would be required to design the program and to provide sufficient notice and information to senior high school students contemplating pharmacy studies. Shorter implementation periods are possible, however. While most schools would likely take advantage of this change to introduce a "top to bottom" curriculum revision, some schools may feel they already have the basic pieces that will fit together to create a standard Pharm.D. program (e.g. good B.Sc., clinical clerkships and existing masters or residency-type programs). A school in this position, operating within a university or province with less rigorous new degree approval requirements, and not seeing a need to alert high school students to the degree change well before implementation could probably "fast track" the first graduates out of the school in two to four years from now.

The issue of a year with no graduates is occasionally raised when the change from a 5 year B.Sc. format to a 6 year Pharm.D. format is contemplated. Should Canadian schools decide to implement this change several scenarios are possible. Canadian pharmacy schools currently graduate about 800 B.Sc. students each year in class sizes ranging from 30 to 140 graduates. Assuming most graduates become registered as pharmacists, and with about 23,000 pharmacists in Canada, Canadian schools of pharmacy therefore add about 3.5% more to the stock of total pharmacists each year. Should a school decide to terminate admissions to its B.Sc. program in one year and then open admissions to year one of its first PharmD class in the next year, then that school would have a year of no graduates the year following the graduation of its last B.Sc. class. It is likely that the transition to a new degree program in Canada would follow a similar pattern to that experienced in the US. That is, this conversion was introduced by each of the 50 schools affected across the country in different years over a time span of 10 years. Nationally, there was never a year when no graduates were produced, although there may have been various states or regions that had to adjust to that experience. Similarly, while a particular province may be hurt by the absence of a graduating class in one year from its school of pharmacy, the impact of that school's loss on a national scale would be relatively insignificant. Other transition approaches are possible. Indeed, a school in its last two years of admissions to its B.Sc. program could also begin to admit students to year one of a new Pharm.D. program in such a proportion that could maintain a flow of graduates with little or no disruption at all.

Given the circumstances of the late 1990s concerning shortages of pharmacists in certain regions of Canada, a more relevant issue to consider is the total number of students admitted to pharmacy programs in the long term to meet the needs of the profession and broader health care trends. Indeed, many US schools have reduced enrolments with the introduction of entry-level PharmD programs (due to higher teaching costs and program resource requirements) which has exacerbated workforce supply concerns. In would be unfortunate if an unnecessary level of attention was directed at one short term problematic feature (i.e. a potential reduction in graduates in one year) associated with a transition period to the entry level PharmD program. Clearly, it is the determination of optimal enrolment levels, the ideal curriculum of study for future pharmacists, and the capacity of the Canadian university system to produce adequate numbers of pharmacy graduates to meet regional and national needs in the long term that are the more pressing questions in this debate.

Summary

The experiences of colleges of pharmacy and the profession in the United States as the transition is made from the B.Sc to the entry-level Pharm.D. can provide useful information for the pharmacy community in Canada as it considers this issue. However, significant differences between the two countries exist in matters such as the historical development of various degree programs, financing of the health care systems, private enterprises and competitive markets permitted in the respective health care systems, government roles, schools of pharmacy budgets and resources, approval process for new degree programs in post-secondary institutions, and in other areas suggest that Canadian pharmacy academic and professional leaders will have to assess the merits of the entry-level Pharm.D. and its implications for the profession from a unique Canadian perspective.

Entry-Level Pharm.D. Degree Issue in Canada
Background Paper

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