Pharm.D. Update, eh.
Overview

• History of the United States Pharm.D. degree

• History of Pharmacy Education in Manitoba

• Canadian Overview: What are Other Universities Doing?

• A Sample Pharm.D.Curriculum (E2P)
A Brief American History of the Pharm. D. Degree

- **Prior to 1900’s** – no standard requirements, apprenticeship to pass board exam only Graduate in Pharmacy (PhG) Pharmaceutical Chemist (PhC)

- **1892** – University of Wisconsin offered first BSc Pharm

- **1910** - Flexner Report declared “Pharmacy is not a profession”

- **1915** First PharmD Awarded in USA for 4 years of College

- **1923** – Led to revision of pharmacy standards: minimum 4 years post high school required for pharmacy degree
A Brief American History of the Pharm. D. Degree

- **1925** – BScPharm offered with 3-4 years education, PharmD degree offered with at least 3 years of graduate work (total 7 years)

- **1927** – AACP outlined “Basic material for a Pharmacy curriculm,” defined a 4 year college minimum

- **1932** – ACPE formed, first accreditation body

- **1938** – PharmD degree discontinued
A Brief American History of the Pharm. D. Degree

• **1946-1948** – “The Pharmacy Survey” to determine future directions of pharmacy education

• **1948** – PharmD reinstated as a 6 year program (2 + 4 years). University of Southern California 1st to convert

• **1961** – University of Michigan offered 1st Post-Bac PharmD

• **1965** – 5-year BSc Pharm became minimum standard
A Brief American History of the Pharm. D. Degree

• **1965 continued** – PharmD now offered several ways:
  – Entry-to-Practice degree
  – Post-Bac (1-3 years)
  – “track in” program offered to top BSc Pharm students

• **1970-1985** – shift from dispensing to informative and patient-centred roles.

• **1975** – Millis Commission's Report: clinical profession, practice sites, national board exam
A Brief American History of the Pharm. D. Degree

• **1987** – concept of pharmaceutical care coined, rekindled the discussion of pharmacy curricula

• **1989** – ACPE issues “Declaration of Intent” to implement/accredit only entry-level PharmD programs (2 + 4 years) with a goal of transitioning by the year 2000

• **1990** – Non-Traditional PharmD programs began

• **1993** – ACPE released PharmD accreditation standards

• **2005** – All US graduates received PharmD degrees

• **2013** 12,000 Pharm.D. graduates
Today: Pharm. D. in the USA

• 129 schools of pharmacy (ACCP website)

• Allow Canadians to pursue Pharm. D.
  – University of Florida
  – University of Colorado

*“Post-Bac” Distance Education Programs

http://www.aacp.org/about/membership/institutionalmembership/Pages/usinstitutionalmember.aspx
Pharmacy Education in Manitoba: A History

- **1878** – Manitoba Pharmacy Act
- **1885** – First pharmacists registered (MPhA)

- **1888** - Cost of tuition?
  - $25 for 3 courses: Chemistry, Materia Medica and Botany

- **1889-1894** – Manitoba Medical College allowed pharmacy students to attend lectures

- **1899** – 422 Notre Dame Ave, first Manitoba College of Pharmacy, first class graduated in (2 terms x 4 months!)
Pharmacy Education in Manitoba: A History

- **1902** – Committee from MPhA outlined pharmacy standards:
  - Affiliation with the University of Manitoba
  - Course Development: Bachelor of Pharmacy (Phm. B.) - 2 years
  - Candidates must pass an examination for competency

- **1914** – Pharmacy joined the University of Manitoba

- **1915** – Became the “Department of Pharmacy” at U of M

- **1916** – University Diploma in Pharmacy (3 year apprenticeship + 2 years university)
Pharmacy Education in Manitoba: A History

• **1922** – Needed more space! Moved to Broadway Campus

• **1929** – Became “Department of Pharmacy and Pharmaceutical Chemistry”

• **1940** – Bachelor of Science in Pharmacy (2 years apprenticeship + 3 years university) established

• **1945** – concept of “Continuing Education” lectures started

• **1949** – Moving again! To the Fort Garry Campus.

• **1951** – Became “School of Pharmacy”
Pharmacy Education in Manitoba: A History

- **1957** – Apprenticeship discontinued; BSc Pharm now a 4 year direct entry university program

- **1962** – New building! (Fort Garry Campus)

- **1965** – first Pharmacy Examining Board of Canada (PEBC) examinations

- **1970** – Became “The Faculty of Pharmacy” and 1 year-of pre-pharmacy studies in sciences required before admission implemented (1 + 3)
Pharmacy Education in Manitoba: A History

- **1975** – Clinical Pharmacy courses introduced: SPEP is born! (9 days in hospital, 14 days community pharmacy) and University Centre Pharmacy opened

- **1986** – Academic review of the Faculty Recommendations:
  - Relocation to medical campus should be investigated
  - Expand curriculum to 4 years
  - Preceptorship education program
  - **Pharm. D. program development**

- **1992** – 4-year training toward a BSc Pharm commenced (1 prerequisite + 4)
Manitoba Pharmacy Education:
In the last 10 years

- Increase in SPEP rotations
- Moved to Health Sciences Campus & New Facility
- Introduced Electives Program
- Inter-professional Education (IPE)
- Immunizations & Physical Assessment Courses
- Expanded Scope of Practice (Jan 2014)
New Accreditation Standards

- Entry-to-Practice Pharm. D. by the year 2020
- Increased experiential requirements (minimum 40 weeks)
- Expanded knowledge base/curriculum redevelopment
- Suggestions/criteria for admissions (non-standardized)
Present Day:
Canadian National Perspective
## Entry to Practice Degree: Pharm.D.

<table>
<thead>
<tr>
<th>Currently With Pharm. D.</th>
<th>Currently Without Pharm. D.</th>
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</thead>
<tbody>
<tr>
<td>Université de Montréal (2007)</td>
<td>Memorial University</td>
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<tr>
<td>Université Laval (2011)</td>
<td>University of Saskatchewan</td>
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<tr>
<td>University of British Columbia (1991)</td>
<td>Dalhousie</td>
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<tr>
<td>University of Alberta (2013)</td>
<td>University of Manitoba</td>
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<tr>
<td>University of Toronto (1991, 2011)</td>
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<tr>
<td>University of Waterloo (2014)</td>
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<tr>
<td>L'Université de Moncton-University of Ottawa (projected 2015)</td>
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</tbody>
</table>

* Has Pharm.. D. Post-Bac (2 years)
Registered Pharmacists (MPhA)

Practicing Pharmacists (MPhA)

Registered PharmDs

Practicing PharmDs

Oldest PharmD

Newest PharmD

21 practicing
12 Faculty at University of Manitoba
1 non-patient care
4 non-practicing
University of British Columbia

- **Current:**
  - BSc. Pharm (4 years)
  - 2-year Post-professional Pharm. D. degree (1991)
    - 8 months coursework
    - 12 months clinical rotations

- **In-development:**
  Entry-to-Practice Pharm. D. degree and a non-traditional Pharm. D. program
  - Annual Report 2012-2013
  - Strategic Plan 2012-2017

http://www.pharmacy.ubc.ca/aboutus/building
University of Alberta

- Current: BSc. Pharm degree (4 years)
- Upcoming Fall 2013: PharmD (+ 1 year) One dozen
- 2014-2015 Academic year
  - 4th year students
  - practicing pharmacists
  - 5 classroom courses (18 credits) in the fall term
  - up to 36 weeks experiential rotations
  - advanced placement E2P PharmD 2016 projected

http://www.pharm.ualberta.ca/
University of Saskatchewan

• **Current:**
  BSc. Pharm. (4 years)

• **In-Development:**
  Strategic Plan (2008-2012) mentions planning for Entry-to-Practice Pharm. D. (no specific dates)

http://www.usask.ca/pharmacy-nutrition/index.php
Current

- 4 Year BSc(Pharm) program Full Accreditation 2013-2019
- 1 year prerequisites
- Will increase pre-requisites to 2 years

- PharmD in development
- E2P and bridging 2020
- In Strategic Plan 2012-2017
University of Waterloo

- **Current:**
  - BSc. Pharm Co-Op Program (4 years)
  - 4 x 4 month work terms throughout program

- **January 2013 – approval for an Entry-to-Practice Pharm. D. program**
  - January 2014 Pharm. D. starts (class of 2017)

http://uwaterloo.ca/pharmacy/
University of Toronto

- **Current:**
  - “New” Combined BSc. Pharm/Pharm. D. (1 + 4 + 1) – since 2012
  - Entry-to-Practice Pharm. D. (2 + 4) – since 2012
  - Traditional Post-professional Pharm. D. (2 years)

- **Future plans?**
  - Traditional Pharm. D. → Masters/Fellowship Program
  - Bridging Program
University of Montréal

- **Current:**
  - Pharm. D. (4 years) – since 2007
  - Bachelor of Biopharmaceutical Sciences (BSBP) (3 years)

- Bridging program with Laval

http://pharm.umontreal.ca/accueil/
Université Laval

- **Current:** Pharm. D. (4 years) – since 2011

- **5 paths**
  - Regular path
  - International Profile (study abroad)
  - Entrepreneurial Profile (project)
  - International Health (10 weeks Africa/Latin America)
  - Scientific Culture and Research (research)
  - Bridging program with Montréal

http://www.pha.ulaval.ca/sgc/pid/13593
Partnership: Université d’Ottawa et Université de Moncton

• Possible Upcoming:
  – Pharmacy Education in New Brunswick (first pharmacy school)
  – French-language Pharm. D. program
  – Start: Fall 2015?
  – 2 + 4 program, with University of Montreal partnership in some distance-learning components?
  – Post-back + 1 online and experience with Laval and Montréal?
Dalhousie University

- Faculty of Health Professions (College of Pharmacy)
- **Current:** BSc. Pharm. (1 + 4 years)
- **In-Development:** No specific dates, planning for Entry-to-practice Pharm.D.

http://pharmacy.dal.ca/
Memorial University of Newfoundland

- Current: BSc. Pharm. (1 + 4 years)
- In-Development: No specific dates, planning for Entry-to-practice Pharm.D.

http://www.mun.ca/pharmacy/about/
Curriculum Example: University of Toronto

Entry-to-Practice Pharm. D.
### Year 1

#### Fall
- Anatomy/Physiology & Physical Assessment Lab
- Molecular Biochemistry and Immunology
- Molecular Pharmacology
- Health Systems 1
- Biostatistics and informatics
- Medication Therapy Management 1 & Skills Lab

#### Winter
- Anatomy/Physiology & Physical Assessment Lab
- Pathobiology and Pathology
- Kinetics and personalized medicine
- Social/Behavioural Health (service learning)
- Pharmaceutics & Lab
- Pharmacotherapy Module 1: Endocrine and Respiratory

- Jurisprudence
- Pharmacy calculations
- Language of Medicine
- IPE requirements
- Placements SPEP 160 hours (May-August)
<table>
<thead>
<tr>
<th>Fall</th>
<th>Winter</th>
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<tr>
<td><strong>Medication Therapy Management 2 &amp; Skills Lab</strong></td>
<td><strong>Microbiology of Infectious Diseases</strong></td>
</tr>
<tr>
<td><strong>Analytical Methods in Pharmaceutical/Medical Sciences &amp; Lab</strong></td>
<td><strong>Toxicology</strong></td>
</tr>
<tr>
<td><strong>Research Methods, Critical Appraisal and Evidence-Based Medicine</strong></td>
<td><strong>Pharmacoepidemiology and Pharmacoeconomics</strong></td>
</tr>
<tr>
<td><strong>Practice Management</strong></td>
<td><strong>Medication Therapy Management 3 &amp; Skills Lab</strong></td>
</tr>
<tr>
<td><strong>Pharmacotherapy Module 2: Musculoskeletal and Nephrology</strong></td>
<td><strong>Pharmacotherapy Module 4: Cardiovascular</strong></td>
</tr>
<tr>
<td><strong>Pharmacotherapy Module 3: Dermatology and EENT</strong></td>
<td><strong>Pharmacotherapy Module 5: Gastrointestinal and Hem/Onc</strong></td>
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- IPE requirements
- Service learning (160 hours)
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<th>Fall</th>
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<tr>
<td>Medicinal Chemistry</td>
<td>Pharm Sci/Med Sci Elective</td>
</tr>
<tr>
<td>Health Systems 2</td>
<td>Social Administration Elective</td>
</tr>
<tr>
<td>Pharmacotherapy Module 6: Infectious Diseases</td>
<td>Pharmacotherapy Module 8: Elective</td>
</tr>
<tr>
<td>Pharmacotherapy Module 7: Neuropsychology</td>
<td>Pharmacotherapy Module 9: Elective</td>
</tr>
<tr>
<td>Medication Therapy Management 4 &amp; Lab</td>
<td>Elective</td>
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- **IPE requirements**
- **Journal Club**
Year 3 - Discovery

**Fall**
- Medicinal Chemistry
- Health Systems 2
- Pharmacotherapy Module 6: Infectious Diseases
- Pharmacotherapy Module 7: Neuropsychology
- Medication Therapy Management 4 & Lab
- Elective

**Winter**
- SPEP – Institutional x 8 weeks
- SPEP – Community x 8 weeks

- IPE requirements
- Journal Club
Year 4

• PRACTITIONER STREAM
  – 4 X 8 weeks of rotations (8 months) in a 12-month period
  – Minimum 8 weeks institution, 8 weeks community, 8 weeks other pharmacy practice
  – May take 3 elective courses (remit one 8-week block)

• DISCOVERY STREAM (1 extra semester)
  – Summer = SPEP (8 weeks practice-based rotation)
  – Fall/Winter – student directed learning plan (take other U of T courses)
Canada and USA and the Pharm D
Acknowledgements:
Dr. Grace Frankel for her assistance

References


• Steele JW. The History of the Faculty of Pharmacy. University of Manitoba 1899-1999. Winnipeg, Manitoba: Faculty of Pharmacy and the Centenary Committee; 1999: 5-192

• The historical Committee: Manitoba Pharmaceutical Association. The History of Pharmacy in Manitoba: 1878-1953. Manitoba Pharmaceutical Association;1955.:1-190