



# 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** – AACCP outlined “Basic material for a Pharmacy curriculum,” 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 1<sup>st</sup> to convert
- **1961** – University of Michigan offered 1<sup>st</sup> 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





# 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)



*The Canadian Council for Accreditation of  
Pharmacy Programs*

ACCREDITATION STANDARDS and GUIDELINES  
for the  
FIRST PROFESSIONAL DEGREE  
IN PHARMACY PROGRAMS

Effective January 2013



## 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)



EXPLORER INNOVATOR PIONEER ADVENTURER VISIONARY TRAILBLAZER



# Present Day: Canadian National Perspective



UNIVERSITY  
OF MANITOBA



# Entry to Practice Degree: Pharm.D.



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

\* Has Pharm.. D. Post-Bac (2 years)





1655

Registered Pharmacists (MPhA)



1395

Practicing Pharmacists (MPhA)



31

Registered PharmDs



21

Practicing PharmDs



1972

Oldest PharmD



2013

Newest PharmD



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





## University of British Columbia



<http://www.pharmacy.ubc.ca/aboutus/building>

- 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





## University of Alberta



<http://www.pharm.ualberta.ca/>

- Current:  
BSc. Pharm degree  
(4 years)
- Upcoming Fall 2013:  
PharmD (+ 1 year) One dozen
- 2014-2015 Academic year
  - 4<sup>th</sup> 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



## University of Saskatchewan



- Current:  
BSc. Pharm. (4 years)



- In-Development:

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

Strategic Plan (2008-2012) mentions planning for Entry-to-Practice Pharm. D. (no specific dates)





UNIVERSITY  
OF MANITOBA

## University of Manitoba



### 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



<http://uwaterloo.ca/pharmacy/>

- 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)

## 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



<http://pharm.umontreal.ca/accueil/>

- Current:
  - Pharm. D. (4 years) – since 2007
  - Bachelor of Biopharmaceutical Sciences (BSBP) (3 years)
- Bridging program with Laval





## Université Laval



<http://www.pha.ulaval.ca/sgc/pid/13593>

- 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





## 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



<http://pharmacy.dal.ca/>

- 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.



## Memorial University of Newfoundland



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/>



UNIVERSITY  
OF MANITOBA



Curriculum Example:  
University of Toronto

# Entry-to-Practice Pharm. D.



# Year 1



- Jurisprudence
- Pharmacy calculations
- Language of Medicine
- IPE requirements
- Placements  
SPEP 160 hours  
(May-August)

## 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

# Year 2



- IPE requirements
- Service learning (160 hours)

## Fall



- Medication Therapy Management 2 & Skills Lab
- Analytical Methods in Pharmaceutical/Medical Sciences & Lab
- Research Methods, Critical Appraisal and Evidence-Based Medicine
- Practice Management
- Pharmacotherapy Module 2: Musculoskeletal and Nephrology
- Pharmacotherapy Module 3: Dermatology and EENT

## Winter



- Microbiology of Infectious Diseases
- Toxicology
- Pharmacoepidemiology and Pharmacoeconomics
- Medication Therapy Management 3 & Skills Lab
- Pharmacotherapy Module 4: Cardiovascular
- Pharmacotherapy Module 5: Gastrointestinal and Hem/Onc



# Year 3 - Practitioner



## Fall



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

## Winter



- Pharm Sci/Med Sci Elective
- Social Administration Elective
- Pharmacotherapy Module 8: Elective
- Pharmacotherapy Module 9: Elective
- Elective
- Elective

- 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

- Higby GJ. From Compounding to Caring: An Abridged History of American Pharmacy. In: Knowlton C, Penna RP eds. *Pharmaceutical Care*. Bethesda, MD: American Society of Health-System Pharmacists; 2003: 19-42
- Francisco GE. Doctor of Pharmacy. In: DiPiro JT ed. *Encyclopedia of Clinical Pharmacy*. New York, NY: American College of Clinical Pharmacy; 2003: 276-281
- 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



EXPLORER INNOVATOR ADV

REBEL ADVENTURER TRAILBLAZER

INNOVATOR CHALLENGER REBEL VISIONARY

REBEL PIONEER CREATOR EXPLORER TRAILBLAZER INNOVATOR

ADVENTURER EXPLORER ADVENTURER TRAILBLAZER REBEL PIONEER CREATOR EXPLORER REBEL PIONEER

PIONEER CREATOR EXPLORER DEFENDER TRAILBLAZER REBEL PIONEER EXPLORER ADVENTURER TRAILBLAZER REBEL EXPLORER PIONEER DEFENDER TRAILBLAZER CREATOR



UNIVERSITY  
OF MANITOBA