

University of Toronto and United-States PharmD Programs

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Pharmacy Education in the United States

Institutions and Programs as of July 2012

- 119 schools accredited and 8 applying:
- 75 schools PharmD first degree in 1996
- 64 private and 63 public universities.
- 11 will offer a post-bac PharmD in 2012
- 69 offer graduate programs
- 5,882 full-time and 530 part-time faculty



Pharmacy Education in the United States

PharmD Students in 2011

- 53 to 1,961 students per school – total 58,915
- application to enrollment rate of 7:1
- Post-bac Pharm.D. enrollment was 1,931
- 61.8% women and 11.2% minority students
- enrollments increased 4% for 11 consecutive years
- Attrition averages 10.9% per class.
- 11,931 first professional degrees : 415 post-bac Pharm.D. degrees



Pharmacy Education in the United States

PharmD Faculty in 2011

- PharmD student to PharmD Faculty Ratio is 20:1
 - Toronto would need approximately 50 PharmD faculty to achieve this ratio
- PharmD Faculty are 49% of all full-time Faculty
 - Toronto would need approximately 100 full-time faculty to match this average



Pharmacy Education in the United States

PharmD Faculty Evolution

- 1960-70's development of clinical pharmacy in concept.
- Strong drug information role
- Applied pharmacokinetics and individualized dosing of target drugs
- Post bac training, few sites, small classes
- Specialist Practices- mostly faculty members



Pharmacy Education in the United States

PharmD Faculty Evolution

- 1980's increasing numbers of students and training programs
- Specialists start teaching pathophysiology
- Growing knowledge base on groups of patients benefiting from pharmacokinetics and individualized dosing of drugs
- Options for combined BScPharm-PharmD programs become more common
- Healthsystems hire PharmD graduates
- Post-graduate training programs grow and accreditation increases



Pharmacy Education in the United States

PharmD Faculty Evolution

- 1990's AACCP endorses entry-to-practice PharmD by 2000
- Demand for PharmD's grows
- Pharmacy Benefits Managers use PharmDs to curtail cost and improve quality
- Post-bac “non-traditional” PharmD programs grow
- Healthsystems want expanded delivery of services- multiple shifts, weekends
- Faculties experiment with MSc and PhD programs



Pharmacy Education in the United States

PharmD Faculty Evolution

- 2000's large increase in numbers of Faculties and number of students amid “pharmacist shortage” worries
- Value proposition for PharmD's generally recognized
- Ambulatory and primary care roles come to the front
- New practitioners look to develop innovative and self-supporting clinical practices
- Some Faculties start to ask what is the next iteration- PharmD 2.0



Pharmacy Education in Toronto

Students in 2011

- enrolment in 2 year Post-bac Pharm.D.
 - ~ 11 Full time
 - ~ 22 part-time (4 year program)
- application to enrollment rate of < 2:1
- enrolments stable for 11 consecutive years
- BScPharm Program enrollment in 1+4 was 240/year



Pharmacy Education at Toronto

PharmD Faculty in 2011

- PharmD student to PharmD Faculty Ratio is ? : 1
 - How do we count our PharmD Faculty?
 - Most PharmD faculty have been 25% time at the Faculty
- PharmD Faculty are <5 % of all full-time Faculty
 - New relationships had to be developed
 - Hired 4 Clinician Scientist and 2 Clinician Educators 2011
 - Plan to hire 6 additional Clinician Scientist in 2012
 - Academic Leads developed



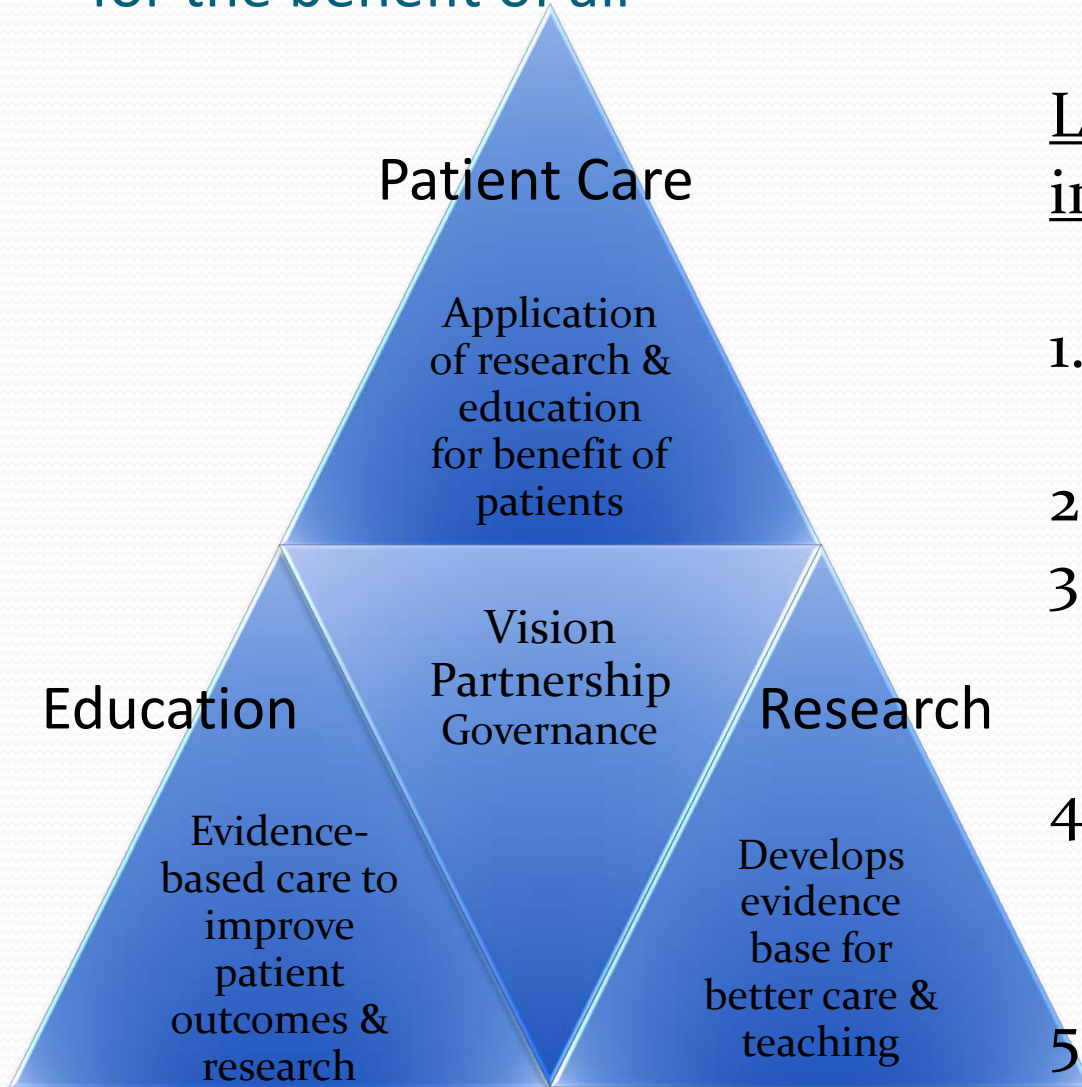
Pharmacy Education at Toronto

Where will the students be trained

- TAHSN- Toronto Area Health Science Network
- 13 Hospitals (4 are specialty hospitals and 4 are academic Community Hospitals)
- Task Force on Valuing Academic Performance
- Community Pharmacies?
- Family Health Teams?



Academic Health Science Networks-Bring together world-class research, excellence in patient care and excellence in education – for the benefit of all



Leading to outcomes including:

1. Attraction of world-class staff and external partners
2. Translational research
3. Collaborative training and working across different professions
4. Adoption of evidence-based practice for patient care and education
5. Redesign of care pathways

Change to the professional program at Toronto

- Our BScPharm curriculum was designed in 1994 and the last graduate will be 2014
- Fall 2011 offered only the new PharmD curriculum as our entry degree
- Focus shifted from a product centered curriculum to a patient care centered curriculum



PharmD 2.0- Pharmaceutical Care Outcomes

Where should we place our emphasis during Pharmacy education?

Do we provide sufficient exposure of students to the problems most commonly seen and the drugs most commonly used?

Most common medical conditions of patients seen for Pharmaceutical Care

- Hypertension
- Hyperlipidemia
- Diabetes
- Arthritis
- Osteoporosis
- Peptic ulcer disease
- Allergic rhinitis
- Depression



How big is the Pharmaceutical Care problem?

- Half of patients have 1 or more drug therapy related problems
- Estimated cost in US is 177 Billion \$/year
 - Is Canada 1/10th or 18 Billion
- Patients over 65
 - No valid medical indication 55%
 - Multiple therapies for a problem 37%
 - Best treated with non drug therapy 4%
 - Treatment is for an avoidable ADR 3.5%

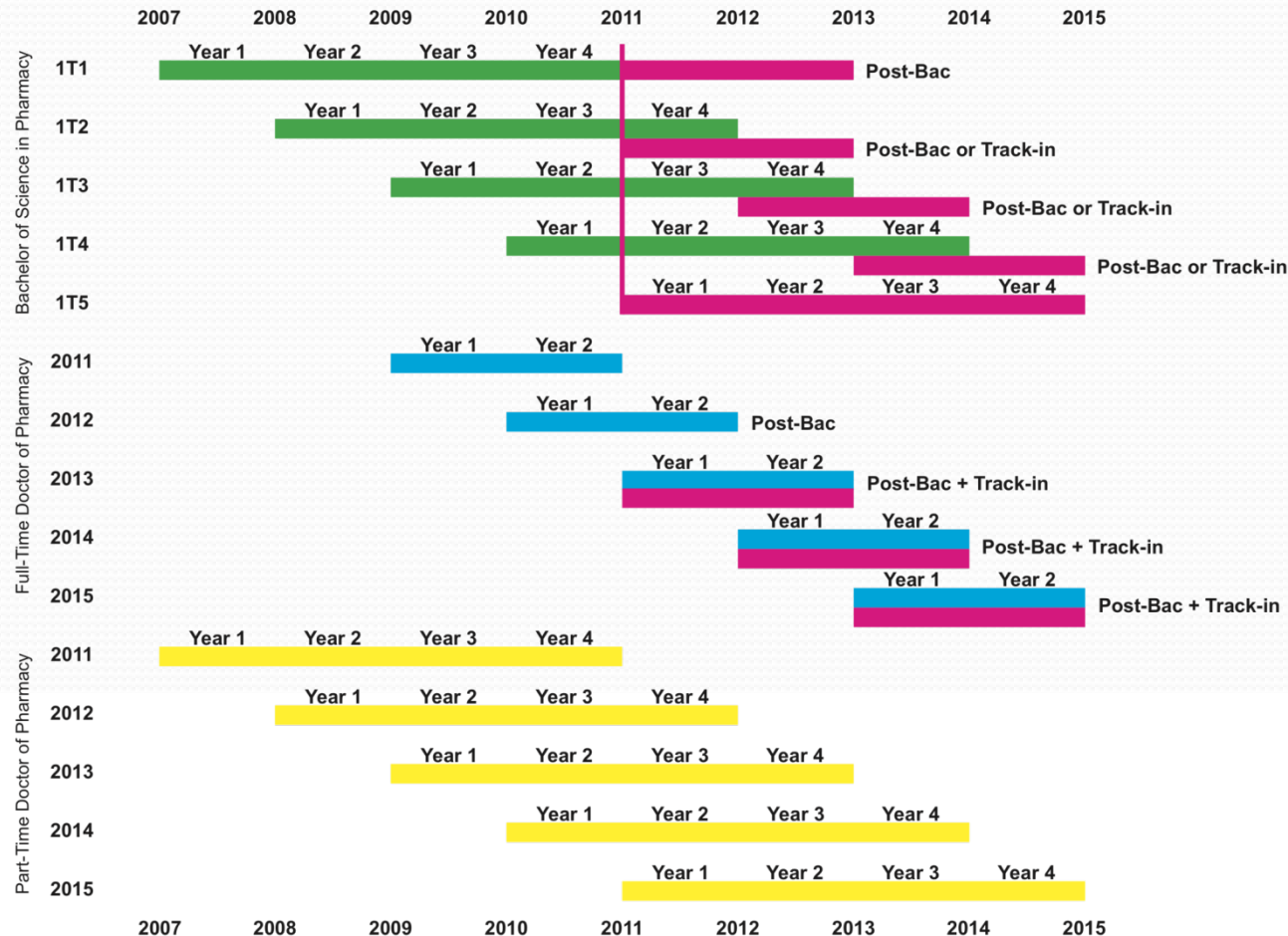


Drug therapy problems by category

- Additional drug therapy needed 30%
- Dose too low 23%
- Non compliance 18%
- Adverse drug reaction 13%
- Unnecessary drug therapy 7%
- Ineffective drug 5%



What is the Timeline for Implementaion of the New PharmD program



What will define the new PharmD curriculum?

- Focus on patient care and clinical skills
- Basic sciences are a prerequisite
- Interaction with patients begins in the first year of the program
- Focus on e-learning technology and ways to break down the “classroom”
- Mentorship, leadership, and self-learning are threaded throughout the curriculum
- Elective opportunities and combination programs will be increased



Year 1 Curriculum

| | |
|---|--|
| PHM 145 Human Histology & Anatomy | PHM140H1: Molecular Pharmacology |
| PSL 205: Physiology (on-line course) | PHM143H1: Pathobiology and Pathology |
| PHM142H1: Metabolic Biochemistry and Immunology | PHM141H1: Pharmaceutics |
| PHM112H1: Pharmacy Informatics and Clinical Trials | PHM105H1: Medication Therapy Management I + Laboratory |
| PHM110H1: Health Systems I Academic Service Learning* | PHM114H1: Social and Behav. Health (Acad Service Learning) |
| PHM144H1: Pharmacokinetics | PHM101H1: General Medicine I |

Online learning modules: Jurisprudence, pharmacy calculations, language of practice, patient care process
Interprofessional Education Credit

Themes: Critical Reasoning, Pt Safety, Pharmaceutical Care, Professionalism/Ethics

Experiential Training – 4 weeks (160 hrs) (summer)

Year 2 Curriculum

| | |
|---|--|
| PHM 205 Medication Therapy Management I + Laboratory | PHM214H1: Practice Management |
| PHM 212: Pharmacoeconomics & Pharmacy Practice Research | PHM240H1: Medicinal Chemistry |
| PHM241H1: Analytical Methods in Pharm/Med Sci & Lab (Pharmaceutics) | PHM213H1: Health Economics & Pharmacoeconomics |
| PHM242H1: Microbiology of Infectious Diseases | PHM206H1: Medication Therapy Management I + Laboratory |
| PHM201H1: Derm, EENT and other topics | PHM203H1: Infectious Diseases |
| PHM202H1: General Medicine II (endocrine , nephrology) | PHM204H1: Cardiovascular |

Online learning modules: Jurisprudence, pharmacy calculations, language of practice, patient care process Interprofessional Education Credits

Experiential Training – 4 weeks (160 hrs) (summer) Themes: all five

LDFP Curriculum Update – Year 3

Curriculum Update

- Toxicology
- Health Systems 2
- PCT 6: Hem/Oncology & Immunotherapies
- PCT 7: Neuropsychiatry
- MTM III (lab)
- Elective
- Pharm Sci or Med Sci Selective
- Soc Admin Selective
- PCT Selective 1
- PCT Selective 2
- Elective
- Elective



LDFP Curriculum Update – Year 4

Curriculum Update

- 36 weeks of Experiential Education



What will define the new PharmD curriculum?

- Patient care rotations in hospitals, clinics, and community- 9 months in the 4th year
- Communities of Practice model- modified
- Pharmacist as a teacher- develop skills early, pyramid teaching models
- Increased focus on interprofessional education
- Scholarly approach to what we do and measuring outcomes



What new opportunities come with the PharmD curriculum?

- Specialty training programs (residencies, advanced residencies)
- Continuing education certificates (bridging programs, specialty certificate training programs, e.g. geriatrics, cardiology, oncology).
- Advanced training opportunities (combined master programs, leadership programs, Ph.D programs, fellowships)



What are the Outcomes of the New PharmD program

- New knowledge and skills acquired
- Clinical attitude and perceptions developed
- Benefits to patients demonstrated
- Changes in the practice of healthcare occur
- Health systems are more responsive to needs of the citizens
- Faculty and Health systems are closer aligned in their training missions



Issues for the new PharmD program

Capstone courses

Assessment Methods

Technology enhanced learning

Themes

Electives

Integration

Physical Assessment



Stop the Cuts Protest



Tayyab Syed (centre), a pharmacist from Woodbridge leads his colleagues to deliver 500,000 signed petitions and a message to Ontario Premier Dalton McGuinty, calling on him to stop massive funding cuts to front-line

healthcare <http://www.nationalpost.com/news/Ontario+budget+pharmacy+rebates/3123317/story.html#ixz>

Strategic Plan

Shape the profession through excellence in teaching and learning

1. Implement a cutting edge pharmacy curriculum.
2. Engage our partners in helping us develop innovative and service-enhancing models for experiential education.
3. Capitalize on market opportunities that support new graduate and undergraduate programs and program models.
4. Put in place faculty recruitment and development mechanisms to attract and develop excellent teachers, mentors, and researchers.



Strategic Plan

Shape the profession through excellence in teaching and learning

5. Enhance the role of technology in supporting student choices in learning, flexibility in scheduling, and resolution of space efficiencies.
6. Implement a program evaluation system to benchmark quality.
7. Develop continuing and professional education programs that impact health outcomes.
8. To become known as the best place for Pharmacy graduate and undergraduate education.



Strategic Plan

Champion success

by enhancing the student experience

1. Attract the best and brightest students to our Faculty.
2. Enhance mechanisms to enable student success.
3. Create a consistent positive experience for students at the Faculty that translates to robust future alumni relationships and engagement.
4. Expand student financial support.



Strategic Plan

Foster leadership by empowering and engaging our people

1. Create and launch a “Leadership Institute”.
2. Use knowledge translation to inform health policy that improves patient care.
3. Identify, recruit and engage the top Pharmacy leaders with our Faculty.
4. Develop leadership potential internally, and build capability.



The title change for our program is in the Government's basket



The curriculum change is not!

Thank You and Questions

