



AMERICAN INSTITUTE OF THE HISTORY OF PHARMACY

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This slide presentation was compiled and produced by Robert McCarthy, Ph.D., Professor and Dean *Emeritus* at the University of Connecticut School of Pharmacy for his class “The History of American Pharmacy.” Prof. McCarthy created this version of the slide talk for his class in the Spring of 2016.

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Pharmacy Education: From Apprentice to Pharm.D.

PHRX 4001W-002
The History of American Pharmacy
Spring 2016

Early Pharmacy Education

- Although medical schools began to be established in the 18th century, pharmacy continued to use a non-standardized, apprenticeship model.
 - Given the scarcity of apothecaries, physicians would often provide the apprenticeship, which may have been via an indenture for a period of 5-7 years.
- 1854: APhA's Committee on Education urged drug clerks (employee pharmacists) to read the pharmacy literature, but did not advocate formal education for pharmacists.

Early Pharmacy Education

- Prior to the end of the Civil War, formal pharmacy education was only available in America at a New Orleans medical school and at six independent schools operated by local pharmacy associations; these schools were to supplement apprentice training not replace it.
- The first schools of pharmacy: Philadelphia (1821), Massachusetts (1823), New York (1829), Baltimore (1841), Cincinnati (1850), Chicago (1859), and St. Louis (1865)

Early Pharmacy Education

- Lectures at these early pharmacy schools were provided during the evening by physicians and “master” pharmacists.
- These schools had no admission requirements and little laboratory instruction.
- Graduate requirements: pass an examination and complete a 4 year apprenticeship
- Before 1860, less than 5% of all American pharmacists graduated from these schools; in 1873, there were 12 American schools of pharmacy with an enrollment of less than 600 students .

Early American Pharmacy Textbooks

- *Practical Pharmacy: The Arrangements, Apparatus, and Manipulations of the Pharmaceutical Shop and Laboratory* (1849)—William Procter, Jr.: “Father of American Pharmacy;” during his life he was a practitioner, teacher, scientist, author, and editor
- *An Introduction to Practical Pharmacy: Designed as a Textbook for the Student, and as a Guide to the Physician and Pharmaceutist* (1856)—Edward Parrish: first American textbook based on American sources
- *Practice of Pharmacy* (later referred to as *Remington’s Pharmaceutical Sciences* and now titled *Remington: The Science and Practice of Pharmacy* or simply known as “Remington’s;” 1885)—Joseph Remington: latest edition is still used today

Early Pharmacy Education

- Morrill Act (1862): created the land grant university (UConn is one), which provided federal land to each state that could be sold to fund the establishment of a university that taught the agricultural and mechanical sciences
- A number of pharmacy schools ultimately were established at or joined these land grant universities.
- The Connecticut College of Pharmacy, established in 1925, officially joined UConn in 1941, although it would be 10 years before it moved from New Haven to Storrs.

Early Pharmacy Education

- 1870: First convention of delegates from schools of pharmacy; their goal was to attempt to develop standards for all pharmacy graduates across the nation (there were concerns about the University of Michigan program, the first pharmacy program at a public institution, that did not require an apprenticeship, but did offer laboratory training)
- During this period, there was a general belief that pharmacy could only be learned through an apprenticeship and schools that graduated pharmacists without an apprenticeship were not competent to practice.

Early Pharmacy Education

- 1874: Conference of Schools of Pharmacy (established by APhA)
 - Agreed that pharmacy graduates would receive a Ph.G. (Graduate in Pharmacy) diploma (University of Michigan awarded the Ph.C. [Pharmaceutical Chemist])
 - Tennessee College of Pharmacy was nearly expelled for awarding the Doctor of Pharmacy (Pharm.D) for the same requirements as the Ph.G.
- Important point: Schools of pharmacy were often prevented from making needed changes by the state associations that established and operated them; this led to the dissolution of the Conference of Schools of Pharmacy in 1883.



Albert Benjamin Prescott (1832–1905) transformed American pharmacy education by creating a full-time university-based program of study leading to a pharmacy degree in 1868 at the University of Michigan. Within 30 years, every pharmacy program in the country followed the model he established.

Alternative Approaches to Pharmacy Education (late 19th, early 20th century)

- Correspondence Courses
 - National Institute of Pharmacy: 24 lectures that could be completed in a year
 - The Era Course of Pharmacy: two years of correspondence lectures and examinations
- Self-Study
 - *A Compend of Pharmacy* (1886)--Francis E. Stewart
 - *A Course of Home Study for Pharmacists* (1891)--Oscar Oldberg

Early Pharmacy Education

- With the dissolution of the Conference of Schools of Pharmacy in 1883, the APhA established the Section on Pharmaceutical Education.
- In 1892, the APhA Section on Pharmaceutical Education voted to encourage all pharmacy schools to establish a 3-year course of study.

Pharmacy Education in the 20th Century

- 1900: the American Conference on Pharmaceutical Faculties (later American Association of Colleges of Pharmacy) was formed; its Constitution mandated that it would meet at the APhA annual meeting.
- 1905: the American Conference of Pharmaceutical Faculties and the APhA Section on Education & Legislation adopted the following degrees:
 - Ph.G. (graduate in pharmacy)
 - Ph.C. (pharmaceutical chemist)
 - Phar.B. (bachelor of pharmacy)

Pharmacy Education in the 20th Century

- 1906: *Pharmaceutical Syllabus* was developed by APhA, National Association of Boards of Pharmacy, and American Conference of Pharmaceutical Faculties to provide uniform instruction in pharmacy; the *Syllabus* was intended to be revised every 5 years.
- American Conference of Pharmaceutical Faculties approved a 4-year baccalaureate in pharmacy program for all member schools effective 1932.
- 1935: University of Michigan Hospitals proposed a one-year internship after graduation prior to licensure.



Source: American Pharmacists Association.



Pharmacy Education in the 20th Century

- 1937: *American Journal of Pharmaceutical Education* established by the American Association of Colleges of Pharmacy.
- 1940: National Association of Boards of Pharmacy established the first national apprenticeship guidelines.
- 1942: American Foundation for Pharmaceutical Education was founded and provided financial support to many pharmacy schools during WWII.

Pharmacy Education in the 20th Century

- After WWII, the American Council on Education recommended a universal 6-year program for pharmacy (pre-professional + professional); most schools were unwilling to make the jump from 4 to 6 years; thus, the 5-year compromise program was adopted (although several west coast schools did adopt the 6-year, PharmD program(University of Southern California offered the PharmD as its only degree beginning in 1950). In 1954, AACP approved a standard program of at least 5-years no later than April 1965 (which helped to ensure an adequate general education portion). Ohio State University was the first to establish a 5-year program in 1948.

Evolution of Pharmacy Degrees in the 20th Century

1907	Ph.G.	2 years
1925	Ph.C.	3 years
1932	B.S.	4 years
1950	B.S.	5 years
1989	Pharm.D.	6 years

1st Pharm.D. programs 1950 at USC and 1954 at UCSF.

Ref: Zebroski, *A Brief History of Pharmacy: Humanity's Search For Wellness*

Pharmacy Education in the 20th Century

- 1968: APhA urged that the internship be replaced by an externship that would occur 6 months before graduation.
- 1974: ACPE proposed that school externships and clerkships should be used in place of internships as a requirement for licensure (even today, not all state boards of pharmacy have adopted this).

Pharmacy Education in the 20th Century

- The 1960s and 1970s, saw the genesis of the clinical pharmacy shifting pharmacy practice from product-focused service to patient-oriented care that emphasized patient counseling.
 - Courses such as analytical chemistry, pharmacognosy, and industrial pharmacy were replaced by anatomy/ physiology, pathophysiology and biopharmaceutics.
- Federal capitation grants in the early 1970s required a clinical component in the curriculum; as a result, pharmacy schools added clinical faculty, sometimes causing friction between pharmaceutical sciences and clinical faculty over resources and curriculum (a challenge that still exists today).

Pharmacy Education in the 20th Century

- Key National Studies:
 - 1975: *Pharmacists for the Future* (also known as the Millis Commission Report) advocated a competency-based curriculum
 - Suggested ending educational practices that trained pharmacy students without interactions directly with patients and other health care professionals
 - Advocated shifting the focus from the drug product to the patient and helping them optimize the benefits of their drug
 - 1979: *National Study of the Practice of Pharmacy* established standards of practice to assist curriculum committees in developing practice-oriented courses and help accrediting bodies evaluate educational programs.

Pharmacy Accreditation

- Accreditation Council for Pharmacy Education
 - Founded as the American Council on Pharmaceutical Education (ACPE) in 1932, the agency's name was changed to the Accreditation Council for Pharmacy Education in 2003.
 - At its inception, ACPE established standards for the baccalaureate degree in pharmacy; later, standards for the doctor of pharmacy were added.
 - 2000: ACPE announced the conversion to the doctor of pharmacy (Pharm.D.) as the sole entry-level degree for the profession of pharmacy.
 - 1975: ACPE developed standards for providers of continuing pharmacy education; in 1999, standards for the CE providers conducting certificate programs in pharmacy were established.

Pharmaceutical Care

- In 1990s, spearheaded by Hepler & Strand, the concept of pharmaceutical care became the new mission for pharmacy. Pharmaceutical care says that pharmacists, not just prescribers, are responsible for the outcomes of drug therapy.
- Pharmaceutical or pharmacists care is today considered the standard of practice expected of pharmacists.

Movement to the Entry-Level Pharm.D.

- 1984: APhA Task Force on Pharmacy Education identified competencies expected of entry-level practitioners and recommended the 6-year degree as the sole entry-level degree into the profession (very controversial).
- 1989: AACP established the Commission to Implement Change in Pharmaceutical Education to articulate the mission for pharmacy practice that could serve as the basis for pharmacy education. The commission produced two background papers and a position paper, “Entry-Level Education in Pharmacy: A Commitment to Change,” which supported the Pharm.D. as the single entry-level degree into the profession. The AACP House approved the single-degree recommendation in 1992.

Movement to the Entry-Level Pharm.D

- 1992: APhA, American Society of Hospital (now Health-System) Pharmacists, and National Association of Retail Druggists (now National Community Pharmacists Association) jointly supported the Pharm.D. as the sole degree for entry into practice; National Association of Chain Drug Stores opposed the conversion.

Pharmacy Education Today

- More than 130 pharmacy programs in the U.S.; nearly double from 2000
- Most pharmacy programs today are 2+4, although some continue to say they are 0+6 because they admit from high school; this is a misnomer, however, given the ACPE requirement that there be a second tier of evaluation/admission into the professional years of the program.
- Pharmacists today are licensed by state boards of pharmacy. To be eligible to practice in that state, they must pass a national exam, the North American Pharmacist Licensure Examination (NAPLEX), to determine whether the licensure applicant possesses the minimum competence to be admitted to practice and the Multistate Pharmacy Jurisprudence Examination (MPJE), which contains both federal and state-specific laws.

University of Connecticut School of Pharmacy Deans

Dean Gustavus Eliot
1925 – 1928



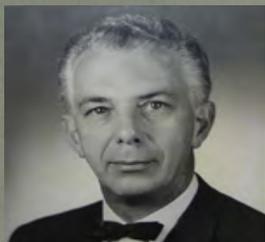
Dean Henry S. Johnson
1928 – 1947



Dean Harold G. Hewitt
1947 – 1969



Dean Arthur E. Schwarting
1970 – 1980



Dean Karl A. Nieforth
1981 – 1993



Dean Michael C. Gerald
1993 – 2002



Dean Robert L. McCarthy
2002 – 2013



Dean James R. Halpert
2014 –

