Teaching and Learning in the New Pharmacy Curriculum

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WELCOME TO
Wild, Wonderful
West Virginia

You Are Entering...
Eastern Panhandle
Conservation District
White Water Rafting
New River & Gauley Rivers

rafters
New River Gorge Bridge
Landing in
Morgantown, West Virginia
Learning Objectives

- Describe the goals of pharmacy education worldwide
- Outline the pharmacy curriculum in the United States
- Compare the U.S. curriculum to the curriculum in Japan
- Describe methods of teaching and learning that prepare students to become pharmacists who deliver patient care
What Should Pharmacy Practice be in the 21st Century?

- The purpose of the pharmacy profession (what does society need?)
  - Assure the best patient outcomes with medication therapy
  - Make the medication use system as safe as possible

- If Pharmacy does not meet society’s needs, who will?

- Dispensing medications will not be the pharmacist’s primary task
  - Pharmacy technicians
  - Dispensing machines, robotics
  - Society does not need pharmacists to dispense
  - BUT pharmacists must be responsible for and supervise dispensing
FIP Good Pharmacy Practice

• 1993 FIP Tokyo Declaration: “The mission of pharmacy is to provide medications and other health care products and to help people and society make the best use of them.”
FIP COUNCIL, VIENNA, 2000

STATEMENT OF POLICY
GOOD PHARMACY EDUCATION PRACTICE

- Care giver
- Decision maker
- Communicator
- Leader
- Manager
- Life-long learner
- Teacher
Teaching

• **What** we teach (course content) is important
  – Half-life of current knowledge is 2 years

• **How** we teach is just as important
  – Emphasis on problem-solving and decision-making
  – Student becomes life-long learner
Why We Teach

Teacher
- Curriculum materials
- Teaching methods
- Assessment methods
- Clinical settings

Learner
- Learning experiences
- Knowledge
- Skills
- Attitudes

Outcome
- Best practices with patients
- Improved patient outcome
What do Students Need to Learn?

- Mastery of skills as well as knowledge of scientific facts
  - Facts change or become obsolete
  - There is a need for life-long learning
  - Skills can be applied to any practice setting
- Communication skills!
- Problem identification
- Problem solving
- Critical thinking
- Working and cooperating with others
How do Students Learn?

• Different levels of learning
  – Low order to high order skills

• What are the objectives?
  – Not just to memorize facts
  – To understand concepts
  – To apply information
  – To analyze problems
  – To create new knowledge

• Different teaching methods must be used to achieve different objectives
Bloom’s Taxonomy of Educational Objectives

Teaching Methods

- Classroom lectures
- Outside class assignments
- Guided small group discussions
- Group and individual presentations
- Case studies
- Internet and other technology (BlackBoard, WebCT)
- Professional experience
  - Pharmacy practice
  - Service learning
Passive Learning

- Reading
- Lecture
  - Good for giving information
  - Poor for learning skills, critical thinking, problem solving
  - Problems with student attention
  - Need to make clear objectives
  - Need to repeat most important information
  - Should integrate active learning techniques
Active Learning

- Students are actively involved in learning
- The only way to learn higher level skills
- Ancient proverb:
  “Tell me, I will forget.
  Show me, I may remember.
  Involve me, and I will understand.”
Types of Active Learning

- Write a paper that analyzes an article or book chapter
- Class questions and discussion
- Case studies
- Group learning
- Role-playing, simulations
- Experiential training
- Methods can be combined
Case Studies

• Use of patient cases helps teach problem-solving skills
• Case studies prepare students for actual patient interventions
• Can be done by computer, individuals, or in groups
• Can be integrated into lecture
Collaborative Learning

• Students help teach each other, take responsibility for each other’s learning
• Important for students to learn cooperation, collaboration, team-based care
• Group-based process
• Can be combined with case studies
Experiential Learning

- Students train in actual practice settings under guidance of practicing pharmacists (preceptors)
- Prepares students for real-life practice

- Requires precautions:
  - Student supervision is important for patient safety
  - Students should be prepared by the school for this training
  - Preceptors must have the appropriate knowledge and skills
Pharmacy Curriculum in the United States

- 2 year pre-pharmacy program
- 4 year professional pharmacy program leading to the Doctor of Pharmacy (Pharm.D.) degree
  - Basic pharmaceutical sciences are the foundation for practice
  - Pharmacoeconomics, medication use policy
  - Experiential learning occurs throughout curriculum
### Example Pre-professional Course Requirements (2 years or more)

<table>
<thead>
<tr>
<th>COURSES</th>
<th>CREDITS</th>
</tr>
</thead>
<tbody>
<tr>
<td>General Biology (with lab)</td>
<td>8</td>
</tr>
<tr>
<td>General Chemistry (with lab)</td>
<td>8</td>
</tr>
<tr>
<td>Organic Chemistry (with lab)</td>
<td>8</td>
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<tr>
<td>English Composition</td>
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<tr>
<td>Calculus</td>
<td>4</td>
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<tr>
<td>Statistics</td>
<td>4</td>
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<td>Psychology</td>
<td>3</td>
</tr>
<tr>
<td>Economics</td>
<td>3</td>
</tr>
<tr>
<td>Electives (humanities, social sciences)</td>
<td>18</td>
</tr>
</tbody>
</table>

**TOTAL** 62
Example Professional Curriculum

**First Year**
- Anatomy/Physiology, Biochemistry, Pharmaceutics, *Introductory Practice Experience (IPPE)*

**Second Year**
- Pharmacokinetics, Medicinal Chemistry, Natural Products, Pharmacology, Drug Information, Pharmacotherapy, *IPPE*

**Third Year**
- Pharmacy Law, Marketing/Management, Pharmacy Economics, Health Care System, Pharmacotherapy, *IPPE*

**Fourth Year**
- Advanced Professional Experience Program (*APPE*)
  - Institutional, community, acute/inpatient care, electives
The PharmD Degree

**Know**
Knowledge

**Do**
Skills

**Be**
Attitudes/Behavior

- **Pre-Professional**
  - 2 years (min.)
  - Dependent/directed learner

- **Biomedical & Pharmaceutical Sciences/Didactic**
  - Early Experiences/Simulation
  - 3 years

- **Behavioral, Social, Admin & Clinical Sciences/Apply & build on knowledge**
  - IPPEs

- **Pharmacy Practice Experiences (patient settings)**
  - APPEs

- **Enter Practice**
  - 1 year
  - Independent/self-directed lifelong learner
What should Doctor of Pharmacy graduates be able to do?

- Work with others to use medicines effectively for the health of patients and society.
- Use thinking abilities and scientific/clinical knowledge to solve drug therapy problems.
- Communicate effectively with patients, caregivers and health care professionals.
- Manage a pharmacy practice.
- Maintain professional competency through lifelong learning.
- Be prepared to enter postgraduate training and education programs.
- Actively participate as responsible citizens in the community.
Philosophy on Teaching and Learning

FACULTY:
- Focus on problem-solving, decision-making
- Employ student-centered learning
- Ensure early understanding of pharmaceutical care
- Develop concepts throughout curriculum
- Cultivate communication skills of students
- Become efficient in delivering information
- Encourage professional development of students
Philosophy on Instruction and Learning

**STUDENTS:**
- Actively participate in their own learning
- Use critical thinking skills
- Participate in patient care decisions early
- Understand the relevance of course offerings
- Communicate and collaborate
- Have personal desire for lifelong learning
- Are eager to become involved
The Annual White Coat Ceremony: Becoming a Professional
The Annual White Coat Ceremony: Reciting the Oath of a Pharmacist
Classrooms that Facilitate Learning
Large Group Sessions
In-Class Demonstrations and Practice
Modular Learning Classroom
Group Presentations to the Class

Who Are the Stakeholders?

- Seniors
- Funding Source
Small Group Case Study Sessions
Group Presentations
Infectious Diseases
Group Case Study
Computer Laboratory
Student Lounge to Relax!
Service Learning
Helping others by taking your time
Community Service Program for the Elderly
Free Patient Care Clinic
Blood Pressure and Glucose Monitoring
Physical Assessment and Physician Consultation
Fourth Year
Advanced Pharmacy Practice Experience (APPE)
Pharmacy Education in Japan

- **Strong emphasis on:**
  - Basic science education
  - Research methodology, skills
  - Pharmaceutical manufacturing, technology

- **Less emphasis on:**
  - Clinical practice
  - Experiential training (patient care experiences)
  - Multidisciplinary care
Changes in Japanese Pharmacy Education

• 1994 Findings of Committee on Pharmacist Training
  – Recommended change from 4 to 6 year program
  – Increased emphasis on clinical/experiential training
  – New 6-year program is designed to train practitioners

• Change were to take place in April, 2006
Model Core Curriculum

• Developed by representatives from 46 pharmacy schools in Japan
• Authorized by Pharmaceutical Society of Japan and Ministry of Education, Culture, Sport and Technology
• Meant to be a minimum standard only
Model Core Curriculum: Six Components

1. Principles of pharmaceutical science
   • Concepts of patient-centered care, ethics, patient rights, safety, problem-solving

2. Introduction to pharmaceutical science
   • Early practice experience

3. Specialized pharmacy courses
   a) Physical pharmacy
   b) Pharmaceutical chemistry
   c) Biopharmaceutics
   d) Medicine and disease
      • Pharmacotherapy
      • Drug information
   e) Pharmaceutical sciences and society
Model Core Curriculum: Six Components

4. Clinical pharmacy training
   - Classroom
   - Hospital
   - Community pharmacy

5. Research training

6. Liberal arts, pre-pharmacy
Clinical Training

• Experiential training to cover all aspects of practice
  ✓ Prescription orders, dispensing, record-keeping
  ✓ Patient interviews and counseling
  ✓ Patient records
  ✓ Legal requirements
  ✓ Compounding, sterile products
  ✓ Communication with patients and other healthcare professionals
  ✓ Inventory control
  ✓ Therapeutic drug monitoring (pharmacokinetics)

• One experience in community pharmacy and one in hospital pharmacy.

• Pharmacy practice experience is 5 months long

• Students are expected to be at the site 40 hours per week.
The Organization of Model Core Curriculum for Pharmaceutical Education

Entrance Examination

**A: Principles of pharmaceutical science**

- Category B: Introduction
- Category C: Specialized pharmacopediaics
  - physical pharmaceutical science
  - chemical pharmaceutical sciences
  - biological pharmaceutical science
  - health and environment
  - medicine and disease
  - pharmaceutical manufacturing
  - and pharmaceutical science and society

**Category D: Clinical Training**

**Category E: Final Training before Graduation**

**Category F: Liberal arts and Pre-pharmaceutical Education**

Graduate/National Examination for Pharmaceutical Practitioners
Implications of the Changes

• Increased need for clinical and practice-based faculty
  – Practitioners need training in education
  – Educators need training in practice
  – Where do they receive such training and experience?

• Development of experiential learning programs
  – Schools must develop relationships with hospitals, community pharmacies
  – Practicing pharmacists must be part of teaching programs
  – Practicing pharmacists should work with schools to develop course content in pharmacy practice
The Challenges of Being a Preceptor

• Schools often do not provide training
• Education objectives may not be clear to preceptor or student
• Difficult to plan patient problems that increase learning
• Takes time!
  – Patient care vs. teaching responsibilities
  – Support of supervisors to provide time for teaching
  – Accept that teaching pharmacists will be less efficient
• Financial
• Resources
  – Space, computer, information
• Dealing with difficult students
The Rewards of Being a Preceptor

• Preceptors have a direct impact on the future practice of pharmacy
• Teaching forces one to maintain and improve knowledge and competency
• The School may provide resources such as drug information references
How to be a Good Preceptor

• Make sure you have knowledge and competence
  – Students will know if you do not!
• Care about the student and the quality of education and experience
• Give clear expectations; explain concepts and ideas
• Be honest in evaluating the student
• Be responsible for the student’s outcome
• Get feedback, and seek ways to improve
• All pharmacists must become educators!
Conclusions

• Pharmacy education in Japan will change dramatically
• Do schools in Japan have enough faculty to teach pharmacy practice?
• Schools need hospital and community pharmacists to be preceptors
• Students will do experiential learning at practice sites for longer periods of time
• Pharmacies need to accept their teaching role and prepare for the increase in workload
• Pharmacists need training to be good teachers
• Pharmacists can have a large impact on students and the future of pharmacy!
They **will** make a difference!
Thank you...Come Visit Pittsburgh!
(or West Virginia!)