

Objectives

As part of a “spiral” educational approach to pharmacology and medication management, the primary goals of this elective are to prepare the 4th year medical student for the challenges of GME by providing in-depth clinical instruction in pharmacology and medication safety. The purpose of this course is to provide advanced training in modern pharmacotherapeutics that will enhance the student’s clinical competence in preparation for first year residency responsibilities.

Rationale

Drug therapy is the prime therapeutic tool for many physicians. Medication use, however, is not without significant concerns which include drug expense, medication errors and adverse drug reactions. Therefore, it is rational to span pharmacology instruction through all 4 years of medical school culminating with a focus in clinical pharmacology in year 4.

Information from the CDC²

% of physician office visits involving drug therapy: **75%**
% of pts. using at least 1 Rx drug in past 30 days: **49%**
% of pts. using 3 or more Rx drugs in past 30 days: **22%**

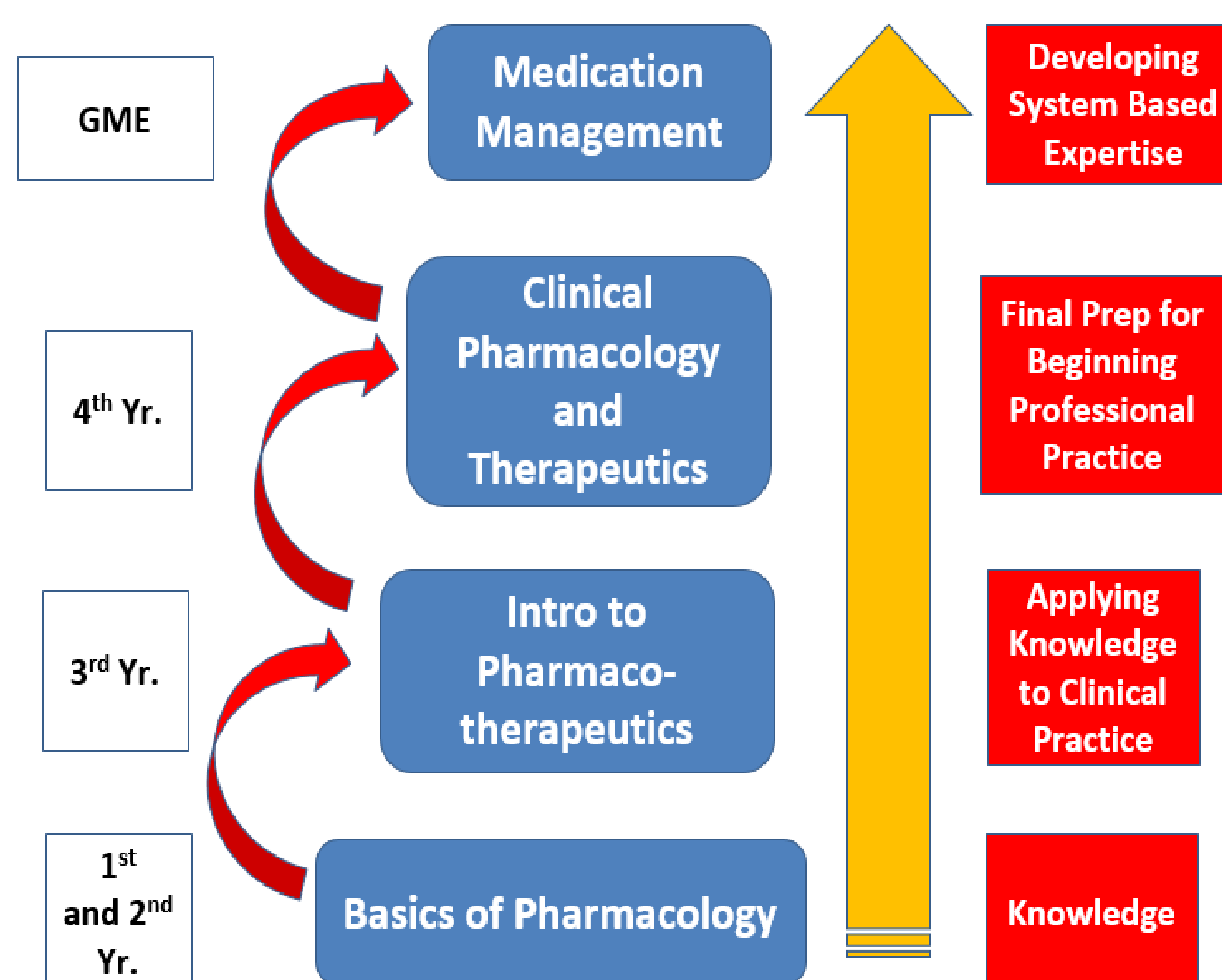
A Dangerous Lack of Pharmacology Education in Medical and Nursing Schools: A Policy statement from the American College of Clinical Pharmacology¹

“Contemporary drug therapy is too important to be learned solely “on the job.” Future clinicians must have a solid background in clinical pharmacology and therapeutics so that they are well prepared to use and study today’s therapeutics, as well as those on the horizon. Without such training, it is likely that the incidence of adverse drug reactions and inappropriate prescribing will continue to rise.”

Rationale (cont’d)

Information from the WHO³ :

3/29/2017: WHO launches global effort to halve medication-related errors in 5 years: *“Medication errors cause at least one death every day and injure approximately 1.3 million people annually in the United States of America alone.”*



(Upward “spiral” educational model)

Elective Content Resources

Institute for Safe Medicine Practices (ISMP): Focus on High Alert Drugs (www.ismp.org)

World Health Organization (WHO): Patient Safety

Curriculum Guide- Multi-professional Edition: Topic 11: Improving Medication Safety

(<http://www.who.int/patientsafety/en/>)

Institute for Health-Care Improvement (IHI): Open School Patient Safety Courses PS101-202 (www.IHI.org)

Lists of Top 200 Drugs

Inpatient Discharge and Outpt. Visit Diagnosis Data

Consultants: 2 practicing Clinical Pharmacists (Pharm.D.’s); 1 Internal Medicine Physician

Course Design Elements ⁴

Since most of our 4th year students are not geographically located in Mesa, Arizona, the elective will incorporate “best practices” for on-line learning:

- Faculty is “present” for the course
- Multi-media design elements: videos, readings, problem sets, quizzes
- Focus on core concepts along with personalized learning
- Include a variety of **active** learning experiences
- Encourage creative and critical thinking
- Include discussion posts that invite questions, discussions, reflections and responses

Elective Design Highlights

(See HANDOUT for proposed elective schedule)

1. Anticipated go-live date is 7/1/2018
2. 1 month on-line elective available 7 months per year
3. Weekly 1.5 hour Remote Meeting Live Discussions
4. During week 1, students select discussion content for 4th week based on current events in drug therapy
5. Complete Medication Safety Case Study Report
6. Clinical Pharmacology Problem Sets: Applied pharmacodynamics and pharmacokinetics; Challenges of medication use in special populations
7. Clinical Challenge Case Studies using EMR order sets for antimicrobial use, fluid and electrolyte management, pain control, treatment of hypertension and diabetes drug therapy
8. Student Assessments: Satisfactory completion of all assignments, weekly quizzes, final exam and attendance at weekly class sessions
9. Course Evaluation

References

1. Wiernik PH et al. A Dangerous Lack of Pharmacology Education in Medical and Nursing Schools: A Policy statement from the American College of Clinical Pharmacology. *J Clin Pharm.* 55:953-954, 2015.
2. <https://www.cdc.gov/nchs/fastats/drug-use-therapeutic.htm>
3. <http://www.who.int/mediacentre/news/releases/2017/medication-related-errors/en/>
4. Boettcher JV. Ten Best Practices for Teaching Online - Quick Guide for New Online Faculty. Designing for Learning <http://www.designingforlearning.info/services/writing/ecoach/tenbest.html>