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Pharmacy 476: Principles of Research and Problem Solving

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Corrections

- Errors in schedule in syllabus:
  - 4/8 instead of 4/7
  - duplicate room on Monday group sessions
  - class WILL be held on 1/10
- Corrected schedule has been posted to CTools

Objectives

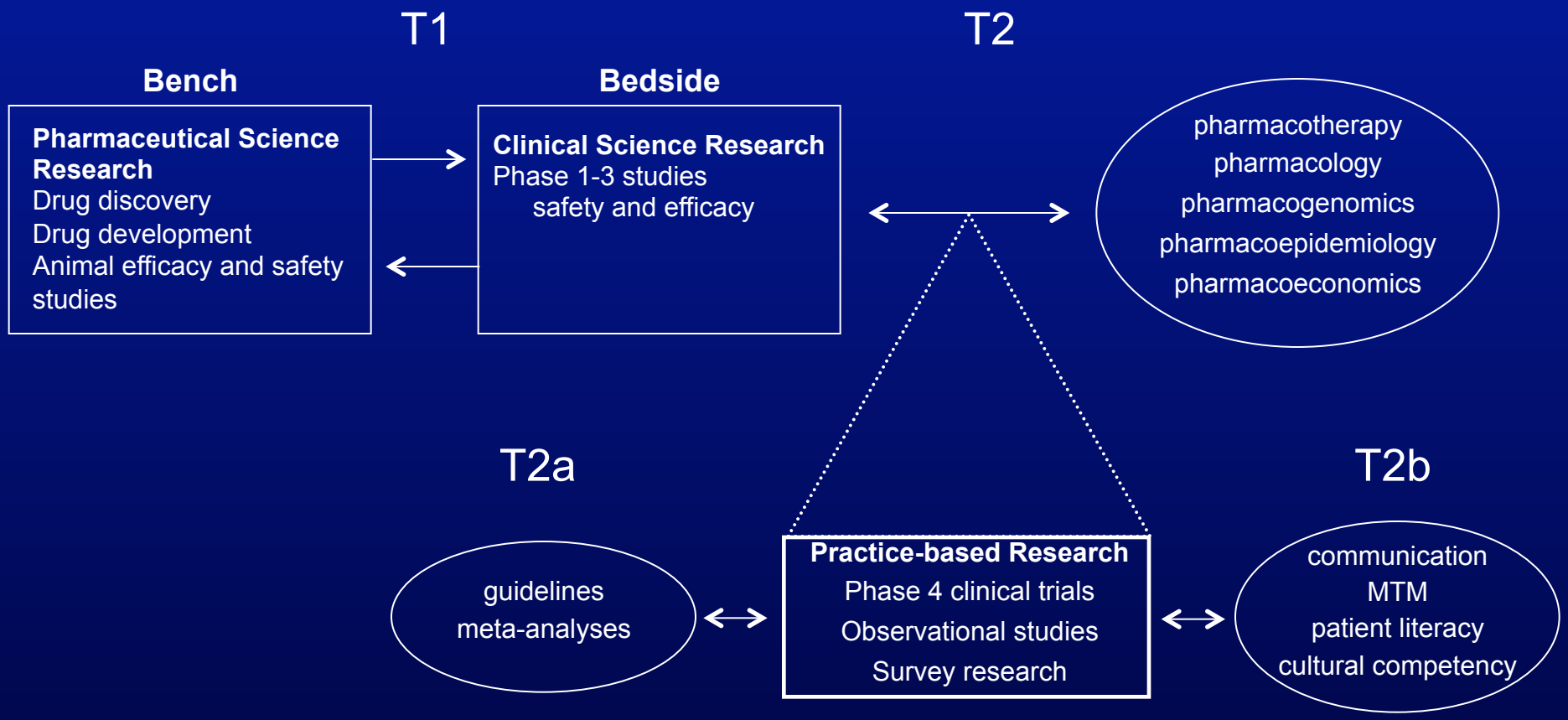
- Briefly explain why research and problem solving is important to pharmacists and the pharmacy profession
- Discuss and present the logistics of the course
- Discuss the expectations for the first two assignments
- Introduce you to RefWorks and review approaches to assessment of the literature (M. MacEachern)

Pharmacists and Research

- Pharmacists are recognized and valued as the health care professionals responsible for the use of medicines in the prevention and treatment of disease.
- Pharmacists can serve as principal investigators for pharmacotherapy research, generate a substantial portion of the research that guides drug therapy, and should be able to compete successfully with other health care professionals for research funding.
- The generation of knowledge about the use and appropriateness of pharmacotherapy in the treatment and prevention of disease is an important responsibility of the pharmacy profession.
- Pharmacists also need to understand the process of research so that they can interpret and utilize the knowledge that's generated by the research enterprise.

Translation of Pharmacy Research to Practice

Translational Research



PD-INEL Adapted from Dr. Lynda Welage

Pharmacists and Problem Solving

- Whether you serve as a principal investigator or not, understanding the research process improves your critical thinking skills and will assist you in solving problems you may face when caring for patients

Pharmacy 476

- The course is designed to achieve the following goals:

  (1) introduce the student to the components of a research proposal;

  (2) improve the student's understanding of a systematic approach to research and problem solving; and

  (3) further develop the student's scientific writing and oral presentation skills in preparation for the PharmD Investigation proposal and PharmD seminar that are required in the P3 and P4 years, respectively.

Pharmacy 476

- Course objectives (page 5)
  - these are the things that YOU are going to do
- Course references/notes/computer requirements
  - recommended text: Research Methodology: A step-by-step guide for beginners (paperback, 2nd edition) by Rajit Kumar
    - this and Introduction to Research in the Health Sciences (S. Polgar) are on reserve at Taubman
  - ALL COURSE MATERIAL will be available via Ctools
    - information gathering
  - laptop

Pharmacy 476

- Please take the time to read and familiarize yourself with the syllabus
  - assignments
  - expectations
  - DUE DATES- no late work will be accepted
- CTools is the primary source for information related to the course

Pharmacy 476

Examinations and Assignments

- There are NO exams in this course but...
  - there are a series of written INDEPENDENT assignments with specific DEADLINES (see p. 9)
    - these are expected to be completed independently per the honor code
    - the end result of the independent work is a 3-5 page proposal
    - this work will be submitted via CTools using the assignments tool
  - there are a series of GROUP assignments
    - these will be completed outside of class but you will be expected to attend group sessions to receive comments on your work and progress
    - the end result of this work is a poster that each member of the group will present (independently) at a poster session
    - more on group stuff in a minute...

Pharmacy 476

Examinations and Assignments

- **In addition to the assignments described in the syllabus, all students must complete the biomedical and health sciences modules of PEERRS** (http://my.research.umich.edu /peerrs/). The modules can be done at any time but need to be completed by the end of the semester.
- There is a link via the P476 CTools site

Pharmacy 476

Grading Policy

- There are **4** individual assignments that will culminate in a final proposal
- The group assignments (**7**) culminate in a poster which you and each member of your group will present at a poster session.
- **Rubrics have been developed for grading and also serve as guides for essential elements of each assignment.**

Pharmacy 476

- Review of assignments and grading
  - you will receive feedback on your work from a primary reviewer who will also grade your work
  - you will have the same primary reviewer for the entire semester but your final proposal will be reviewed by a different reviewer

Pharmacy 476

Assignments

- Independent assignments
  - should be submitted via CTools by midnight of the due date
  - no late work will be accepted
- Group assignments
  - organize yourselves into groups
  - presented in group sessions
  - poster template will be provided

Pharmacy 476
My Philosophy and Expectations

- That you will do your best work
- That you will be honest and ethical
- That you will follow directions- usually given in class...

P476
First Assignments

- First, self-associate into groups of 3-4 (no less than 3, no more than 4) by January 14th
- Assignment #1: Formulate a research problem statement (due Jan. 14th)
  - has to be drug, pharmacy or health-related AND it has to be something you are interested in and that you can write concisely about (there are word limits)
  - has to be in the realm of feasibility
  - can't be something that's already been done

Identify Your Research Problem

- To do this, you will need to:
  - independently identify a research problem
  - investigate a problem that is health, pharmacy and/or drug related
  - open your mind and be creative!
  - clearly and concisely state your research problem in writing
  - keep in mind that your research problem cannot be too broad - focus, focus, focus

Have an idea?

- "Formulating a research problem is the first and most important step in the research process.[1]"
  - identifies your destination
  - tells everyone what you intend to research
- Be specific and clear
  - has to be "researchable"
  - don't forget the "why" part
  - this will help you design the study

[1]Kumar, R. Research Methodology. Chapter 2, p. 20.

Create a Framework for Your Study

- Identify an area of interest
- Conduct a literature review to:
  1. find support for your idea
  2. consider arguments that oppose your idea
  3. broaden your understanding of the topic
- Based on your review create a logical statement- this will likely take multiple attempts

http://explorations.sva.psu.edu/lapland/maps/construct_maps.htm

Review the Literature

- How do you know that your idea is original?
  - review the literature:
    - **Primary** literature (journal articles)
      - Original research results published for the first time
    - **Secondary** literature (textbooks)
      - Derived from the primary literature
    - **Tertiary** literature (reference books: dictionaries, encyclopedias, Meylers side effects of drugs)
      - Derived from primary and secondary literature

http://grinnell.unh.edu/primarylit.html

Review the Literature

- Just because it's been done before doesn't mean it was done right!
  - how would you do it differently?
  - why is your way a better way?
- These points as well as the information you gather during your literature review will help you write the introduction section of your proposal
  - gather information to support the rationale for your idea

Formulate a Research Problem

- Doesn't necessarily have to be "new"
  - what do you want to find out
  - *how* do you want to find it (methods)
  - change in paradigm (we've been doing it wrong all along)
- What "gaps" exist in our knowledge of your topic?
  - literature review
  - make your case, tell your story

Formulate a Research Problem

- Doesn't have to be complicated
  - KISS principle
  - "garbage in, garbage out"
- BUILD ON WHAT YOU KNOW!
  - expand on what you want to know
  - this doesn't have to be rocket science
  - why did you want to go to pharmacy school?

Kumar, R. Chapter 4: Formulating a Research Problem. In: Research Methodology, 2nd Edition.

Formulate a Research Problem: The Four "Ps"

1. People: identify an "at risk" population
   - groups of individuals- "population"
     - pediatrics, geriatrics, ethnic groups
     - socio-economics
     - communities- urban, rural, inpatient, outpatient
2. Problems: identify a healthcare problem
   - drug packaging, formulation, dosage forms
   - absence or efficacy of therapeutics for a specific disease
   - access to medical care and/or medicines

Kumar, R. Chapter 4: Formulating a Research Problem. In: Research Methodology, 2nd Edition.

Formulate a Research Problem: The Four "Ps"

3. Programs: establish the impact of a program or intervention (effectiveness, structure)
   - impact of RPh on medical care, RPh prescriptive authority (ethical, legal and healthcare aspects)
   - Medicare part D
   - RPh run anticoagulation clinics, smoking cessation and immunization programs

Kumar, R. Chapter 4: Formulating a Research Problem. In: Research Methodology, 2nd Edition.

Formulate a Research Problem: The Four "Ps"

4. Phenomena: establish existence of a process or mechanism
   - adverse drug events, medication safety
   - mechanism of drug action- mechanisms not previously identified
   - pharmacist-patient relationship, patient counseling
   - patient (consumer) satisfaction

Kumar, R. Chapter 4: Formulating a Research Problem. In: Research Methodology, 2nd Edition.

Formulate a Research Problem: Considerations

- Interest
  - if your topic isn't of interest to you, you won't be interested in studying it
- Magnitude
  - don't try to solve a huge problem- focus on a specific aspect of a problem
  - KISS

Kumar, R. Chapter 4: Formulating a Research Problem. In: Research Methodology, 2nd Edition.

Formulate a Research Problem: Considerations

- Measurement
  - what will you measure and HOW will you measure it?
- Expertise
  - you may not be an expert now, but you will be
    - build your knowledge, make your case, become an expert

Kumar, R. Chapter 4: Formulating a Research Problem. In: Research Methodology, 2nd Edition.

Formulate a Research Problem: Considerations

- Relevance and significance
  - how does your research problem/topic fit into what we already know?
  - why is it important?
- Access to data
  - will investigation of your topic require acquisition of information from secondary sources (e.g., medical records)?
- Ethical issues
  - relates to human and animal research
    - IRB
    - UCUCA

Kumar, R. Chapter 4: Formulating a Research Problem. In: Research Methodology, 2nd Edition.

Formulate a Research Problem: Other Points to Keep in Mind

- Your topic is a problem, program or phenomenon about which you will collect information (data)
- Emphasis is on exploring, discovering or establishing associations or causation
- Use the four "Ps" to help identify and narrow your research problem
- Now, write a research problem statement...

Research Problem Statement

- Effective problem statements answer the question “why does this research need to be conducted?”
- It is a concise statement of why the study should be conducted and what question(s) it will answer
- It creates a framework for your study

Examples

Write your research problem statement in this format

- This study will investigate the effects of *(treatment)* on *(population and setting)*. This study will be conducted to determine whether *(treatment)* results in *(performance change or measured outcome)* compared with *(standard treatment)*. The investigation will be conducted *(describe the setting)*.
- See examples on CTools (not necessarily in the correct format)

Assignment #1

- Formulate a research problem statement
- Due January 14th
  - has to be drug, pharmacy or health-related AND it has to be something you are interested in and that you can write concisely about (there are word limits)
  - has to be in the realm of feasibility
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QUESTIONS?



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Additional Source Information

for more information see: http://open.umich.edu/wiki/CitationPolicy

Slide 8: Adapted from Dr. Lynda Welage

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