ASSESSING EVIDENCE BASED PRACTICE IN A POPULATION OF HEALTH SCIENCE GRADUATE STUDENTS

Presented by Juan Ramirez, Director of Institutional Research

Co-contributors: Peggie Barr, Katherine Mitsouras, Patricia Vader, Mary Long, and LaMesha Carter

Overview: Western University

- Western University of Health Sciences:
  - Medium-sized Health Sciences Institution (enrollment = 2649)
  - Nine colleges (13 programs):
    - Biological Sciences, Dental Medicine, Health Sciences Education, Nursing, Optometry, Osteopathic Medicine, Pharmaceutical Sciences, Pharmacy, Physical Therapy, Physician Assistant Studies, Podiatric Medicine, and Veterinary Medicine.
- WASC Reaccreditation Timeline
  - Proposal submitted in October 2005
  - CPR site visit March 2008
    - Developed and adopted 8 institutional outcomes
  - EER site visit October 2009

Overview: WASC Process

- WASC Educational Effectiveness Review for Western University:
  - WASC
    - Three faculty, staff, administrator panels evaluated WASC themes
    - Support from Institutional Research and Effectiveness
    - WASC Steering panel consisted of panel Chairs, ALO, IRE director
  - Panel Approach:
    - Literature review
    - Peer analysis
    - Internal evaluation

Evidence Based Practice Panel

- Evidence Based Practice Panel
  - Consisted of ten administrators, faculty, and staff
  - Investigated EPB learning outcomes at WesternU.
- Goals to investigate:
  - Definition of Evidence Based Practice (EBP)
  - EBP teaching methods
  - EBP assessment instruments
  - Evaluate student:
    - **Knowledge****
    - **Skills****
    - Behaviors
    - Attitudes

Definition

- The Panel adopted the a basic and currently accepted definition:*

  "EBM (or EBP) is the integration of the best research evidence with our clinical expertise and our patient's unique values and circumstances."

- Five Steps: Evidence Based Practice

1. Formulate a searchable, answerable clinical question (PICO format).
2. Collect the most relevant and best evidence.
3. Critically appraise the quantitative evidence.
4. Integrate all evidence with clinical expertise, patient preferences, and values in making a practice decision or change.
5. Evaluate the practice decision or change.

*Sackett DL, Straus SE, Richardson WS, Rosenberg W, Haynes RB. Evidence-Based Medicine: How to Practice and Teach EBM. 2nd ed. Edinburgh, England: Wolfe Pub Ltd; 2000.

*Straus SE, Richardson WS, Glasziou P, Haynes RB. Evidence-Based Medicine: How to Practice and Teach EBM. 3rd ed. Edinburgh, England: Wolfe Pub Ltd; 2005.

Internal Assessment

- Team selected two methods to evaluate EBP skills at WesternU.
  - Standardized Instrument: Berlin Questionnaire
  - Evaluation of student work: Rubric-based
- Two programs at WesternU were selected for assessment
  - College of Veterinary Medicine (CVM)
  - Physical Therapy Program (DPT)

Method 1: Berlin Questionnaire

- Berlin Questionnaire
  - Despite the name, the Berlin Questionnaire is a 15-item multiple choice exam.
  - Assesses ability to apply EBP knowledge
  - Time allotted is 1 hour
- The exam was administered to two different student cohorts in each program:
  - Incoming (first-year) students who had yet to take a EBP course at WesternU
  - Outgoing (graduating) students who had training in EBP at WesternU

Participants: Berlin Questionnaire

- College of Veterinary Medicine (CVM)
  - Entry Level - A total of 101 entry-level students, class of 2012, were tested.
  - Final Year - A total of 91 fourth and final year students (class of 2009) were tested.
- Department of Physical Therapy (DPT)
  - Entry Level - A total of 48 entry level students, class of 2011, were tested.
  - Final Year - A total of 38 third and final year students (class of 2009) were tested.

Results: Berlin Questionnaire

- Analysis
  - ANCOVA (one-way) for students within program to measure mean difference in score between incoming and outgoing cohorts.
  - Control variables included undergraduate GPA and GRE
- Results
  - No significant differences in preadmissions variables for either cohort
  - CVM 2009 students scored significantly higher than those from the 2012 group
  - DPT 2009 students scored significantly higher than DPT 2011 students

Findings: Berlin Questionnaire

Cohort	1st year Cohort	Graduating Cohort	Mean Difference	% Difference	F(df)	p (2-sided)
Veterinary Medicine	x = 5.09	x = 6.04	0.95*	6.3%	5.53 (1, 83)	0.021
Physical Therapy	x = 4.46	x = 5.41	0.95*	6.3%	11.17 (190)	0.001

*p < .05

Conclusion

- Older cohorts performed significantly better than newer cohorts in both colleges after controlling for preadmission GPA and GRE score.
- Other considerations
  - Students did not perform very well overall on the exam.
  - Berlin Questionnaire may not be the best tool for WesternU purposes?
  - The Fresno test was also considered
    - Panel members rejected this test, for now, due to the following:
    - A higher degree of subjectivity in the scoring
    - Time-intensiveness to grade.

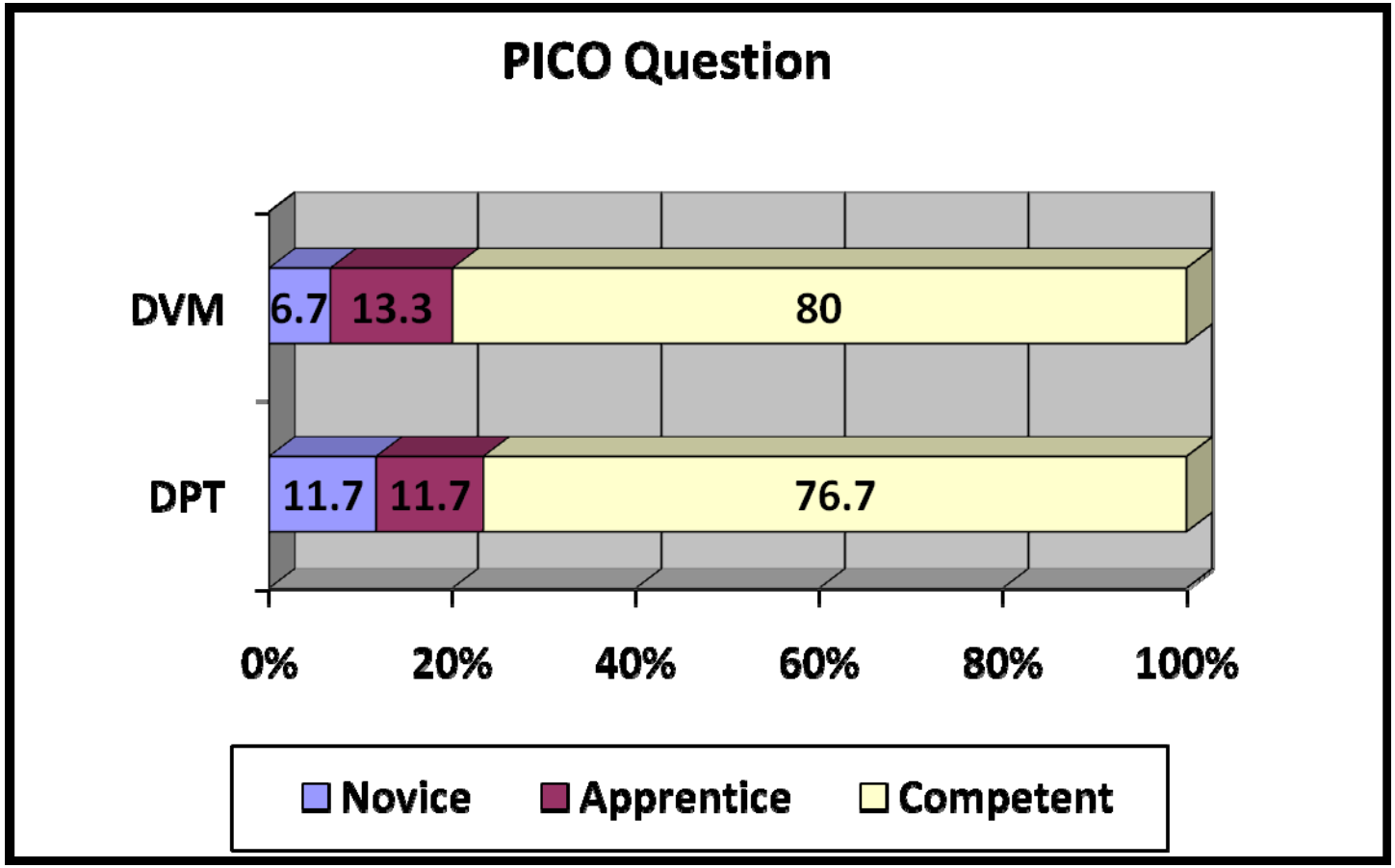
Method : Student Work Analysis

- The subcommittee focused the evaluation of student work on the first two steps of the EBP process.
  - Creating the clinical question (PICO)
    - **Patient**: accurately describes patient of interest
    - **Intervention**: What is the main intervention under consideration?
    - **Comparison**: Is there an alternative treatment to compare?
    - **Outcome**: What is the target clinical outcome?
  - Conducting a literature search
    - Search terms from PICO question.
    - Includes 2 or 3 keywords/search terms (not 1 and not 4+).
    - Reasonable limits (OK: English, human/animal as relevant; sensible age range that is not too restrictive; Not OK: free full-text, too many limits, etc).
    - Number of hits is +/-20% of what student quotes.
    - Student chooses one article that is on 1st 2 pages of hits and justifies why chosen.
- Assessment Tool:
  - A rubric was developed to assess student work at the novice, apprentice, or competent (non-expert) level for practicing identified EBP steps (see handout).

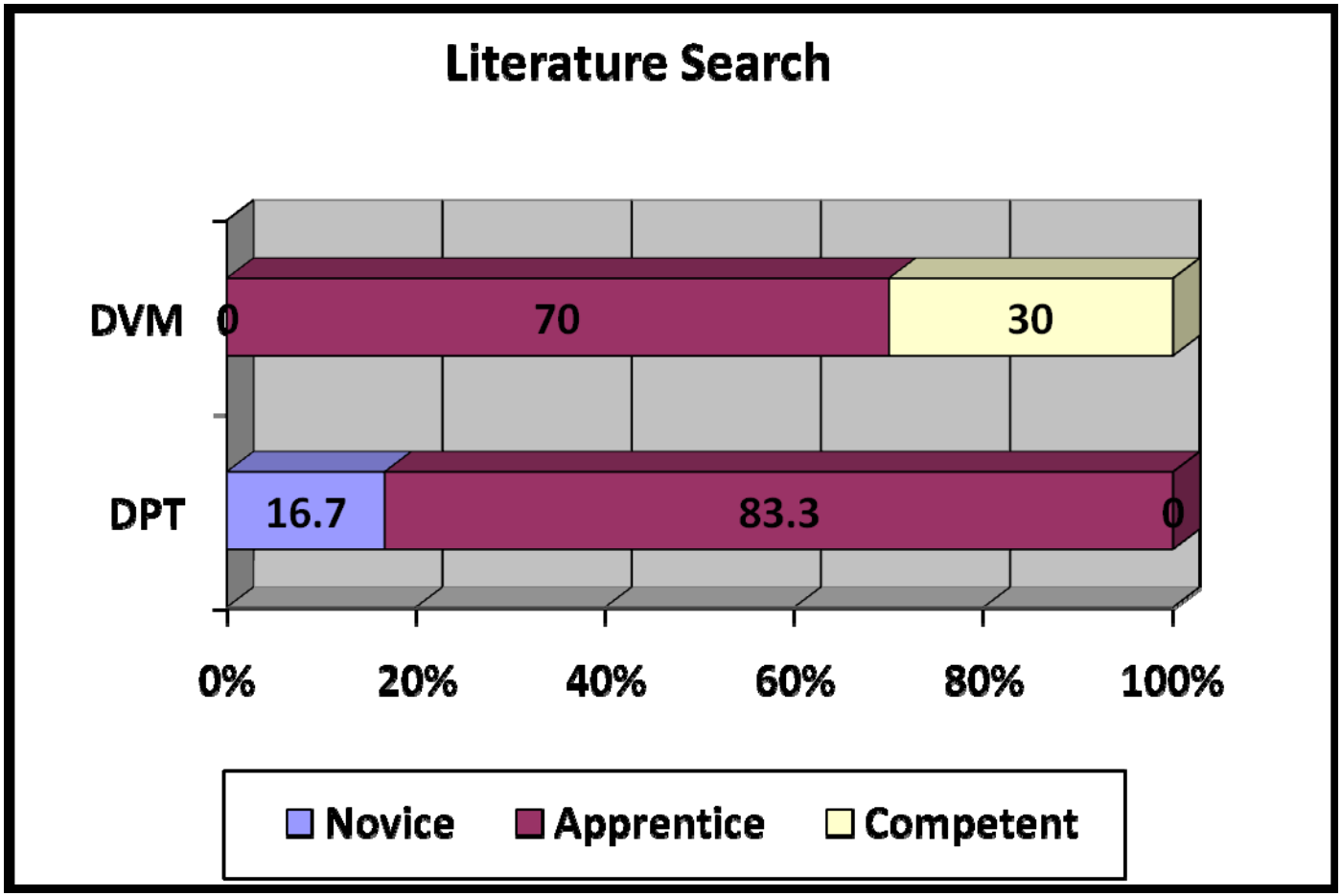
Participants: Student Work Analysis

- 60 randomly selected student assignments from CVM (n = 30) and DPT (n = 30) were evaluated by panel members.
- DPT assignment: Modified Educational Prescription form
  - Students in this course were assigned a patient case and were instructed to do the following: (1) create a PICO (acronym for Patient, Intervention, Comparison, Outcome); (2) create a clinical question; (3) conduct a search utilizing terms from clinical questions, and (4) select and evaluate a clinical practice guideline from their search strategy.
- CVM assignment: Educational Prescription form
  - Assignment required students to formulate a question based on a specific topic, identify keywords and limits and perform a PubMed search to identify relevant primary literature to answer the question.

Findings: Student Work Analysis



Findings: Student Work Analysis



Findings: By Sub-area

	EBP Sub-area	% Correct (CVM)	% Correct (DPT)
PICO	**PT/Objective**	90.0%	80.0%
	Intervention	93.3%	86.7%
	Comparison	---	50.0%
	Outcome	90.0%	73.3%
Search Strategies	**Search 1**	56.7%	90.0%
	Search 2	90.0%	60.0%
	Search 3	63.3%	60.0%
	Search 4	73.3%	58.3%
	Search 5	83.3%	0.0%

Conclusion: Student Work Analysis

- General Results
  - Majority of students in both programs achieved Competent level on PICO analysis
  - Not many achieved Competent level on Search analysis.
- Strengths of approach
  - Able to identify specific areas of weakness on assignments at program level
- Limitations:
  - Rubric developed after assignments completed; probably best to develop prior.
  - Time consuming (especially after the fact)
  - Analyses a bit messy
  - No effort was made to distinguish between “parts” on the rubric.

Closing Remarks

- Standardized Testing Method
  - Cleaner but potentially less informative
  - Testing approach may be difficult to implement at a more traditional school
  - Not always easy to locate appropriate instrument
  - Necessary to examine subscale data to use more effectively
- Student Work Analysis
  - Messier but potentially more informative
  - Works well when using rubrics; but more time consuming
  - Need to ensure that rubric or grading instrument is applied accurately and consistently.
  - Works better when rubric created ahead or in conjunction assignments

Thank you!

Any questions?