Incorporating a Research Experience into a Professional Graduate Program

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Objectives

• Discuss the benefits of students conducting research
• Identify the challenges associated with students conducting research
• Summarize the pros/cons of a full master’s thesis
• Consider alternatives to the thesis

*Questions are welcome throughout
Importance of a Research Philosophy

• Clinicians must understand research concepts to practice evidence-based medicine (Keeley, 2016; VanLunen, 2015)
• More than just reading the results of a study (Arnold, 2017)
  – Need to understand how to judge the quality of the methods
  – Need to understand the statistics, at least at a basic level, to understand whether or not the findings are clinically meaningful
  – Need to discern if the findings can be generalized to the clinician’s current patients

Research within the Curriculum

• Research should be woven throughout
  – Sensitivity/Specificity - evaluation
  – Numbers Needed to Treat – epidemiology
  – Cost analysis and healthcare informatics – management
  – Patient-reported outcome measures – therapeutic interventions
  – Formation of Clinical questions – PICO
  – Evaluation of research – PEDRO scale
Getting students involved

- Importance of Evidence-Based Practice
  - Systematic review of the evidence, combined with experience and expertise (Raab, 2016)
- One of the best ways to learn how to evaluate evidence is to learn how to conduct research (Arnold, 2005; Hurley, 2011)
  - Develop a clinical question
  - Design a research study to answer the question
  - Collect and analyze the data
  - Evaluate the study’s limitations

How to teach research

- How do we teach other skills?
- How do your students best learn?
Need for Outcomes Research

• Who can best conduct patient outcomes research? Practicing clinicians!
• Why aren’t practicing clinicians producing research on patient outcomes?
  – Time
  – Money
  – Knowledge of the process
  – Joy of research

Many different options

• Full or Partial Master’s Thesis Research Project
• Scholarly Projects
• Research embedded within the curriculum
  – CAT papers
  – Systematic reviews
  – Research methods course
  – Portions of the thesis
Challenges of Requiring Research

• Sufficient number of faculty advisors
• Resources including equipment, supplies, faculty load
  – Research grants
• IRB timeline
• Delayed graduation = delayed certification/license
• Credit hours in program

Challenges of Requiring Research

• Faculty Turnover/Sabbaticals
• Academic preparation of students
• Time-consuming for students
• Faculty expertise
• Getting other faculty (outside of AT) involved
• Required vs. optional
  – If optional, then other classes are likely needed
Benefits of Required Research

• Challenging, graduate-level work
• Teach future clinicians how to conduct quality research studies
• Better understanding of and appreciation for the research process
• Opportunities for undergraduates to get involved in research

Benefits of Required Research

• Resume-builder – PhD
• Project to talk about during interviews
• Help faculty advance their research agendas
• Professional presentations
  – Bring recognition to program
  – Help faculty produce scholarship for tenure/promotion
• Networking
  – At conferences and with other researchers
Benefits of Required Research

• Research is FUN!
• Research is challenging!
• Research projects encourage faculty to collaborate between one another and across campus
• Provides an opportunity for Interprofessional Education (IPE) through collaborations

Advanced Skill Application

• Phlebotomy
• Diagnostic Ultrasound
• Wireless EMG
• Video gait analysis
• Force plates for gait and balance
• Laboratory analysis
• Continuous Quality Improvement
Group Research Projects

Independent work
• Each student writes own literature review
• Beginning with data analysis, manages own dependent variable(s)
• Writes own results/discussion
• Individual oral defense

Group work
• Group defines the methods
• Group writes IRB
• Group collects the data together
• Group may present data together or separately

Alternatives:
Scholarly Project
• Very similar to the thesis, but students work in groups only – no individual projects
• Topics are assigned to each group based on faculty expertise
• Advantages – faculty manage fewer projects and all are in their area of expertise
• Disadvantages – may get less buy-in from students
Alternatives: CAT Papers

• Critically Appraised Topic Papers
  – Students develop a focused clinical question
  – Use PICO to identify research studies
    Patients, Interventions, Comparison, Outcomes
  – Identify and search appropriate databases
  – Identify and use inclusion/exclusion criteria for studies, including level of evidence
  – Develop a clinical bottom line – implications for practice

Other Alternatives

• Have students write a literature review, develop their methods, write an IRB, but then stop there.
• Provide students with a data set to analyze and develop results/conclusions
• Conduct small experiments in lab classes where everyone puts their data together and analyzes it as a group
Conclusions

• There are many benefits to incorporating research into a professional graduate program
• There are many challenges to incorporating research into a professional graduate program
• A full thesis is one option
• Many other options are also viable
• The right option for your program depends on your faculty and your university

Thank you

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