RESEARCH IN MEDICINE: EARLY LEARNINGS FROM AN INNOVATIVE APPROACH TO UNDERGRADUATE MEDICAL EDUCATION

Presenters: Dr. Ronald George, Dr. Brian Wheelock, Robin Parker, Darrell Kyte & Rachel Ogilvie

Other contributors: Dr. Jill Hayden, Jackie Phinney

April 27th, 2016

Overview

1. Introduction To RIM: Ron George & Brian Wheelock
2. Systematic Review Results: Robin Parker
3. Internal Evaluation: Darrell Kyte
4. MicroResearch Pilot: Rachel Ogilvie
5. Question Period and Panel Discussion

Introduction To Research in Medicine

Ronald George, MD FRCPC
Chair RIM Governance Committee
Unit Director, RIM

&

Brian Wheelock, MD FRCSC
Co-Chair RIM Governance Committee
Unit Director, RIM DMNB

"...every student will have the opportunity to experience research in medicine, to see the work that translates to good clinical care"

Dr. Tom Marrie, Dean (2009-2015)
Dalhousie Medical School

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Vision of Research in Medicine

Medicine & Research integrated so that students rigorously consider clinical applications as they learn basic sciences and scientific principles and apply them to clinical skills.

Research in Medicine

- Mentor - Mentee program with a research deliverable

- Four years - longitudinal unit - unique to Dalhousie Medical School

- The Faculty of Medicine provides a summer stipend for students for an intensive summer of research.

RIM - Unit Directors

- Eight UD - students randomly assigned

- Govern the RIM Unit to ensure all goals and objectives are met

- Assist in aligning students with a mentor appropriate for their research of interest

- Coordinate with mentors on evaluation of progress

- Serve as the core peer-review committee for approval of student projects

- Orient each student to the program, and ensure ongoing, timely dissemination of information regarding the program

Mentors

· Lend their research experience to help the student develop a suitable project plan and proposal

· Assist student obtaining ethical approval (if needed)

· Meet with the student regularly and monitor their project timeline and progress toward the proposed objectives

· Review and approve progress reports

· Provide constructive feedback to the student on progress and performance

· Ensure the student is fully dedicated to their RIM project during funded summer(s) and adheres to the research expectations as outlined by the RIM Office.

RIM Research Day

· April 1, 2016

Systematic Review: Evaluation of RIM-Type Scholarly Concentration Programs

Robin Parker, MLIS

Evidence Synthesis and Information Services Librarian,
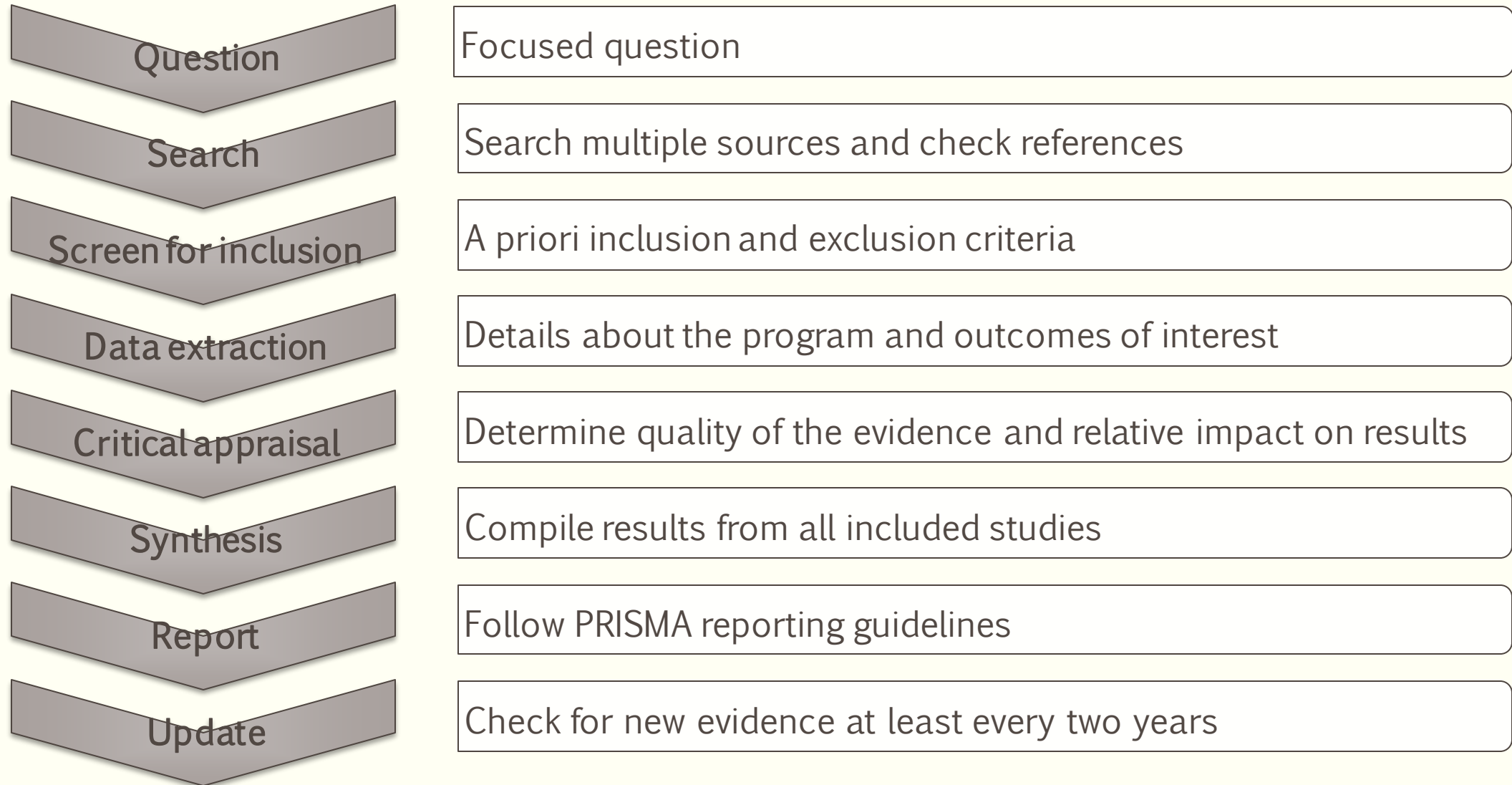W.K. Kellogg Health Sciences Library
Cross-appointed: Research Associate, Dept. of Community Health and Epidemiology

Systematic Review Question

Are applied research curricula in UGME programs more effective than theoretical or no research training at increasing research knowledge, skills, capacity and/or outputs amongst graduates?

Systematic Review Methods

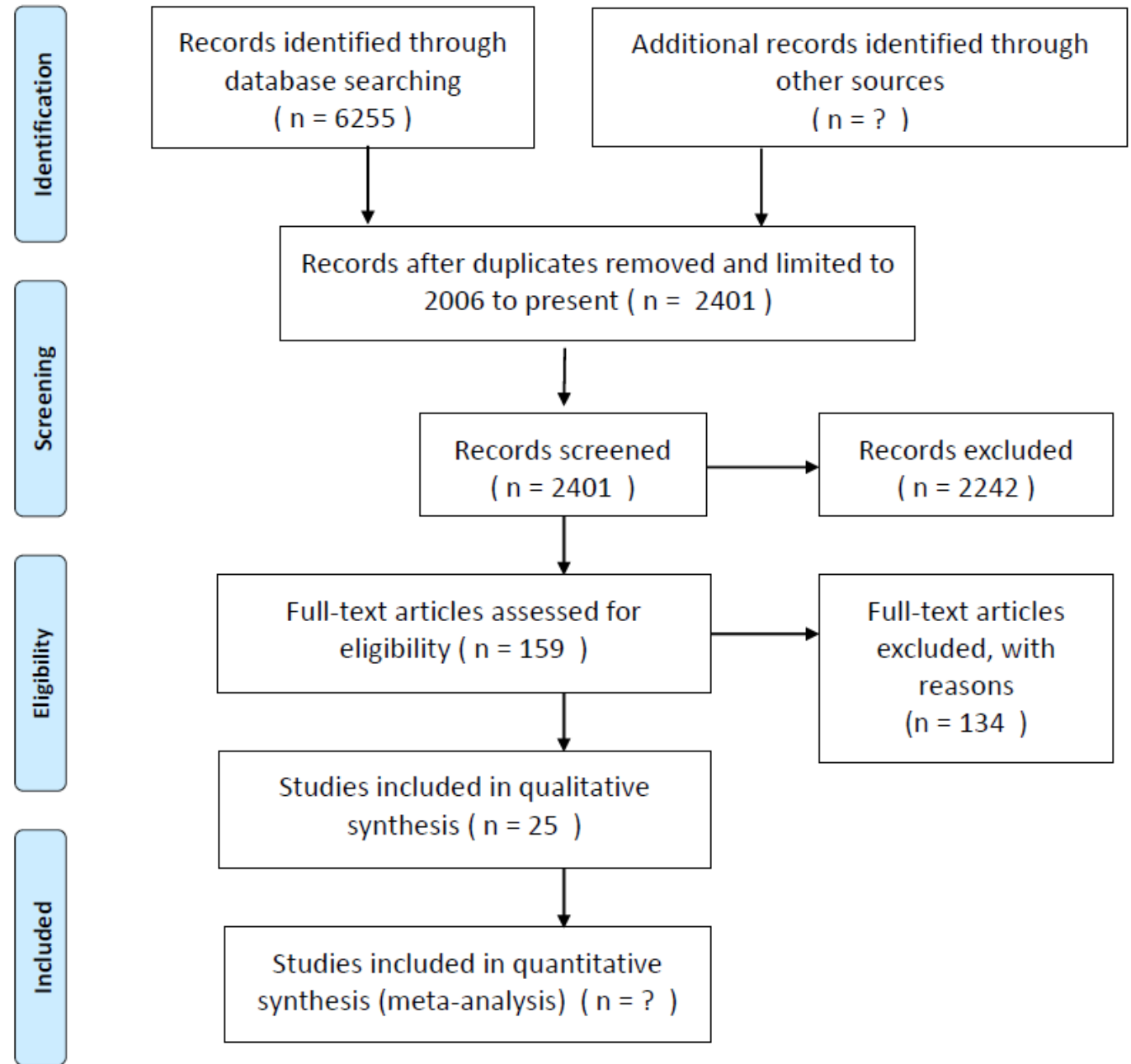|	
Question	Focused question
Search	Search multiple sources and check references
Screen for inclusion	A priori inclusion and exclusion criteria
Data extraction	Details about the program and outcomes of interest
Critical appraisal	Determine quality of the evidence and relative impact on results
Synthesis	Compile results from all included studies
Report	Follow PRISMA reporting guidelines
Update	Check for new evidence at least every two years

Systematic Review Methods

Search

Searched MEDLINE, Embase, ERIC, Web of Science, and PsycINFO; grey literature search and reference checking ongoing

Screen for inclusion

Selected studies with relevant outcome data dealing with applied research curricula in UGME education

Data extraction

Study citation information, location of program, program details, outcome data (measures of student perceptions, behaviours, publication rates, research careers, etc.)

Results – in progress

- 2006 – 2016
- 25 studies included
  - two reviews published in 2015
  - 15 primary studies published since 2013

Identification

Records identified through database searching (n = 6255)

Additional records identified through other sources (n = ?)

Records after duplicates removed and limited to 2006 to present (n = 2401)

Screening

Records screened (n = 2401)

Records excluded (n = 2242)

Eligibility

Full-text articles assessed for eligibility (n = 159)

Full-text articles excluded, with reasons (n = 134)

Studies included in qualitative synthesis (n = 25)

Included

Studies included in quantitative synthesis (meta-analysis) (n = ?)

Results – in progress

- **15 primary studies since 2013***
  - 2 qualitative studies
  - 13 with quantitative evaluation data, mostly from surveys and questionnaires
 - Some cohorts with evaluation of research output and involvement in research in subsequent career

*Searches for published reviews last run in 2013

Discussion

Recent reviews:

Chang & Ramnanan (2015): A review of literature on medical students and scholarly research: Experiences, attitudes, and outcomes

Amgad et al. (2015): Medical student research: An integrated mixed methods systematic review and meta-analysis

Our review (n=23) 2006-2016

Chang & Ramnanan (n=20) 1950-2013

Amgad et al. (n=79) 1950-2013

0

2

1

13
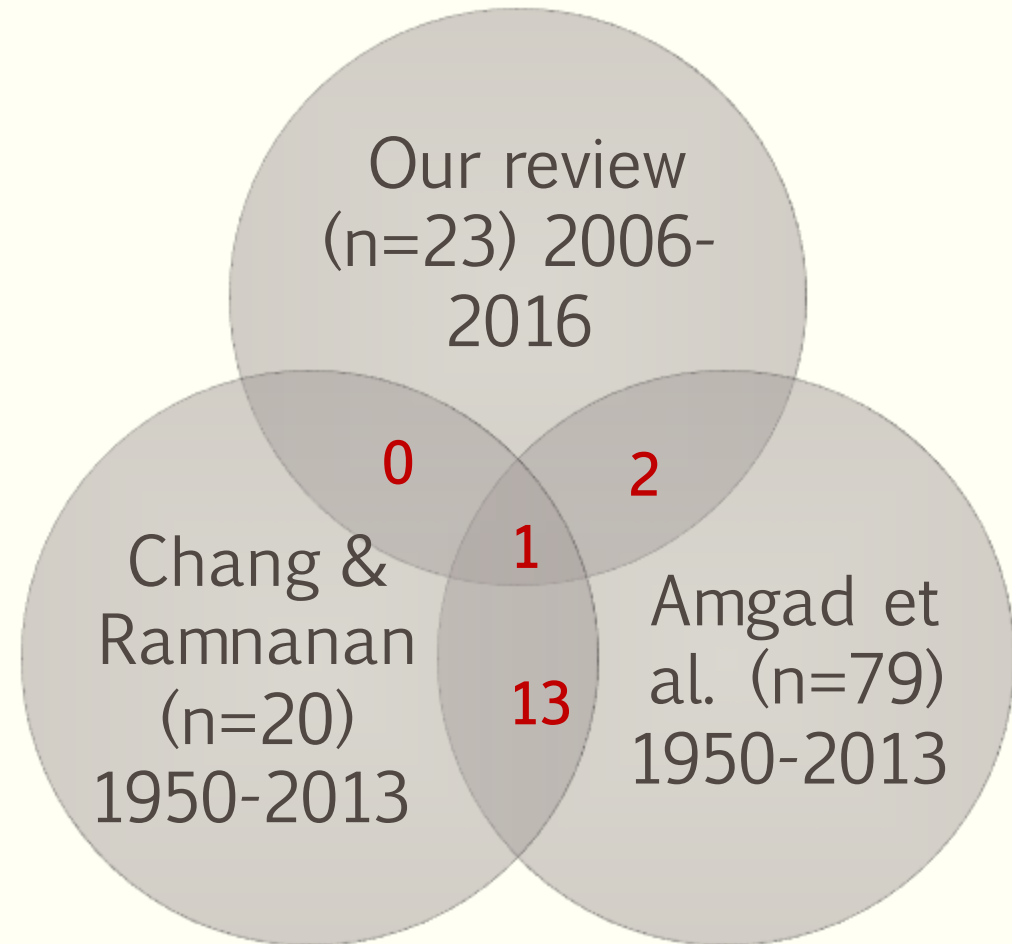
Discussion – previous review results

Barriers to student research:

- Time
- Mentoring
- Relevant acknowledgement of effort
- Lack of role models
- Perceived lower salaries of academic physicians

Outcomes of student research:

- Peer reviewed publications
- More likely to (or plan to) engage in research during career
- More likely to pursue specialty related to their research
- Correlation with success in academia
- Reported increase in research skills
- Contributed to increased confidence in residency competition

Next steps

- Data extraction from included studies

- Critical appraisal based on internal validity and Kirkpatrick's Model for Evaluating Educational Outcomes (Steinert et al., 2006)

- Analysis

- Reporting

- Recommendations, if appropriate, to RIM unit governance committee

Early Evaluations of the RIM Unit

Darrell Kyte

Evaluation Specialist: Dalhousie Undergraduate Medical Education

Evaluation in UGME – The Context

- UGME evaluates all required learning experiences in MED I, II, III, and IV

- Accreditation bodies require evaluations as part of continuous quality improvement

- Evaluations are reviewed by unit head/component heads leading to creation of annual unit report

- Unit report detailing the strengths and areas for improvement leads to creation of syllabus for following year
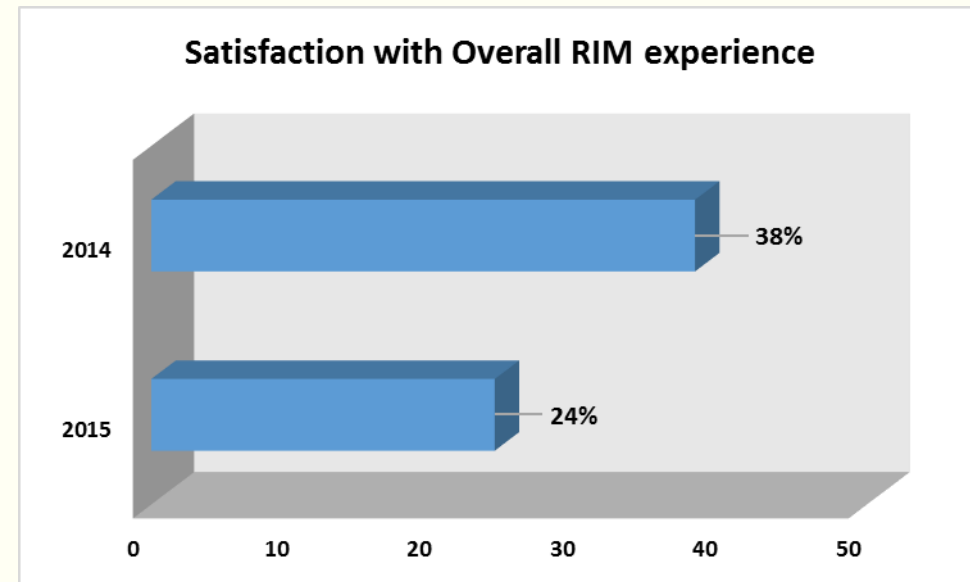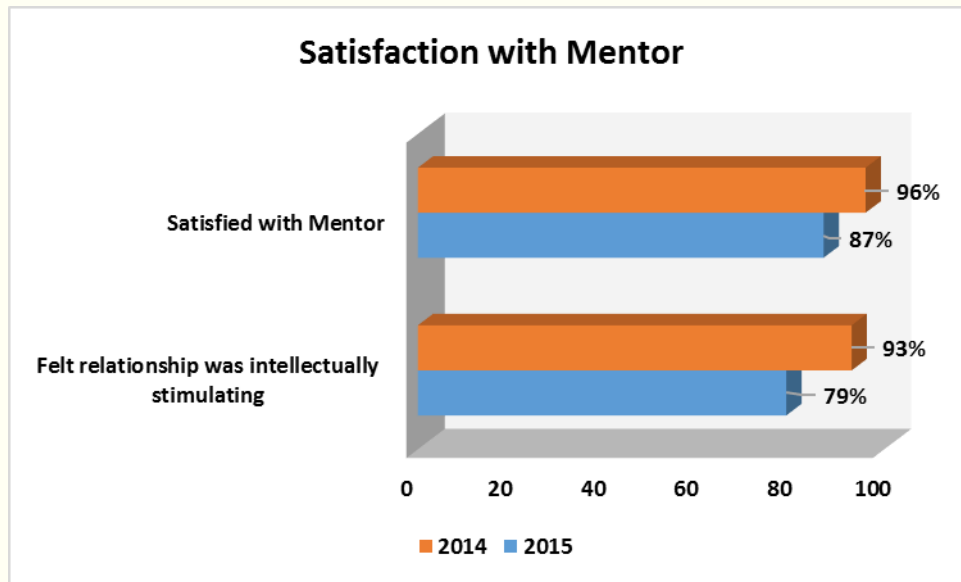
Evaluation of RIM – Initial student feedback

- Student led evaluation of RIM in late Fall 2013 - Survey consisting of Likert scale and open-ended questions

- 85% response rate (93 of 109)

- Findings indicated room for improvement
  - 56% did not believe RIM would be useful to their career as a physician
  - More timely information about RIM – "In coming years, please ensure that information is sent well out in advance."
  - Unhappy with lost elective time– "I personally was really upset that our elective got taken away from us, that was one of the things I was looking forward to the most about coming here."

- Important to note feedback was obtained prior to students working with mentor

Evaluation of RIM – Unit Review surveys with students

- Evaluation in mid-summer 2014 and 2015

- Response rate consistent
  - 46% in 2014
  - 42% in 2015

- Relationship with mentor viewed positively in both years

- Overall satisfaction low

- Students not using positive relationship with mentor to judge overall satisfaction

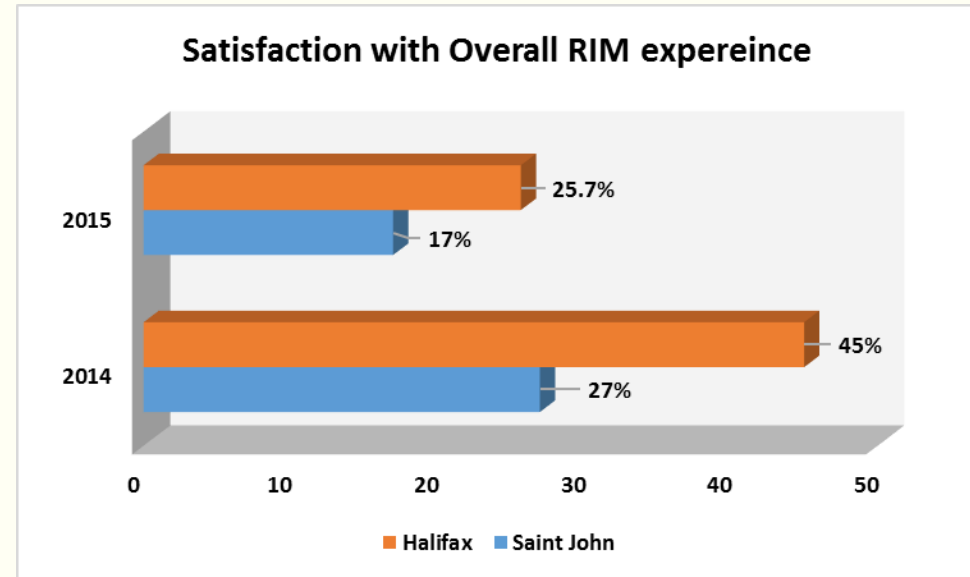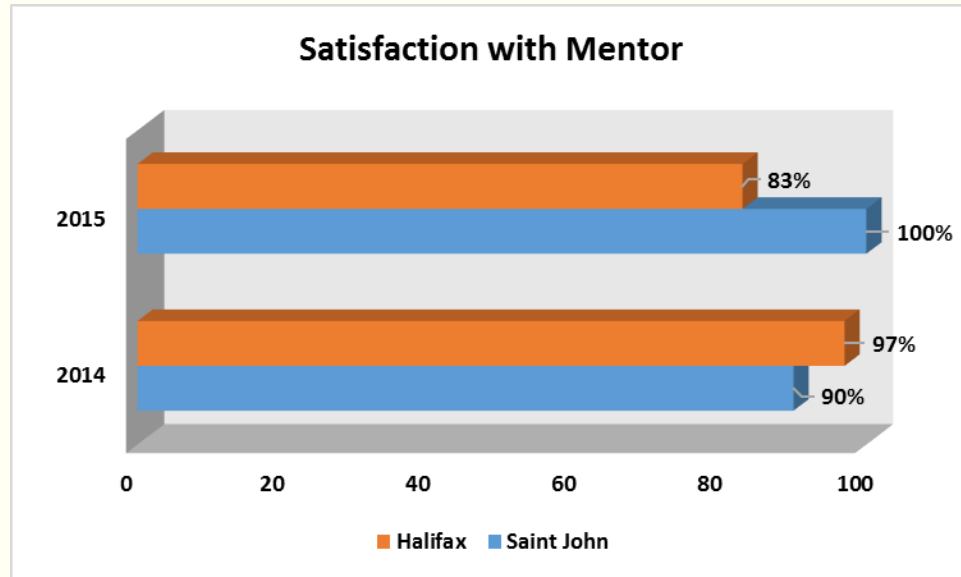- Comments reveal litany of issues with RIM

Evaluation of RIM – Unit Review surveys with students

- Satisfaction with Mentor relationship
- Satisfaction with RIM experience

Satisfaction with Mentor

Satisfied with Mentor	96% (2014) / 87% (2015)
Felt relationship was intellectually stimulating	93% (2014) / 79% (2015)

Legend: 2014, 2015

Satisfaction with Overall RIM experience
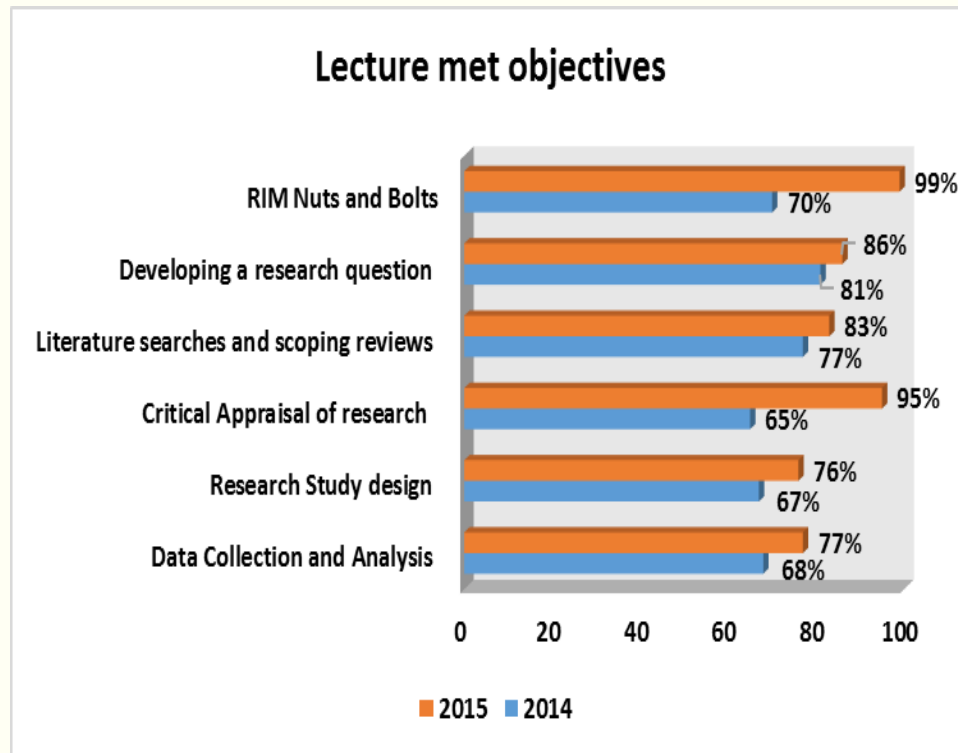
2014	38%
2015	24%

Evaluation of RIM – Unit Review campus comparison

- Satisfaction with Mentor relationship
- Satisfaction with RIM experience

Satisfaction with Mentor
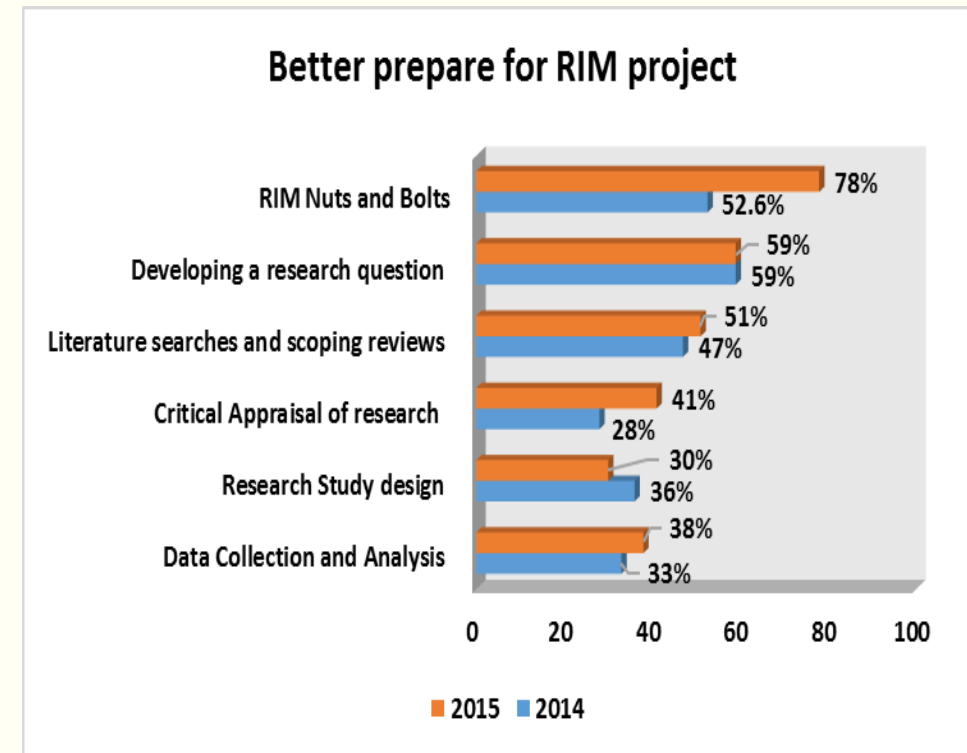
	Halifax	Saint John
2015	83%	100%
2014	97%	90%

Satisfaction with Overall RIM expereince

	Halifax	Saint John
2015	25.7%	17%
2014	45%	27%

Evaluation of RIM – Core Curricular Sessions

- Met Objectives

- Better prepare for RIM project

Lecture met objectives

	2015	2014
RIM Nuts and Bolts	99%	70%
Developing a research question	86%	81%
Literature searches and scoping reviews	83%	77%
Critical Appraisal of research	95%	65%
Research Study design	76%	67%
Data Collection and Analysis	77%	68%

Better prepare for RIM project

	2015	2014
RIM Nuts and Bolts	78%	52.6%
Developing a research question	59%	59%
Literature searches and scoping reviews	51%	47%
Critical Appraisal of research	41%	28%
Research Study design	30%	36%
Data Collection and Analysis	38%	33%

Evaluation of RIM – Mentor Feedback

- Focus groups with RIM mentors in late summer 2014

- Survey with mentors in late summer 2015

- Feedback suggested:
  - Mentors satisfied with overall RIM experience
  - Mentors satisfied with student relationship
  - Intensity of working relationship varied – some students worked closely while others saw student less frequently
  - Mentors felt additional meet and greet should be held to introduce students and potential mentors
  - Mentors lacked understanding of RIM governance
    - Unaware of responsibilities of RIM unit directors

Evaluation of RIM – Responding to feedback

- Exposure to research sessions moving earlier in first semester

    - Designed to expose students to potential research earlier

- Core curricular sessions moving later in first semester

    - Designed to better prepare students for RIM project

- Student reps sit on governance committee from both sites for student input

- Future potential change – move core curricular sessions into second year

RIM MicroResearch Pilot Project: A collaborative team approach to support trainees in relevant research

Rachel Ogilvie, MA
Research Coordinator: Dept. of Community Health and Epidemiology

The MicroResearch Model

What is the MicroResearch Model?

➢ Collaborative research model developed by Noni MacDonald and Bob Bortolussi in 2008 (Dalhousie)

➢ Originally developed for community engagement work in Africa

➢ Mentors lead multi-disciplinary teams to conduct locally-relevant research with relatively small pockets of funding

➢ Hayden et al. was the first team to adopt and evaluate the model in Canada

Mission

"Improving health care outcomes with innovative community based research that assures quality and integration of research into the fabric of the local health system and the community."

MicroResearch Model:
Low Back Pain in the QEII Emergency Department

Overarching Team Goal: Improve management of low back pain in the emergency department (ED)

2015/2016 Trainee Projects

➢ Prevalence study of how common low back pain is at the QEII ED? (Master's Trainee)

➢ Qualitative study of why patients with low back pain go to the ED (RIM)

➢ Descriptive analysis of current management practices at QEII ED (RIM)

➢ Systematic review of effectiveness of NSAIDs for low back pain in the ED setting (RIM)

➢ Overview of reviews on effective therapies for low back pain in the ED (RIM)

Building A Collaborative Research Team

- Co-mentorship: Jill Hayden (research) & Kirk Magee (clinical)
- Engagement of MacDonald & Bortolussi
- Trainees recruited in Fall 2014/Winter 2015
- **June to August 2015: Intensive RIM Placement**

Weekly Activities in MicroResearch Team

- team meetings
- research seminars
- activity logs
- research activity

- Additional seminars throughout summer

Evaluating the MicroResearch Model in RIM

Living Labs Grant – 2015/2016

Data Collection
- Activity Logs
- Trainee Focus Group
- Mentor Focus Group/Interview

Facilitation and Analysis
- External to team
- Thematic coding of transcripts

RIM Student Activity Log To be completed by:

July, 2015   Submit: Each week, Friday 4pm

Done?	Week 4	Date	What I Worked On: Research Activities/Training Sessions	Challenges/Successes/Questions
	Monday			
	Tuesday			
	Wednesday			
	Thursday			
	Friday			
Major Activities for Next Week				Weekly Note from Supervisor(s)

Done?	Week 5	Date	What I Worked On: Research Activities/Training Sessions	Challenges/Successes/Questions
	Monday			
	Tuesday			
	Wednesday			
	Thursday			
	Friday			
Major Activities for Next Week				Weekly Note from Supervisor(s)

Done?	Week 6	Date	What I Worked On: Research Activities/Training Sessions	Challenges/Successes/Questions
	Monday			
	Tuesday			
	Wednesday			
	Thursday			
	Friday			
Major Activities for Next Week				Weekly Note from Supervisor(s)

Benefits of the MicroResearch Model for Trainees: Key Themes

1. Working within a collaborative research team

"It was good to bounce ideas off each other or at least have a common goal that we kind of all worked towards in a sense, and not feel so isolated. Support was fantastic."

2. Engaging in peer mentorship

"We were able to help each other. Some days [trainee] would help me with working on the computer system that I'm completely unfamiliar with. [Trainee] did some of my... Actually everybody did some of my screening and stuff like that. And hopefully it's kind of a back and forth dynamic."

3. Making a substantive contribution to a field of inquiry

"And that necessarily wasn't going to be a publication or anything you got necessarily credit for but it was you might be able to see that change implemented in like how care is delivered."

4. Bringing research into practice

"Yeah, I would say if I ever have a bigger question, I could just recognize that it could be answered in smaller pieces that could add up. Like, I think that's a good way to approach a lot of the healthcare problems we have that may be viewed as bigger questions."

Keys to Success for Mentors: Key Themes

1. Identify trainees interested in your area of inquiry
2. Select diverse trainees who are interested in working in a collaborative model – be clear about expectations
3. Identify potential resources in advance (people, support services)… it takes a village
4. Recognize that the MicroResearch Model requires a flattening of the traditional mentor/mentee hierarchy
5. Organization & accountability: multiple trainees, projects & activities

"Where it has been successful I think is there's 2 things that drive it, at least. It's the motivation of the participants, probably to some degree peer pressure to keep up with everybody else on the team, and the other part of it is the infrastructure support that can be offered."

Lessons Learned

➢ Find the "right" balance between *enough* and *too much* training

➢ Be strategic with training (timing)

➢ Ensure that all parties in the MicroResearch Model have clear expectations of their role

The Future of Our Team

➢ Overall, effective within our team

➢ Growing our collaborative team
   • Study of prognosis of patients with low back pain after they leave the ED (Medical Resident)
   • Two new RIM students/projects joined the team for 2015/2016

➢ Considering how to adapt MicroResearch Model where community = healthcare system

➢ Development of guidelines to support MicroResearch/Collaborative Research Mentors

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