The Research Process in 9 Steps

Research, Evaluation and Library Services
FRASER HEALTH

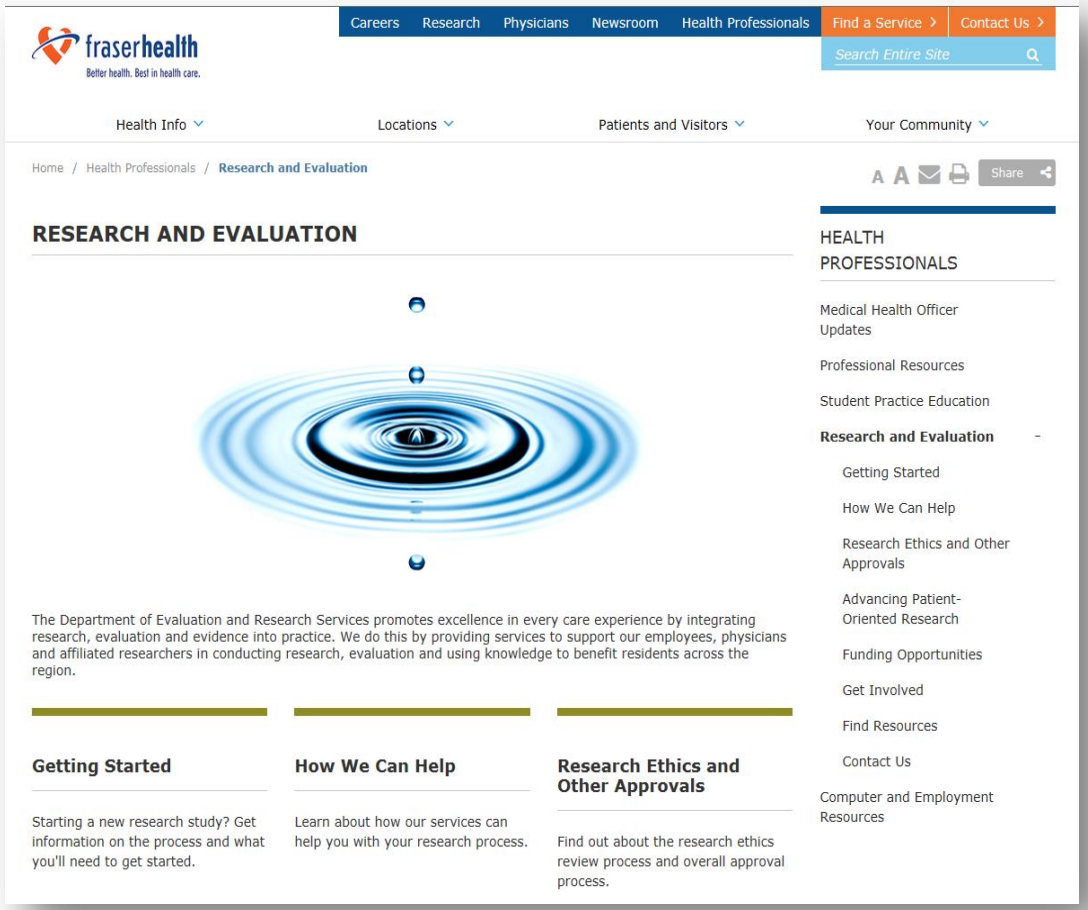
Outline

1. DERS overview
2. Definition of Research
3. Overview of Research Process – 9 steps
4. Sources of Research Questions
5. Forming, refining and assessing research question
6. Tools

Objectives

- Understand the nine major components of the research process
- Understand how to formulate your idea into a researchable question
- Understand how to asses the feasibility and relevance of research question

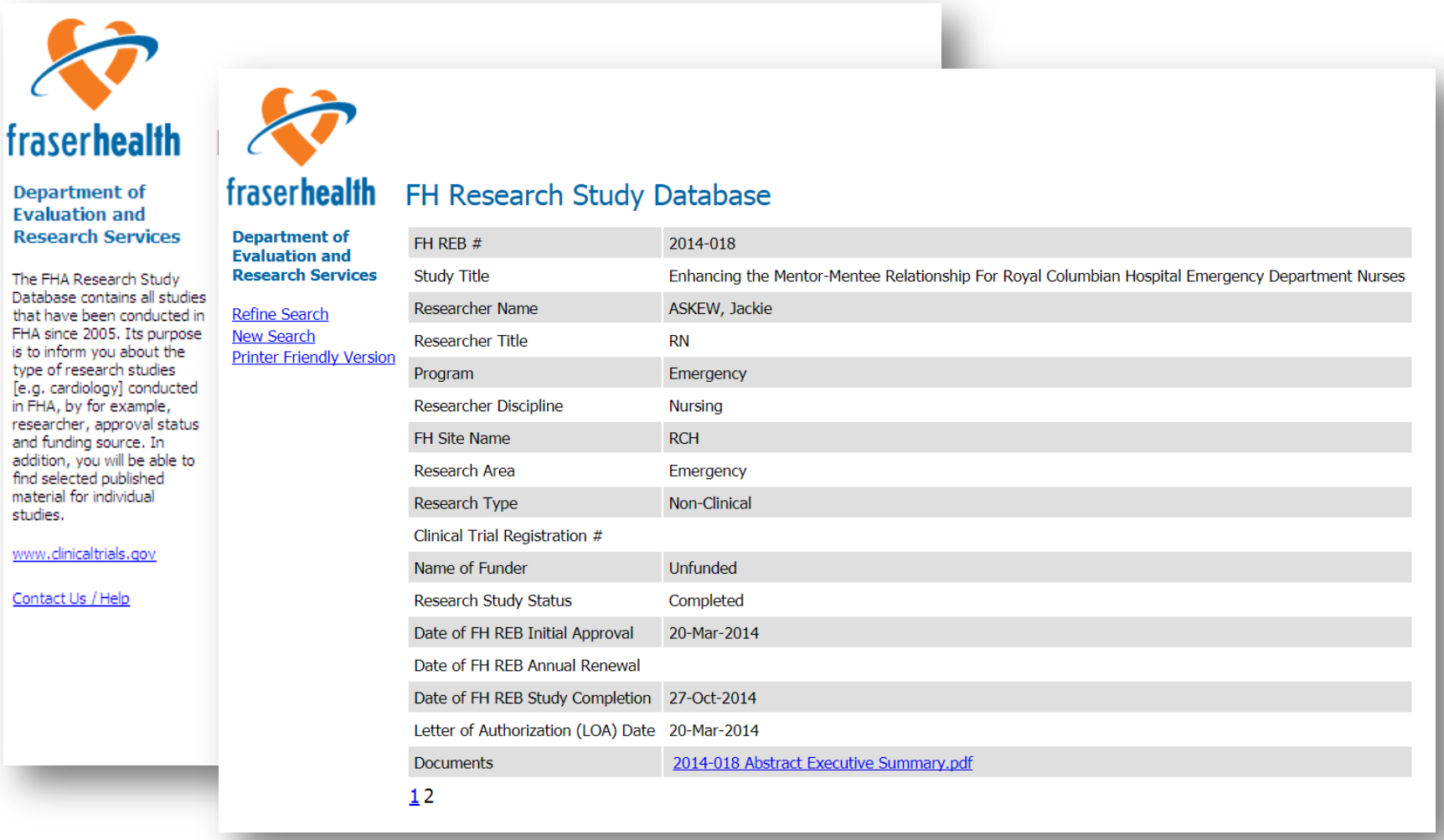
DERS Website:
http://fraserhealth.ca/research



Key Features:

- How to get started
- How we can help
  - Description of services and contacts
- Tons of resources!
  - Research Toolkit
  - Clinical Research Start-up Toolkit
- Research Study Database

FH Research Study Database



http://researchdb.fraserhealth.ca/ersweb/

FH Methodology Unit
How can we help?

Research Development Specialist

- Conducting a search for funding opportunities
- Targeted notification of new funding sources and deadlines
- Identifying a research team
- Preparing letters of intent
- Identifying resources required for conducting research
- Formulating the research budget
- Facilitating proposal development in collaboration with researchers
- Understanding FH and funding agency requirements regarding preparation of specific documents
- Administration of funding awards

FH Methodology Unit
How can we help?

Epidemiologist

Protocol Development Services

- Refine ideas into a researchable question
- Refine project objectives, questions & hypothesis
- Develop study methods: study design, sample size calculation, analyses plan

Statistical Analyses Services:

- Database design, data analyses and interpretation of results

Project Dissemination Services:

- Posters, power point presentations & manuscript development

Fraser Health Library Services

FHpulse

Facilities Bargaining Association joint committee on health and safety risks associated with shift work

Employees covered by the Facilities Collective Agreement are being asked to complete an online survey.

I Need To...

- Search for a Public Location
- Contact the Service Desk
- View Seniority Reports
- eConnect - Change Employee Info
- View the Stores Catalogue
- Use the Parenteral Drug Therapy Manual
- Find Laboratory Sample Collection Instructions

Management Centre

Tool Favourites

more tools...

FH Pulse Main Categories

About Fraser Health
CEO Messages | News | Org Charts ...more

Benefits & People Resources
Opportunities to Grow | Paying You | Your Benefits & Pension ...more

Capital, Finance & Purchasing
Financial Reporting | Payment Reimbursement | Paying Staff ...more

Clinical Programs

Computers & Technology
Privacy & Confidentiality | Online Resources | Service Catalogue ...more

Corporate Services
Communications | Finance | People & Organization Development ...more

Education & Professional Development
Clinical Education | Leadership Training | Site Education/Orientation ...more

Leadership Resources
Employee Engagement | LEADS Capabilities | Performancelink ...more

Quality & Patient Safety
Hand Hygiene | Infection Control | Patient Care Quality Office ...more

Research and Library
Catalogue | Databases | Research Help ...more

Security & Emergency

Fraser Health Library Services

Research & Library

Use the links below to navigate Research & Library Services.

- Research & Evaluation
- About Us
- Research Support
- Approvals & Ethics
- Clinical Trials
- Evaluation
  - Evaluation Registry
- Education
- Knowledge Transfer

- Find Books
- Find Articles
- Research Help
- Contacts
- Knowledge Transfer
  - GRADE/CADTH Database
  - FH Writes Database

I Need To...

- Request a Literature Search
- Use a Database
- Find a Workshop
- Register for UpToDate
- Search the Research Study Database
- Print Forms for Consent to Contact

What's New

- Lexicomp Mobile App - Android 2017
- Lexicomp Mobile App - iPhone 2017

More On This Topic

- UpToDate
- RefWorks

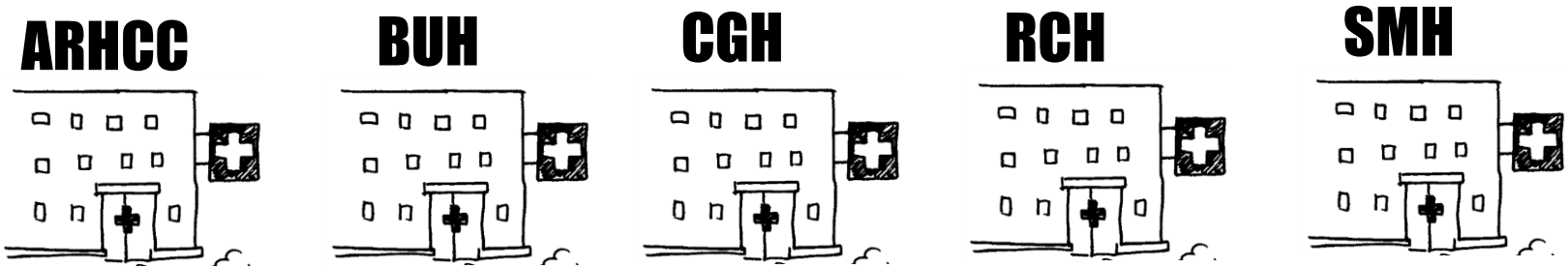
Other Web Resources

- BC Cancer Agency Library
- UBC Library
- SFU Library
- CPSBC Library

Fraser Health Library Services

"... Supporting patient care through access to information"

Your largest libraries (most resources & full staffing)



Other Library Spaces

- Ridge Meadows Hospital

Remote Access

- Send an email to Library@fraserhealth.ca for prompt assistance across the region

BC SUPPORT Unit Fraser Centre

- Provides services to support patient-oriented research and knowledge translation
- Partnership between regional Health Authorities and their local universities
  - Fraser Centre = FH and SFU
- Part of Canada's Strategy for Patient-Oriented Research (SPOR)

Services and Supports

Research Navigator Leader

- Refine POR research questions & research design
- Navigate FH and SFU research services
- Facilitate links & collaborations across institutions

Patient Engagement Specialist

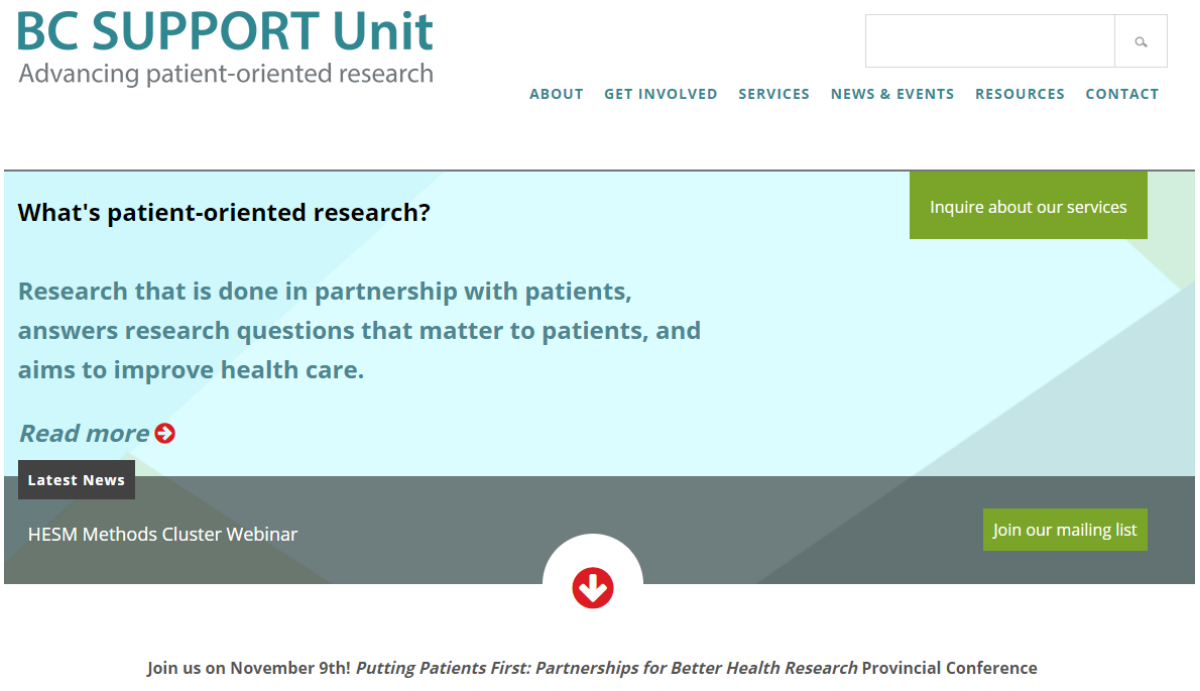
- Recruit patient partners and participants
- Capacity building in POR
- Support multidisciplinary research teams

Knowledge Translation Specialist

- Knowledge Translation (KT) capacity development
- Develop KT strategy for applications and projects
- Support doing KT activities and creating KT products

Access to Fraser Centre Services

Fill out an inquiry form at bcsupportunit.ca



Differences Between Research, Evaluation and QI

Research

For discovery purposes

'new knowledge' that can be applied to the wider population

Evaluation

For 'business' purposes

ensuring the intervention was implemented as planned and is meeting its goals

FHREB

Quality Improvement

For maintaining fidelity

determine how *this* intervention affected *this* participant group in *this* setting

FHREB

Research Basics

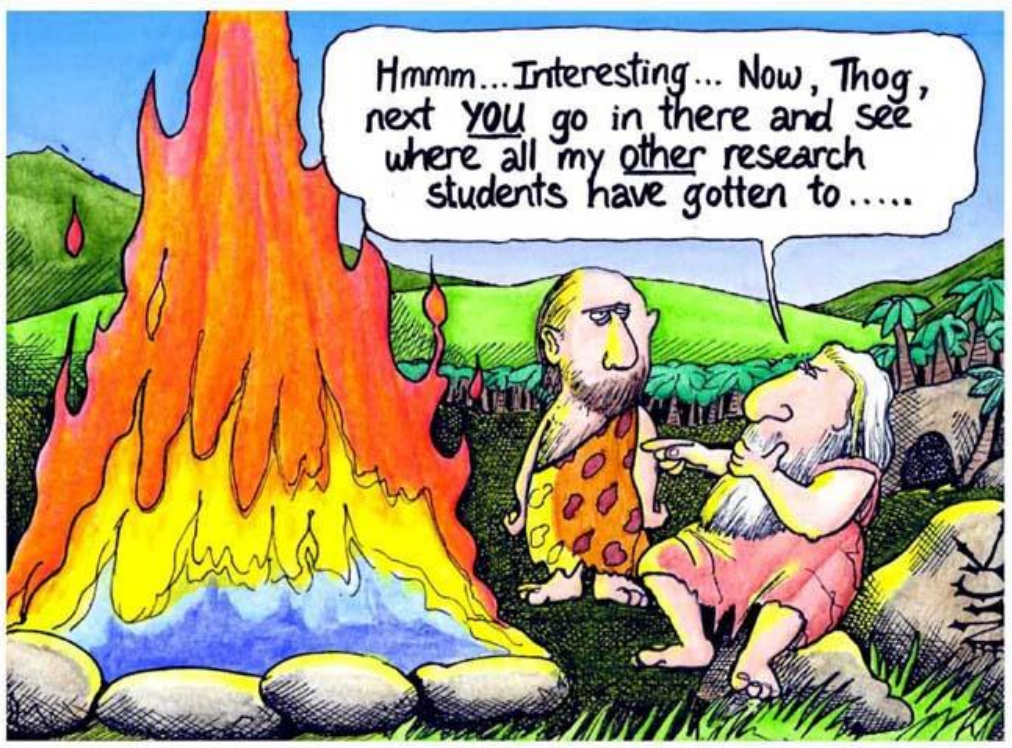
- You have a question that you think would make an interesting research study
- What should you do?

  Question?

  ↓

  Study?

- It is important to understand research basics before beginning the research process



Proto-Professor Algarth Zag, pioneer in fire research.

Research Process

1. Generate idea
2. Conduct literature review
3. Refine research question
4. Plan research methodology
5. Create research proposal
6. Apply for funding
7. Apply for ethics approval
8. Collect and analyze data
9. Draw conclusions and relate findings

Step 1: Generate research idea

- Identify area/topic of ***interest*** ?
- Do some reading on the area of interest
- Write a list of some ideas or possible questions
- Choose a main research question
- Has this research been done before?

Step 2: Conduct literature review

- A systematic process of capturing what is known on a particular topic
  - To understand state of current knowledge
  - To identify gaps, limitations or inconsistencies
- A process of summarizing "synthesizing" results
  - Draw a conclusion about what is known/not known, similarities/differences between studies, highlight findings
  - Use critical appraisal tools to evaluate quality of evidence

To ensure that the question has not been already examined

Step 2: Conduct literature review

- Search books, journal articles and grey literature on your topic
- See reference sections for other relevant articles

FH Library Services can help you:

- Focus your research question
- Aid in your search, including facilitating offsite access to databases
- Assist with article retrieval

Step 3: Refine research question

- General idea is formulated into an answerable research question
- Narrow down the topic
- Start thinking in more detail:
  - Focus: re-state the problem or research question
  - Specify: who, where, when, and what
- Ensure question is relevant, realistic & feasible

Step 4: Plan research methodology & Design

- Describe how the research will be carried out
- Select methodology to allow you to answer your research question: qualitative vs quantitative
- Select methods and tools

Consider:

- Study participants and sampling methods
- Measures & measurement methods
- Procedure for accessing data
- Procedure for interventions
- Sample size justification
- Analysis plan
- Dissemination of results

Step 5: Create research proposal

- Will enable people who are not involved in the study to understand exactly what you plan to do
- A proposal will be required for:
  - seeking departmental approval
  - applying for grant funding
  - ethics review

Step 5: Create research proposal

- Proposal should include:
  - abstract
  - background information
  - question & goals & objectives & hypotheses
  - justification & relevance
  - research design, subjects, measures, data collection procedure, sample size justification, data analysis
  - KT plan
  - (may include budget + other sections)

Step 6: Applying for grant funding

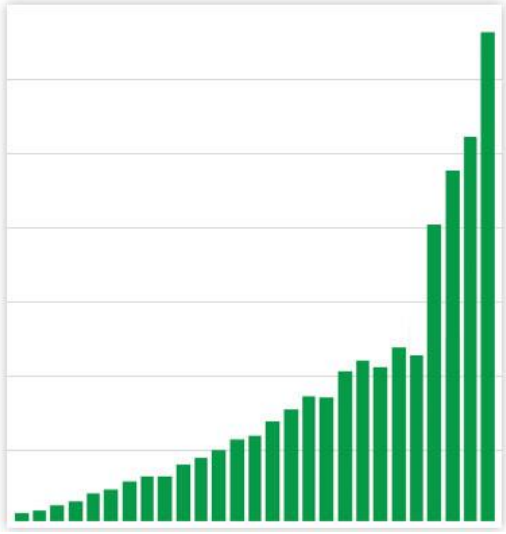
- Often possible to apply for funding for research study
- Funders require a detailed research proposal
- Consult with the FH DERS Methodology Unit early
- Contact Kate Keetch, Research Development Specialist, for further information regarding grant writing kate.keetch@fraserhealth.ca

Step 7: Ethics approval

- Ethics is essential when dealing with human subjects or health data
- The Fraser Health Research Ethics Board (REB) reviews submissions on a regular basis
- See the Fraser Health Research homepage for more information and guidelines http://fraserhealth.ca/research

Step 8: Collect and analyze data

- Collecting data for your study is exciting
- Goal is to generate reliable results
- Follow your study design and methods
- Exercise care in the collecting, coding and documentation of data
- Follow your analysis plan



Step 9: Draw conclusions and relate findings

- Summarize your findings and formulate conclusions
- Was your research question answered?
- Why do you think this was the case?
- What were the limitations of your study?
- What new information was gained that would inform future research?
- Prepare presentation, poster and / or manuscripts, liaise with stakeholders, etc.

What does "patient-oriented" mean?

- Engages patients as partners (i.e. as team members), focuses on patient-identified priorities, and improves patient outcomes
- Aims to apply knowledge generated to improve health care systems and practices
- Patients include anyone who has experience with the health care system or a health issue, and informal caregivers

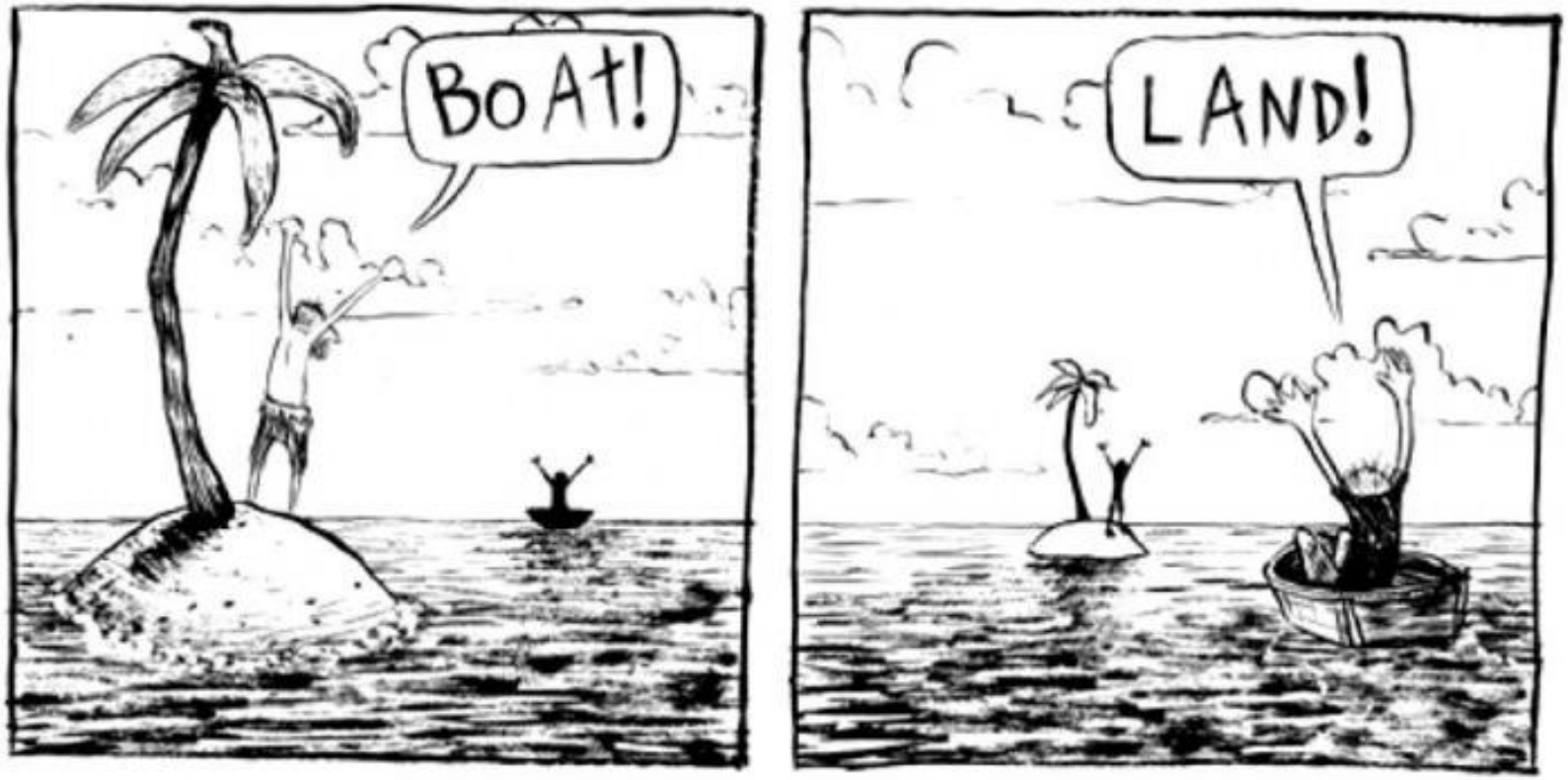
Potential Patient Activities

Priority-setting
Formulating a study question
Identifying study population
Recruitment
Determining consent procedures
Designing interventions
Choosing outcomes that are important to the population of interest (e.g. survival, function, symptoms, quality of life, etc.)
Study design

Potential Patient Activities

Data collection (e.g. conducting interviews and focus groups)
Data analysis
Interpretation of findings
Designing/suggesting plans for dissemination and implementation activities
Actual dissemination of research results (e.g. presentations, social media, etc.)
Translating documents into plain language
Evaluation
Peer Review

It's all about getting perspective



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Generating, Assessing and Refining the Research Question

"You can tell whether a man is clever by his answers. You can tell whether a man is wise by his questions."

Naguib Mahfouz

Generate Research Idea

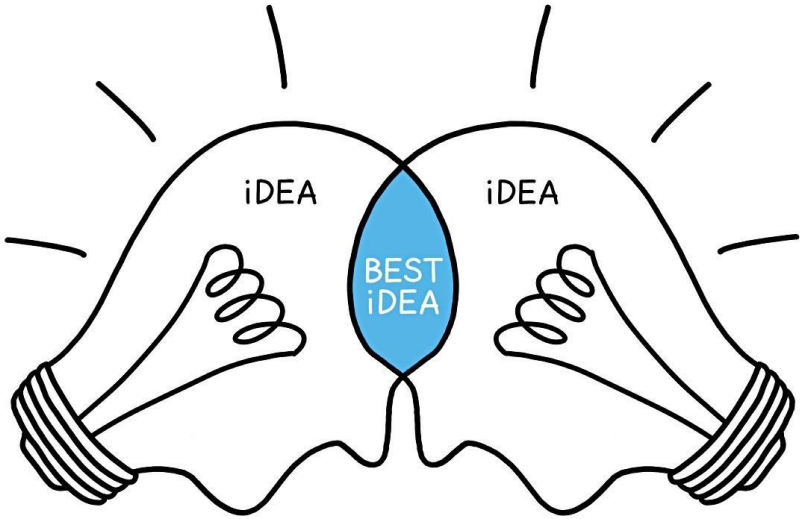
- Research begins with the identification of a problem/knowledge gap and formulation of a research question
  - Identifying this problem can be the hardest part of research
  - It does not have to be complex

Generate Research Idea

- Where to obtain a research idea
  - Experience in your area of specialty
  - Knowledge of the relevant literature and issues
  - Practice guidelines
  - Journal editorials and review articles
  - Department strategic priorities
  - Peers

Group Exercise 1: Generating the research question

Working in small groups, come up with 2 research questions or topics of interest to you



Assessing the Goal

- **What is your primary goal?**
  - **Describe** – when little is known about the characteristics of a problem, patient group, health care providers or a health service/system
  - **Associate** – when you want to assess if certain factors are linked with a well described problem

Assessing the Goal

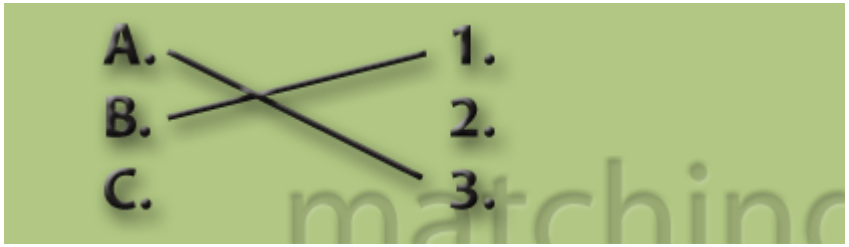
- **What is your primary goal?**
  - **Predict** – when you want to understand the extent to which certain factors contribute to or cause a problem
  - **Compare** – when you wish to assess the impact of an intervention or to determine if there are differences between interventions or characteristics of various groups (eg., differences between patients or health services)

Building a Program of Research

State of Knowledge	Type of Research Question	Examples
Problem is new or characteristics of problem not well defined.	Describe	What are the characteristics? To what extent is this observed? What are the experiences?
Possible linkages between problem and other relevant factors.	Associate	Is there an association? What are the correlates?
Determine the extent to which other characteristics influences the problem.	Predict	What are the predictors? What are possible causes?
Identify differences between groups. Determine effects of interventions.	Compare	Do differences exist? Is the treatment effective? Does the condition change over time?

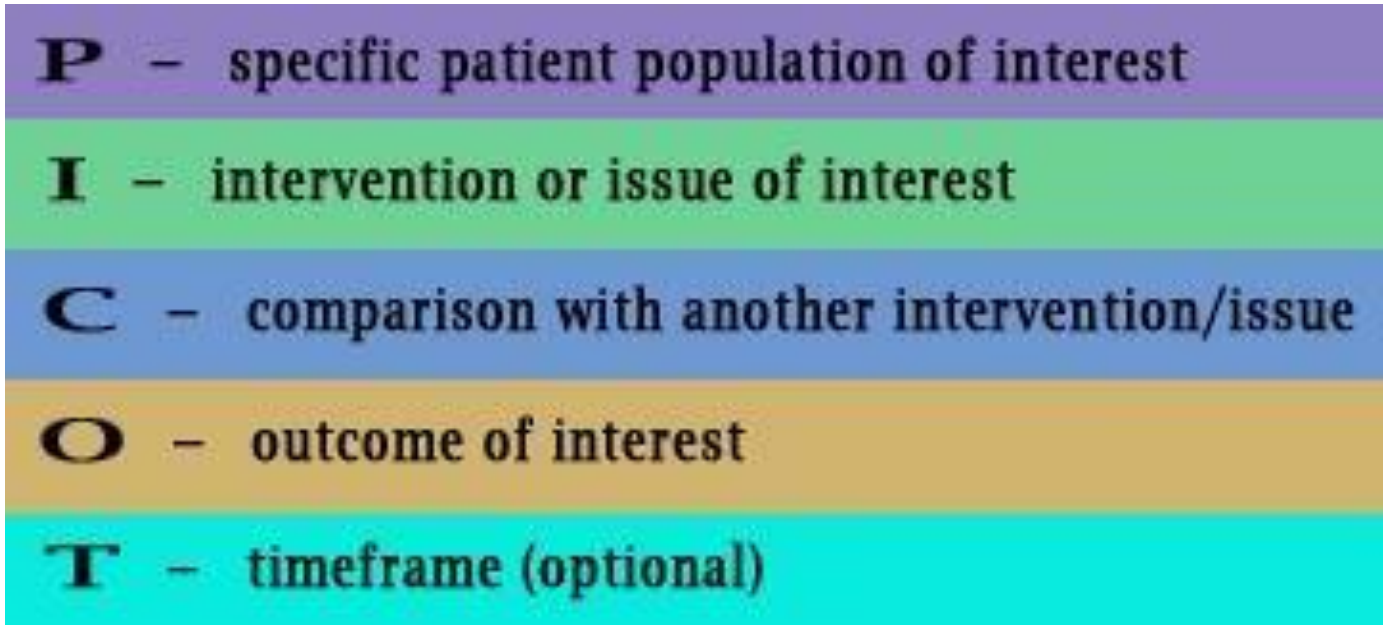
Group Exercise 2: Assessing the goal

Working in your groups, examine your list of research ideas/questions and assess how they fit with the four main goals of describe, associate, predict and compare



Refining the Research Question

Define the key components of the question



Formulating the Question
P = Patient or Population

I = Intervention

C = Comparison

O = Outcome

T = Time (quantitative)

The time it takes for the intervention to achieve the outcome

Formulate question using PICO(T)

In women with *suspected* coronary disease, what is the accuracy of ECHO exercise testing, compared to exercise ECG, for diagnosing coronary artery disease?

Reformulate question

P	Females who are suspected of having coronary disease
I	ECHO exercise testing
C	Exercise ECG
O	Accurate diagnosis of Coronary Artery Disease

Answerable Question

- For females with suspected coronary disease, is there any evidence that a ECHO exercise testing provides better accuracy in diagnosis of coronary artery disease compared to ECG exercise testing?

- In female patients with suspected coronary artery disease, what is the accuracy of ECHO exercise testing compared with ECG exercise testing?

Qualitative Research

- An exploratory approach
  - To understand meaning through description
  - Experiences, perceptions, feelings, motives
  - Narratives, phenomenologies, ethnographies, grounded theory, case studies
  - Not frequency

Qualitative Research

Qualitative Approach	Example Question
Narrative	How does a good everyday life come about when living with chronic rheumatic conditions?
Phenomenology	What role does the therapist's spirituality play in the treatment of his or her patients?
Grounded theory	What are the attitudes of elderly people with stroke towards the daily use of assistive devices and technologies?
Case study	What strategies are being used by small businesses that have effective and viable workplace wellness programs?

Example questions from http://unstick.me/qualitative-research-question-examples/nts

SPICE

For qualitative research SPICE may be more useful:

- **S**ETTING
- **P**ERSPECTIVE
- **I**NTERVENTION/INTEREST
- **C**OMPARISON
- **E**VALUATION

http://www.jbiconnect.org/connect/info/about/jbi_ebhc_approach.php

SPICE

- SETTING – In acute care
- PERSPECTIVE – Patients with diabetes
- INTERVENTION/INTEREST – recommendations for weight management from clinicians
- COMPARISON – Not Applicable
- EVALUATION – perceptions

Example: What are the perceptions of patients with diabetes in acute care about information they receive from clinicians about managing their weight?

Group Exercise 3: Refining the Research Question

Choose one research question and refine using PICO or SPICE

P	Population/Patient
I	Intervention
C	Comparison
O	Outcome
S	Setting
P	Perspective
I	Intervention/Interest
C	Comparison
E	Evaluation

Assessing Your Research Question

Make it FINER

FINER Criteria for a Good Research Question

(from *Designing Clinical Research*, by Stephen Hulley and Steven Cummings, 1988)

Feasible - Adequate number of subjects.

- Adequate technical expertise.
- Affordable in time and money.
- Manageable in scope.

Interesting - To the investigators.

Novel - Confirms or refutes previous findings.

- Extends previous findings.
- Provides new findings.

Ethical

Relevant - To scientific knowledge.

- To clinical and health policy.
- To future research directions.

Confirmed through literature search and review

Obtain Feedback

- Write down your research question
- Prepare a 1 or 2 page summary of the rationale and draft research plan
- Obtain feedback from peers, colleagues, decision makers
- Seek consultation with Evaluation and Research Services

Questions?


Department of Evaluation and Research Services
www.iamdarius.com

Thank You!