Developing a Research Interest and Formulating a Research Question

PEER Research Faculty
Workshop 1: Introduction to Clinical Research
Workshop Day 2: Objectives

After completing Day 2 activities, it is our hope that you acquire skills in the following areas:

- Understanding the many types of medical research
- Formulating a research question
- Accessing the medical literature and performing a literature search
- Becoming more comfortable and familiar with reading scientific literature
Developing a research interest & formulating a research question
Perceptions of Research by Students!
How to choose a research topic

Choose something you are passionate about!

- Which patient populations are you drawn to?
- Which disease processes are you fascinated with?
- Is there a way that you wish to improve patient care?
Choose a project that you can complete!

Some things to consider:

- **Time frame**: How long will it take to complete?
  - Consider: IRB approvals, data collection, data analysis

- **Cost – what is your budget?**
  Cost will be related to the number of patients that you are proposing and the types of tests or interventions required (e.g. RDT malaria test vs MRI scan)

- **Number of study subjects needed**
  - Are there many patients with this condition (e.g. malaria) or few (e.g. Chagas disease). This will impact length of data collection
  - Estimate how many types of these patients are seen per month or per year at JFK
Projects that are easier and less costly to complete:

- **Secondary data analysis**
  - Review data that has already been collected
  - Examples: Electronic medical record data, large data sets from prior studies of large patient populations (e.g. PREVAIL study database on Ebola survivors, Demographic and Health studies, Malaria Indicator Survey)

- **Quality improvement projects**
  - Infection control: Use of hand sanitizer by doctors and nurses on the wards
  - Does Improvement of patient handoff improve patient outcomes
  - Does Electronic Medical Record improve patient care

- **Retrospective studies:**
  - Chart reviews, case series (case controlled studies)
  - This will depend on quality of information and access to medical records

- **Work with a mentor on a project already in progress**
  - E.g. Ongoing study of malaria in children which also measures hemoglobin levels: Secondary aim of study: What is the Incidence of anemia in this patient population)
Formulating a Research Question

- The best research questions are focused and specific.
- This allows you to perform a better literature search and makes your project more easily implemented.

Example of research question:
- Does increased exposure to sugar in the diet cause children to become hyperactive?
Formulating a Research Question: The PICO Method

- **P-Population:** What is the population you are studying?
  - Age group
  - Male, female
  - Rural, urban

- **I-Intervention:** What is the intervention you will be undertaking?
  - Medication trial, vaccine, surgical procedure
  - Lab investigation
  - Systems improvement

- **C-Comparison Group:** Who are you comparing them to?
  - Patients who did not receive the intervention
  - General population
  - Standard practice

- **O-Outcome:** How will you measure your outcome?
  - Survival, mortality rate, number of hospital days, clinical improvement
  - Improvement in knowledge base, skill
Prior example of childhood obesity

- **Population**: Children: age 5-12 yrs living in USA
- **Intervention**: consumption of > 250g sucrose in diet per day over 6 mos
- **Control**: Children who consume < 50 g sucrose per day
- **Outcome**: increased hyperactivity by ADHD rating scales performed by teachers and parents

**Focused research question**: Does a diet containing > 250mg/d of sucrose cause increased levels of hyperactivity in school age children in the US?
### Small Group Breakouts

**Session 1: Formulating a Research Question**

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<th>Specialty Area</th>
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<tr>
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<td>Drs Moon, Deressa, Ovundbun</td>
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<tr>
<td>Internal Medicine</td>
<td>Drs Moorman, Ideh</td>
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<td>Surgery</td>
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<tr>
<td>Ophtho/ Family Medicine/ OB Nursing</td>
<td>Drs Valdman, Sseitiloleko</td>
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Focus of Discussion for Small Groups:

- Developing your research interest
- Formulating a research question
- Finding a research mentor