Developing an Answerable Research Question

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Outline

• Consider How to Design a Research Question

• Discuss Features of Suitable Research Questions for MPOG

• Discuss High Quality Data Elements

Maslow’s hammer
Have a Vision For Your Research Question

• What question are you trying to answer?
  – Specific
  – Population Focused
  – Actionable

• What are you NOT trying to answer?
  – Define out of scope
    – What’s best left as a follow up project?
    – What’s really a different question?

Should Be:

- Specific
- Measurable
- Achievable
- Realistic
- Time related

- George T. Doran
Critically Consider the Best Way to Address Research Question

• Observational:
  – Is there good reason to believe that practice is meaningfully varied?
  – Is the variation of a clinically useful magnitude?
  – Does the variation arise from solely from different practice patterns? (Confounded by important patient factors)

• Interventional:
  – Can practice be varied in an ethical and practical manner?
MPOG Is a Powerful Research Tool:

- Large Dataset
- Many Sites
- Long Time Periods
- Much Heterogeneity of Practice Described
Not All Research Questions Are For MPOG:

• Adding extra sites adds complexity
  – Does it meaningfully increase the research value?
  – Does it worsen confounding?

• Can MPOG data answer the question you are asking?
  – Is this a core data element?
  – Is this present at most sites?
  – Is the focus WHAT rather than WHY?
Project Will Live or Die in Data Quality:

• Quality > Quantity
  – Confounding gets worse by making populations more heterogeneous
  – May be best to answer serial narrow questions than many broad ones

• Consider the nature of MPOG Data Sources:
  – Machine Captured vs Human Entered
  – Structured vs Unstructured
  – Administrative vs Clinical

• Free text data remains very challenging to handle
Specific Data Types (Exposure/Covariates):

<table>
<thead>
<tr>
<th>Good Data</th>
<th>Proceed with Caution</th>
<th>Unavailable Data</th>
</tr>
</thead>
<tbody>
<tr>
<td>Perioperative Basic Labs</td>
<td>Home Medications</td>
<td>Floor/ICU Data</td>
</tr>
<tr>
<td>Intraoperative Vital Signs</td>
<td>Anesthesia H&amp;P Elements</td>
<td>Surgical H&amp;Ps</td>
</tr>
<tr>
<td>Structured Text Entries</td>
<td>PACU Data</td>
<td></td>
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<tr>
<td>Intraop Drug Administration</td>
<td>Unstructured Text (Event Notes)</td>
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<tr>
<td></td>
<td>Administrative Data</td>
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</tbody>
</table>
Specific Outcome Data Types:

• Practice Patterns as Data
• Administrative Data
  – Data used for Billing/Coding
  – Present for most patients, quality questionable
• In hospital mortality
  – Broadly available, limited utility
• Surgical Registry
  – Highest Quality,
  – Present in very select sub-populations
Practical Next Steps:

• Know Your Data
  – Consider Single Center Study to Understand the Problem and Data
  – May consider a descriptive study prior to an outcomes study
  – Discuss this with your local MPOG PI

• Define and Guard Your Scope
  – A single aim may fill a manuscript
  – Many aims may not lead to a more successful project

• Don’t be afraid to plan your “next” project
  – Datasets take a long time to learn the quirks of
  – Next projects are best planned with insight
Thank You
• What question are you trying to answer?
  – In surgeries involving 1-3 units of PRBC transfusion, what is the apparent hemoglobin “transfusion threshold”?  

• What are you NOT trying to answer?