Introduction to Evidence Based Medicine
Objectives

- Define evidence-based medicine.
- Review the four steps of practicing evidence-based medicine.
Evidence Based Medicine

- “The conscientious use, explicit, and judicious use of current best evidence in making decisions about the care of individual patients.”

Evidence Based Medicine

- Patient Values
- Clinical Expertise
- Research Evidence

Medical Decision
Evidence Based Medicine

Four steps:

1. **Ask** a relevant, focused question.
2. **Acquire** necessary resources to answer question.
3. **Appraise** evidence obtained.
4. **Apply** to patient care.
Ask

- **Background Questions**
  - General questions about conditions, illnesses, syndromes and patterns of disease, pathophysiology.
  - Information can be found in textbooks and review articles.

- **Foreground Questions**
  - Information found in primary literature, evidence-based extraction service, guidelines, or systematic reviews.
  - Questions about issues of care (i.e. diagnostic tests or therapies needed for clinical decision-making).
Background vs. Foreground

- Identify the following questions as either background or foreground questions:
  1. What causes gastroenteritis?  
     - Background
  2. Is oral rehydration as effective as IV rehydration?  
     - Foreground
  3. How can I tell if my patient is dehydrated?  
     - Background
1. What are the symptoms of otitis media?
   - Background

2. Can I effectively treat otitis media with a shorter course of antibiotics?
   - Foreground

3. Can this febrile infant be safely treated as an outpatient?
   - Foreground
Ask

- Formulate your clinical question:
  - Patient or Population - Be specific.
  - Intervention
  - Comparison Group
    - I.e. standard therapy, “gold standard.”
  - Outcome of Interest
    - I.e. efficacy of therapy, mortality, specificity of diagnostic test.
Ask

- In the following questions, identify the missing component.

1. Is oral rehydration in the emergency room more cost-effective than IV rehydration?
   - Patient/Population – Not identified. Examples: infants, infants with vomiting.
   - Intervention – Oral rehydration.
   - Comparison – IV rehydration.
   - Outcome – Cost-effectiveness.
2. Will Atrovent help prevent hospitalization of my 2-year-old patient with an acute asthma exacerbation?

- **Patient/Population** – Child w/ acute asthma
- **Intervention** – Atrovent
- **Comparison** – Not identified.
  - Examples: standard therapy, albuterol alone.
- **Outcome** – Prevent hospitalization.
Ask

3. Is 10 days of antibiotic therapy better than 5 days of antibiotic therapy for treating an infant with acute otitis media?

- Patient/Population – Infant with AOM.
- Intervention – 10 days of antibiotic therapy.
- Comparison – 5 days of antibiotic therapy.
- Outcome – Not identified.

Examples: Resolution of symptoms, recurrence risk, persistent effusion.
Acquire

- Classify the Clinical Question into Domain.
  - Therapy
    - Randomized controlled trials or meta analyses.
  - Diagnosis
    - Sensitivity and specificity, predictive value, diagnostic errors.
  - Prognosis
    - Cohort studies, survival analysis.
  - Harm or Casualty
    - Case control studies, cohort studies.
Acquire

- Search the Medical Literature.
  - Select initial search terms.
    - Population
    - Intervention
  - Narrow search further with:
    - Comparison
    - Outcome
  - Use MeSH terms to start.
Acquire

- Narrow search using limiters.
  - Examples of limiters:
    - Date of publication
    - Type of study
    - Language
    - Human
    - Specific age group
    - Full text online
    - Sensitivity and Specificity
Acquire

- Scan the articles.
  - Is it a clinical study?
  - Is the research current?
  - Is the journal well-regarded?
  - Are the research questions similar to my question with regards to Population, Intervention, Comparison groups and Outcomes?

- Select an article for appraisal.
Appraise

- **Validity**
  - Can I trust this information?

- **Clinical Importance**
  - If true, will the use of this information make an important difference?

- **Applicability**
  - Can I use the information in this instance?
Apply to Patient Care

- Patient Values
- Clinical Expertise
- Research Evidence

Medical Decision
Summary

- Practicing evidence-based medicine is the integration of best research evidence with clinical expertise and the patient’s values.

- Ask – Acquire – Appraise – Apply:
  - Clinical question – Obtain relevant Information – Gauge applicability – Apply to patient care.
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