Critical Appraisal of the Medical Literature - Making Data Relevant to Your Practice

Victoria A Cargill, M.D., M.S.C.E.

Office of AIDS Research

NIH

Learning Objectives

- Articulate how to approach the review of a medical article and determine its relevance to their practice

- Determine if the conclusions drawn from an article about therapy or treatment are appropriate and relevant to their specific patient or practice

- Identify resources to further their knowledge of critical appraisal skills of the medical literature

- Review HIV treatment articles for the recruitment methods and study population to determine if the article addresses their unique practice or patient-related question

Disclosures

Dr. Cargill has no financial disclosures to make.

Part 1. What is critical appraisal and why learn it?

Critical Appraisal is the critical review of published research data to determine its relevance to a specific clinical question, situation or patient circumstance

Why Learn Critical Appraisal Skills?

- To better understand the published literature.
- To determine the relevance of a particular treatment intervention or option for a patient.
- To assess specific practice guidelines, and determine their validity.
- To assist with patient care and management.
- To show off…

Part II.   Approaching the article

- 1. Get your "bearings". It is best to have some background knowledge of the subject, if not check a quick review so you know the basics.
  - Example – 50% of MI victims die before reaching the hospital. Thus most studies of MI treatments already are biased in the direction of survivors. *Duh...*
- Question #1 – WHY was the study done and WHAT clinical question were they trying to address?
  - *Is this question relevant to your practice?*

Part II. Approaching the article - 2

- Remember many published papers have *significant* methodological flaws

- **Question #2: What type of study was done? Is this primary research (original question) or secondary (summary or synthesis of the data)?**

- If primary research: Are patient demographics provided? Is there a description of how patients were recruited and retained? Are the subjects all accounted for and is there an intention to treat analysis? Type of patient grouping?

Part II. Approaching the article - 3

- Was the study design appropriate for the research?
  - Therapy: drug treatments or surgical interventions; RCT preferred
  - Diagnosis: new diagnostic test – cross sectional design is preferable
  - Causation: is a putative agent harmful; case control or cohort studies, or if rare enter the care report

BMJ 1997;315:243

Approaching the article - 4

- Study Design Terms to know:
  - Parallel group comparison
  - Paired (or matched) comparison
  - Within subject comparison
  - Single blind trial
  - Double blind trial
  - Crossover design

The Hierarchy of Evidence

- Systematic reviews or meta-analysis

- Randomized controlled trials*

- Cohort studies

- Case control studies (Trohoc studies)

- Cross sectional surveys

- Case reports

In this assessment definitive results trump non-definitive

Studies we will review

- **HPTN 052**
  - – review the design what the participants received – compare this to your practice
- **Outcomes** – without giving it away – look closely at the data.
  - A free coffee to the person who is first to identify an important subtext finding from the study. *HINT*: look at the seroconverters

Studies we will review

- **The "Quad" Pill**
  - – review the setting of the participants– compare this to your practice
- **Outcomes**
  - Was their an ITT (Intention to Treat Analysis)?
  - Are all the subject accounted for?
  - Who funded the study and what was their role?
  - Is that role a concern?
  - Does the patient population resemble yours?

The "Quad" Pill -2

- Side effect profile?
- Virologic suppression?
- Your bottom line

Summary

- Critical appraisal is an important skill
- It takes time and practice
- AND PRACTICE
- Did I say practice?
- Introduce it in journal clubs
- Teach others

- Not all that is *published* is valid
- Not all that is *noteworthy* is published – bias against negative studies
- Always ask if the question is relevant to your situation/practice.