

Evidence-Based Medicine Journal Club: How to Use an Article about Prognosis

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Peds EBM teaching slides credits-- materials developed with help from:

- User's Guide to EBM (reproduced with permission of JAMA): <http://www.cche.net/usersguides/main.asp>
- Dr. Susan Guralnick of Stony Brook (SUNY)
- EBM Pediatric Program Directors and Educators Workshop at University of Illinois at Chicago
- Epidemiology and Preventive Medicine Dept. at Univ. of MD (Masters Program)

Developing the "Answerable" Clinical Question

- First step in applying the results of clinical research to patient care
- A well "framed" clinical question will allow an efficient and effective search for evidence

ACQ: Answerable Clinical Question

- P - The patient's Problem
- I - The potential Intervention
(test, treatment, prognostic factor, etiology, etc...)
- C - Comparison to another potential intervention (if necessary)
- O - The Outcome of interest

ACQ: Answerable Clinical Question

- Four Types of Questions:
 - Diagnosis
 - Treatment
 - Prognosis
 - Causation/Etiology

How to Use an Article about Prognosis

- **Prognosis**
The possible outcomes of a disease and the frequency with which they can be expected to occur

How to Use an Article about Prognosis

- **Prognostic Factors:**

Characteristics of a particular patient that can be used to more accurately predict eventual outcome.

- Demographic (age)
- Disease-Specific (Tumor stage)
- Comorbid conditions

How to Use an Article about Prognosis

- **Prognostic factors** don't necessarily *cause* the outcome, just have a strong enough association to *predict the development* of the outcome.

- Different from **Risk Factors** - patient characteristics associated with the development of the disease at all.

How to Use an Article about Prognosis

- **Best Study Design:**

Cohort Study

It is usually *impossible* or *unethical* to randomize patients to different prognostic factors.

How to Use an Article about Prognosis

- **Ideal Cohort Study:**

- Well-defined sample of individuals representative of the population of interest
- Objective outcome criteria

How to Use an Article about Prognosis

- **Randomized Trials:**

- Rigorous randomized trials can generate information about prognosis

But

- patients entered into the trial are often not representative of the population with the disease

How to Use an Article about Prognosis

- **Case-Control Studies:**

- Potential for bias in selecting both cases and controls
- Retrospective data collection about prognostic factors (memory/chart accuracy issues)
- Cannot provide Absolute Risk information, only Relative Risk
- Can be useful when the outcome is rare, or the required duration of follow-up is long

How to Use an Article about Prognosis

- **Are the results of the study VALID?**

- Was there a representative and well-defined sample of patients at a similar point in the course of the disease?

"Referral-filter bias"

How to Use an Article about Prognosis

- **Are the results of the study VALID?**

- Was follow-up sufficiently long and complete?

- Patients fail follow-up usually for not inconsequential reasons

- May have suffered the outcome under study
- May feel entirely healthy

How to Use an Article about Prognosis

- **Are the results of the study VALID?**

- Was follow-up sufficiently long and complete?

- The greater the number of patients unavailable for follow-up, the less accurate the estimate regarding the risk of the adverse outcome

How to Use an Article about Prognosis

- **Are the results of the study VALID?**

- When does failure to follow-up compromise the validity of the study?

- Consider the proportion of unavailable patients to the proportion of patients who have suffered the outcome of interest.

- The larger the number of "lost" patients relative to the number who have suffered the event, the greater the threat to the validity of the study

How to Use an Article about Prognosis

- **Are the results of the study VALID?**

- The larger the number of "lost" patients relative to the number who have suffered the event, the greater the threat to the validity of the study

Example – 20% of pts have the outcome of interest
- 8% of pts were lost to follow-up
- up to 28% may have had the outcome of interest

How to Use an Article about Prognosis

- **Are the results of the study VALID?**

- If the number of patients "lost" jeopardizes the validity of the study:

- Look for the reasons for unavailability
- Compare important demographic characteristics of available vs unavailable patients. If they are similar, it may be less of a problem.
- If information about reasons for unavailability is not provided, the strength of inferences from the study are weakened.

How to Use an Article about Prognosis

- Are the results of the study VALID?
 - Were objective and unbiased outcome criteria used?
 - Was there adjustment for important prognostic factors?

How to Use an Article about Prognosis

- Are the results of the study VALID?
- Were objective and unbiased outcome criteria used?
 - Clear and sensible definition of adverse outcomes **before** the study starts
 - Outcome events can be objective or can require limited or considerable judgment
 - To minimize bias, individuals determining outcome should be blinded to whether patient has the prognostic factor in question. Not necessary with entirely objective outcome (e.g. death)

How to Use an Article about Prognosis

- Are the results of the study VALID?
- Was there adjustment for important prognostic factors?
 - Investigators should consider whether the clinical characteristics of the groups is similar and adjust the analysis for any differences found
 - Investigators should adjust for differences in treatment

How to Use an Article about Prognosis

- What are the results?

Quantitative results from studies of prognosis or risk are **the number of events that occur over time**

How to Use an Article about Prognosis

- What are the results?
 - **How large is the likelihood of the outcome event in a specified period of time?**

How to Use an Article about Prognosis

- What are the results?
 - **How precise are the estimates of likelihood?**
 - Confidence Intervals

How to Use an Article about Prognosis

- What are the results?
 - **How precise are the estimates of likelihood?**

Even when valid, a prognostic study provides only an estimate of the true risk

How to Use an Article about Prognosis

- Will the results help me in caring for my patients?
 - **Were the study patients similar to mine?**

How to Use an Article about Prognosis

- Will the results help me in caring for my patients?
 - Were the study patients similar to mine?

Article should list the patients' important *clinical characteristics*, along with the *definitions* used for these characteristics

How to Use an Article about Prognosis

- Will the results help me in caring for my patients?
 - Will the results lead directly to selecting or avoiding therapy?

Prognostic data often provide the *basis for sensible decisions* about therapy

How to Use an Article about Prognosis

- Will the results help me in caring for my patients?
 - Are the results useful for reassuring or counseling patients?

Uniformly good prognosis - Reassuring

Uniformly poor prognosis - Counseling