I. Critical Appraisal Practice Exercise

The goal of this exercise is to learn the appropriate approach to critical appraisal of the medical literature. You will review your assigned article according to the standardized protocol outlined below. Prepare a type-written report that addresses all the questions stated below. Your report should be headed in the following manner. The body of the report should follow the heading.

Critical Appraisal Practice Exercise

Resident Name: Date:
Title of Your Assigned Article:

II. Presentation and Critical Appraisal

A. State the research objective of the article or evidence that you find.
B. Characterize the article itself by identifying the:
   a. Source: Primary (Original Research) or Secondary (Review, Structured Review, Meta-analysis)
   b. Research Design: Descriptive, Case-Control, Cohort, Randomized Controlled Trial, Review
   c. Journal type
   d. Authors
   e. Sites
   f. Patients
   g. Specific Description of the Methods, Protocol, and Statistics of the Study
   h. End points
   i. Results
   j. Authors’ conclusions

C. Critically appraise the article by using the specific protocol appropriate to the theme of your paper.

D. Questions to Evaluate a Study Whose Primary Objective is to Evaluate a Therapy
   a. Methods of Evaluation
      i. Was the assignment of patients to treatments randomized?
      ii. Did the randomization work; that is, were the groups really the same?
      iii. Were the subjects and investigators blinded to the fullest extent possible?
      iv. Were all patients who entered the trial accounted for at the end of the trial? If not, what would happen to the study’s conclusions if all the patients lost to the treatment group were added as failures?
v. Were each of the groups treated exactly the same in all respects except for the intervention being studied?
vi. Did the investigators enroll enough patients in the study to ensure that a negative result was not due to too few subjects?
vii. Were subgroups and outcomes specified beforehand and did the authors stick to those outcomes and subgroups in their analysis?
viii. Who funded the research?

b. Outcomes Evaluation
i. Do these results apply to your patient? How similar to your patient were the patients in this study?
ii. Was the outcome a truly meaningful outcome? For example, did the medication just lower cholesterol or did it actually lower total cardiac mortality or total mortality?
iii. Could your patient actually comply with the therapy?
iv. Does the result apply to all subgroups in the study which were predetermined or only to subgroups which were identified after the results were collected?
v. If you are satisfied that the statistical significance is real, are you satisfied with the clinical significance? What are the absolute risk reduction and the number needed to treat for this therapy?

c. Definitions

- **CER** (Control Group Event Rates or % bad outcomes) \text{ Measured in trial}
- **EER** (Experimental Group Event Rates or % bad outcomes) \text{ Measured in trial}
- **RRR** (Relative Risk Reduction) \((\text{CER-EER)} / \text{CER}\)
  - The percent by which risk was reduced.
- **ARR** (Absolute Risk Reduction) \(\text{CER-EER}\)
  - The percent of patients who actually benefitted.
- **NNT** (Number Needed to Treat) \(1 / \text{ARR}\)
  - The number one needs to treat to provide benefit to one patient.

For example: 1000 patients are treated with a new medication to prevent recurrent heart attacks. The CER in the placebo group is 4%. The EER in the treatment group is 2%. Both are measured from the study. Therefore, \(\text{RRR} = 50\%\); \(\text{ARR} = 2\%\), \(\text{NNT} = 50\). You must treat 50 patients to prevent 1 recurrent event. The rationality of this approach depends on the significance of the disease, the cost and side effects of the treatment, and the acceptability to the patient.