Publish or Perish

I.**Types of medical articles**:

Abstract or summary only

Case report or case series

Literature review

Research report

II.Published Guidelines:

- http://www.consort-statement.org (for clinical trials; there are elaborations for abstracts, cluster designs, reporting of harms, herbal interventions, non-inferiority and equivalence studies, trials of non-pharmacologic interventions, and pragmatic trials)
- http://jama.ama-assn.org/cgi/reprint/283/15/2008 (for MOOSE: Meta-analysis of Observational Studies in Epidemiology: A Proposal for Reporting, Donna F. Stroup et al.; published in J Am Med Assoc 2000; 283:2008-2012)
- http://prisma-statement.org (for meta-analyses and systematic reviews)
- http://reflect-statement.org (for clinical trials in livestock)
- http://www.stard-statement.org (for evaluations of diagnostic tests)
- http://www.strobe-statement.org (for observational studies; there is an elaboration for studies of genetic associations)

III.**What to look for in each section of a research report or case series**:

Section	Look for
Abstract, summary	Overview or summary of the work, highlights of results/findings, and general statement of significance.
Introduction	Background information: history, pathophysiology, clinical presentation, review of the work of the others, and rationale for present study; objective(s) of the study.
Methods, Materials	Study design, subject selection procedures, methods of measurement, and description of analytic techniques.

Results	What you find! Graphics, tables, charts, and figures that summarize findings.
Discussion Comment Conclusion	Meaning and significance of work. Critique of study: discussion of limitations as well as strengths, further analysis, equivocation, apologies, chest thumping, speculation, instruction, fantasy and so on.
References Bibliography	Evidence that work of others has been considered leading to further exploration of the subject.

IV.<u>Questions you should ask</u>:

The following are examples of questions you should ask yourself when reading <u>any</u> journal article. Every question does not necessarily apply to <u>every</u> article. You may also have questions not listed here. Regardless of the specific questions you deal with, the main headings (Objective, Design, Observations, etc.) provide a convenient format for organizing your critique:

A.Introductory material

- When was the project reported? Is it still current?
- What does the title suggest about the content? Is it clearly stated? Does it state a conclusion? Is it appropriate to the content?

B.Objective or Aim of the Article

- What is the objective of the study or question to be answered? Is there more than one question?
- What is the authors' rationale? Does it convince you of the scientific/practical necessity for this work? Does it relate to the question being asked?

C.Design of the study

- What is the design of the study? (Prospective, cross-sectional, retrospective, quasi-experimental, randomized trial, etc.) Is it clearly stated?
- Is the design appropriate to answer the question(s) posed?

- Were the sample size requirements stated and are the numbers adequate to answer the question?

D.Study population (cases, populations)

- What are the criteria for selection of the study population and are they clearly stated?

- Are there criteria for exclusion from the study population? Are they appropriate?

- What factors other than the criteria might lead to inclusion or exclusion from the study population? (e.g., referral patterns, type of animals, type of farms or pet households, various costs of different types of veterinary services, use of cooperative farms instead of random selection, etc.).

- If there are possible sources or means of selection that would make the sample atypical or unrepresentative, what provision was made to deal with this bias?

E.Control (comparison) population

- Is a control necessary?

- If so, is it similar to or different from the study population with regard to:
  - selection criteria
  - exclusion criteria
  - variables that may confound the results (e.g., age, breed, species, sex, use of animals such as show horses vs. race horses, presence of other diseases, location of animals, type of farms, and use of various methods for diagnosis, etc.)
  - What provisions have been made to deal with the possible biases?

F.Observations

- Did the authors clearly define all relevant terms including the diagnostic criteria, the test measurements, and the outcome criteria?
- Was the method of measurement or classification consistent for all subjects?
- Were any provisions made to examine measurement and classification variability or bias and to deal with these problems during the study (e.g. comparison of different observers on same patient or record, re-abstracting of records, instrument standardization and use of external reference standards, examination of the consistency of different proxy measures that are intended to measure the same thing).
- Were observations on all subjects made during the same period of time?
- Are there additional observations that should have been made?

G.Analysis

- Are the data worthy of statistical analysis? (e.g., are the measurements consistent, accurate, reliable, valid in adequate numbers, and collected on groups that provide useful contrasts relevant to the question that was asked?)
- Are the methods of statistical analysis appropriate to the source and the nature of the data? (i.e., did they use a scalpel when an axe would have been better?)
- Are all subjects in the study and control groups reported or accounted for in the analysis?
- Is the analysis correctly performed and interpreted?
- Is there sufficient analysis to determine whether "significant differences" may in fact be due to the lack of compatibility of groups (due to different distributions in sex, age or other relevant variables) or due to measurement bias?
- Are all reported methods of analysis in the "results section" in the "methods section"?

- Were assumptions made in the design or analysis? Are they explicit or implicit? Does varying them change the analysis or outcome?

H.Presentation of Results

- Are the findings presented with sufficient clarity, objectivity, and detail to enable the reader to judge them for him/herself?
- Are the findings internally consistent? (i.e., do the numbers add up properly within and between tables? Do some results contradict others?)
- Were important data collected that were never reported?
- Do graphs and figures use appropriate scales to represent the data clearly? (e.g., some graphs use very expanded scales to make small changes look very large, etc.)
- Are the results based on the preliminary or final analysis? Are the data partial or complete?
- Are conclusions and opinions clearly stated or are they placed among the results?

I.Conclusions

- Are the authors' conclusions stated clearly? Do you agree with them?
- How well do the data and analysis support each conclusion?
- Is there a clear distinction between conclusion and speculation?
- Did the authors omit conclusions that are justified on the basis of the data?
- Did the investigators answer the question(s) that they posed?
- Are inferences made to the correct population? (i.e., Is there an attempt to over-generalize the findings?)
- Are the methodological faults sufficient to negate the conclusions?

V.<u>Clinical Trials</u>

When the study is a randomized controlled trial (RCT), the following additional questions should be asked:

- Was masking (blinding) employed? At what point(s) in the trial? Did treatment assignments remain masked during the trial?
- What type of randomization scheme was employed? Was the process of randomization executed properly?
- Was informed consent obtained?
- Are the treatments which are to be compared carefully defined?
- Is the control treatment appropriate for the objective(s) of the trial?
- Does the study incorporate measures of adherence to treatment?
- Were there criteria for stopping a treatment on a patient? Were the criteria applied equally to all treatments? Were there provisions made for breaking the masking code?
- What was the length of the follow-up period? How frequently were observations made during the follow-up? What provisions were made for missed appointments, dropouts, or subjects who were lost to follow-up?
- Were any attempts made to trace those who were lost to follow-up?
- Did the authors present sufficient data so that you are able to determine whether the groups were comparable at entry into the trial?
- If necessary, does the analysis take into account different periods of follow-up? (e.g., life tables or person-years)
- If necessary, does the analysis account for patients who changed from one group to the other? Does it make allowance for periods of treatment interruption? Were there predetermined rules about how long a treatment would have to be applied before any outcome could be attributed to it?

VI.Constructive Suggestions

Assume that you are planning an investigation to answer the questions raised in the study. If the questions have not been clearly stated by the authors, frame them in an appropriate manner. Suggest revised designs, types of observations or methods of analysis which would provide reliable and valid information relevant to the questions under study.

Gehlbach, S. H. Interpreting the medical literature. D.C. Heath, Lexington, M. A. 1982.