

# **The Form and Function of Scientific Articles: Plan for Variations and Commonalities**

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# Planning a Project, Manuscript, or Grant

Begin planning when you get the idea

- Complete a comprehensive pre-publication worksheet
- Make an outline
- Consider writing a “zeroth” draft: more than an outline, less than a first draft
- Use your worksheet and zeroth draft to get co-authors and collaborators to commit to the plan

# Pre-publication Worksheet Clinical and Animal Studies

- Title
- Principal author/investigator
- Departments and Institution(s)
- Co-author(s)/Co-investigator(s) in order of their level of participation
- Database of interest
- If for manuscript, proposed journal
- Have you received IRB (human trials) or IACUC (animal trials) approval?
- Completed all necessary forms?
- Deadline

# Pre-publication Worksheet

- Audience
- Hypothesis/research question
- Background: How will this study fill a gap in the scientific literature?
- Study Design
  - Type of study
    - Observational (prospective or retrospective), ie, case series, case control, cohort; or randomized controlled clinical trial
  - Key messages
  - Number of patients? Animals (species)?
  - Eligibility Criteria (inclusion and exclusion)
  - Outcome (dependent) variables
  - Predictor (independent) variables
  - Method of randomization or blinding, if applicable

# Pre-publication Worksheet

- Statistics
  - Which tests will you use? Which variables will you test? How will you account for bias in a non-randomized trial? What is the probability of detecting a result if the result really exists (power calculation)?
- Limitations
- Significance/potential impact on practice or research
- Anticipated diagrams, tables, graphs
- Key references
  - Check for appropriate guidelines, ie, CONSORT, MOOSE, STROBE, QUORUOM, STARD, TREND, CLEAR NPT
- Budget or funding source
- Approvals

# Pre-publication Worksheet

## Basic Science Studies

- Administration
- Target audience
- Hypotheses/research questions\*
- Key messages
- Background
- Study design (in vitro/in vivo); sequential studies
- Types of cells; number of animals (species)
- Describe the model; why was it chosen
- Interventions: in vitro studies (types of treatments); animal studies (experimental and comparison)
- Clearly outline steps in research protocol
- Outcome variables

\* Red font = heading differences from clinical, pre-publication worksheet

# Pre-publication Worksheet

## Basic Science Studies

- Methodology (cellular or molecular techniques)
- Statistics
- Anticipated limitations (inaccurate measurements, absence of certain necessary variables, methodology problems, inability to extrapolate data to clinical situations, etc.)
- Significance/potential impact on practice or research
- Anticipated diagrams, tables, charts
- Key references
- Budget or funding source, disclosures, author participation

# Outline

## Include

- Thesis, headers, relevant points, information that supports your thesis
- Possible tables and figures

## Remember

- Audience (readers, peer reviewers, peers)
- You can write if you can outline



# Zeroth Draft\*

- Write a fairly complete introduction
  - Background
  - Gap
  - Study question (hypothesis)
    - Literature review
      - Is the question an important one?
      - Has the study question already been answered?
- Turn your protocol into the Methods section before you begin collecting data
  - Include subheadings
  - Statistical analysis

\* Babbs CF, Tacker MM. Writing a scientific paper prior to the research. Am J Emerg Med 1985;3(4):360-63

# Zeroth Draft\*

- Write a hypothetical Results section
  - Construct tables and graphs
  - Include possible figures
  - Are the results convincing?
    - Are the statistical tests appropriate?
- Sketch out a potential Discussion
  - Consider all possible conclusions
  - Draft comparison/contrast paragraphs
  - Ensure that any possible conclusion will be worthy of publication

\*Babbs CF, Tacker MM. Writing a scientific paper prior to the research. Am J Emerg Med 1985;3(4):360-63

# Plan for Variations and Commonalities

- Save time and decrease headaches
  - Pre-publication worksheets
  - Outlines
  - Zeroth drafts