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PhD Course on "Scientific Writing"

Michael S. Goligorsky, MD, PhD

July 6th and 8th, 2015

9.30 – 12.30

14.30 – 17.30

Room I – Lente Didattica

Policlinico G.B Rossi

SYLLABUS

Why do we need to write papers?

Your own curiosity has been satisfied, why go through all these troubles? The motives are purely pragmatic: funding, career, promotions… There is however an internal urge to share the findings – it is a biological necessity. Communication between the members of the clan/species is the basis for progress/survival benefits. Lingua franca – English. How I learned – re-typing, examining corrections, reading…

"Science – the glorious entertainment" (Jacques Barzun), "The pleasure of finding things out"(Richard Feinman)

When to write? And when to put data in a drawer? Remember NY Times Logo: All news fit to print.

The necessity to share something valuable; if the value of a message is ambiguous, don't write, wait until it crystallizes. This process sometimes is excruciating, but be patient. Remember the poem of Jacque Prever: How to paint a bird…

From idea, to execution, to summarizing it in writing – PLACE BRICCOLE IN YOUR MIND

Does your study challenge the dogma? Closes the existing gap? Discloses something new and unexpected? Confirms and extends previous work? Confuses? – the size of a precious stone you possess determines the type of a journal for which you'll be preparing your manuscript (top-tear, medium, lower)

Ranking the journals; different systems of ranking

What happens with your manuscript: the path from an editor to associate editor, to referees, back to AE and to authors. Importance of a letter to the Editor – describe basic value of your work in lay terms. Importance of suggesting reviewers: choice of reviewers – avoid suggesting competitors, but name competent people. Reading the decision letter "between the lines"

Incremental writing of a manuscript – write along the way, convert your protocol notes into the text.

Writing M&M section: essential elements of techniques, necessity for reproducibility, referrals to previously published techniques, statistical analyses

Discussion

Results section –

it is not a chronological reflection on how you've arrived to it in actual, sometimes convoluted way (although that is also possible sometimes), it is selecting the optimal sequence for the reader to understand what has been done. Logical progression from the initial finding to the culmination. Remember how Homer starts "Iliad" – immediate action.

Brevity and clarity, "cut flowers" in this section. When to invoke previous studies and when to defer them to Discussion? Choice of words, avoid repetitions (increase/decrease, etc). Choice of verbs – a process of trial and error. Avoid words that carry no information – this section prizes economy; be parsimonious.

Using tense – present for Intro and Disc, past for M&M and Results

Subheadings – a logical transition from one subject to another. Try to summarize in one last sentence of each subheading what has been accomplished and what should be done next

Illustrations – the art of visualizing results. Mixing-up techniques (diagrams, images, tables) – building the presentation before the group

Discussion

Writing Introduction –

describing the broad field to which your study belongs. What are the current contentious issues? Gaps of knowledge? Cracks in the foundation? Are you coming in to repair those or to make more damage to it?

Discussion – it is designed to explain obscure findings, controversial results, drive progress

Writing Discussion section – a brief summary of findings to enable a conceptual deliberation on each of the main findings. Do not use it to re-phrase the observations reported in Results section – advance to the new frontiers, predict, challenge. Do not give a review of the entire literature on the subject – highlight only those aspects pertinent to your study. This is the section where a bit of poetry and a bit of prophecy can live together. Sum-up the entire work in 1-2 sentences.

Use summary cartoon, if/when it is helpful

Discussion

Writing an Abstract – abstract is poetry, main text – prose (FASEB rules).

Importance of the Title (using key words, declarative rather than neutral)

Accessories. Be sure to meet all requirements of the particular Journal. Uniformed requirements (Lancet)

Discussion

Writing a grant proposal

Main portions of the proposal – it is a drama with the conflict, actions, and ways to resolve the conflict.

Background – select relevant publications. *Study design* – be specific, crisp-clear, use strategic diagrams (do all you can, but modestly, to help your reviewers to understand the grandeur of your project). Formulate *Specific Aims* – preference for words like “to examine, investigate, test” rather than “to assess, observe, estimate” (unless it is a mathematical modeling). Sub-aims and ramifications. Cutting-edge quality of immersing into the unknown territory or critically exploring

in-depth the known one – this is your geological survey. Think carefully about *potential problems* and alternative ways of addressing the issue, thus avoiding obstacles – discuss those for the benefit of reviewers. Such discussions demonstrate your breadth of vision and skills to overcome drawbacks.

Hands-on writing – designing a grant proposal

Reviewing a manuscript or a grant – use as example manuscripts of an issue of a journal relevant to the audience. You can also use the own produced manuscript

Learn/refresh the subject and areas related to the manuscript at hand. Get an idea where this manuscript is penetrating the general subject and whether this is to the benefit of the whole field. Is the concept OK? How adequate are techniques used? Does the interpretation reflect actual results – under-interpreting vs over-interpreting or misinterpreting? What is missing to make the claim stronger? Are illustrations top-quality (better not to how an image than to show a poor image).

Exercises in detecting weaknesses in published papers
Discussion of the entire course – what was missing, neglected, needed deeper coverage?