The First Steps toward Basic Scientific Writing

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March 27, 2013

Webinar Overview

- Introduction
- How to get started
  - Get organized and focus
  - Know what kind of paper you’re writing
  - Outline your paper
  - Write; then edit, edit, edit
- Conclusion
- Your questions
The ICF Scientific Writing Workshop Series

- Goal: Complete paper ready for submission
- Participants start with working data tables and results
- 4.5 days
- Presentations cover basics of scientific writing
- Peer review (3 to 4 sessions per workshop) and statistical support
- Individual work time with faculty consultation
- Time to work protected from daily demands

Papers from Our Workshop Series for Communities Putting Prevention to Work Published in Many Journals
**Why Publish?**

- Fulfill our ethical obligation to communities, taxpayers, and society
- Have the greatest public health and clinical impact
- Improve public health practice
- Contribute to prevention science
- “If we don’t publish practice-based evidence, we won’t have evidence-based practice”

**Your Work Is Designed to Create Change**

- **Our job is to tell the story**
  - Who/what changed?
  - How did they/it change?
  - What did we have to do to make change occur?
  - How long will it be before we see the change?

- **Use evaluation data to assess:**
  - What works
  - For whom
  - Under what conditions
Outcome Papers in Context

- Describe the challenge
- Describe your approach to addressing the main issues
- Use your logic model to provide an analytic framework
- Describe the evaluation
- Present outcome findings where you have data, reference effect estimates where there is an evidence base, estimate time it will take outcomes to change, present “post-test” data if available

Many Papers Focus on Outcomes, But Process Is Also Valued

- Many important pieces to our stories
- Focus on the strongest stories you can tell
- Work with team members to coordinate dissemination goals and set priorities
- Use your quarterly and annual reports as sources of information for papers
GETTING STARTED

Four Steps to Getting Started Writing a Professional Scientific Paper

- Get organized
  - Main evaluation question
  - SOCO or elevator speech
  - Analyses, results, tables and figures

- Know where you’re going
  - What type of paper are you writing?
  - If you’re writing an empirical paper, for which journal?

- Make an outline, section by section

- Write, then edit, and edit some more (and again)
First: Get Organized and Focus

Hint: Not like this

GETTING STARTED: GET ORGANIZED AND FOCUS
First: Get Organized and Focus

- The best (most memorable or publishable) papers focus on a single main finding
  - Decide on the OBJECTIVE of your paper and the MAIN IDEAS that support that objective
  - Avoid saying too much to densely—write other papers

- Know the literature
  - This helps you relate your work to others’ work
  - Knowing the literature shows you the gaps in the evidence base
  - If you’re writing a paper for peer-reviewed publication, you need this to frame your Introduction and Discussion sections
**The Main Question**

- What is the main question that your paper is attempting to answer?
  - **Important:** What gap in the literature are you filling?

**Paper objectives:**
- Be absolutely clear about what these are
- Be able to state them clearly and concisely
- Objectives use active verbs:
  - “We conducted an evaluation of cotinine levels . . . .”
  - “We defined a successful program . . . .”
  - “We examined (identified, described, assessed) the relationship between early tobacco use and obesity . . . .”

**SOCO Statement**

- **SOCO = Single Over-arching Communications Objective**

- **Create your SOCO statement from**
  - Your analyses, if you’re writing an empirical paper
  - Your paper’s main idea, if you’re writing a conceptual paper, white paper, or report
GETTING STARTED: GET ORGANIZED AND FOCUS

**SOCO Statement = The “Elevator Speech”**

- You are lucky enough to get into an elevator with Dr. Thomas Frieden, director of CDC. He asks, “What did you find in that evaluation in your community?”
- You have 20 seconds before he gets to his floor
- Explain the single most important idea in 20 seconds
- This is your SOCO

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**GETTING STARTED: GET ORGANIZED AND FOCUS**

**How to Create the SOCO for an Empirical Paper**

2 or 3 good sentences:

- Evaluation question
  - Methods or study design and subjects/participants
- Main results
- Implications, relevance, or significance of findings
**Empirical Paper SOCO Example Deconstructed**

- **Design and Population:** Pre/post-intervention experimental design; bar employees
- **Main Findings:** Had reduced levels of cotinine, NNAL, and self-reported respiratory symptoms 2 months after implementation of Michigan’s Dr Ron Davis smoke-free air law
- **Implications:** A smoke-free workplace air law can protect employee health

[Wilson, Shamo, Boynton, & Kiley, 2012]

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**How to Create the SOCO for a Descriptive or Conceptual Paper**

2 or 3 good sentences:

- Public health problem your paper addresses
- Main analyses or results
- Implications and significance of your review
GETTING STARTED: GET ORGANIZED AND FOCUS

Example Deconstructed

- **Public Health Need:** Collaboration between cancer prevention and tobacco control programs to leverage scarce resources
- **Main Analyses or Description:** Grantees from both programs agreed on 8 concepts that defined program success
- **Implication:** Identifying common ground between the 2 programs can serve as a basis for future collaboration

[Stillman, Schmitt, & Rosas, 2012]

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GETTING STARTED: GET ORGANIZED AND FOCUS

Relate Your SOCO to the Foundation Sections of a Scientific Paper

- **Title page**
  - Long title
  - Short (running) title
  - Authors
  - Affiliations
  - Correspondence
- **Abstract** (this is not the SOCO)
- **Key words**
- **Introduction**
- **Methods**
- **Results**
- **Discussion, conclusions, and implications**
- **Acknowledgements**
- **References**
- **Tables and figures**
Use the SOCO to Guide Your Introduction Section Outline

- The SOCO tells you where your paper is heading
- Use the “funnel” approach
  - Describe the general public health issue or problem your intervention addressed
  - Describe what is missing in the evidence base
  - Describe what you did that’s new and unique
  - Describe the intervention
  - First half of SOCO (specific aim) plus transition to Methods; don’t include results here

Example: Introduction Main Points

- Exposure to second-hand smoke at work
- Michigan’s smoke-free workplace law
- “We conducted pre/post analysis of bar employees for cotinine, NNAL, and self-reported respiratory symptoms 2 months after implementation of Michigan’s Dr Ron Davis smoke-free air law.”

(Wilson, Shamo, Baynton, & Kiley, 2012)
GETTING STARTED: GET ORGANIZED AND FOCUS

Use the SOCO to Guide Your Discussion Section

- Use the pyramid approach
- SOCO is the transition from Results to Discussion
- Describe your findings, your intervention, and why your paper is a contribution to public health
- Describe limitations of your study in 1 paragraph (without being too apologetic)
- Describe implications for public health practice

Focus on the pyramid approach when writing your discussion section. SOCO (Statement of Contribution to Organization) helps guide your content. Describe your findings, intervention, and why your paper contributes to public health. Be clear about the limitations of your study and outline implications for practice.

Public health problem

Your intervention

SOCO transition to Methods section

SOCO statement

Your intervention, implications, relationship to other interventions

Implications for public health practice

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GETTING STARTED: KNOW WHERE YOU’RE GOING

Second: Know Where You’re Going

- Decide what type of paper you’re going to write
- If you’re writing for publication, obtain instructions for authors from your target journals
- Read model papers
  - From journal where you want to publish your paper
  - On a topic similar to your paper
  - In a form similar to yours
GETTING STARTED: KNOW WHERE YOU'RE GOING

Know Where You’re Going: What Type of Paper?

- White paper or systematic review
- Project report
- Full empirical or conceptual manuscript
- Science brief or short communication (1,000 words or fewer)
- Letter to the editor
- Theoretical model, policy analysis
- Commentary
- Meta-analysis

This decision determines your paper’s format and length
GETTING STARTED: MAKE AN OUTLINE

Third: Make an Outline—Order of Writing?

- Title page
  - Long title
  - Short (running) title
  - Authors and affiliations
  - Correspondence
  - Word count
  - Acknowledgements and disclaimers

- Abstract

- Key words

- Introduction

- Methods and Results

- Analysis

- Discussion, conclusions, and implications

- Acknowledgements

- References

- Tables and figures
Recommend Order of Writing

(just remember this is iterative)

- Results OR Analysis: Analysis—This is the heart of your paper, where you support your arguments for your new findings or idea, and the source of your SOCO: Write this first
- Introduction—Can spend too much time on it, but it’s important for framing: Write this second
- Discussion or Conclusions—Can’t write until you know the main point(s) from your analysis and where your work fits into the literature: Write this third
- Abstract—Much easier after you have finished the paper: Write this last
- References, if using—Ditto
- Methods—For empirical papers, this is the easiest section: Write it any time

In What Order Should an Empirical Paper Be Written?

The Backwards (Easy) Option

1. If you have data or main points that fit into tables, create them first
2. Identify 1 or 2 main findings that the paper reports
   - Use this as the basis of your SOCO
3. This is your Results section
In What Order Should an Empirical Paper Be Written?

4. Methods
   – Matches how you got results (no more, no less)

5. Discussion or conclusions
   – Single main finding clearly stated (SOCO statement as transition)
   – Relevant other findings from the literature, confirmation of other studies
   – Surprising, contradictory, unexpected findings
   – Limitations (1 paragraph only)
   – Public health implications

6. Introduction
   – Now you know where everything is heading
   – Set up general issue or large-scale public health problem
   – Specific issue
   – What is missing in the evidence base?
   – What you did to fill void and your paper’s contribution
   – Your study objective (first part of your SOCO)

7. References
   – 20 are usually sufficient
In What Order Should any Article Be Written?

8. Title
   - Title should reflect single main finding or main point of study

9. Abstract
   - Do last, falls into place, rewrite as you rewrite the paper

Making the Outline

- Make an outline with sufficient detail, major headings
  - Abstract
  - Introduction
  - Methods
  - Results or analysis
  - Discussion or conclusions

- Write one line for each point or paragraph (think “sub-SOCO” here)

- Can be critical for organizing Introduction and Discussion or Conclusions sections

- Use standard subheadings for Methods section (according to the journal’s requirements)
GETTING STARTED: BEGIN WRITING

Fourth: Begin Writing

- Use your SOCO statement to be clear about what you want to say before you write it down

- Be concise
  - Short sentences, short paragraphs
  - Avoid the “squid effect”
  - “Brevity is the soul of wit”
    (Shakespeare, Hamlet)
Comments on General Style

- Concise, short sentences—NOT like a policy statement (unless it’s in blank verse)
- Use active voice as much as possible
  - Narrative style (“We” or even “I”) is OK for almost all publications now
- Use clear, straightforward prose

Comments on General Style: Clarity

- Not clear:
  - “In addition, understanding of potential population reach and impact for many community-based interventions has been limited.”
- Better:
  - “We do not understand the potential population reach and impact of many community-based interventions.
- Principle: Use active voice
Comments on General Style: Clarity

- Not easy to read:
  - The program intervention-specific population reach estimates contribute to a framework for strategy selection.

- Better:
  - By estimating the number of people reached in each program intervention, we can obtain information to guide selection of future strategies.

- Principle: Beware the long noun string

Citations, Quotations, and Plagiarism

- Cite all facts or ideas derived from other sources.
- Use quotes if you’re directly quoting another source (and reference it).
- Be careful that you are not accidentally plagiarizing
  - It’s very easy to do with electronic cut-and-paste.
When You’re Ready to Write: General Advice

- Peer review, peer review
- Rewrite
- Rewrite again
- Rewrite shorter
- Peer review again
- Soon “out the door” or hit “submit”

First Steps to Scientific Writing: Conclusion
First Steps to Scientific Writing: Conclusion

- Determine your main findings
- Focus: Write your SOCO
- Decide what type of paper you’re writing
- If you’re writing an empirical paper, choose 3 target journals
- Outline your paper, results or main ideas first
- Write
- Edit, peer review, edit, peer review

Every Paper Has a Home
An Assignment to Get You Started

- Identify a paper topic
- Analyze your data and determine your main finding(s)
- Write your elevator speech, or SOCO (2 to 3 sentences)
- Try it on your colleagues first

"You talkin' to me?"

Questions?