


Week 3: Begin Day 4

Writing: Telling Your Story

| Faculty Agenda with Instructions | |
|--|---|
| Materials/Preparation: <ul style="list-style-type: none"> Participant Workbook and Week 3 USB flash drive Equipment/resources: Same as Day 1 Printed material/handouts: Participant and faculty evaluation forms | |
| Time | Lecture/Activity |
| 8:00 | Welcome back (1hr) <ul style="list-style-type: none"> Recap Day 3; Preview Day 4 Identify 3-4 participants to discuss updates/revisions to their written drafts (faculty may choose to focus on specific areas: subjects & methods, results, abstracts, or oral presentation, depending on group needs and progress) |
| 9:00 | W3L7: Telling a Compelling Story, part 1: Introduction (22 slides, 30min) |
| 9:30 | Small group work with mentors: Write/rewrite introduction (2hr 30min) <ul style="list-style-type: none"> Break into assigned small groups to share with peers and faculty mentors Break into individualized work with mentors circulating to spend 1:1 time with participants |
| | Break ad lib |
| 12:00 | Lunch (1hr) |
| 1:00 | W3L8: Telling a Compelling Story, part 2: Discussion (13 slides, 30min) |
| 1:30 | Small group work with mentors: Write/rewrite discussion (3hr) <ul style="list-style-type: none"> Break into assigned small groups to share with peers and faculty mentors Break into individualized work with mentors circulating to spend 1:1 time with participants |
| | Break ad lib |
| 4:30 | End Day 4 (15 min) <ul style="list-style-type: none"> Review homework for Day 5: Continue work on manuscript Participants complete Day 4 evaluations |
| 4:45 | Faculty Debrief |

| | | |
|---------|--|--|
| Slide 1 | <div data-bbox="225 210 759 607"> <h2 style="text-align: center;">Telling a Compelling Story, part 1: Introduction</h2> <hr style="border: 2px solid red; width: 100%;"/> <p style="text-align: center;">CDC Operations Research Course Add place and date Add presenter name & affiliation</p>  </div> | <p>Title: W3L7 Telling a Compelling Story, part 1: Introduction</p> <p>Time: 30 minutes (22 slides)</p> <p>Reading: Writing Science (Joshua Schimel), chapters 5-7</p> |
| Slide 2 | <div data-bbox="225 770 759 1167"> <h3>Learning objectives</h3> <ul style="list-style-type: none"> ▪ The introduction answers the question W-H-Y. ▪ Describe the problem that you wanted to solve through the piece of research you are writing about. ▪ Explain why that problem is important. ▪ Review what has been done so far to solve the problem. ▪ Introduce the study by pointing out what is different about it compared to past research. </div> | <ul style="list-style-type: none"> • “The problem must be such that it matters what the answer is — whether to science generally or to mankind.” • <i>[Review slide content]</i> |
| Slide 3 | <div data-bbox="225 1335 759 1731"> <h3>Purpose of the introduction</h3> <ul style="list-style-type: none"> ▪ Introduction acts as bridge that transport your readers from their own lives into the “place” of your analysis ▪ Helps your readers make a transition between their own world and the issues you will be writing about ▪ Motivates readers and elicits their curiosity to read your work ▪ Answers two major questions: <ul style="list-style-type: none"> • Why was this study needed to fill in the gap in scientific knowledge? • Why does this gap need filling? </div> | <ul style="list-style-type: none"> • Your introduction will make your readers want to read your paper. The introduction should capture your readers’ interest, making them want to read the rest of your paper. • Opening with a compelling story, an interesting question, or a vivid example can get your readers to see why your topic matters and serve as an invitation for them to join you for an engaging intellectual conversation. |

Slide 4

Outline

- The Opening
- The Funnel: Connecting O & C
- The Challenge

- [Review slide content]

Slide 5

Goals of the introduction

- 1 • Identify the knowledge gap or problem
- 2 • Explain why it needs to be filled
- 3 • Summarize how this study attempts to fill that gap
- 4 • Target an audience

- Your opening should address these 3 goals.
- [Review slide content]

[Image source: modified from image obtained through Microsoft clipart (soccer goal)]

Slide 6

Introduction structure

1. What is known? (background information)
2. What is unknown? (what gap do you want to fill?)
3. How and why should we fill the gap? (your rationale and purpose/hypothesis)

- [Review slide content]



The Opening

Introduction content

1. Brief background information

- Strong statement that reflects your research subject area and the title
- State the problems and aims of the study
- Use key words from the title
- Cite all relevant literature that supports your explanation of current knowledge base
- Clarifications of terms, definitions, or abbreviations

- *[Review slide content]*

Opening sentence

- Introduces the topic of your manuscript (story)

- Example:**

"Early identification and treatment of individuals with infectious tuberculosis (TB) are crucial to interrupting transmission and reducing incidence, morbidity and mortality."

- Problem = TB transmission/missed cases
- Characters = Methods for early case detection

Excerpt source: *IUTLD 22(3):264–272*

- The opening sentences of your manuscript hold a lot of power in that they can capture or lose your reader's interest. **Make them count.**
- The first sentence should frame the topic of your manuscript.
- In this example, the authors make clear from their opening sentence what the overarching problem is that their research is related to.
- [Slide animation]**
- ASK participants to state what they think the problem is.**
- [Slide animation]** Click for answers
 - The **problem** these researchers want to address = ongoing TB transmission and missed cases due to diagnostic and treatment delays.
 - The **main character** in this story = methods for early case detection
- The **target audience** may be: Community health providers? Public health? Policy makers?

Introduction content (2)

- Show knowledge gaps (unknown)
 - Explain why and how we should fill in the gap
 - Explain what logical steps can be developed based on existing research
- Rationale and purpose/hypothesis
 - Reason for "filling the gap"
 - State your purpose and objectives of the study
 - Hypothesis: 1- to 2-sentence explanation of useful knowledge to be gained

- [Review slide content]**

Intended audience: Who?

- Subject matter experts?
 - Launch from newest research to what you will add to it
 - Do not bore with well-known details
- Broader audience? **Two-step opening**
 1. Open with issue that engages target audience
 2. Move from the target audience interest into the focus of your research

- *[Review slide content]*

Example 1: Who is the target audience?

"Tuberculosis (TB) is an infectious disease caused by the bacillus *Mycobacterium tuberculosis*. Typically, it affects the lungs and other organs [1]. The disease is spread through the air when people who are sick with pulmonary TB expel the bacteria. Only a small proportion of people, approximately 10%, infected with *M. tuberculosis* will develop clinical TB during their lifetime, but this probability is much higher among immunocompromised individuals, such as those infected with HIV [2]."

Excerpt source: BMC Public Health (2018) 18:422.

ASK: *Who is the target audience likely to be for this journal article based just on these opening sentences?*

- Maybe the general public who have little or no knowledge about TB, how it is transmitted, etc. as the authors provide information that would be given to a new TB patient or a family member.
- You would never guess from this opening paragraph that the study was about risk factors for MDR-TB in people undergoing treatment.

ASK: *How do you think these opening sentences would be received by tuberculosis expert reviewers?*

- While this manuscript did get published, the authors risk it not being read by their target audience (opening offers NO DIRECTION as to where the story is going and information TOO BASIC).

[Example taken from: Desissa, F., Workineh, T. & Beyene, T. Risk factors for the occurrence of multidrug-resistant tuberculosis among patients undergoing multidrug-resistant tuberculosis treatment in East Shoa, Ethiopia. BMC Public Health (2018) 18: 422. <https://doi.org/10.1186/s12889-018-5371-3>.]

Example 2: Who is the target audience?

"Although most countries with a high burden of tuberculosis (TB) have adopted and widely implemented the World Health Organization's Stop TB Strategy, the rate of decline in case numbers has been slower than expected^{1,2}. Possible explanations include patient and health system delays in diagnosis and treatment, and the rise of risk factors including co-infections (notably with human immunodeficiency virus, HIV), air pollution, alcohol abuse, crowding, diabetes, malnutrition, tobacco smoking and urbanization³.

Low body mass and diabetes have been treated as distinct risk factors for tuberculosis⁴⁻⁷ although they are linked components of the nutritional profile of populations."

Excerpt source: PLoS ONE 6(6): e21161

ASK: Who is the target audience likely to be for this article?

- The target audience here are subject matter experts. It is assumed the WHO Stop TB Strategy will be well-known by the readership the authors are targeting.
- This is an **example of the two-step approach** where the authors cast the net wide with their opening sentence then begin to drill down towards their focus on nutrition and diabetes as it relates to impacting the global TB burden.

[Example taken from: Dye C, Bourdin Trunz B, Lönnroth K, Roglic G, Williams BG. Nutrition, Diabetes and Tuberculosis in the Epidemiological Transition. *PLoS ONE* (2011) 6(6): e21161. doi:10.1371/journal.pone.0021161.]

Example 3: Who is the target audience?

"The WHO currently recommends at least 6–9 months of isoniazid preventive therapy (IPT) for all people living with HIV (PLHIV) deemed unlikely to have active tuberculosis (TB) on the basis of symptom screening¹. Several clinical trials have demonstrated an individual-level efficacy of IPT for preventing TB among PLHIV². Longer follow-up studies on the risks of TB after stopping IPT, however, suggest that the duration of protection post-IPT varies on the basis of setting and may be lost almost immediately³⁻⁶."

Excerpt source: AIDS (2016) 30(17):2715–2723.

ASK: Who is the target audience likely to be for this journal article based just on these opening sentences?

ASK: What do you think this study is going to address?

[Example taken from: Kunkel A, Crawford, FW, Shepherd J, Cohen T. Benefits of continuous isoniazid preventive therapy may outweigh resistance risks in a declining tuberculosis/HIV coepidemic. *AIDS* (2016) 30(17): 2715–2723.]

The Funnel
Connecting the Opening & Challenge

Main body: The funnel

- Frames the knowledge gap (gives specifics)
- Leads readers **from general** (big problem) to **specific** (question your research addressed)
- Builds the case for why your research question should be answered



- This is the portion Schimel refers to as “the funnel”
- *[Review slide content]*
- The introduction must be more than just a review of the literature on the topic of our research, it must be laid out in such a way that builds the case for why your research question is important to answer if progress is to be made on the big problem.

Using literature reviews for introduction

- Review literature to establish a rationale for your research:
 - Previous studies have been inconsistent in findings
 - Previous research has been on different populations
 - Interpretation from previous research is uncertain
- Literature review “sells” the idea to readers
- Use literature for conceptual framework

- *[Review slide content]*
- A literature review is a means to an end

The Challenge

State the research question

- The question describes the specific knowledge you hope to gain
- May also include a hypothesis and specific objectives
- Stating the question that led you to do your research is important to storytelling

- [Review slide content]
- Some approach this by stating the objectives of their research rather than what their question was. Good storytelling will state the question clearly for the reader.

Funnel example

Source: *IJTL* 22(3):264–272

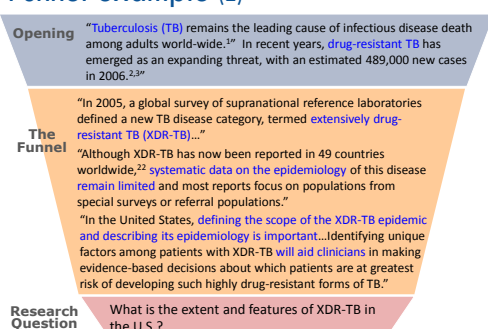


- This slide shows just a few of the key points made by the authors to connect the broad problem of missed cases of TB globally to the specific problem of their research (**What is the best strategy for TB case detection within the health system of Buffalo City Metropolitan (BCM) District, Eastern Cape Province, S. Africa?**)

[Example taken from: Kweza PF, C. Van Schalkwyk,† N. Abraham,* M. Uys,* M. M. Claassens,‡ A. Medina-Marino* Estimating the magnitude of pulmonary tuberculosis patients missed by primary health care clinics in South Africa. *IJTL* 22(3):264–272.]

Funnel example (2)

Source: *JAMA* 300(18): 2153–2160



- This slide shows just a few of the key points made by the authors to connect the broad problem of TB and drug-resistant TB to the specific problem of their research (**What are the extent and features of XDR-TB in the U.S.?**)

[Example taken from: Shah NS, Pratt R, Armstrong L, Robison V, Castro KG, Cegielski JP. Extensively drug-resistant tuberculosis in the United States, 1993–2007. *JAMA* (2018) 300(18): 2153–2160.]

In summary...

- Know who your intended audience is
- Use your opening sentences to frame your story, incorporating the interests of your target audience
- Connect your opening statement with your specific research question making a clear argument as to the importance of answering your question

- *[Review slide summary]*
- *[END]*

Slide 1

Telling a Compelling Story, part 2: Discussion

CDC Operations Research Course

Add place and date

Add presenter name & affiliation



Title: W3L8 Telling a Compelling Story, part 2: Discussion

Time: 30 minutes (13 slides)

Reading: Writing Science (Joshua Schimel), chapters 8-9

Slide 2

Core principles

1. Make the reader's job easy!
 - Present results and interpretations in a way that best develops the story
2. Make clear the distinction of **what you found (RESULTS)** from **what you think (DISCUSSION)**

- There are different ways in which the outcome (results and discussion) of a study can be written.
- Most commonly, the results section is separate from the discussion; however, some disciplines weave them together in different ways.
- In either approach, these two **core principles** should guide you as you are writing this section of your manuscript.
- *[Review slide content]*

Slide 3

Discussion section: Pieces

- Distill the essence of your study - **main finding**
- **Interpret** what the results mean
- Describe how results **compare with prior knowledge**
 - What do your results add to the field of study?
 - Consistent or inconsistent with other studies?
- Explain **limitations** / note **strengths**
- Make **recommendations**, state policy/program implications
- Summary/**conclusions**

- Remember, there is much ground to cover in your discussion section.
- *[Review slide content]*

Slide 4

Discussion section: Story telling

- Should form a story within itself
 - Consider why you are telling any particular piece of information
 - How does it contribute to the larger story?
- What do your results mean?
- How do the results answer your research question?

- Each section of your manuscript contributes to the overall story **AND** each section should also form a story within itself.
- Think about each piece you want to highlight and how they fit together.
- *[Review slide content]*

Slide 5

Resolution/Conclusion

A strong resolution should:

- Reiterate the action
- Answer the question(s) raised in the challenge
- Demonstrate how answers contribute to the addressing the larger problem
- Make clear the “take-home message”



- Just like the opening of your manuscript, your closing words are extremely important. People remember the last things you say. Make these last words reflect your “key take-home message.”

[Image source: Royalty free Vector clip art]

Slide 6

Discussion – Story structures

- **OCAR** (Opening/Challenge/Action/Resolution)
 - Open by reminding readers of the challenge and question, then work through to the resolution
- **LDR** (Lead/Development/Resolution)
 - Open by framing the conclusion, then provide supportive arguments building to the resolution

- The two basic story structures a discussion section will take are: an OCAR (Opening, Challenge, Action, Resolution) or an LDR (Lead, Development, Resolution) structure

Example 1: OCAR structure

Opens with reminder of the challenge:

"This is the first study from Zimbabwe to assess the use of Xpert before and after the WHO recommendation that the assay be used as the first investigation in all patients with presumptive TB. There were some interesting findings."

Example source: PHA 2018; 8(3): 124–129

- In this example, the authors open the discussion by reminding the reader of the specific question they sought to answer: ***What is the utilization and results of deploying Xpert in Zimbabwe before and after guideline changes?***

[Example taken from: Jokwiro A, Timire C, Harries AD, Gwinji PT, Mulema A, Takarinda KC, Mafaune PT, Sandy C. Has the utilisation of Xpert® MTB/RIF in Manicaland Province, Zimbabwe, improved with new guidance on whom to test? PHA 2018; 8(3): 124–129]

Example 1: OCAR structure (2)

Building case toward the resolution:

"First,...the number of assays and the utilisation rates of the instruments all increased in 2017 compared with 2016, when Xpert was only recommended for patients with presumptive MDR-TB or those with coinfection." *[followed by interpretation]*

"Second, in both 2016 and 2017 there were more Xpert assays and better utilisation rates in provincial than in district hospitals, which in turn performed more assays than in rural hospitals; these differences were particularly significant in 2017."

"Finally, MTB positivity rates decreased by almost half in 2017 compared with 2016."

Example source: PHA 2018; 8(3): 124–129

- The authors then move on to recap their main findings and their analysis/interpretation of their findings.

[Example taken from: Jokwiro A, Timire C, Harries AD, Gwinji PT, Mulema A, Takarinda KC, Mafaune PT, Sandy C. Has the utilisation of Xpert® MTB/RIF in Manicaland Province, Zimbabwe, improved with new guidance on whom to test? PHA 2018; 8(3): 124–129]

Example 1: OCAR structure (3)

The resolution

"In conclusion, with the introduction of new guidelines recommending Xpert use as the first diagnostic tool in patients with presumptive TB, the volume of assays and utilisation of Xpert instruments has increased significantly, in parallel with a decrease in MTB positivity rates and an increase in registered cases with bacteriologically confirmed TB. There is a clear gradation from provincial to rural hospitals, with the latter needing more attention to improve the use of this new technology. Policy implications are discussed."

Example source: PHA 2018; 8(3): 124–129

- The authors finish by restating the main finding that answers the research question and the resulting impact of the increased uptake of Xpert implementation.
- It finishes with a clear statement of policy implication and recommendation for a focus on rural hospitals as a next step.

Example 2: LDR structure

Opens by framing the conclusion (Lead):

"CHW-led, home-based HCT has the potential to improve HIV testing rates and linkage to HIV treatment. CHWs can approach at-risk populations in ways that may be more acceptable and convenient for clients, while simultaneously shifting responsibility away from overburdened health workers in facilities.¹⁷ However, it is essential that these services be provided competently.

Here, we have demonstrated that CHW-led, home-based HCT among high-risk TB contacts can provide results similar to those obtained in laboratory settings."

Example source: PHA 2018; 8(2): 72–78

- This next example shows the Lead, Development, Resolution structure.
- This was a mixed-methods study in Kampala, Uganda, the specific aim of which was to determine the feasibility and quality of home-based HIV counseling and testing (HCT) by community health workers (CHW) and to gather health worker perspectives on delivering HCT as part of household TB contact investigation.
- In this study example by Ochom and colleagues, the discussion opens by framing the author's conclusions.

[Example source: Ochom E, Meyer AJ, Armstrong-Hough M, Kizito S, Ayakaka I, Turimumahoro P, Ggita JM, Katamba A, Davis JL. Integrating home HIV counselling and testing into household TB contact investigation: a mixed-methods study. PHA 2018; 8(2): 72–78.]

Example 2: LDR structure (2)

Presents supportive arguments (Development):

"We found that CHWs adhered to the HIV testing algorithm. Moreover, the results of CHW-led tests had a high level of concordance with re-testing by laboratory personnel... Our findings are in agreement with a recent large study of community members tested in rural Uganda, where the quality of the CHW-led, home-based HCT provided was extremely high.²⁰"

"We also found that the CHWs' confidence grew as they gained field experience in carrying out home-based HCT..."

"...the test acceptance rates observed are consistent with other reports from the region.^{16,21}"

[Study limitations and strengths]

Example source: PHA 2018; 8(2): 72–78

- These are a few of the arguments summarizing the main findings and how these findings support those from other research leading to the conclusion.

Example 2: LDR structure (3)

The resolution:

“By utilizing CHWs, HIV testing can be feasibly integrated into household TB contact screening, potentially facilitating faster identification of those infected. Future research should identify strategies for implementing standardized and cost-effective QA programs.”

Example source: PHA 2018; 8(2): 72–78

- The authors conclude with a statement that was alluded to in the opening of the discussion, that HIV testing can be integrated into TB contact investigation using CHWs, potentially improving HIV testing rates and linkage to care.

Summary

- Choose structure (OCAR or LDR) that fits best for telling your story
- Make sure your last words contain the key take-home message from your research



- *[Review slide content]*
- *[END]*