

# Week 3: Begin Day 2

## Writing the Core Science

Faculty Agenda with Instructions	
<b>Materials/Preparation:</b> <ul style="list-style-type: none"> <li>Participant Workbook and Week 3 USB flash drive</li> <li>Equipment/resources: Same as Day 1</li> <li>Printed material/handouts: Participant and faculty evaluation forms</li> </ul>	
Time	Lecture/Activity
8:00	<b>Welcome back (1hr)</b> <ul style="list-style-type: none"> <li>Recap Day 1; Preview Day 2</li> <li>Participants continue presenting PowerPoint presentations summarizing research projects (as needed to complete ALL participants) or allow 3-4 volunteers to present homework revisions</li> </ul>
9:00	<b>W3L3: Structure of Scientific Manuscripts</b> (39 slides, 45min)
9:45	<b>Small group work with mentors:</b> Write/rewrite subjects and methods (2hr 15min) <ul style="list-style-type: none"> <li>Break into assigned small groups to share with peers and faculty mentors</li> <li>In small group: Participants share drafts of their methods sections; facilitate group input as needed (30min – 1hr)</li> <li>Break into individualized work with mentors circulating to spend 1:1 time with participants</li> </ul>
	<b>Break ad lib</b>
	<b>Small group work with mentors:</b> Write/rewrite subjects and methods (continued)
12:00	<b>Lunch (1hr)</b>
1:00	<b>W3L4: Writing an Abstract</b> (17 slides, 30min)
1:30	<b>Small group work with mentors:</b> Write/rewrite abstracts (3hr) <ul style="list-style-type: none"> <li>Break into assigned small groups to share with peers and faculty mentors</li> <li>In small group: Participants share their abstracts; facilitate group input as needed (30min – 1hr)</li> <li>Break into individualized work with mentors circulating to spend 1:1 time with participants</li> </ul>
	<b>Break ad lib</b>
4:30	<b>End Day 2 (15 min)</b> <ul style="list-style-type: none"> <li>Review homework for Day 3: Complete abstract and methods</li> <li>Participants complete Day 2 evaluations</li> </ul>
4:45	<b>Faculty Debrief</b>

Slide 1

## Structure of Scientific Manuscripts

CDC Operations Research Course

Add place and date

Add presenter name & affiliation



**Title: W3L3 Structure of Scientific Manuscripts**

**Time: 45 minutes (39 slides)**

**Reading: None**

Slide 2

### Scientific manuscript components

- Title
- Introduction
  - Opening – Define the context and characters
  - Body – Present what is known and unknown
  - Challenge – Specific question/hypothesis or study goals
- Methods – What you did
- Results – Findings
- Discussion
  - What the findings contribute to existing knowledge
  - Conclusion – the “take home message”

- The specific components of manuscript writing that we will cover include: *[Review slide content]*
- The section of the introduction that reviews the existing knowledge related to your research can be referred to as the Body or Background

Slide 3

### Coming Up with a Title

- The title of your manuscript is usually the first introduction readers (and reviewers) have to your work. Therefore, you want to strive for a title that grabs attention, accurately reflects the contents of your manuscript, and makes people want to read further.

### What makes a good title?

A good title **clearly describes** the **contents of the paper** in the fewest possible words

- Characteristics of an effective title:
  - Conveys the **main topics** of the study
  - Highlights the **importance** of the research
  - Is **concise**
  - **Attracts** readers

- Writing a good title for your manuscript can be challenging but can also be a lot of fun.
- *[Review slide content]*
- Think about why you decided to study your topic and why your research will be of interest to others. If your title makes this clear, it will likely attract more readers to your manuscript.
- ***[Slide animation]*** Click or advance to reveal bullet points on bottom half of slide.

## The Introduction

### Purpose of the introduction

- Background on study context (broad issues)
- Immediate problem and review of related research
- Justification for the study
- Study objectives / hypothesis



- The introduction generally includes these four elements: *[Review slide content]*
- A common way to organize the introduction is to start with a sentence or two about the overall topic of your research, then zero in on the problem, summarize the existing research related to the topic, then finish with why your research was important and the objective/study hypothesis.

### Study background

- Introduces the study topic
- Start with **broad issues** and move to the **immediate problem**
- Example:
  - **Broad issue:** “Antenatal care is an essential ingredient in reducing infant mortality.”
  - **Immediate problem:** “Senegal has had an antenatal program since 2000 but no data are available to show the efficacy of the program.”

- When describing the background of your research topic, focus on the topic or topics that relate specifically to the contribution your research adds to the field, then move directly to stating what the problem is – which leads to why you conducted your particular study.
- *[Review example provided on slide and/or other examples you may have at hand]*

### Related research

- Relevant papers should be cited throughout the introduction section
- Example:
 

“There is widespread concern that emergency contraception will lead to more risk-taking.<sup>1-8</sup> A few studies show no increase in risky behavior,<sup>9-11</sup> but these studies did not evaluate outcomes.”

- You conducted a literature search during Week 1 of this course as you were exploring and preparing your research question.
- As you are beginning to write your manuscript, it is always good practice to go back and update your lit search so that you don’t miss something important that may have been published and is relevant to your field of study.
- The review of current knowledge on your topic should be more of a synthesized summary of the relevant papers, pulling out the main points or findings that support and provide context to your field of study.
  - If there are articles on your topic that have influenced clinical practice or advanced scientific knowledge in the area of your research, those studies should be cited.
  - If there is a recent review article, it is usually worth citing.
- *[Review example]*
- If prior research in your field of study has not been published, explain why you think this gap exists, and discuss current beliefs and where they may have originated.

## Slide 9

### Justifying need for the study

- The justification follows the general and immediate problems and a review of current knowledge
- Highlights gap in knowledge or understanding in a specific context
- Example:  
 “Determinants of adherence to IPT among PLHIV are largely unknown, and data from prospective cohorts are lacking.”  
Example source: *UTLD* (2016) 20(10):1342-47

- [Review slide content]

[Example taken from: Ayele HT, van Mourik MSM, Bonten MJM. Predictors of adherence to isoniazid preventive therapy in people living with HIV in Ethiopia. *Int J Tuberc Lung Dis* 2016; 20(10): 1342-47.]

## Slide 10

### Study objectives

- Objectives or hypothesis follow your study justification
- Example:  
 “The present study aimed to identify the potential predictors of adherence to IPT among PLHIV using prospectively collected data.”  
Example source: *UTLD* (2016) 20(10):1342-47



- [Review slide content]

[Example taken from: Ayele HT, van Mourik MSM, Bonten MJM. Predictors of adherence to isoniazid preventive therapy in people living with HIV in Ethiopia. *Int J Tuberc Lung Dis* 2016; 20(10): 1342-47.]

## Slide 11

### DO NOT include...

- Information that is not directly relevant to your study
  - General information about the country
  - Problems other than the one being examined
  - Details of the research design



- [Review slide content]



## Methods Section



### The methods section describes...

- How you collected, organized, and analyzed your data
- What you did, not what you found
- Original methods in detail; otherwise give references



- A well-written methods section will provide enough information so the reader will understand how you conducted your study, and so that others could reproduce your study or the part they are interested in.
- *[Review slide content]*



### And answers...

- Whom or what did you study?
- When did you study them?
- Where was study conducted?
- What did you do to study them?
  - Recruit and randomize
  - Study design
  - Interventions
  - Activities to collect data (interview, record review, etc.)
  - Define variables
  - Analysis
  - Protect subjects

- Remember that research protocol you labored over? It contains much of the information you need to include in your methods section.
- *[Review slide content]*

### Keep simple and easy to follow

- Start with a simple description
- Respect chronology
- Organize in logical subsections; for example...
  - Study design
  - Subjects and setting
  - Measurements and analysis
  - Ethical review statement
- Review published studies similar in design to get ideas on wording and flow

- To get started, begin by writing a simple description of your study and what you did.
- A framework is commonly used to organize the methods section. Think about and make an outline of the subsections you will include.
- Look for a published study that is similar in design to your own study to get ideas on wording and flow for your methods section.

### Link methods and results

- Any measurements described in methods should have results of those measurements presented in the results section
- For results you plan to present, describe your method of measurement in the methods section

Methods: \_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_



Results: \_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

- It's important to keep in mind that your methods and results sections are linked.
- For every measurement described in the methods section, there should be a counterpart in the results section and vice versa.

### Data analysis: How and why

- Start with a single overview sentence stating how and why you analyzed your data, then provide the details

*"To investigate risk factors for developing TB, we calculated incidence rates of TB per 100 000 person-years follow-up and assessed TB incidence over time using Nelson-Aalen cumulative hazard plots. We estimated incidence rate ratios (IRRs) using univariable and multivariable Poisson regression models, offset by follow-up time. Cox regression was precluded as our data did not satisfy the proportional hazards assumption for key variables such as route of HIV infection."*

Excerpt from: AIDS, 31(17) - Nov. 2017

- The data analysis section of your methods should describe how you conducted your analysis and why you used a particular analytical method.
- In this example, the authors state up front what their goal was – *"to investigate risk factors for developing TB"* – and a brief overview of how they did it – *"calculated incidence rates of TB... and assessed TB incidence over time using Nelson-Aalen cumulative hazard plots."*
- From this opening overview, the authors then go on to provide the details around their calculations.

*[Excerpt source: Winter JR, Stagg HR, Smith CJ, Brown AE, Lalor MK, Lipman M, Pozniak A, Skingsley A, Kirwan P, Yin Z, Thomas HL, Delpech V, Abubakar I. Injecting drug use predicts active tuberculosis in a national cohort of people living with HIV. AIDS 2017; 31(17):2403-2413.]*

- Note:
  - If you did a power calculation before your study, the data analysis section is where you would mention it.
  - If your analysis adjusted for age or other factors, stating this once in the data analysis section is usually sufficient.

### Ethical review statement

*"The study was approved by the Ethics Committees of the University of KwaZulu-Natal, Yale University, and Albert Einstein College of Medicine."*

Excerpt from: IJTL, (15) 9 - Sept. 2011

- Most journals expect a statement about ethical review

- [Review slide content]*



**DO NOT** include in Methods...

- Results
- Background information
- Justification/ support for methods
- Details about software (explain the math, not the software)

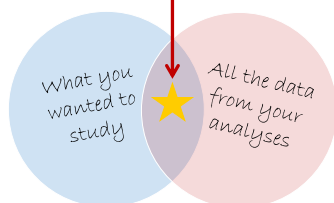


- *[Review slide content]*

## Results Section

**Results section should describe...**

- Results of data analysis that are **relevant to the study objectives**



- Become very familiar with your data before you begin writing the results section.
- All results should map directly to your specific aims/objectives. Too many pieces of data may obscure the important stuff.
- Highlight key findings that will best inform your program.

### Descriptive results

- Characteristics of your study subjects
  - Demographic characteristics
  - Important outcome variable(s)
  - Characteristics that correspond with analytic results to be presented
- May also include:
  - Characteristics of subjects enrolled but not included in analyses

- Summarize the characteristics of your study subjects in a table.
- Analyze and stratify your descriptive results by variables of interest (e.g., age groups, sex, region, etc.); make comparisons between groups or with previous time periods.
- If there were many subjects who dropped out of the study after enrollment or that were not included in the analysis due to missing data, inclusion of these demographic characteristics may be important to provide as well.

### Main finding

- Three basic principles when presenting your main findings:
  1. Do not bury in the middle or at the end of a paragraph
  2. Do not use fancy statistical terms
  3. Do not forget the effect size



- Next, present your basic analytic findings.
- Make sure the effect size is crystal clear.

### Other important findings

- Might include:
  - More elaborate statistical models used
  - Additional supporting evidence including:
    - Alternative measurement methods
      - Example: Use of genotyping or whole genome sequencing in addition to social network analysis
    - Different analytic techniques
    - Other sub-group analysis

- *[Review slide content]*

### Results section: Helpful tips



- Tables and figures should stand on their own
- Data presented in tables or figures should not be repeated in the text
  - Use **tables** to highlight **individual values**
  - Use **figures** to highlight **trends/relationships**
- Percentages should include raw numbers
- Use *past tense*
- Almost NEVER is a reference required in this section

- Text, tables, and figures in your results section should complement each other.
- Later today, we'll go deeper in to presenting your data in tables, figures, and graphs but a key principle to remember is that the reader should be able to determine what a table or figure is about by simply looking at it, without having to read any text. The text should simply guide the reader to notice a particular finding.
- If you find yourself wanting to cite text in your results section, this is a clue that the text probably belongs in either the methods or the discussion section of your manuscript.

### Discussion Section

### Format of discussion section

- 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

- Start your discussion with what you found.
- Interpret for the reader what you think your results mean. Summarize your evidence for each conclusion you make.
- Convey to your reader **why** these results matter.
- Consider all the implications of your results, then hone in on the most important take-home message for your conclusion.

## Slide 28

### Main finding

- Begin with a statement summarizing what you did and your main finding
- Example:  
“In this study, **we examined the role of transmission** in the ongoing epidemic of XDR tuberculosis by combining multiple genotyping methods with social-network and epidemiologic analysis. **We found** that XDR tuberculosis remains widespread throughout KwaZulu-Natal ....”

Excerpt from: Shah NS, Auld SC, Brust JC, et al. Transmission of extensively drug-resistant tuberculosis in South Africa. *N Engl J Med* 2017; 376:243–53.

- [Review slide content]

*[Example source: Shah NS, Auld SC, Brust JC, et al. Transmission of extensively drug-resistant tuberculosis in South Africa. N Engl J Med 2017; 376:243–53.]*

## Slide 29

### Interpret what results mean

- Follow your main finding statement with your interpretation of what the results mean
- Example:  
“We found that XDR tuberculosis remains widespread throughout KwaZulu-Natal and that **transmission is the primary driver** of the epidemic.”

Excerpt from: N Engl J Med 2017; 376:243–53

- [Review slide content]

*[Example source: Shah NS, Auld SC, Brust JC, et al. Transmission of extensively drug-resistant tuberculosis in South Africa. N Engl J Med 2017; 376:243–53.]*

## Slide 30

### Comparison with other research

- Examine and describe how your results compare to findings of similar research
  - Consistent or inconsistent
  - What your study adds to existing knowledge
- Example:  
“The results of whole-genome sequencing provide support for these findings, with a median difference of 5 SNPs between the most closely connected patients in each cluster; **these findings are similar to published thresholds for transmission of *M. tuberculosis***.<sup>24–27”</sup>

Excerpt from: N Engl J Med 2017; 376:243–53

- If your results differ from what other investigators have found, try to explain why.

*[Example source: Shah NS, Auld SC, Brust JC, et al. Transmission of extensively drug-resistant tuberculosis in South Africa. N Engl J Med 2017; 376:243–53.]*

### Limitations of the study

- Be open and candid about any potential sources of bias or limitations in the study
  - Method of recruitment/enrollment; response rate
  - Data collection or data measures
  - Lack of information on variables that might be important (e.g., no information on HIV status)
  - Generalizability of findings
- State limitations in separate paragraph
  - You may subsequently provide insight as to why it may not compromise the overall internal validity of your study (if applicable)

- [Review slide content]

### Study limitations (example)

- Example:
 

“Several limitations may have affected our estimates of transmission. Because of the large case numbers, we **were not able to enroll all the patients** with a diagnosis of XDR tuberculosis during the study period. In addition, because of limited use of culture and drug-susceptibility testing, **many patients with XDR tuberculosis may not have been identified**. The proportion of cases arising from transmission is therefore a minimal estimate because **participants may have been misclassified** as having unique genotypes if their source case did not receive a diagnosis or was not enrolled.”

Excerpt from: *N Engl J Med* 2017; 376:243–53

- [Review slide content]

*[Example source: Shah NS, Auld SC, Brust JC, et al. Transmission of extensively drug-resistant tuberculosis in South Africa. *N Engl J Med* 2017; 376:243–53.]*

### Highlight implications

- Were there immediate consequences? (e.g., was intervention adopted?)
- Should theory or practice change?
- Example:
 

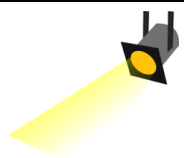
“We have shown that transmission was the major driver of the epidemic of XDR tuberculosis in KwaZulu-Natal during the study period. As the global tuberculosis community mobilizes around the goal of no new tuberculosis infections, the age-old approach of turning off the tap by **stopping transmission is all the more critical for halting epidemics of drug-resistant tuberculosis**.<sup>44a</sup>”

Excerpt from: *N Engl J Med* 2017; 376:243–53

- In this example the authors emphasize the need to focus efforts on stopping transmission; however, they fall short of stating what those next steps should be.

*[Example source: Shah NS, Auld SC, Brust JC, et al. Transmission of extensively drug-resistant tuberculosis in South Africa. *N Engl J Med* 2017; 376:243–53.]*

### Highlight implications (2)



- Example:  
 “This study provides important epidemiologic **evidence that supports** the use of current WHO recommendations about **TB screening in HIV-infected persons and HIV testing of TB patients** in Southeast Asia.”

- This example makes clear that the study findings support policy implementation for screening.



### References

### What to cite

- Statements of fact, must be referenced
- Cite references that:
  - Support the point you are making
  - Are seminal studies in the field
- Pay attention to the order of references within a sentence or paragraph
  - Example: “Some<sup>1-3</sup>, but not all<sup>4,5</sup> studies ...”

- If there are multiple articles related to your main topic(s), cite studies in chronological order beginning with the oldest.
- *[Review slide content]*

### What **NOT** to cite

- Do not cite **well-known facts** (TB is caused by *Mycobacterium tuberculosis*)
- Do not cite a **reference that you have not read**



- *[Review slide content]*

### Lit search and reference updates

- Always redo your literature search and update your references each time you submit or resubmit your manuscript
  - Add and/or update any new relevant studies
  - Pay attention to format and guidance on references from each journal you plan to submit your manuscript to



Image source: imageBROCK/REX/Shutterstock

- *[Review slide content]*

### Summary

- **Title** that describes your study
- **Introduction** – covers background, existing research, problems with that research, your improvements
- **Methods** – how you collected, organized, and analyzed your data
- **Results** – tables, figures, and graphs can stand alone
- **Discussion** – what your findings contribute to existing knowledge and why your results matter
- **References** – cite non-obvious statements of fact, emphasizing reviews and seminal articles

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

# Writing an Abstract

CDC Operations Research Course

Add place and date

Add presenter name & affiliation



**Title: W3L4 Writing an Abstract**

**Time: 30 minutes (17 slides)**

**Reading: None**

## This week...

*Homework: Write an **abstract** (for conference submission) summarizing the results of your study*

### What is an abstract?

- A **brief summary** of your study - an efficient means of conveying what you did, why, what you found, and why it matters
- Two types: 1) Summary for published paper, or 2) A version submitted to a conference for potential acceptance for presentation

- This week you will also be writing an abstract summarizing your research and results – in the end you will be well along the way to having something to submit in hopes of presenting your work at a conference in the (near) future.
- There are two types of abstracts:
  - Abstracts are a short summary of your research that you place at the front of your scientific paper **after you have written it**.
  - But we also write abstracts of our work **before we have written the paper**, if we first want to share our work at a scientific conference or meeting. This is a good opportunity to share your findings with the broader community and to get feedback on your research.
- Abstracts enable readers to quickly grasp the purpose and major ideas of your research (“time-saving”).
- They serve as an advertisement to inform and persuade your audience (“help readers decide if they want to look more closely at your work”).
- *[Review slide content]*



### Slide 3

#### Why are we writing abstracts?

- Abstracts allow readers who may be interested in a longer work to quickly decide whether it is worth their time to read it.
- Also, many online databases use abstracts to index larger works.
- Therefore, abstracts should contain keywords and phrases that allow for easy searching.

- Preparing an abstract will help to focus and clarify your work as you proceed this week...
- *[Review slide content]*

### Slide 4

#### Abstracts address 4 main points:

1. What was the research question (and why)?  
– *Statement of the problem & justification*
2. How did you investigate the question?  
– *Methodology*
3. What did you find?  
– *Results*
4. What are the implications of the findings?  
– *Conclusions & discussion*

*(These basic points also form the basis of the paper you will later write)*



- *[Review slide content]*

### Slide 5

#### Format of the abstract

- The format of your abstract will depend on the work being abstracted
- **Short and to the point!**
  - Length: may vary 100-500 words max
- Can be structured or unstructured
  - Structured: use of subheadings; i.e., *title, background, objectives, design, results, discussion*
  - Unstructured: lack of subheadings
- Format is specified by the conference organizers – check the requirements!

- *[Review slide content]*
- Important to see format of journal or academic conference and use it as a guide.
- Sometime 1-2 tables/figures may be included.

## Elements of an abstract

- **Begins after the title**
  - Should concisely describe your research
  - should also be interesting!
- **Background/purpose/objective**
  - Should provide context/rationale for why your research is important (research question)
  - 1-3 sentences



- Title: Remember – it helps if the title grabs the reader's attention.
- **ASK:** Can the audience offer examples of mundane titles vs. more stimulating versions?
- Background/objective: Should provide context and rationale for the study (should answer why the study was done, the importance of the study); should hone in on the research question that inspired the project; should address what you hope to accomplish ("your study purpose").
- *[Review slide content]*

## Example: Structured abstract

### Active case finding of undetected tuberculosis among chronic coughers in a slum setting in Kampala, Uganda

J. N. Sekandi,<sup>1,2,3</sup> D. Neuhauser,<sup>4</sup> K. Smyth,<sup>5</sup> C. C. Whalen<sup>1\*</sup>

<sup>1</sup>Department of Epidemiology and Biostatistics, Case Western Reserve University, Cleveland, Ohio, USA; <sup>2</sup>Makerepe University-Case Western University Research Collaboration, Kampala; <sup>3</sup>Makerepe University School of Public Health, Kampala, Uganda

#### SUMMARY

**SETTING:** Kisenyi slum in peri-urban Kampala, Uganda.

**OBJECTIVES:** Using chronic cough ( $\geq 2$  weeks) inquiry as a screening tool to identify undetected smear-positive tuberculosis (TB) cases and to describe the characteristics of smear-positive TB cases detected by active case finding.

**DESIGN:** A house-to-house survey was conducted in five randomly selected villages in Kampala between June and August 2005. A sample of households was visited; adults aged  $\geq 15$  years were consecutively interviewed to identify those with chronic cough. Three sputum specimens were collected and examined by smear microscopy.

**RESULTS:** Among 930 individuals, we identified 189 (20%) chronic coughers. Of these, we found 33 (18%) undiagnosed smear-positive cases. The

newly detected cases had an even sex distribution ( $P=0.47$ ), a median age of 30 years, a median cough duration of 1 month and 55% had acid-fast bacilli 1+ sputum smear grade.

**CONCLUSION:** These findings suggest that active case finding could supplement DOTS to yield additional smear-positive TB cases, lead to early diagnosis and thus shorten the duration of infectiousness before effective chemotherapy is initiated. In communities such as Kisenyi, this is a feasible strategy that may prove useful for TB control, but its cost-effectiveness needs to be evaluated. Early health care seeking for cough should be emphasized.

**KEY WORDS:** tuberculosis; active case finding; case detection; chronic cough; smear-positive

- *[Review slide content]*
- *[Point out the structure common to this style of abstract]*

## Example: Unstructured abstract

**Abstract.** China is among the countries with the largest epidemic of drug susceptible and resistant tuberculosis globally. We investigated the locations tuberculosis patients visited before being diagnosed, total diagnostic delay, and risk factors associated with total delay from a large tuberculosis referral hospital in Nanjing, China. We conducted a retrospective cohort study among tuberculosis patients who initiated anti-tuberculosis treatment within 3 months prior to the study date. Patient information regarding time and locations visited while seeking care for tuberculosis-related symptoms was collected through face-to-face interviews. Crude and adjusted Cox proportional hazard ratios of factors associated with time to diagnosis were calculated. Of 179 bacteriologically confirmed patients, 37% were women and median age was 41 (interquartile range [IQR], 26–62). Public hospitals were the most commonly visited health-care institution and repeated visits to them were common. The mean days to tuberculosis diagnosis were 50.3. Female patients (hazard ratio [HR], 1.29; 95% confidence interval [CI], 1.04–1.48) or patients who contacted a health-care provider 2 weeks after becoming symptomatic (HR, 1.59; 95% CI, 1.43–1.70) were significantly less likely to have a timely diagnosis. In a referral hospital in urban China, we found that female tuberculosis patients took significantly more time to reach diagnosis than males and patients often cycled in public hospitals for multiple visits before reaching final diagnosis. Health professionals at public hospitals in Nanjing should be encouraged to refer potential tuberculosis patients as soon as possible to avoid nosocomial transmission.

- *[Review slide content]*

*[Abstract source: Martinez L, Xu L, Chen C, Sekandi JN, Zhu Y, Zhang C, Whalen CC, Ahu L. Delays and Pathways to Final Tuberculosis Diagnosis in Patients from a Referral Hospital in Urban China. Am J Trop Med Hyg 2017; 95(5):1060-1065.]*

## Slide 9

### Elements of an abstract



- **Methods/design: Describe what you did**
  - Population studied (size and sampling)
  - Study design
  - Data analysis
  - Length: Usually 3-8 sentences
- **Results: State the main findings of your study**
  - Present main findings of study
  - Should focus only on results related to research question/problem
  - Length: typically longest section (3-8 sentences)

- [Review slide content]

## Slide 10

### Structured abstract

**Abstract**  
**Background:** Delay in tuberculosis (TB) diagnosis adversely affects patients' outcomes and prolongs transmission in the community. The influence of social contacts on steps taken by active pulmonary TB patients to seek a diagnosis has not been well examined.  
**Methods:** A retrospective study design was used to enroll TB patients on treatment for 3 months or less and aged  $\geq 18$  years from 3 public clinics in Kampala, Uganda, from March to July 2014. Social network analysis was used to collect information about social contacts and health providers visited by patients to measure the number of steps and time between onset of symptoms and final diagnosis of TB.  
**Results:** Of 294 TB patients, 58 % were male and median age was 30 (IQR: 24–38) years. The median number of steps was 4 (IQR: 3, 7) corresponding to 70 (IQR: 28–140) days to diagnosis. New patients had more steps and time to diagnosis compared retreatment patients (5 vs. 3,  $P < 0.0001$ ; 84 vs. 46 days  $P < 0.0001$ ). Fifty-eight percent of patients first contacted persons in their social network. The first step to initiate seeking care accounted for 41 % of the patients' time to diagnosis while visits to non-TB providers and TB providers (without a TB diagnosis) accounted for 34 % and 11% respectively. New TB patients vs. retreatment (HR: 0.66, 95 % CI: 1.11, 1.99), those who first contacted a non-TB health provider vs. contacting social network (HR: 0.72, 95 % CI: 0.55, 0.95) and HIV seronegative vs. seropositive patients (HR: 0.70, 95 % CI: 0.53, 0.92) had a significantly lower likelihood of a timely final diagnosis.  
**Conclusions:** There were four degrees of separation between the onset of symptoms in a TB patient and a final diagnosis. Both social and provider networks of patients influenced the diagnostic pathways. Most delays occurred in the first step which represents decisions to seek help, and through interactions with non-TB health providers. TB control programs should strengthen education and active screening in the community and in health care settings to ensure timely diagnosis of TB.

- [Review slide content]

[Abstract source: Sekandi JN, Zalwango S, Martinez L, Handel A, Kakaire R, Nkwata AK, Ezeamama AE, Kiwanuka N, Whalen CC. Four degrees of separation: social contacts and health providers influence the steps to final diagnosis of active tuberculosis patients in urban Uganda. *BMC Infect Dis* (2015) 15:361;1084-88.]

## Slide 11

### Elements of an abstract



- **Discussion/conclusion**
  - Explains the take-home message of why your findings are important
  - Answers the question, "So what?"
  - Length: Usually short, 2-3 sentences

- [Review slide content]
- Discussion/conclusion "sums up project", provides an interpretation of your results
- Answers the question "So what?" and summarizes the main ideas that come from the discussion.

### Elements of an abstract



- **Keywords**
  - Tool to help indexers and search engines classify research
  - Words should be chosen carefully and represent research content
  - Select 3-5 keywords that are specific to your research

- *[Review slide content]*

### In summary...

- **Reason for writing:** What is the importance of the research? Why would a reader be interested in the larger work?
- **Problem:** What problem does this work attempt to solve? What is the scope of the project? What is the main argument/thesis/claim?
- **Methodology:** An abstract of a scientific work may include specific models or approaches used in the larger study. Other abstracts may describe the types of evidence used in the research.

- *[Review slide content]*

### In summary (2)...

- **Results:** Again, an abstract of a scientific work may include specific data that indicates the results of the project. Other abstracts may discuss the findings in a more general way.
- **Implications:** What changes should be implemented as a result of the findings of the work? How does this work add to the body of knowledge on the topic?

- *[Review slide content]*

### Abstract writing conventions

#### Do

- Write in past tense (convey what you *did*)
- Include searchable keywords



#### Don't

- Refer extensively to other works
- Add information not contained in the original work
- Cite literature or include any references
- Use copyright or trademark symbols
- Use acronyms without defining them
- Define terms
- Include grant or funding acknowledgements



- *[Review slide content]*

### What makes a good abstract?

#### Complete - a miniature version of your paper

- Should contain the essential information to understand your study

#### Clear, concise, and cohesive

- Readable, well organized, not too much jargon, flows smoothly between parts

#### Compelling

- An exciting abstract is more likely to get attention!

- *[Review slide content]*
- Circulate your abstract with all other authors involved in the study to get their feedback and to ensure they agree with submitting it.

### What if it gets accepted?

#### You will be invited to attend conference and present your findings as:

- Poster
- Oral presentation

#### Provides opportunity:

- For attendees to learn about your research
- For you to receive feedback about your research



*....hooray!*

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