Joint Workshop on Scientific Writing In Field Epidemiology - Lectures 7 & 8 (2014-02-27)

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JOINT WORKSHOP ON SCIENTIFIC WRITING IN FIELD EPIDEMIOLOGY

Lecture 7: Reorder for Logical Flow
Thursday afternoon - 2014-02-27

Pakse, Champasak Province, P.D.R. Lao
International Field Epidemiology Training Programme
25 February - 1 March 2014

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Revise for Flow - Example *
Re-order Sentences for Logical Flow

The NEW ENGLAND JOURNAL of MEDICINE

TUBERCULOSIS IS A MAJOR CAUSE OF DEATH in persons infected with the human immunodeficiency virus (HIV), especially in resource-limited settings.[1,2] Despite effective tuberculosis therapy, mortality is particularly high among patients with severe immunosuppression.[3,4] Although mortality among HIV-infected patients has been reported to be approximately 30% within the first 2 months of tuberculosis treatment if antiretroviral therapy (ART) is withheld,[5] the timing for starting ART in patients with tuberculosis has remained unclear.

Arguments that support delayed initiation of ART include concern about the combined toxic effects of drugs, an increased risk of the immune reconstitution inflammatory syndrome (IRIS), and poor adherence to a regimen that involves an increased pill burden. In contrast, arguments that support earlier initiation of ART include more rapid restoration of the immunocompetence needed to cure the tuberculosis and the enhancement of immune responses to other specific pathogens, thus reducing the risk of opportunistic infections.[6,7] The Starting Antiretroviral Therapy at Three Points in Tuberculosis (SAPIT) study (ClinicalTrials.gov number, NCT00398996) showed that initiating ART during tuberculosis therapy provided a significant survival advantage in patients with CD4+ T-cell counts lower than 500 per cubic millimeter.[8] The retrospective Multicenter Cohort of Patients with HIV Infection in the Madrid South-Eastern Metropolitan Crown (COMESEM) study showed that survival was further increased when ART was started within 2 months after the start of tuberculosis treatment.[9] On the basis of these data, the World Health Organization (WHO) guidelines recommend that ART be started as soon as possible within the first 8 weeks after tuberculosis therapy is begun.[10] However, there has been no specific guidance regarding timing within this critical period, owing to the lack of evidence-based research addressing this point.

To determine whether the earlier initiation of ART (2 weeks after the onset of tuberculosis treatment), as compared with later initiation (8 weeks afterward), could reduce mortality among patients with advanced immunodeficiency, we designed the Cambodian Early versus Late Introduction of Antiretrovirals (CAMELIA) trial.

* Blanc F-X *et al.* Earlier versus later start of antiretroviral therapy in HIV-infected adults with tuberculosis. N Engl J Med 2011;365:1471-81. http://dx.doi.org/10.1056/NEJMoa1013911

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Revise for Flow - Example - 2 *
Re-order Sentences for Logical Flow

Original version First Paragraph	Re-worded for logical flow according to Gopen & Swan principles Old information → New information at *Stress position* (sentence end)
Tuberculosis is a major cause of death **in persons infected with the human immunodeficiency virus (HIV)**, especially in **resource-limited settings**.[1,2]	**Tuberculosis** is a major cause of death in resource-limited settings for **persons infected with the human immunodeficiency virus (HIV).**[1,2]
Despite effective **tuberculosis therapy**, **mortality is particularly high** among patients with **severe immunosuppression**.[3,4]	**Patients with severe immunosuppression**, despite effective tuberculosis therapy, have a particularly **high mortality**.[3,4]
Although **mortality** among HIV-infected patients has been reported to be approximately **30% within the first 2 months** of tuberculosis treatment if antiretroviral therapy (ART) is withheld,[5] **the timing for starting ART in patients with tuberculosis has remained unclear**.	Although **mortality** among HIV-infected patients has been reported to be approximately 30% within the first 2 months of tuberculosis treatment if antiretroviral therapy (ART) is withheld,[5] there is **uncertainty about when to initiate ART**.

* Blanc *et al.* N Engl J Med 2011;365:1471-81.

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Revise for Flow - Example - 3

Original Version Second Paragraph - Top	Re-worded for logical flow Old information → New information at *Stress position* (sentence end)
Arguments that support **delayed initiation of ART** include concern about the combined **toxic effects of drugs**, an increased **risk of the immune reconstitution inflammatory syndrome (IRIS)**, and **poor adherence** to a regimen that involves an increased pill burden.	Although delays in **initiating ART** reflect concerns about drug toxicity, an increased risk of the immune reconstitution inflammatory syndrome (IRIS), and poor adherence, there are competing arguments for the **early start of ART**.
In contrast, arguments that support **earlier initiation of ART** include **more rapid restoration of the immunocompetence** needed to cure the tuberculosis and the **enhancement of immune responses** to other specific pathogens, thus reducing **the risk of opportunistic infections**.[6,7]	Among the strongest of arguments is that **early ART** would rapidly restore the immunocompetence needed to **cure tuberculosis** and improve the outcomes of infections with **other opportunists**.[6,7]
The **Starting Antiretroviral Therapy at Three Points in Tuberculosis (SAPIT) study** (ClinicalTrials.gov number, NCT00398996) showed that **initiating ART during tuberculosis therapy** provided a significant **survival advantage** in patients with CD4+ T-cell counts lower than 500 per cubic millimeter.[8]	The ability to **cure tuberculosis and other opportunistic infections** was suggested by the **Starting Antiretroviral Therapy at Three Points in Tuberculosis (SAPIT) study** (ClinicalTrials.gov number, NCT00398996). The **SAPIT study** showed that initiating ART during tuberculosis therapy in patients with CD4+ T-cell counts lower than 500 per cubic millimeter provided a significant **survival advantage**.[8]

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Revise for Flow - Example - 4 *

Original Version Second Paragraph - Bottom	Re-worded for logical flow Old information → New information at *Stress position* (sentence end)
The retrospective **Multicenter Cohort of Patients with HIV Infection in the Madrid South-Eastern Metropolitan Crown (COMESEM) study** showed that **survival** was further increased when **ART was started within 2 months** after the start of tuberculosis treatment.[9]	**Survival** was further increased in the retrospective **Multicenter Cohort of Patients with HIV Infection in the Madrid South-Eastern Metropolitan Crown (COMESEM) study**, which **started ART within 2 months** after the start of tuberculosis treatment.[9]
On the basis of these data, the **World Health Organization (WHO) guidelines** recommend that **ART be started as soon as possible within the first 8 weeks** after tuberculosis therapy is begun.[10]	**Early starting of ART** in HIV-infected tuberculosis patients thus became a **formal recommendation of the World Health Organization (WHO)**, which recommends that ART be started as soon as possible within **the first 8 weeks of tuberculosis therapy**.[10]
However, there has been **no specific guidance** regarding **timing within this critical period**, owing to **the lack of evidence-based research** addressing this point.	Within this critical **8-week guideline**, however, there is a **lack of evidence-based research** for whether **earlier initiation (within 2 weeks) is better than later (at 8 weeks)**.

* Blanc *et al.* N Engl J Med 2011;365:1471-81.

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Revise for Flow - Example - 5 *

Original Version Third Paragraph	Re-worded for logical flow Old information → New information at *Stress position* (sentence end)
To determine whether the **earlier initiation of ART (2 weeks after the onset of tuberculosis treatment), as compared with later initiation (8 weeks afterward)**, could reduce mortality among patients with advanced immunodeficiency, we designed the **Cambodian Early versus Late Introduction of Antiretrovirals (CAMELIA) trial**.	To address this **earlier vs. later question**, we implemented the **Cambodian Early versus Late Introduction of Antiretrovirals (CAMELIA) trial**.

* Blanc *et al.* N Engl J Med 2011;365:1471-81.

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Exercise 6 – Revise/reorder sentence words in published Introduction section

"Write for flow" by reordering key words and phrases within sentences, or by combining or splitting words, ideas, and sentences, from a Background/Introduction section of a published paper.[1]

[Work individually, but feel free to discuss within workgroups and with instructors. May use separate lined paper.]

Workshop group "A" (sentences 1 to 10)

no.	Original sentence	Revision (may combine, split, shorten, and move words/ideas between sentences)
1.	Depression is a common mental disorder.	
2.	Approximately 13% of the population in European countries experience depression at least once in their life [1].	
3.	Depression has a high burden of disease [2,3] and a high economic burden [4].	
4.	In the Netherlands, as in other European countries, the majority of people suffering from depression receive treatment in primary care [5,6].	
¶		
5.	The Netherlands has a strongly developed primary	

Exercise 6 – Revise/reorder sentence words in published Introduction section

Show and discuss work of groups A, B, C, &D

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Exercise 6 – Lecturer example

	Original sentence	Revision
1	Depression is a common mental disorder.	**Depression** is a common mental disorder with a high **economic toll** and **burden of disease**. This **burden** is experienced at least once in the life of 13% of **European populations**.
2	Approximately 13% of the population in European countries experience depression at least once in their life [1].	
3	Depression has a high burden of disease [2,3] and a high economic burden [4].	
4	In the Netherlands, as in other European countries, the majority of people suffering from depression receive treatment in primary care [5,6].	As in other **European countries**, the majority of people in the Netherlands who suffer from depression receive treatment for it in a strong **primary care system.**
¶		
5	The Netherlands has a strongly developed primary care system.	
6	There are approximately 11,000 GPs in the Netherlands [7].	**Primary care** in the Netherlands is delivered by approximately 11,000 **General Practitioners (GPs)**.
7	Nearly all Dutch citizens (98%) are registered with a general practice where they receive care that is free of charge, and most patients have long lasting contact (>10 years) with the same general practitioner (GP).	These **GPs** deliver care **free of charge** to **nearly all (98%) Dutch citizens** who are registered to them, usually with **long-lasting contact (>10 years)** to the **same GP**.
8	Besides GPs, other professionals provide primary mental health care.	Besides **GPs**, other professionals who provide primary mental health care include **physiotherapists**, **nurses**, **social workers** and **psychologists**.
9	These include physiotherapists, nurses, social workers and psychologists.	
10	The GP is the central provider for all primary care, including mental health care, and acts as a gatekeeper to secondary (specialised) care.	However, as **the GP** is the central provider for all **primary care**, including **mental health**, he or she acts as the **gatekeeper for secondary (specialised) care**.

End of Exercise 6

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Lecture 8: Feynman Principle - Limitations
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SCIENTIFIC-WRITING WORKSHOP

Lecture 9:

The Feynman Principle of Utter Honesty - The Limitations Section of Discussion

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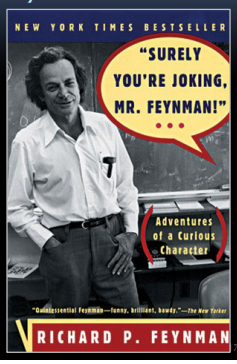
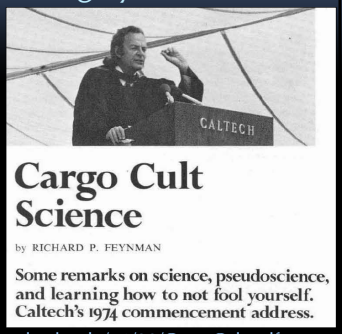
Feynman Principle
Utter honesty and integrity

- Richard P. Feynman
  - 1918 - 1988
- Theoretical physicist
  - 1965 Nobel Prize Laureate
  - WWII: worked at Los Alamos on atomic bomb
- Taught at Wisconsin, Princeton, Cornell, Cal Tech
- A "character" with several popular books for lay readers



Feynman Principle - 2
Utter honesty and integrity

- "Cargo Cult" Science
  - Famous commencement address at California Institute of Technology, 1974
  - Follow forms of science, but not its substance



http://calteches.library.caltech.edu/51/02/CargoCult.pdf

Feynman Principle - 3
Utter honesty and integrity

- "Cargo Cult"
  - World War II brought soldiers and their equipment to remote tribes in Melanesia and New Guinea
  - Tools and other "cargo" shared with them were highly valued
  - After the war, the villages tried to bring back the cargo they missed so much
  - To attract the airplanes and their nice soldiers and valued cargo, cults recreated their wartime experience:
    - Imitation "runways"
    - Fires for "landing lights"
    - Wooden "airplanes"
    - Traffic control "towers"
    - Bamboo "antennas"
    - Dummy "controllers" with coconut earphones

Feynman Principle - 4
Utter honesty and integrity

- "Cargo Cult" Science
  - Feynman made the analogy that much of current science is like these Cargo Cults
    - Follows the form and appearance of science (like the tribes imitating airfields), but not its essential elements

"They're doing everything right. The form is perfect. It looks exactly the way it looked before. But it doesn't work. No airplanes land."

"So I call these things Cargo Cult Science, because they follow all the apparent precepts and forms of scientific investigation, but they're missing something essential, because the planes don't land"

- Cargo Cult Science lacks key elements of modern science:
  - Random selection, blinding, controls, avoiding bias, quantification, disclosure of outlier results and weaknesses

Feynman Principle - 5
Utter honesty and integrity

"But there is one feature I notice that is generally missing in Cargo Cult Science. That is the idea that we all hope you have learned in studying science in school -- we never explicitly say what this is -- but just hope that you catch on by all the examples of scientific investigation. [...]

*"It's a kind of **scientific integrity**, a principle of scientific thought that corresponds to a kind of **utter honesty** -- a kind of leaning over backwards.*

"For example, if you're doing an experiment, you should report everything that you think might make it invalid -- not only what you think is right about it: other causes that could possibly explain your results; and things you thought of that you've eliminated by some other experiment, and how they worked -- to make sure the other fellow can tell they have been eliminated.

"Details that could throw doubt on your interpretation must be given, if you know them.

"You must do the best you can -- if you know anything at all wrong, or possibly wrong -- to explain it. If you make a theory, for example, and advertise it, or put it out, then you must also put down all the facts that disagree with it, as well as those that agree with it."

The Feynman Principle - 6
Limitations component in Discussion

- Discussion section should include *limitations* and *weaknesses*
  - In interpreting results, do not fool yourself by ignoring inconvenient facts
  - Describe negatives and defects of your work, as well as its strengths, so others may fairly judge it
  - The truth will out
  - You will be respected for doing so
  - Reviewers and editor will welcome this honesty
    - May "immunize" paper from reluctance to publish results with a probability of error, because it has been admitted