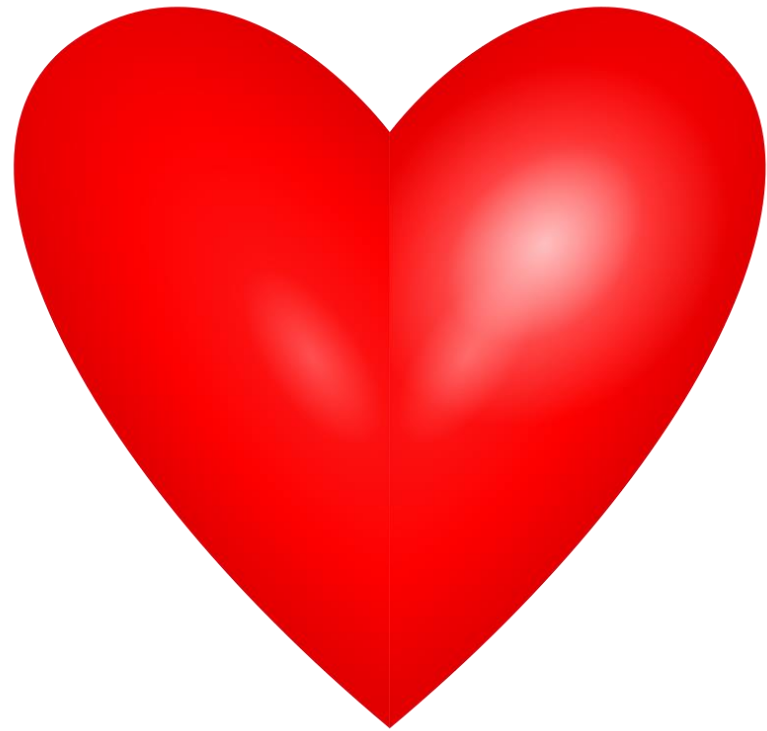


**ASEAN+3 FETN**  
**Scientific Writing Workshop**

**LECTURE 3**  
**RESULTS**

**Presented by Dorothy L Southern, MPH**



# Objectives

- Focus on organization of a manuscript: **The Results section**
- Review and discuss related ‘most common errors’
- Time to Write: expand on your draft manuscript’s **Result section**



# To publish you need to find out if your work:

**1. Is true?**

2. Is new?

3. Is well-written and concise?

# Is it true?

- What is the reliability of your estimate?
  - Confidence intervals
- Do you have a strong case?
  - Causality criteria
- Is the pathogen confirmed?
  - Quality of the laboratory confirmation



# Present *meaningful* statistics!

“33  $\frac{1}{3}$  % of the mice used in the experiment were cured by the test drug; 33  $\frac{1}{3}$  % of the test population were unaffected by the drug and remained in a moribund condition; the third mouse got away.”



Source: Day, R.A. 1998. How to Write and Publish and Scientific Paper, 5<sup>th</sup> ed. Oryx Press, Phoenix, AZ.

# Meaningful statistics

- Need to check, verify and agree on your statistical analysis outcomes
- Ensure that the results directly link back to your objectives
- Provide the tables and figures that support your main results



# Sample paper

## Objectives:

1. To describe characteristics of study participants
2. To verify increase in rifampicin-monoresistant tuberculosis (RMR-TB)
3. Identify risk factors for RMR-TB

# Sample paper

## Statistical methods per objective:

1. Descriptive statistics
2. Trend analysis
3. Logistic regression to determine risk factors

# Sample paper

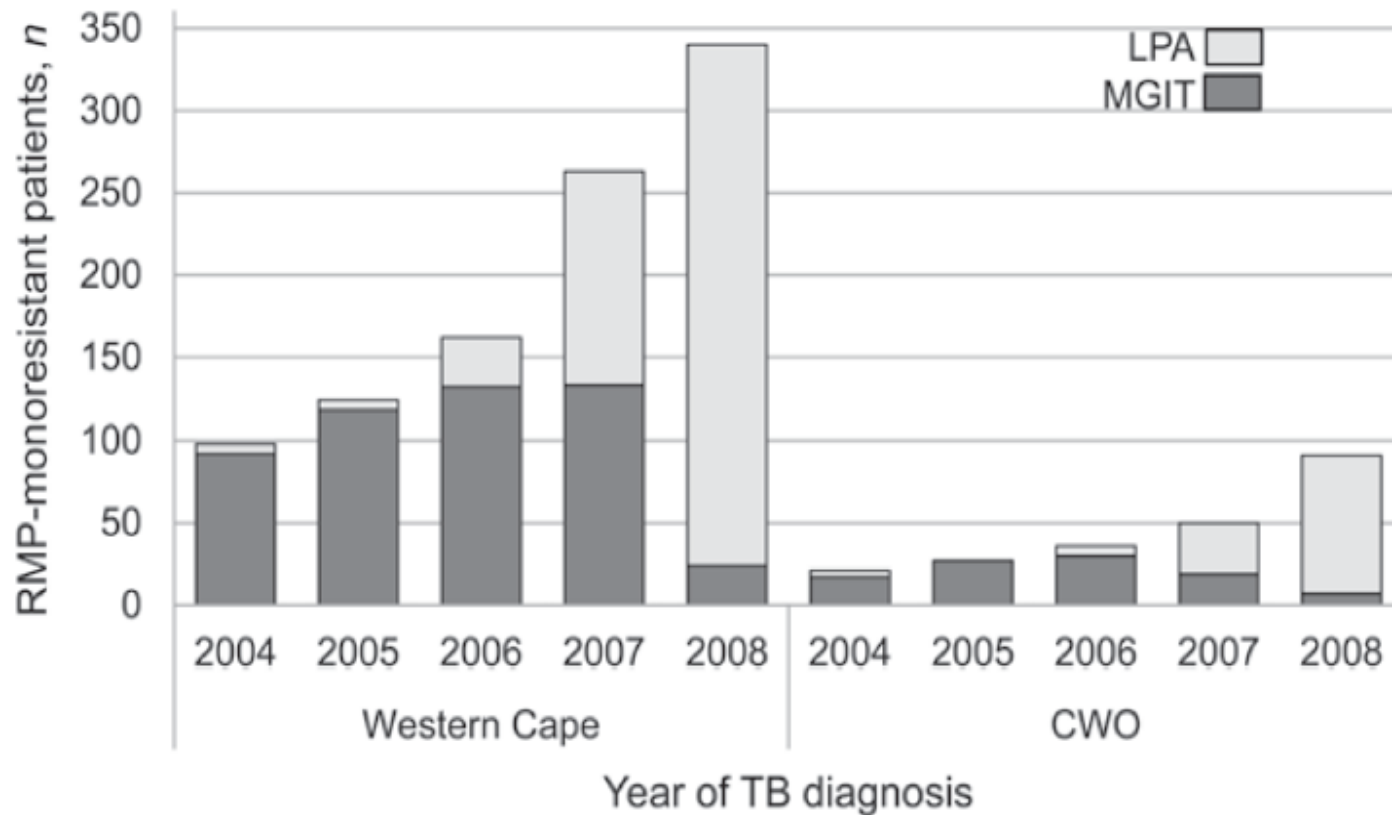
## Main results per objective:

1. The majority of cases (83%, 74/91) were  $\geq 40$  years, while most of the controls (52%, 59/114) were  $< 40$  years .  
Approximately half the cases (52%) and almost two-thirds of the controls (64%) were males. Only 13.5% of cases and 24.3% of controls were new patients. (Table 1)
2. The total number of RMR-TB cases more than tripled, from 31 in 2004 to 98 in 2008. The calculated doubling time was 1.63 years (95%CI 1.18–2.66). (Figure 1)
3. On multivariate analysis, previous use of antiretroviral therapy (OR 6.4, 95%CI 1.3–31.8), alcohol use (OR 4.8, 95%CI 2.0–11.3) and age  $\geq 40$  years (OR 5.8, 95%CI 2.4–13.6) were significantly associated with RMR-TB. (Table 2)

# Table 1: Characteristics of cases and controls

	<b>RMP- monoresistant (n = 91) n (%)</b>	<b>INH- monoresistant (n = 114) n (%)</b>
<b>Age, years</b>		
<40	15 (16.9)	59 (51.8)
≥40	74 (83.1)	55 (48.2)
Not recorded	2 (0)	0
<b>Sex</b>		
Male	47 (51.7)	73 (64.0)
<b>Patient category</b>		
New	12 (13.5)	27 (24.3)
<b>Retreatment</b>		
After default	31 (34.8)	28 (25.2)
After failure	11 (12.4)	3 (2.7)
After relapse	35 (39.3)	53 (47.8)
Unknown	2 (0)	4 (0)

# Figure 1: Increasing trend of RMR-TB



**Figure 1.** RMP-monoresistant cases recorded at the routine diagnostic laboratory over a 5-year period. RMP = rifampicin; LPA = line-probe assay (genotypic test); MGIT = Mycobacteria Growth Indicator Tube (phenotypic test); CWO = Cape Winelands-Overberg region; TB = tuberculosis

## Table 2: Factors associated with RMR-TB

<b>Risk factor</b>	<b>Adjusted OR</b>	<b>95%CI</b>	<b>P value</b>	<b>Standard error</b>
Older age				
$\geq 40$ years	5.8	2.44–13.57	<0.001	2.5
ART before RMR/				
HMR-TB	6.4	1.3–31.8	0.023	5.2
Excessive alcohol use	4.8	2.01–11.31	<0.001	2.1
Sputum smear-negative	3.0	1.4–5.0	0.006	0.1
More recent diagnosis				
Study year 2008	4.01	1.81–8.90	0.001	1.6

# Inter-relationship of data and text

- Data in tables and figures should stand independently while being connected to each other.
- The reader should be able to:
  - Understand most of the results through browsing the tables and figures
  - Get the key points of the results by reading through the text only

**Are your tables and figures constructed for easy understanding?**



**Digital vs Analog?**



# Digital communication: *Tables*

- Precise

**7:00 am**

- Numeric

- Provides detailed and exact description

# Cases of Monkeypox by month of onset, Katakombé, Zaire, 1996-1997

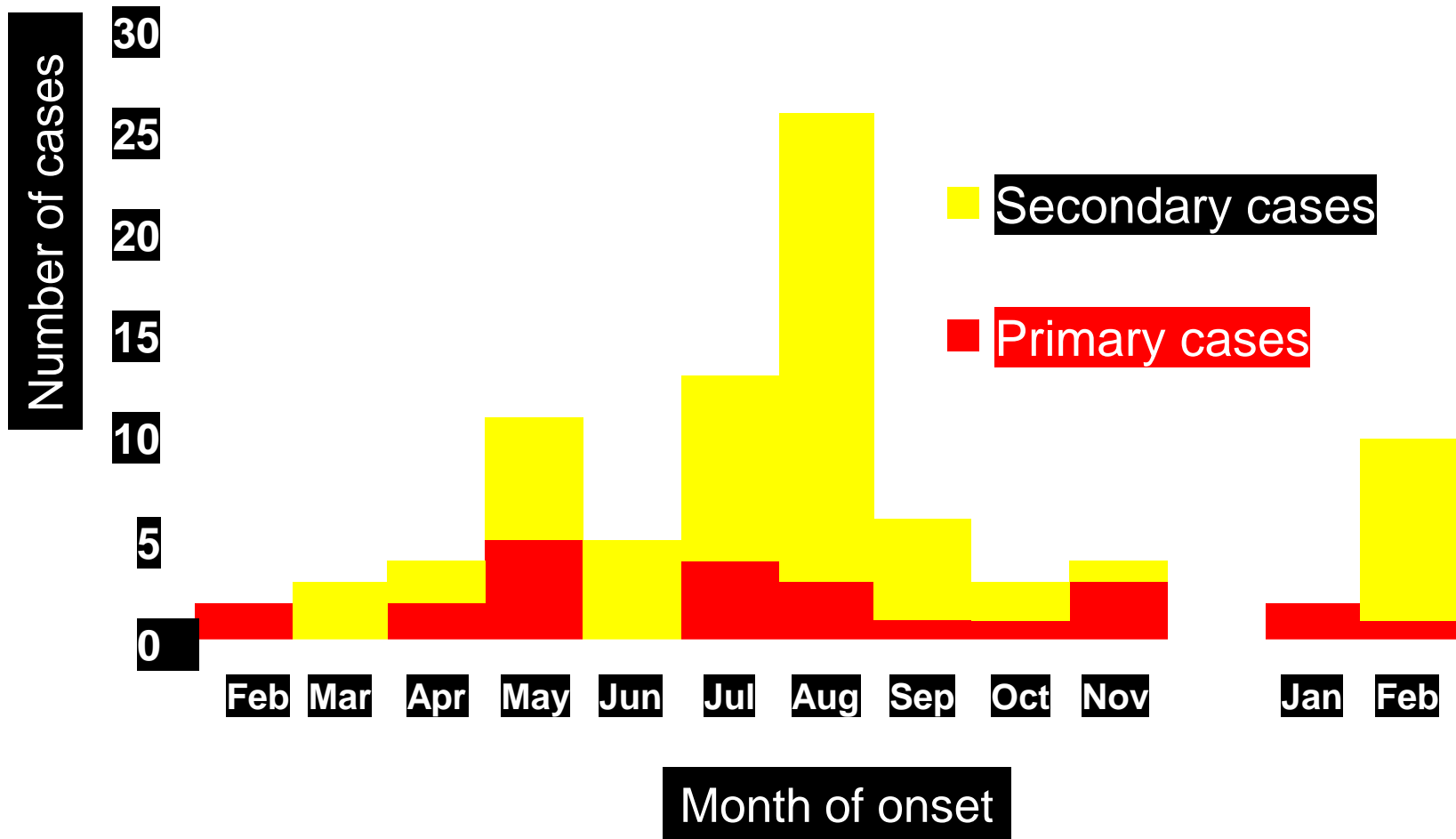
	Primary cases	Secondary cases
Feb-96	2	0
Mar-96	0	3
Apr-96	2	2
May-96	5	6
Jun-96	0	5
Jul-96	4	9
Aug-96	3	23
Sep-96	1	5
Oct-96	1	2
Nov-96	3	1
Dec-96	0	0
Jan-97	2	0
Feb-97	1	9
Total	24	65

# Analogical communication: *Figures*

- **Less precise**
- **More graphic**
- **Provides overall understanding**



# Cases of monkeypox by month of onset, Katakoto-Kombe, Zaire, 1996-1997



# Figures

- Graphs
- Charts: pie and bar
- Diagrams/flow charts
- Drawings
- Photos
- Maps

# To publish you need to find out if your work:

1. Is true?

**2. Is new?**

3. Is well-written and concise?

# Is it new?

- **Is the research of general relevance?**
  - Incidence and prevalence
  - Mode of transmission
  - Prevention opportunities
  - Lessons learnt
- **Is it adding to the body of knowledge?**

# Handout

## Tips for writing up the results





# Review of most common errors linked to the Results section

## Section F: Recording Scientific Data



# Writing up the results

Use language to make results understandable to readers

Error F1. Using statistics in place of the study question to frame results

# Example 1 – Raw data (Khamis 2016)

## Factors associated with rotavirus positivity among children in Zanzibar

- Receiving a complete dose of rotavirus vaccine (OR 0.47, 95%CI: 0.29 to 0.73,  $P < 0.001$ )
- Receiving at least one dose of rotavirus vaccine (OR 0.53, 95%CI: 0.35 to 0.87,  $P < 0.001$ )
- Using tap water (OR 0.66, 95%CI: 0.44 to 0.79,  $P = 0.04$ )

- Receiving a complete dose of rotavirus vaccine reduced the odds of children being infected with rotavirus by 53% (OR 0.47, 95%CI: 0.29 to 0.73,  $P < 0.001$ )
- Receiving at least one dose of rotavirus vaccine reduced the odds of children being infected with rotavirus by 47% (OR 0.53, 95%CI: 0.35 to 0.87,  $P < 0.001$ )
- Using tap water reduced the odds of rotavirus infection by 34% (OR 0.66, 95%CI: 0.44 to 0.79,  $P = 0.04$ )

# Example 2 – Raw data (Camara 2016)

## Risk Factors for dengue fever among febrile cases in Dar es Salaam, Tanzania

- Kinondoni district (aOR 4.28; 95% CI: 1.74 to 10.53)
- Piped water (aOR 2.63; 95% CI: 1.40 to 4.95)
- Previous visit to a health facility (aOR 1.94; 95% CI: 1.11 to 3.38)

- Respondents from Kinondoni district had 4.28 times the odds of having dengue compared to XX district (aOR 4.28; 95% CI: 1.74 to 10.53).
- Respondents having piped water had 2.63 times the odds of having dengue compared to those who did not (aOR 2.63; 95% CI: 1.40 to 4.95).
- Visiting a health facility in the previous one month almost doubled the odds of having dengue compared to those who had not (aOR 1.94; 95% CI: 1.11 to 3.38).



# Writing time



1. Review your draft manuscript's **Results section**
  - Is it true?
  - Is it new?
2. Focus on the inter-relationship of data and text
3. Look at each of your tables or figures
  - Write 2 or 3 sentences that describe the important points or principal patterns of the raw data
  - Try to find a balance between the tables and figures and the narrative (Error F 6)