



EUPHEM

Constructing a scientific argument

The “Argument Matrix”

Katharina Alpers

Based on a presentation developed by FETP India
(Acknowledgments to Yvan Hutin)

EPIET introductory course, Lazareto 2012

Objectives of this session

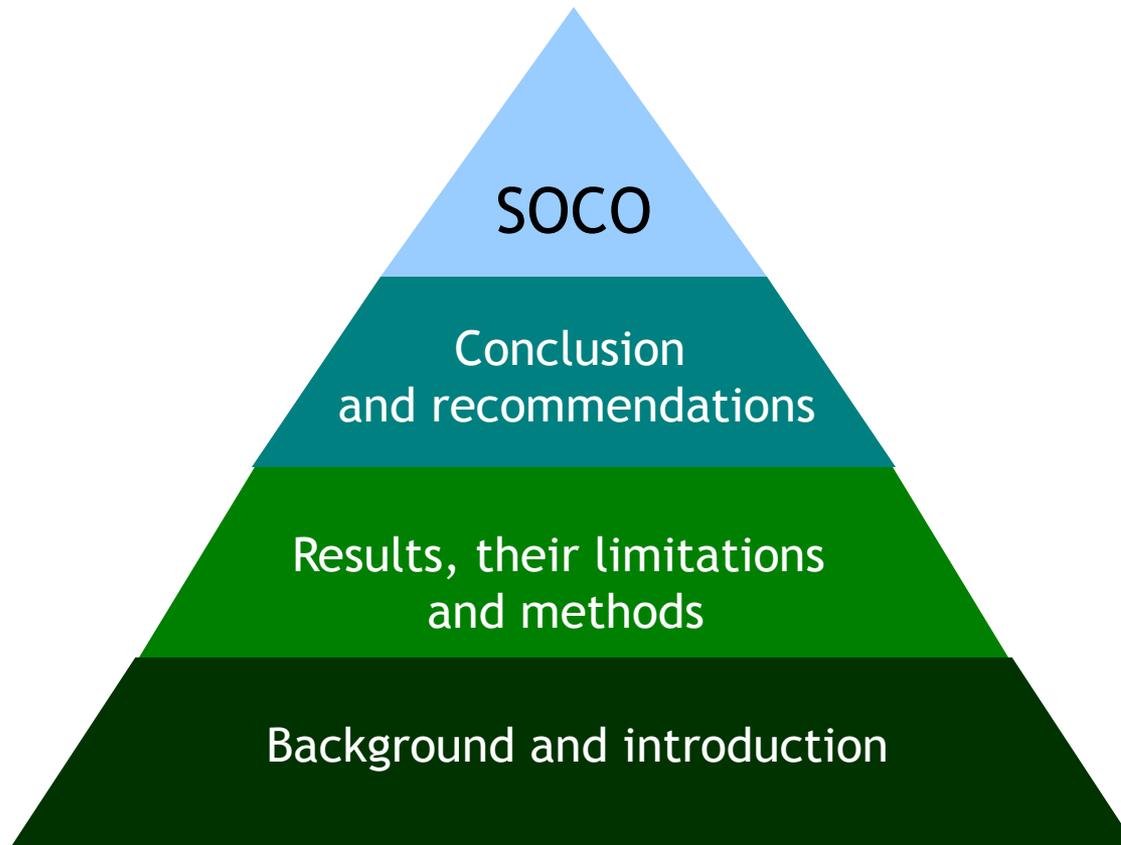
- Articulate the content of a manuscript
 - By sections
 - Introduction, methods, results and discussion
 - By ideas
- Present this organization
 - “argument matrix”

What to communicate – the SOCO

- Take-home message
 - Objective, concise, precise

S	=	Single
O	=	Overriding
C	=	Communication
O	=	Objective

Good SOCO: A logical way to structure communication



Anything that is not essential to support the conclusion and recommendations is harmful and must be cut out

Starting points for a manuscript

- Products of the analysis
 - Tables and figures
- Key points and recommendations
 - Abstract
- Write down your SOCO in two or three lines

- Outline of the argument
 - Slide set
 - Poster

Prepare the content

– Focus on the SOCO

- Start by preparing the conclusions
- Prepare recommendations on the basis of conclusions
- Choose results supporting conclusions
- Explain methods to get the results
- Describe background

Common difficulties in manuscript preparation

- Issues relating to the structure
 - Misplaced elements
 - Results in the “discussion”
 - Interpretations in the “results”
- Issues relating to ideas
 - Non-sequential ideas
 - Missing links in the development of an idea

Objectives of the “Argument matrix”

- Provide a framework that
 - Respects the structure of the various sections
 - Develops 2 or 3 ideas logically and sequentially
- Use that framework to prepare the outline of the manuscript

Structure

The various sections

Main questions – the IMRaD structure

- Introduction
 - Why did you start?
- Methods
 - What did you do?
- Results
 - What did you find?
- Discussion
 - What does it all mean?

Introduction

- Zoom in: from the general to the specific
- Familiarize the reader with the subject
- Current state of knowledge
- Provide the information that makes it clear that the study had to be done

Methods

- Explain what was done in simple terms
- Provide key information
 - Type of study
 - Case definitions
 - Sampling strategy
 - Sample size
 - Data collection
 - Data analysis
 - Confidentiality and ethical considerations

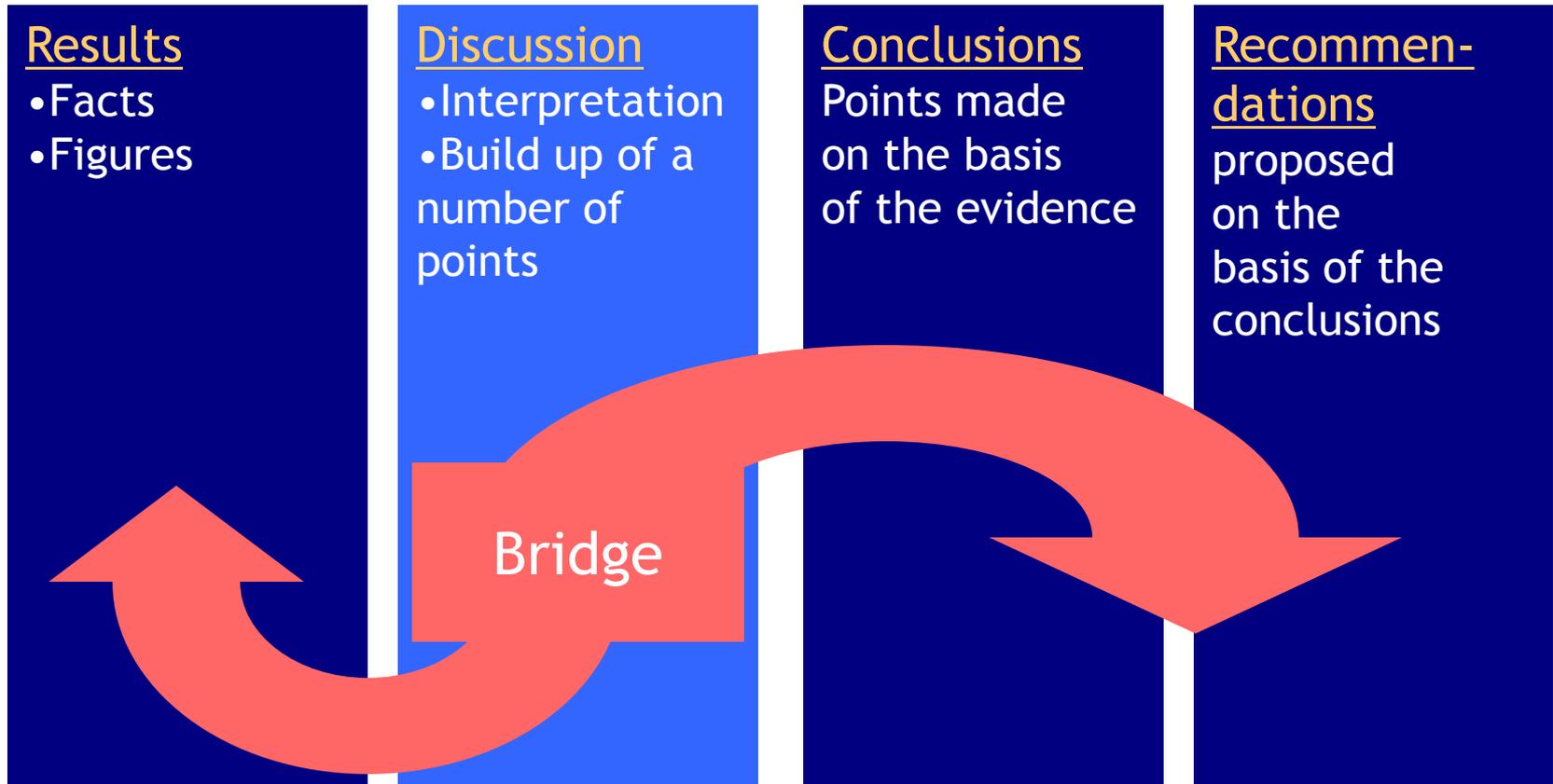
Results

- Describe the findings in simple terms
- Describe the information in the tables as captions
 - Eg.: cases and controls did not differ with respect to baseline characteristics (Table 1)

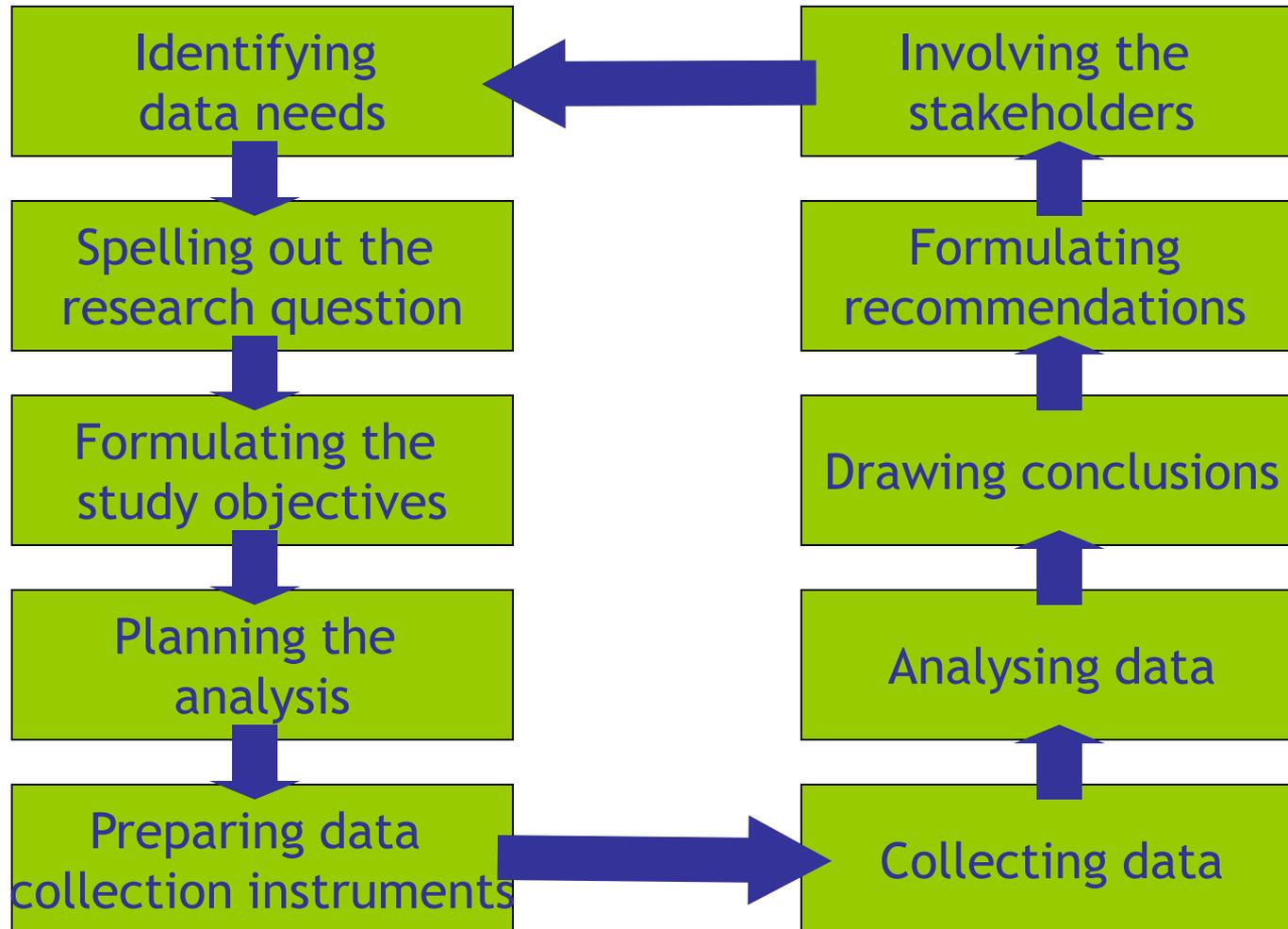
Discussion

1. Summary of findings without quantified detailed results } What was found
2. Making points } What can be said
 - First point
 - Second point
 - (Potentially a third point)
3. Limitations } What you cannot say
4. Last paragraph of conclusion and recommendations } What you make of it

Envisioning the discussion

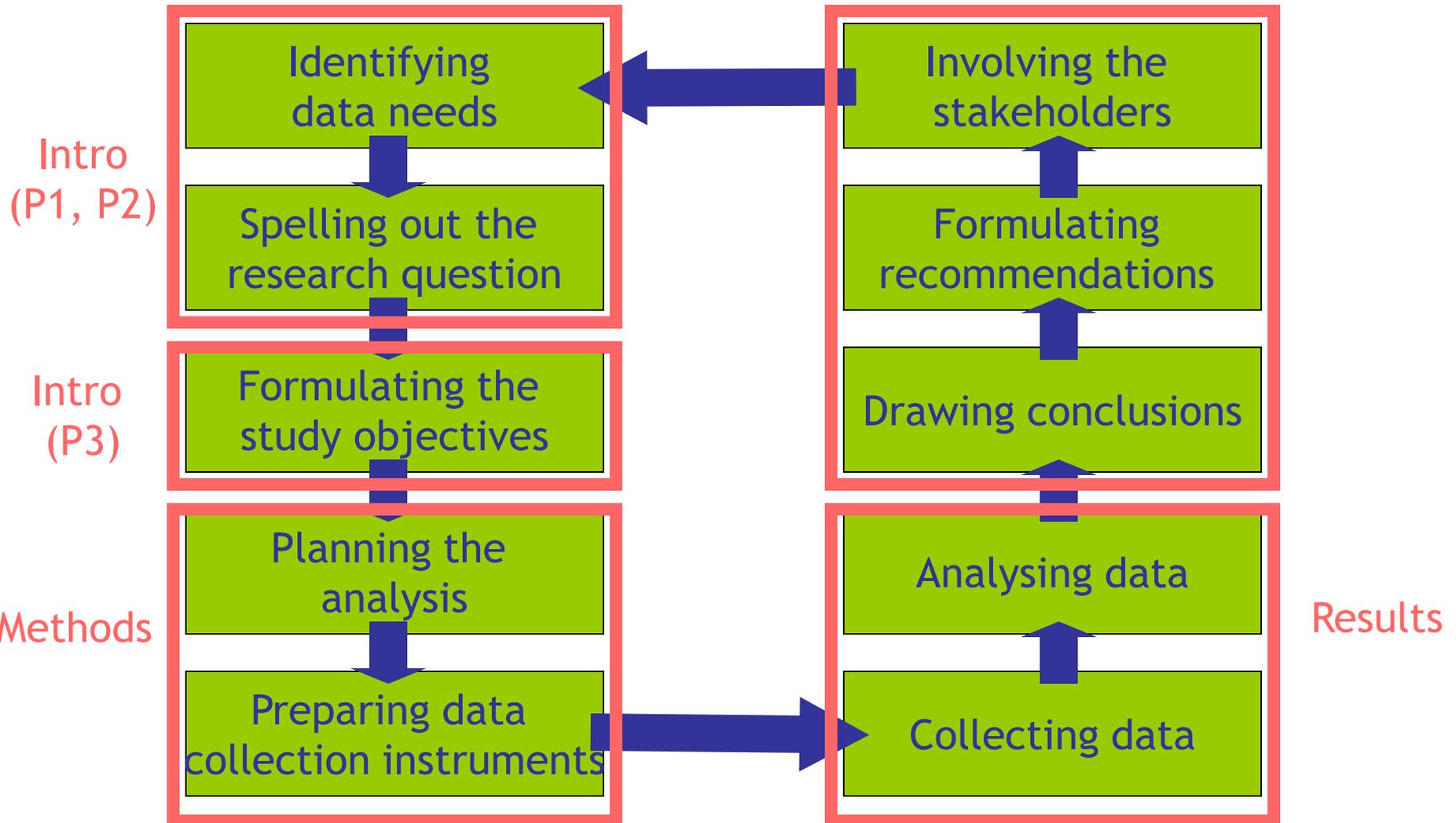


The life cycle of an epidemiological investigation



The life cycle of an epidemiological investigation

Discussion



Ideas

Progression in the various sections

Linear construction to follow one idea throughout the manuscript

- Introduction
 - What was know before, the local context
- Methods
 - The methods used to generate the finding
- Results
 - The facts and figures
- Discussion
 - Integration of all elements making the case
- Conclusion
 - The point made
- Recommendation
 - What the point calls in terms of action

Example of linear construction: Pandemic influenza in Berlin, 2009/2010

- **Idea 1**
 - Use clinical picture + lab characteristics to distinguish H1N1 cases among hospitalized ARI patients
- **Idea 2**
 - Similar medical preconditions between hospitalized ARI H1N1+/-
- **Idea 3**
 - Questionable difference in severity between H1N1+/- ARI patients

Pandemic influenza in Berlin, 2009/2010

- Introduction
 - Clinicians do not know who to test for H1N1
 - Risk profiles not known for hospitalized cases
- Methods
 - Case-control study comparing H1N1+/- ARI-patients
 - Information retrieved from medical files
- Results
 - More likely fever, headache sore throat and thrombopenia
 - Less likely leukocytosis and radiological pneumonia
 - Preconditions present in 70% of cases and controls
- Discussion
 - Low case number
 - Only hospitalized patients
- Conclusion
 - Indicative for H1N1: Fever + Leuko/Thrombo + Rx pneumonia
 - medical preconditions not indicative
- Recommendation
 - Indicators need to be further assessed
 - Laboratory diagnosis of H1N1 necessary

The matrix

The organization of the ideas in the sections

Argument matrix template to articulate the ideas of a manuscript

Ideas	Intro	Methods	Results	Discussion			
				Points	Limitations	Conclusions	Recommendations
Idea #1							
Idea #2							
Idea #3							

Argument matrix template

Ideas	Intro	Methods	Results	Discussion	Limitations	Conclusions	Recommendations
Idea #1							
Idea #2							
Idea #3							



Direction used to develop the ideas

Argument matrix template

Ideas	Intro	Methods	Results	Discussion	Limitations	Conclusions	Recommendations
Idea #1							
Idea #2							
Idea #3							

Direction which the paper will follow

Uses of an argument matrix

- Primary preparation
 - Before a manuscript is started
- Secondary preparation
 - To re-organize a draft

Uses of an argument matrix

- Primary preparation
 - Organize ideas before drafting the manuscript
 - Identify ideas
 - Lay out the points according to the sections of the manuscript
 - Helps to build consensus among all co-authors
 - Starting from the matrix prepare a high level outline
- Secondary preparation

High level outline

- Synopsis of the manuscript
- Contains all the sections and subheadings
- “Outline view” in Word
- One bullet point per future paragraph
 - Think of what the reader will have to remember upon completion of the reading of the future paragraph

Uses of an argument matrix

- Primary preparation
- Secondary preparation
 - Re-organize the ideas in a confused manuscript
 - Identify the main ideas
 - Prepare a blank matrix
 - Read the manuscript with a highlighter to identify the elements that belong to the main ideas
 - Within each ideas, identify the elements that belong to the various sections
 - Distribute the elements in the blank matrix
 - Identify the holes in the matrix

Take home message

- The argument matrix helps to organize
 - The structure and
 - The ideasin the manuscript
- Use the argument matrix
 - From the beginning
 - To recover ideas from a disorganized document