

# Qualitative Methods in Operations Research

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Operations Research Mini-Course

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- Qualitative data is information that is difficult to measure, count, or express in numerical terms. This type of data is used in research involving detailed, verbal descriptions of characteristics, cases, and settings.

- Data which can be categorized in some way but which cannot be reduced to numerical measurements

■ Data that is not quantitative

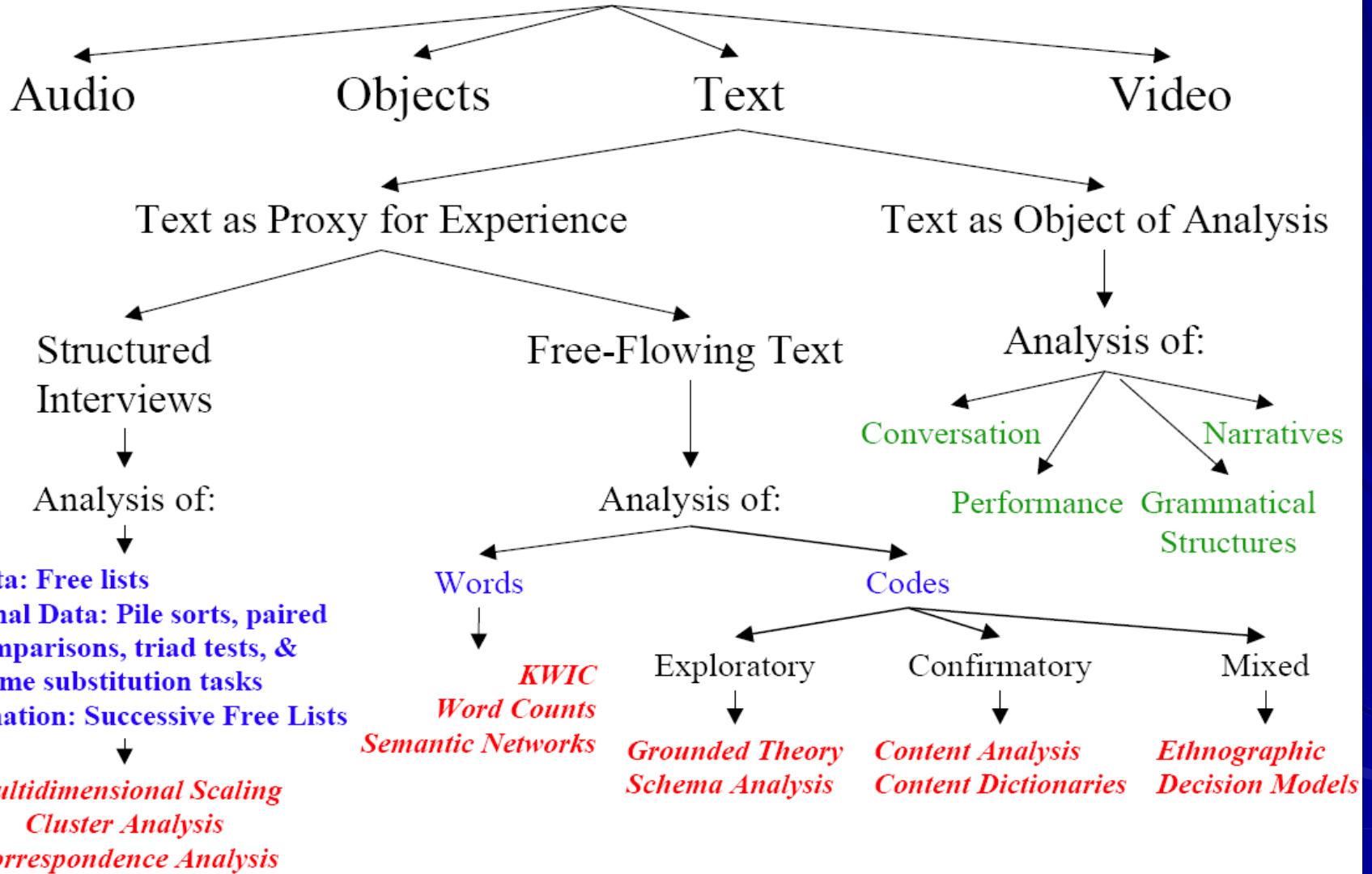
The question is not whether to use qualitative methods in OR, since they are always used in some way. The question is how systematic should their application be.

# Qualitative Research

- What are qualitative data?
- Where do we get them and how? How do we analyze them?
- Why should they be used in OR and how?
- Qual OR design issues.

■ What are qualitative data?

# Qualitative Data

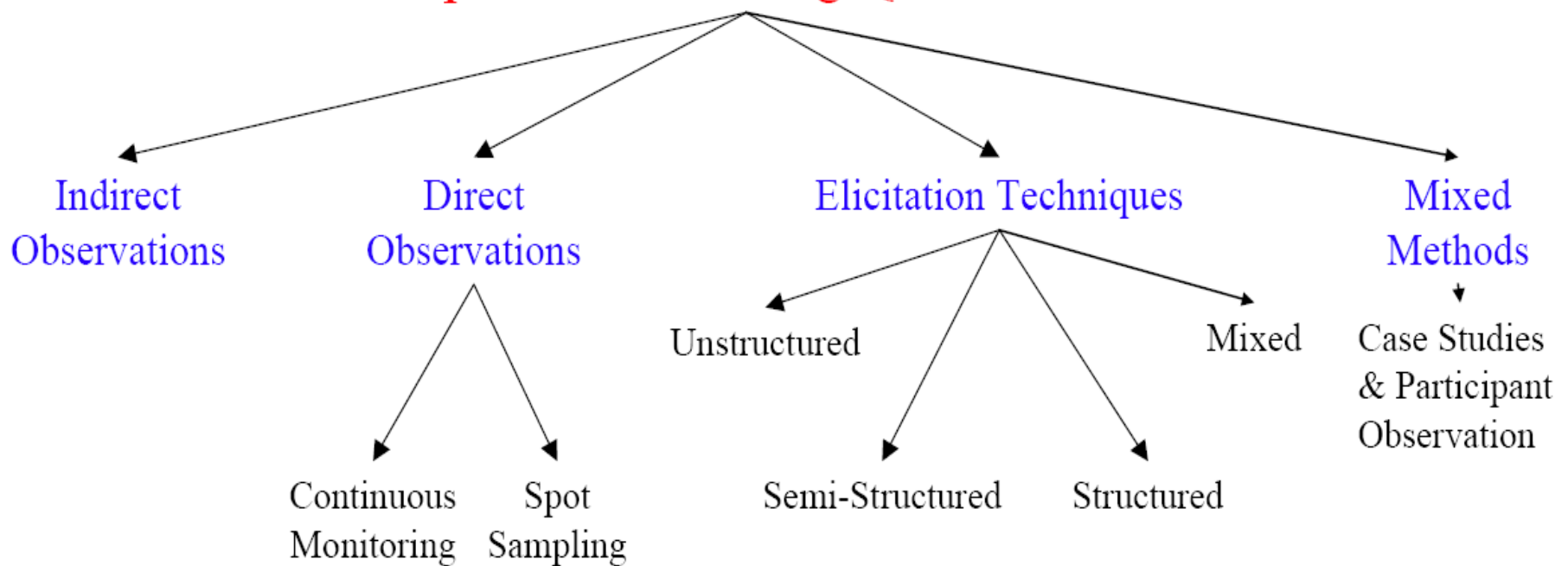




- Where do we get them and how?  
How do we analyze them?

# Where Do Qualitative Data Come From?

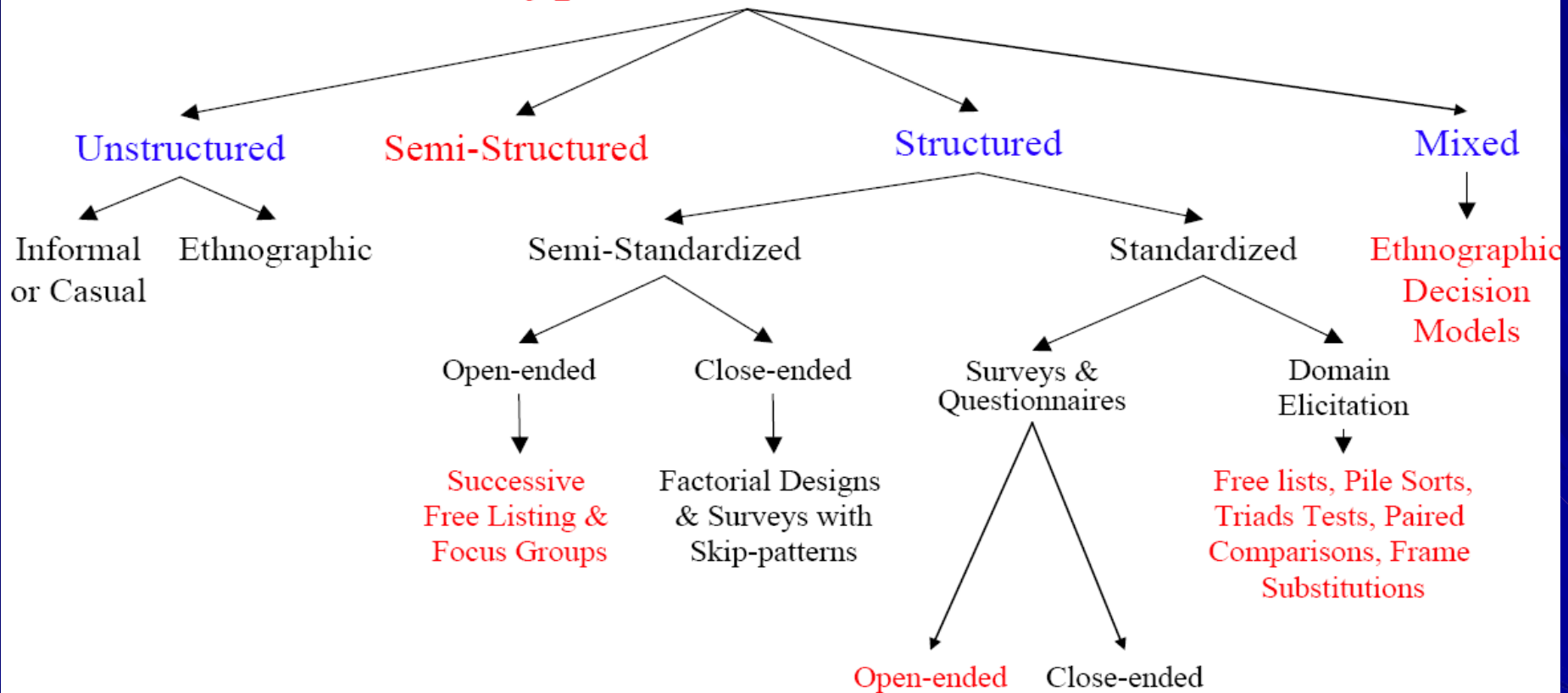
## Techniques for Producing Qualitative Data



# Basic Methods

- Individual Interviews
- Focus groups
- Direct Observation
- Participant-Observation

# Types of Elicitations

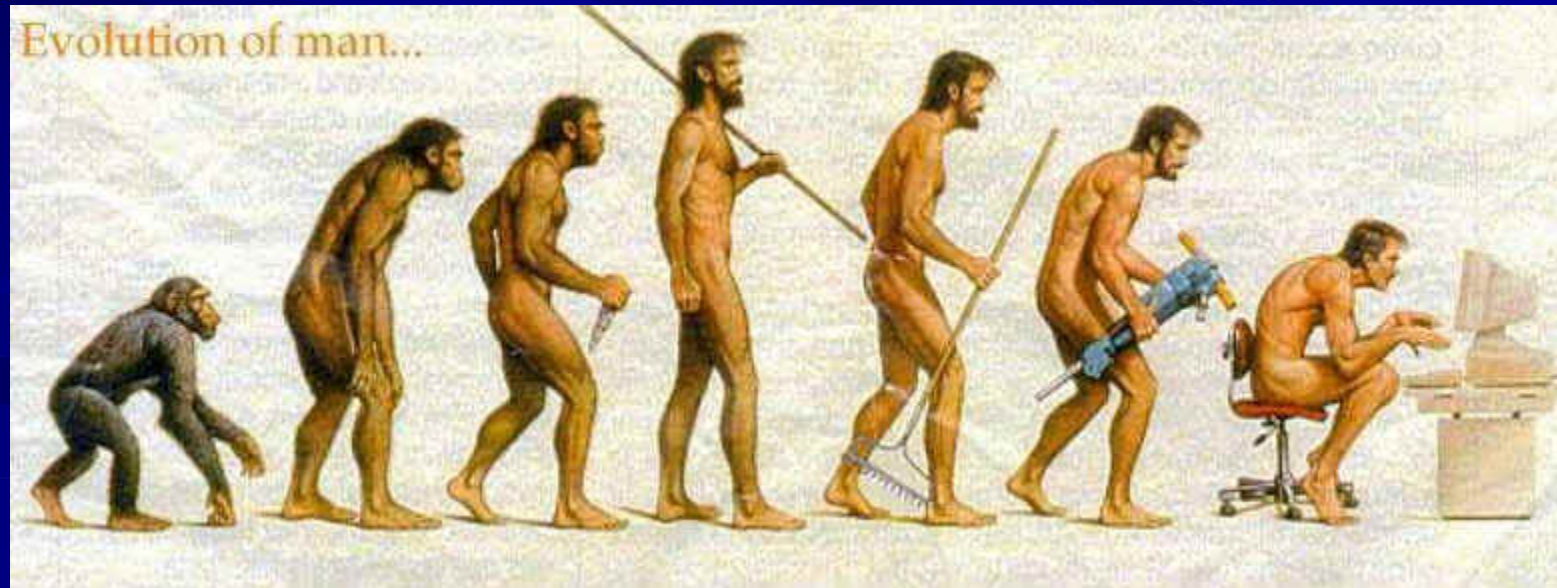


# What is Qualitative Data Analysis?

	<b>Data</b>	
<b>Analysis</b>	<b>Qualitative (Texts)</b>	<b>Quantitative (Ordinal/Ratio Scale)</b>
<b>Qualitative</b>	Interpretive text studies. Hermeneutics, Grounded Theory	Search for and presentation of meaning in results of quantitative processing
<b>Quantitative</b>	Turning words into numbers. Classic Content Analysis, Word Counts, Free Lists, Pile Sorts, etc.	Statistical & mathematical analysis of numeric data

# Software: What it does and doesn't do

- Atlas.ti
- NVivo/Nud\*ist
- CDC EZ text
- Anthropac



# ■ Why and how should we use qualitative methods in OR ?



# Mixing Methods/Qual-quant

## Three purposes (Sandelowski):

- Triangulation – convergent validation
- Complementarity – clarify, explain, elaborate
- Development – guide additional data collection



# Priority Decision

Quantitative

Qualitative

Comp  
Prelim

Qualitative Preliminary  
Qual → QUANT

Quantitative Preliminary  
Quant → QUAL

Sequence  
Decision

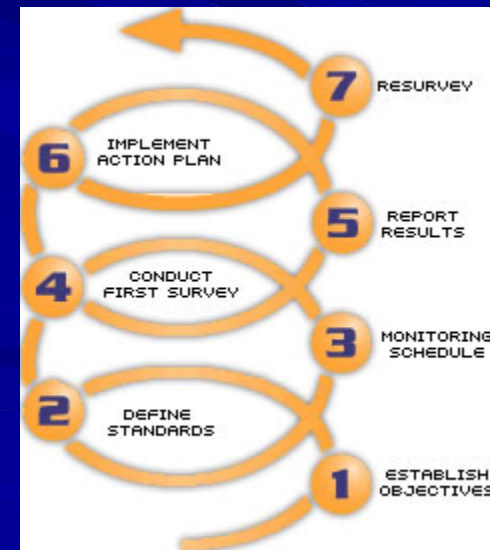
Qualitative follow-up  
QUANT → Qual

Quantitative follow-up  
QUAL → Quant

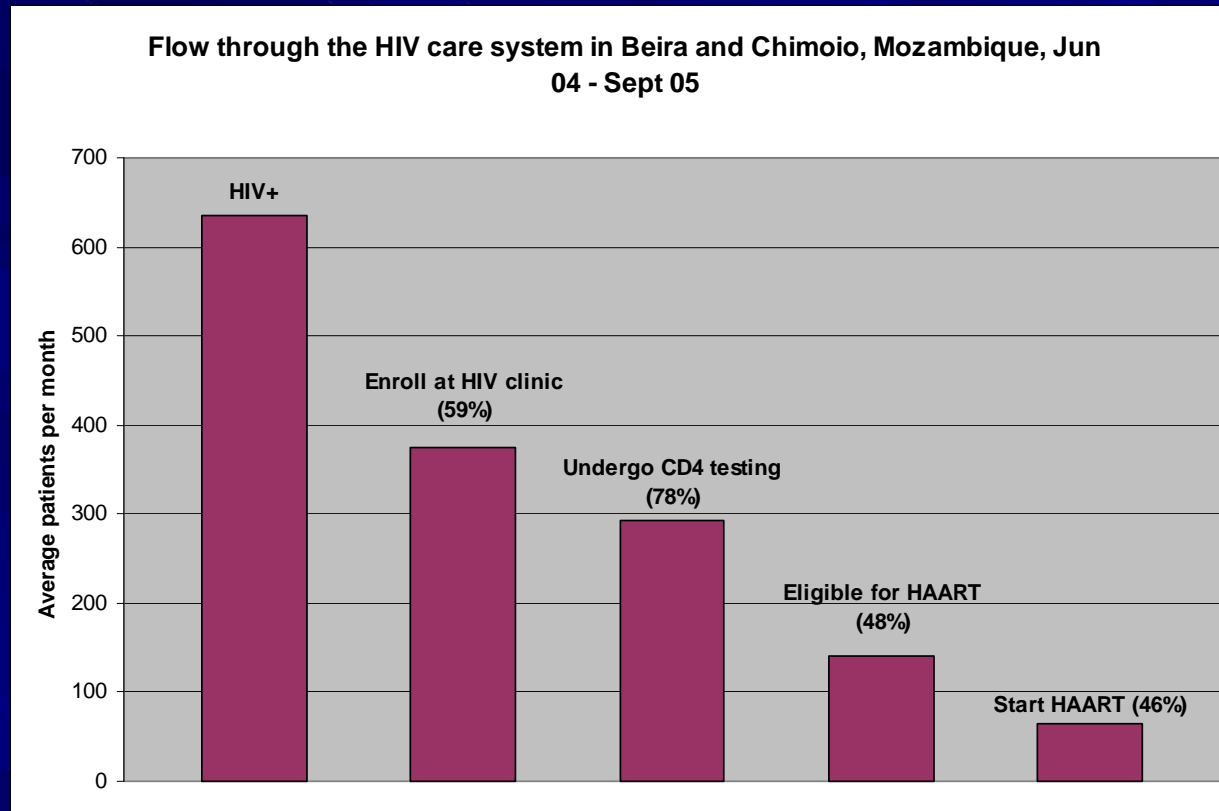
Comp  
Follow-up

# Steps in the OR Process

1. Identify and diagnose the problem
2. Generate a programmatic solution to solve problem
3. Design and test intervention to solve the problem
4. Ensure results are used
5. Disseminate results

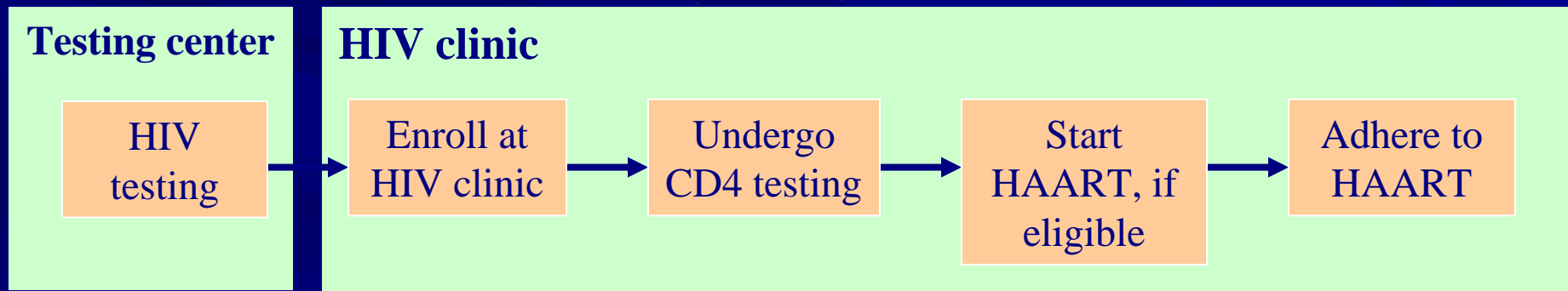


# Example: Loss to Follow-up from HIV testing to HAART in Mozambique



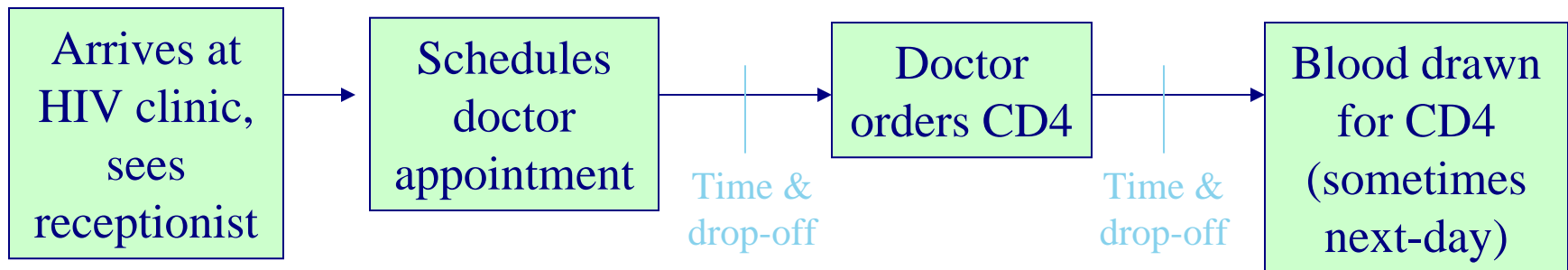
# Good OR views health programs as interdependent “systems” (2)

## ■ Local level HIV care system in Mozambique



- How can we change the system to improve the flow?
- Will improving one step affect other steps?

# Health programs are complex systems



## Potential solutions

- CD4 ordered by non-doctors, at enrollment?
- All blood draws same-day?
- CD4 ordered in HIV testing site?
- Move CD4s to another site?

## Problems & solutions depend on system

- Staffing
- Lab location, capacity, policies

# 1. Identify and diagnose the problem

How much of problem derives from patient characteristics vs. system problems?

Qualitative research aspects:

- Direct observation
- Focus group discussions
- Individual interviews with health workers/target pop.



- **Triangulation – convergent validation**
- **Complementarity – clarify, explain, elaborate**
- **Development – guide additional data collection**

## 2. Generate a programmatic solution to solve problem

- Focus group discussions
- Participatory Action Research
- Individual interviews with health workers/target pop.

### Examples: Potential systemic solutions

- CD4 ordered by non-doctors, at enrollment?
- All blood draws same-day?
- CD4 ordered in HIV testing site?
- Move CD4s to another site?
- Improved health worker training?

### Examples: Potential community-based solutions

- Improved education about testing and treatment.
- Community mobilization strategies for social support.





### **3. Design and test intervention to solve the problem**

- Individual interviewing and direct observation for regular process monitoring and evaluation, and for identification of unintended consequences of intervention.
- Interviews, focus groups, observation combined with quant measures to test intervention effectiveness.

#### 4. Ensure results are used:

- How to influence policymakers or program managers



#### 5. Disseminate results:

- Identify best venues for dissemination to influence policy and generate discussion.

# Qualitative OR Design Issues

- Need to scale design and plan to rapid turnaround
- What mix of qual and quant data will you need?
- What is your unit of analysis?
- What should your sample strategy and size be to answer the question?
- Do you need unstructured free flowing responses or structured responses, or both?
- What contextual data will you need?

# Defining the Case

## The Unit of Analysis: Examples

- Individuals
- Households
- Groups
- Communities
- Illness episodes
- Organizations
- Health posts
- Events

# CONTEXT IS EVERYTHING!!!

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- Language
- Cultural knowledge
- Rappore/ trust/ power dynamics
- Location of the interview
- Topics
- Paralinguistic phenomena – “qualities of voice, breath resonance, pitch”