

Qualitative Methods in Operations Research

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Operations Research Mini-Course

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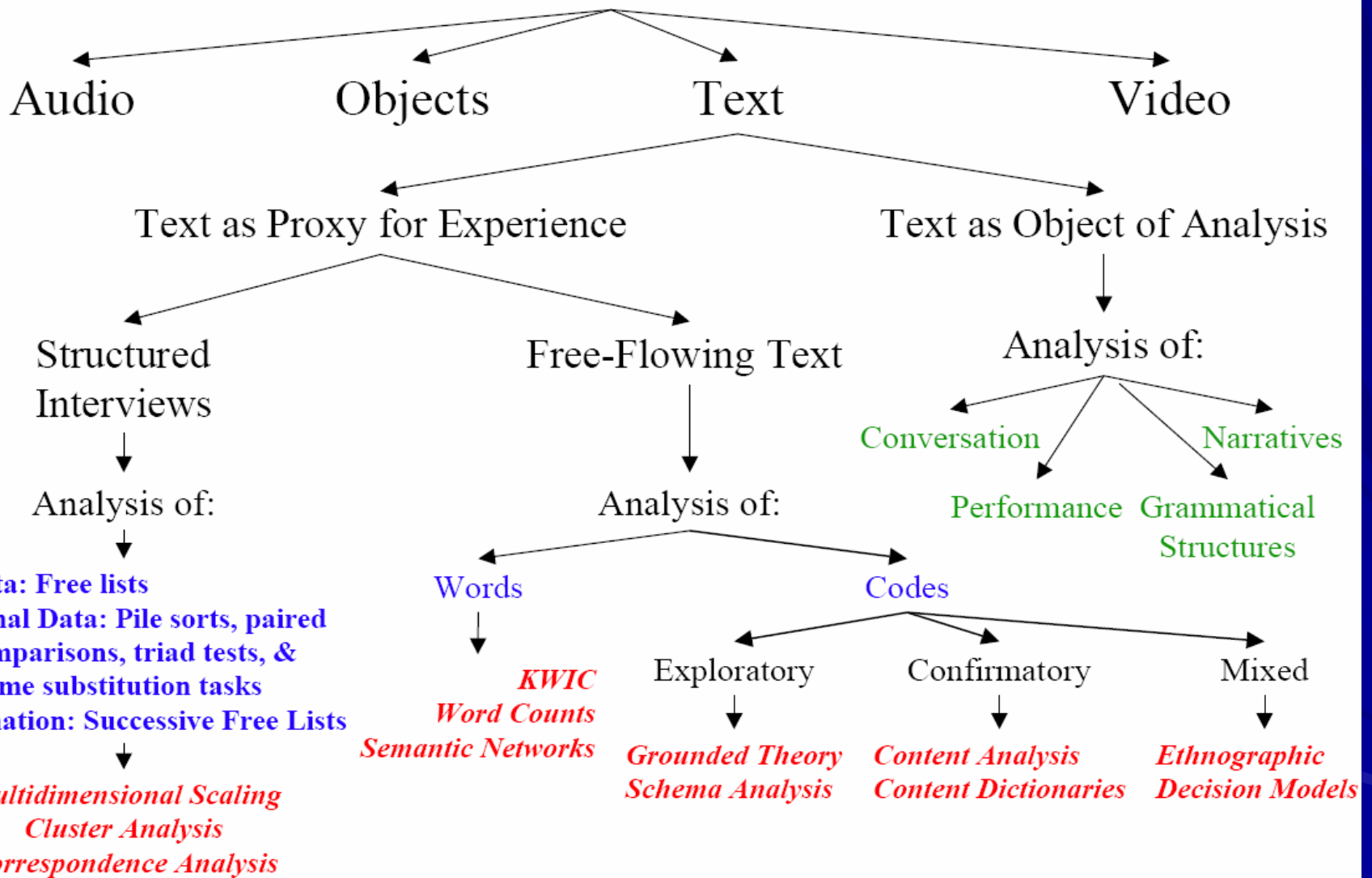
The question is not whether to use qualitative methods in OR, since they are, in fact, always used. The questions are how much they should be used and how systematic should their application be.

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



What is Qualitative Data Analysis?

Data

Qualitative (Texts)

Quantitative (Ordinal/Ratio Scale)

Analysis

Qualitative

Interpretive text studies.
Hermeneutics, Grounded
Theory

Search for and presentation of
meaning in results of
quantitative processing

Quantitative

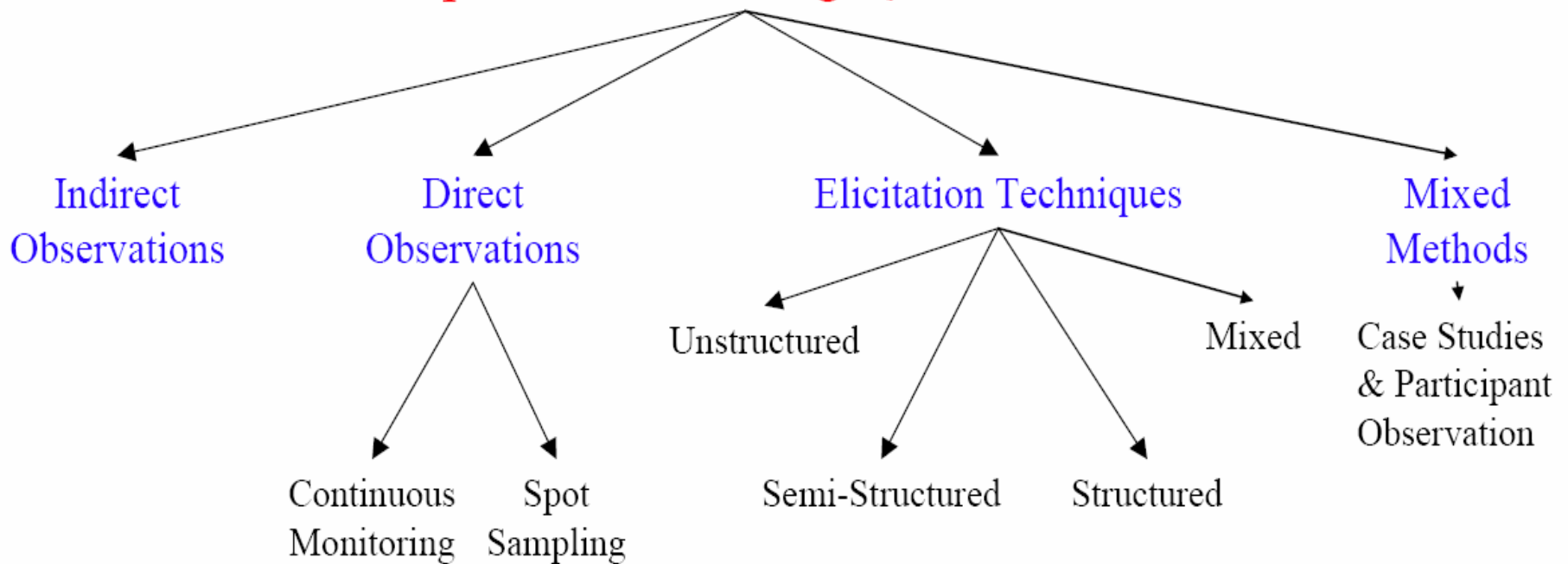
Turning words into numbers.
Classic Content Analysis,
Word Counts, Free Lists,
Pile Sorts, etc.

Statistical & mathematical
analysis of numeric data

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

Where Do Qualitative Data Come From?

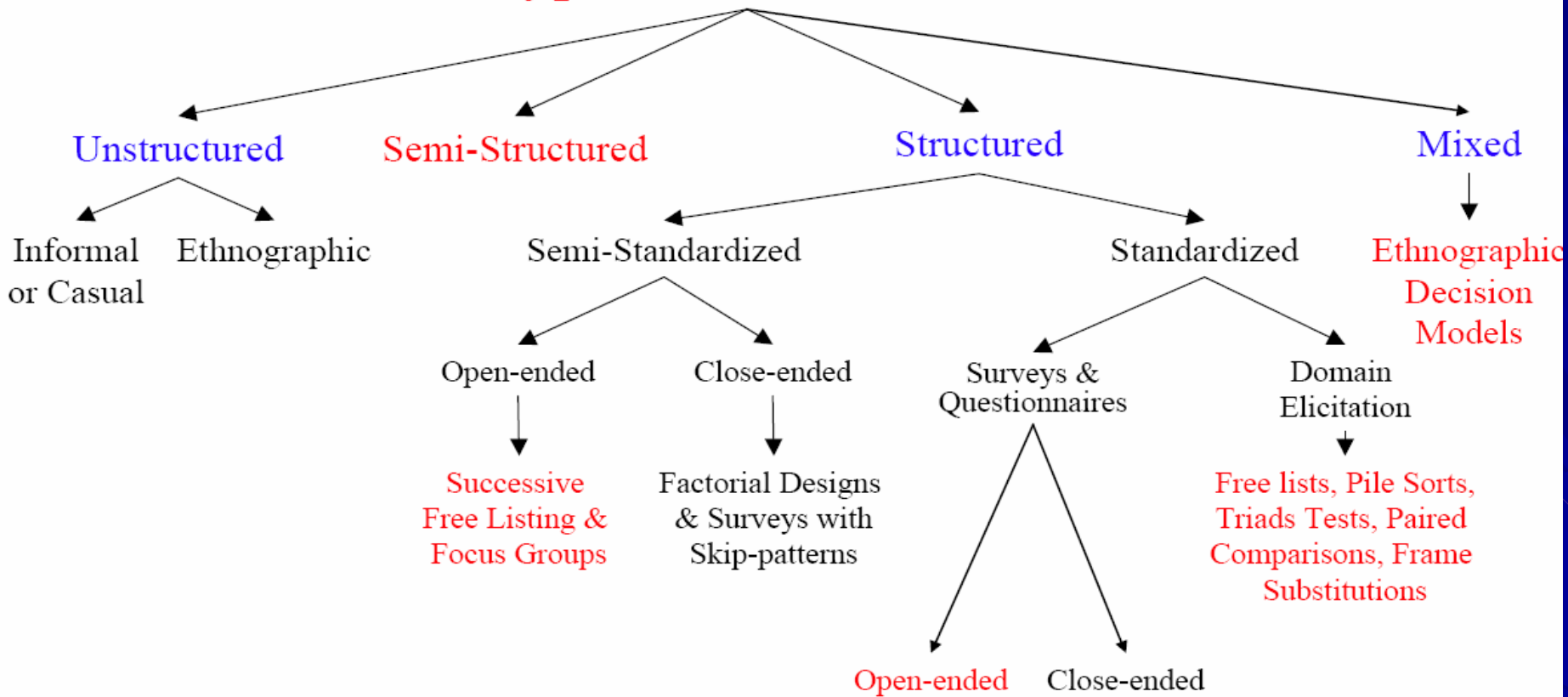
Techniques for Producing Qualitative Data



Basic Methods

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

Types of Elicitations

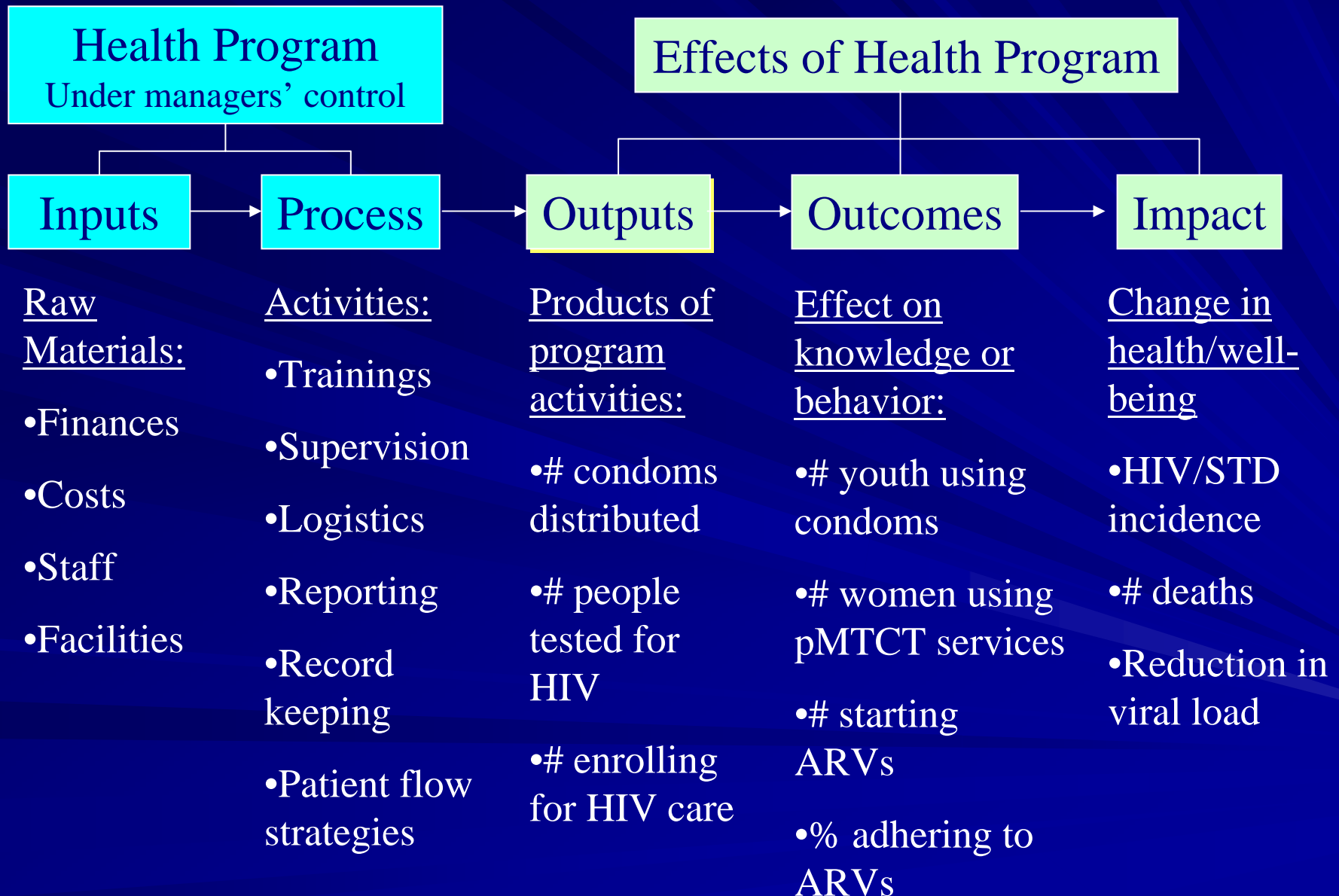


■ Why should we use
qualitative methods in OR
and how?

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

Health program as system



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

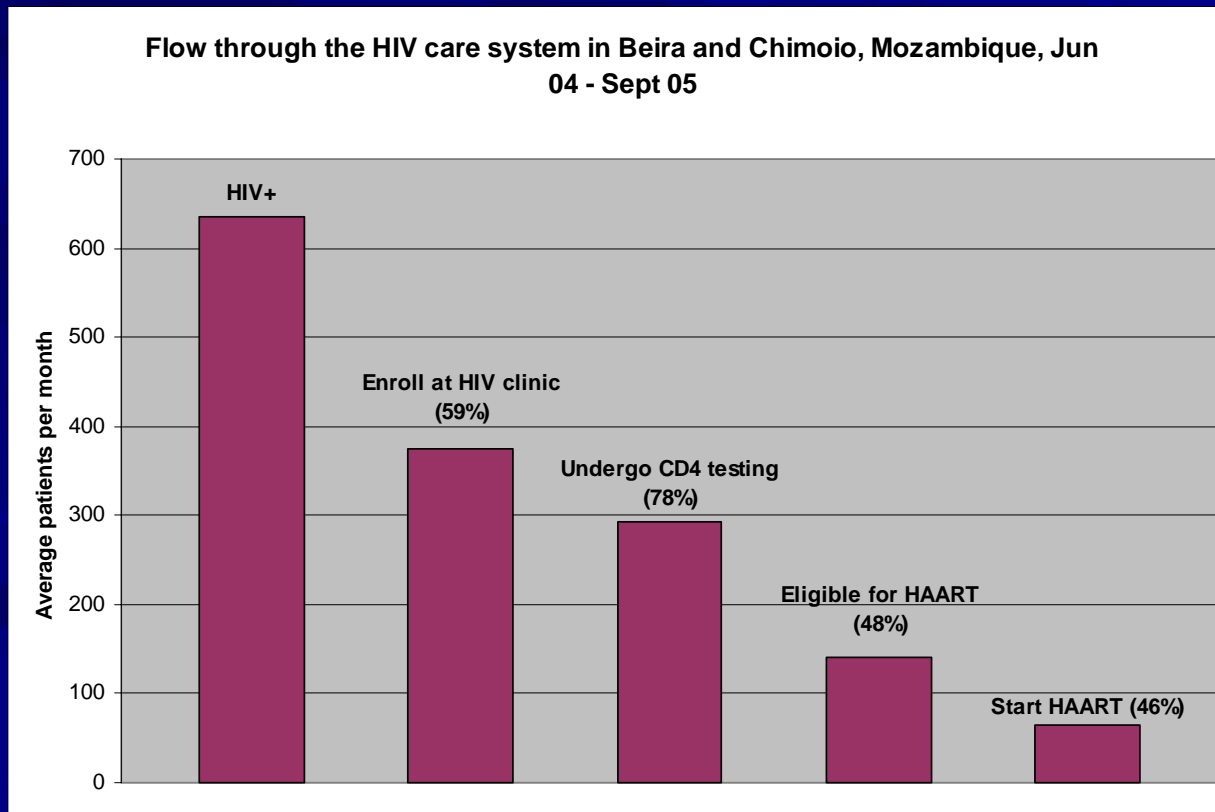
Comp
Follow-up

1. Identify and diagnose the problem

- Example: Late utilization of prenatal care in Mozambique (Chapman).
 - Problem discovered through quantitative routine data.
 - Potential causes: Lack of knowledge in pop, poor treatment in system etc.
 - Unclear whether system problem or community-based problem
 - Qual methods: In-depth, open-ended interviews, participant-observation
- Example: Activista/adherence problem

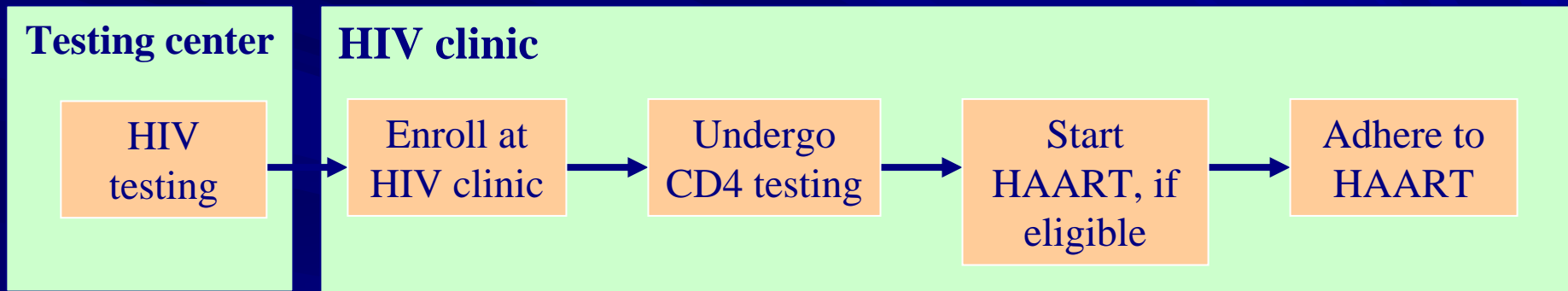
Example of difficulties in translating proven treatment into practice

- HAART reduces mortality among patients with HIV
 - BUT many eligible HIV-positive people don't start HAART



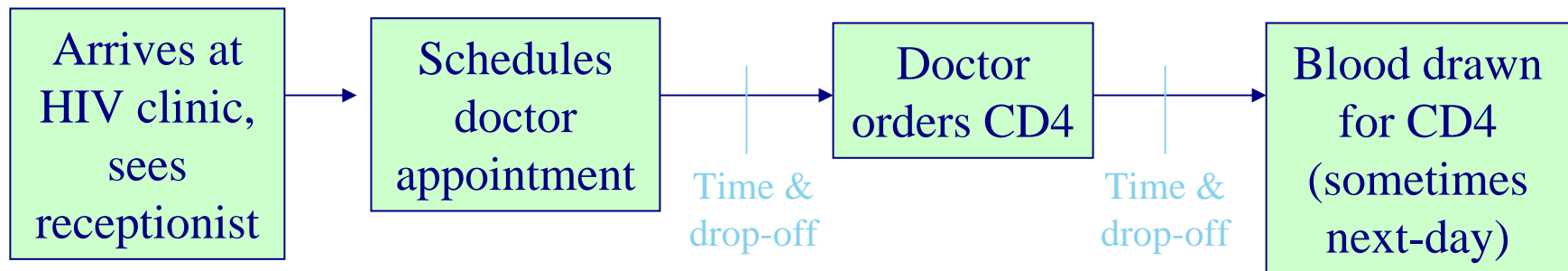
Good OR views health programs as interdependent “systems” (2)

■ 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

2. Generate a programmatic solution to solve problem

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

**Example: High maternal mortality in rural areas,
transport plans**

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.

Example: Bednet distribution through community groups

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.

Example: Syphilis testing in Mozambique

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

Sampling

(and what it means for analysis)

- Convenience
- Snowball
- Quota
- Theoretical sampling
- Special cases: typical, deviant, critical, politically important

- Purposive
 - Criterion sampling
 - Maximum variation
 - Random purposeful sampling
 - Stratified purposeful sampling

Sample Size

Rules of Thumb in Qualitative Research

- Theoretical saturation
- Informational redundancy

But how many?

- Phenomenology = 6 respondents
- Ethnography and grounded theory = 30-50
- Ethological studies = 100-200 observations

But.....it depends.....

CONTEXT IS EVERYTHING!!!

And what it means for your analysis!!!

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