

HRSA Ryan White HIV/AIDS Program

**CENTER FOR QUALITY
IMPROVEMENT & INNOVATION**

Root Cause Analysis for Quality Improvement

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HRSA Ryan White HIV/AIDS Program

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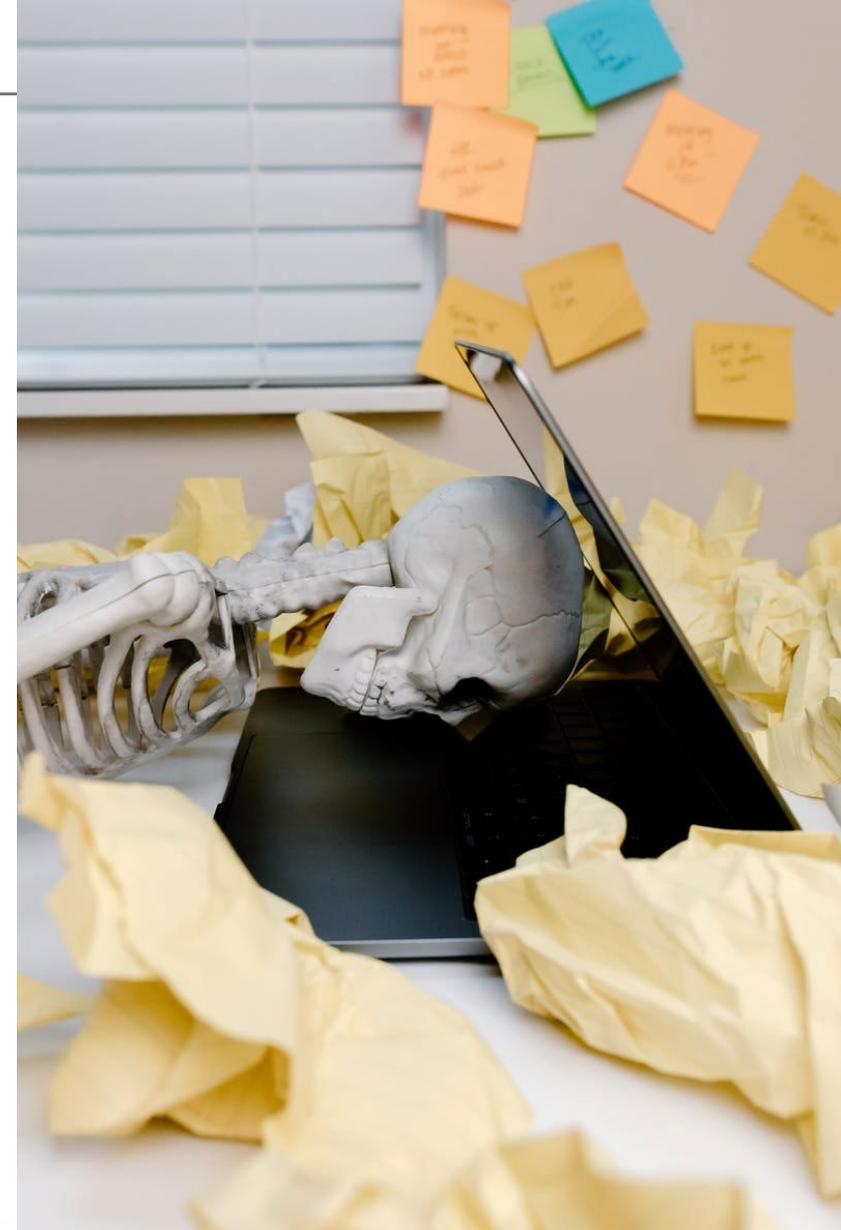
So, you have a problem to solve.....

- How do you solve your problem?
- Where do you start?
- What should you do?



Historical approaches to problem solving

- Create a committee
- Create a big plan
- Solve it yourself
- Work harder
- Add more stuff (people, money, time, effort, etc.)





Where have you seen or used root cause analysis in your improvement work?

Learning Objectives

After this session, learners will be able to:

- Describe root cause analysis for quality improvement (QI)
- Describe the value of root cause analysis in supporting change and QI efforts
- Identify when to use root cause analysis during a QI effort
- List the processes, mindset, and tools for carrying out root cause analysis in change and improvement projects
- Identify common pitfalls associated with root cause analysis and discuss possible remedies

Is there anything specific that you
are hoping to learn today?

WHAT IS ROOT CAUSE ANALYSIS FOR QUALITY IMPROVEMENT?



Root cause analysis for QI is a process, mindset, and set of tools that can be used to better understand a problem and use that understanding to generate better solutions.

WHY IS ROOT CAUSE ANALYSIS IMPORTANT IN CHANGE AND IMPROVEMENT EFFORTS?

“All improvement requires change, but not every change leads to an improvement.”

Langley, Gerald J., Ronald D. Moen, Kevin M. Nolan, Thomas W. Nolan, Clifford L. Norman, and Lloyd P. Provost. *The Improvement Guide: A Practical Approach to Enhancing Organizational Performance*. 2 edition. San Francisco: Jossey-Bass, 2009.



Root cause analysis is useful to better understand a problem and to generate knowledge that can lead to better ideas/solutions to address the problem.

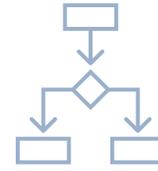
Root Cause Analysis for quality improvement helps to avoid:

- Assumptions
- Leaping to solutions that don't fit the problem
- Scapegoating/blaming

So that you can:

- Focus on the problem rather than the symptoms
- Explore a problem holistically, thinking about the parts of the system that might contribute to it
- Create better theories and predictions for overcoming the problems

WHEN MIGHT WE USE ROOT CAUSE ANALYSIS IN AN IMPROVEMENT PROJECT?



Project set-up

- Clear aim & problem statement
- Charter endorsed by leadership
- Clarity on the measurement strategy
- Right people, right time

Disciplined root cause analysis

- Fishbone Diagram
- Develop profound knowledge of the process
- Flowcharting/process mapping
- Pareto analysis (80%/20% rule)

Improvement process

- Theory of change
- Rapid cycle tests of change (PDSAs)
- Measurement
- Implementation

Sustainability

- Clear plan for sustainability
- Process owner
- Key quality process measures
- Periodic review

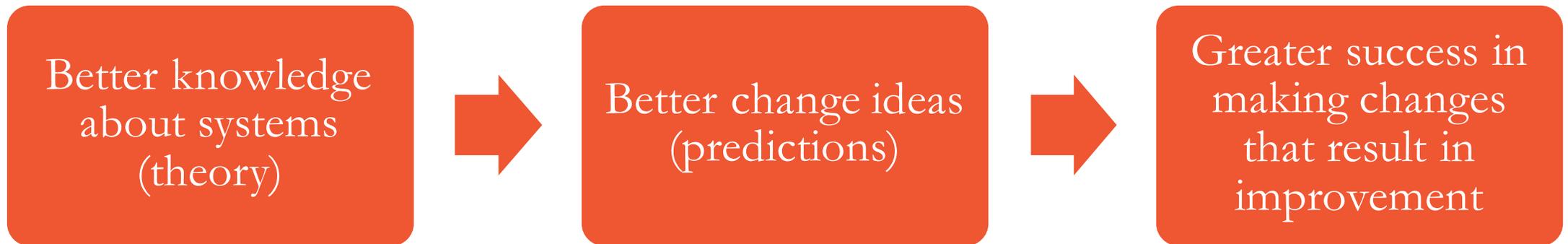
A note about systems, theory, change ideas, PDSAs

- A “system is an interdependent group of items, people, or processes with a common purpose”
- Theory and change theory is our best current knowledge of how a system works
- A change idea is a prediction based on knowledge (theory) of the system
- A change idea (prediction) is tested with a PDSA cycle to validate the prediction and confirm or adjust the theory

Langley, Gerald J., Ronald D. Moen, Kevin M. Nolan, Thomas W. Nolan, Clifford L. Norman, and Lloyd P. Provost. *The Improvement Guide: A Practical Approach to Enhancing Organizational Performance*. 2 edition. San Francisco: Jossey-Bass, 2009.

Davidoff, Frank, Mary Dixon-Woods, Laura Leviton, and Susan Michie. “Demystifying Theory and Its Use in Improvement.” *BMJ Qual Saf* 24, no. 3 (March 1, 2015): 228–38.
<https://doi.org/10.1136/bmjqs-2014-003627>.

Root Cause Analysis is one process that can help us develop better systems theory



Again, about theory in improvement

“Many of the difficulties of securing improvement lie in the enormous complexity of healthcare delivery systems, including their challenging technical, social, institutional and political contexts.² But some challenges can be attributed to the persistent failure to take full advantage of informal and formal theory in planning and executing improvement efforts.³

The need for more effective use of formal theory in improvement is increasingly pressing, because personal intuition is often biased, distorted and limited in scope¹⁰ and the application of formal theory enables the maximum exploitation of learning and accumulation of knowledge, and promotes the transfer of learning from one project, one context, one challenge, to the next.”

Davidoff, Frank, Mary Dixon-Woods, Laura Leviton, and Susan Michie. “Demystifying Theory and Its Use in Improvement.” *BMJ Qual Saf* 24, no. 3 (March 1, 2015): 228–38. <https://doi.org/10.1136/bmjqs-2014-003627>.



You notice no show rates for appointments are quite high (12%). This is problematic because it's resulting in a lot of waste, and you're also worried about folks with missed appointments falling behind on important care. You decide to try phone reminders the day before appointments. A couple weeks rafter implementing the phone reminders, you notice there's only a very small improvement in no show rates.

- What is the problem?
- What is your theory?
- What is the prediction?
- How might you revise your theory?

**WHAT PROCESSES, MINDSET, AND
TOOLS ARE USEFUL FOR SUPPORTING
OUR IMPROVEMENT PROJECTS WITH
ROOT CAUSE ANALYSIS**

A process (but not the only one) for Root Cause Analysis in the context of a QI project

- Define the problem (What? By how much?)
- Seek consensus on the problem statement
- Use tools and group process techniques to gather data and knowledge about the root causes to the problem (root cause analysis)
- Validate the root causes by collecting data and feedback
- Prioritize which root causes you will target (first) with interventions
- Connect change ideas to root causes
- Build/update your theory of change

Mindset for Root Cause Analysis

- Use the beginner's mindset
- Be open to learning
- Stay with curiosity
- Avoid blame or judgment
- **What else?**

Common Tools and Processes for Root Cause Analysis

- Cause and effect diagram aka fishbone diagram aka Ishikawa diagram
- Five whys
- Positive deviance
- Pareto analysis
- Process mapping
- Patient journey mapping
- Others...



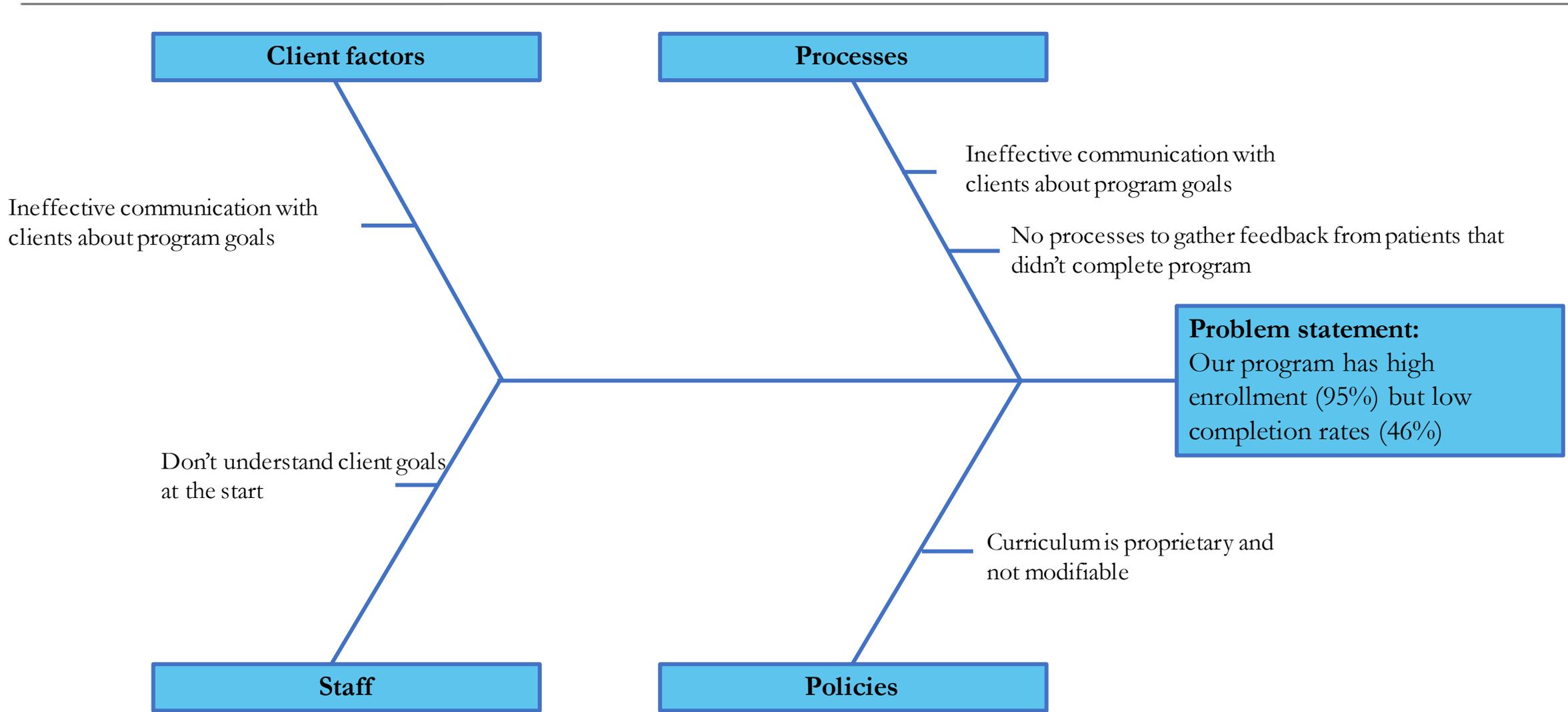
Tool Deep Dive 1: Fishbone Diagram

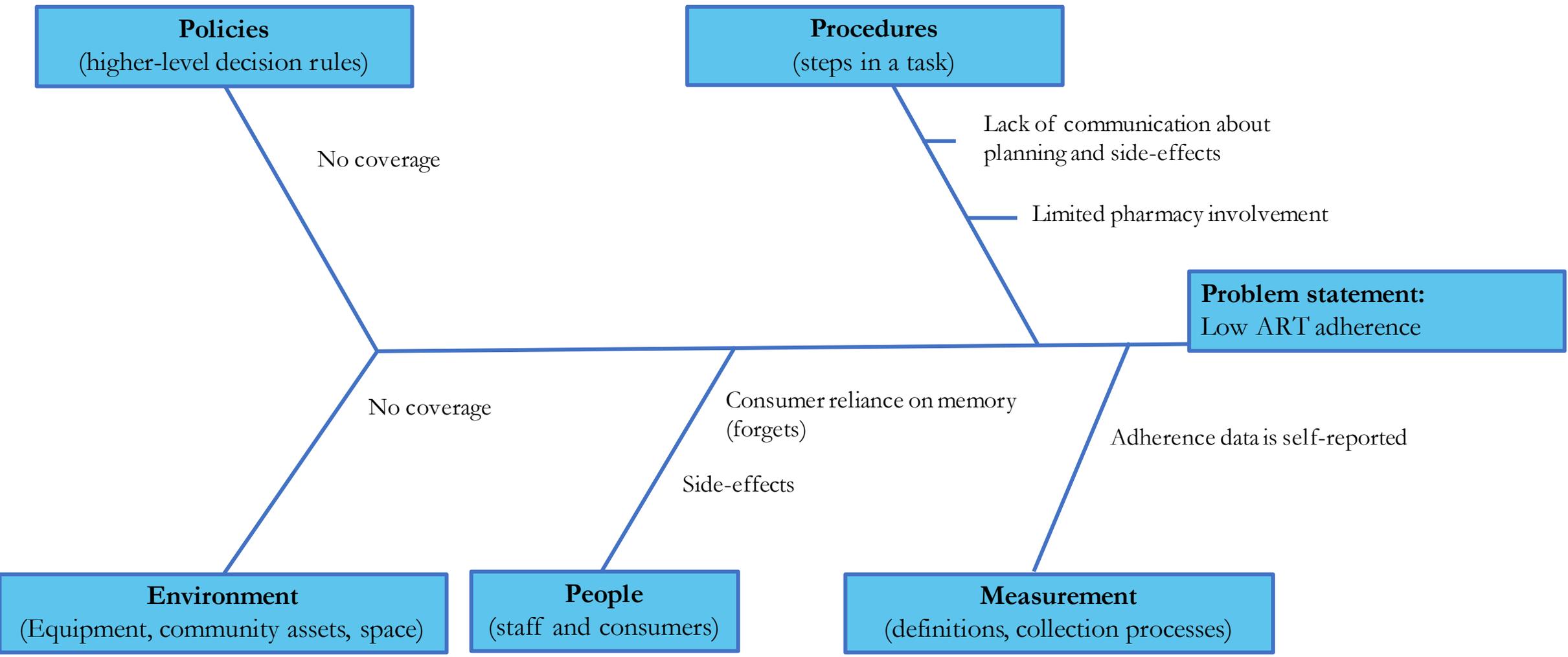
- A tool that engages a team in brainstorming to identify, explore, and visually display root causes that are connected to a problem.
- The root causes that are identified can be validated, tested for frequency, and used to identify change ideas to tackle the problem.



Tool Deep Dive 1: Fishbone Diagram

1. Write down a clear and specific problem statement
 - Ask team members/colleagues, leaders, and clients: Look for agreement on the problem statement
2. Write down major cause categories (e.g., policies, procedures, etc.)
3. With a team, brainstorm possible causes (why does this happen?) and place each cause on the relevant branch(es)
 - Think about different processes that might contribute to the problem
 - What data and knowledge do you have already?
4. Keep brainstorming until you're satisfied you have a good understanding of the root causes





Tool Deep Dive 1: Fishbone Diagram (cont'd)

Next steps could be to interpret or test for root causes by one or more of the following:

1. Look for causes that are common (appear repeatedly within or across cause categories)
2. Use a decision-making processes (e.g., Nominal Group Technique) to prioritize root cause selections for targeting interventions
3. Use check sheets or other tools to gather data about the relative frequencies of different causes

Brassard, Michael, and Diane Ritter. *The Memory Jogger 2: Tools for Continuous Improvement and Effective Planning*. 2 edition. Goal Q P C Inc, 2018.

Tool Deep Dive 2: Five Whys

- A simple brainstorming tool to dig deeper into the root causes of a problem and interdependencies in systems
- Steps:
 - Assemble a team
 - Define the problem
 - Ask why the problem exists and for each response, continue to ask why four more times

Tool deep dive 2: Five Whys (cont'd)

Our appointment no show rate is 10%

Why?

- Patient didn't arrive for appointment

Why?

- Patient didn't know about appointment

Why?

- Appointment set very far in advance

Why?

- Scheduling system set up to schedule 5 months in advance

Why?

- Software is old

Tool Deep Dive 3: Positive Deviance

- A process of seeking to explore a problem and possible solutions by looking for unique strengths and bright spots in a community
- Can be used to discover and build on the root causes of success
- Based on the observation that in every community there are pockets of individuals or groups whose uncommon behaviour and strategies enable them to find unique solutions to problems that are faced by their peers. (<https://positivedeviance.org/>)

Tool Deep Dive 3: Positive Deviance (cont'd)



- Well known case study in Vietnam
- In 1991, more than 65% of all children living in Vietnam villages were malnourished
- Jerry Sternin, with Save the Children, was asked by government officials to develop a large-scale program to combat child malnutrition

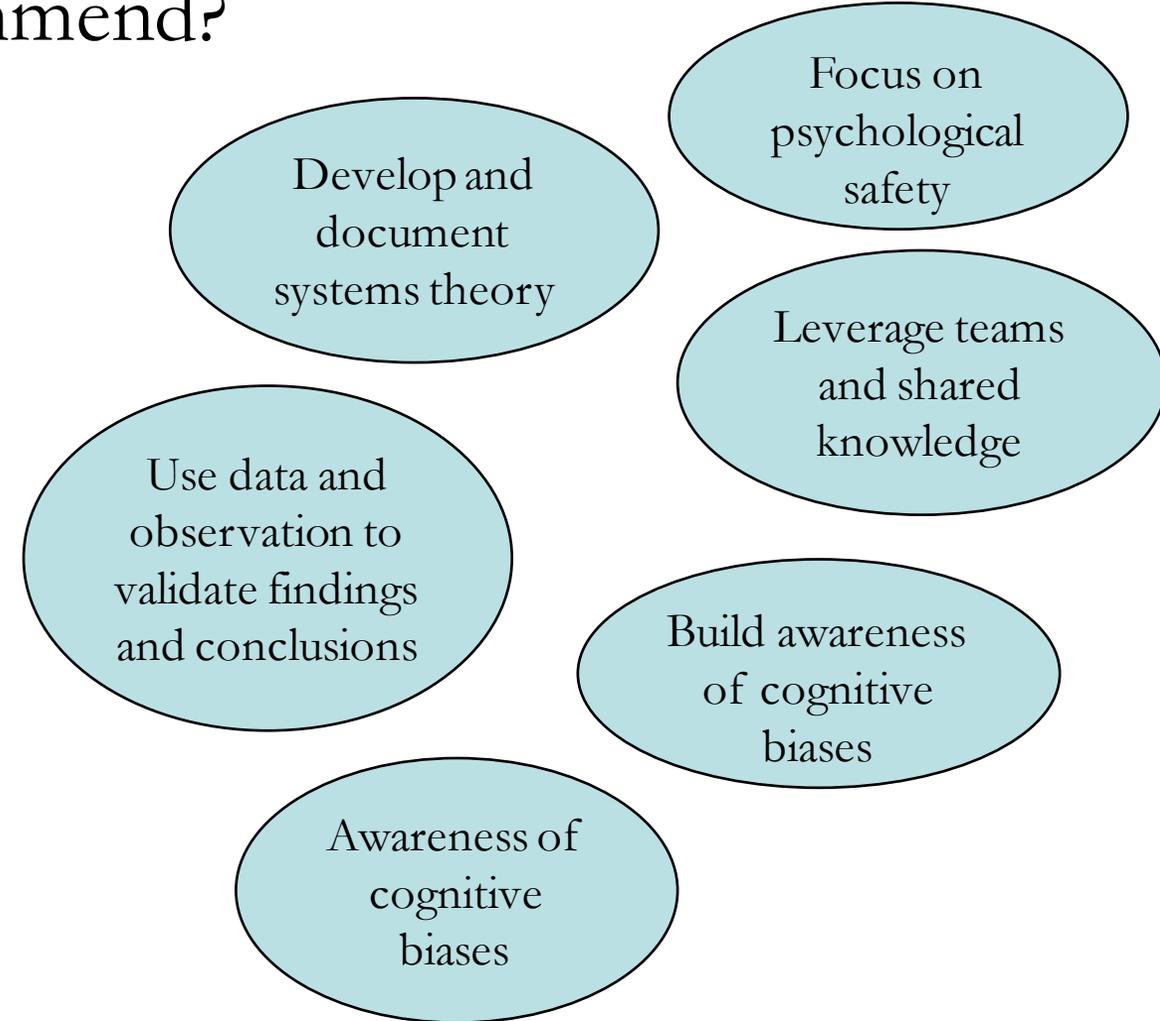
Pitfalls with Root Cause Analysis in Improvement

- Using punishment or blame
- Cause \neq effect
- Single causal chain error
- Cognitive biases – confirmation bias, status quo bias, others
- Fuzzy haze (when the brain automatically fills in missing information when it perceives something, sometimes leading to misperceptions)

Paradies, Mark. “Under Scrutiny.” *Qual Prog.* April 2010: 32-37.

What Remedies might you Recommend?

- Using punishment or blame
- Cause \neq effect
- Single causal chain error
- Cognitive biases – confirmation bias, status quo bias
- Fuzzy haze (when the brain automatically fills in missing information when it perceives something, sometimes leading to misperceptions)





What questions
do you have?

Discussion Questions

- Where have you used root cause analysis? Where would you like to use root cause analysis?
- What tools have you used? What tools would you like to use?
- What pitfalls have you encountered? What pitfalls might you encounter?
- What would you like more information on?

THANK YOU!

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