

HRSA Ryan White HIV/AIDS Program

**CENTER FOR QUALITY
IMPROVEMENT & INNOVATION**

Systems Thinking: Applying the Lens of Profound Knowledge to QI

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**Department
of Health**



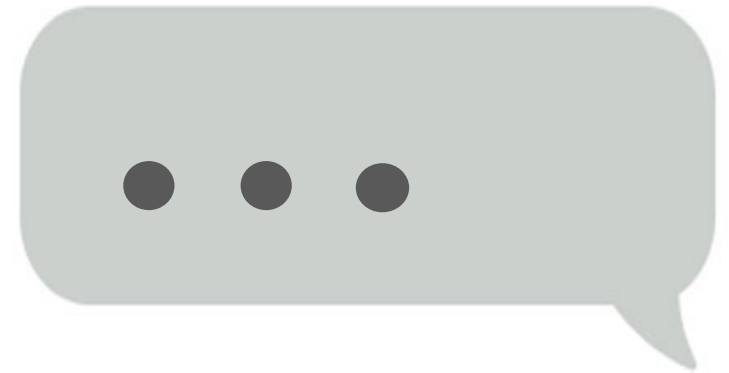
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In the Chat Box



Making a change within the healthcare system is ...

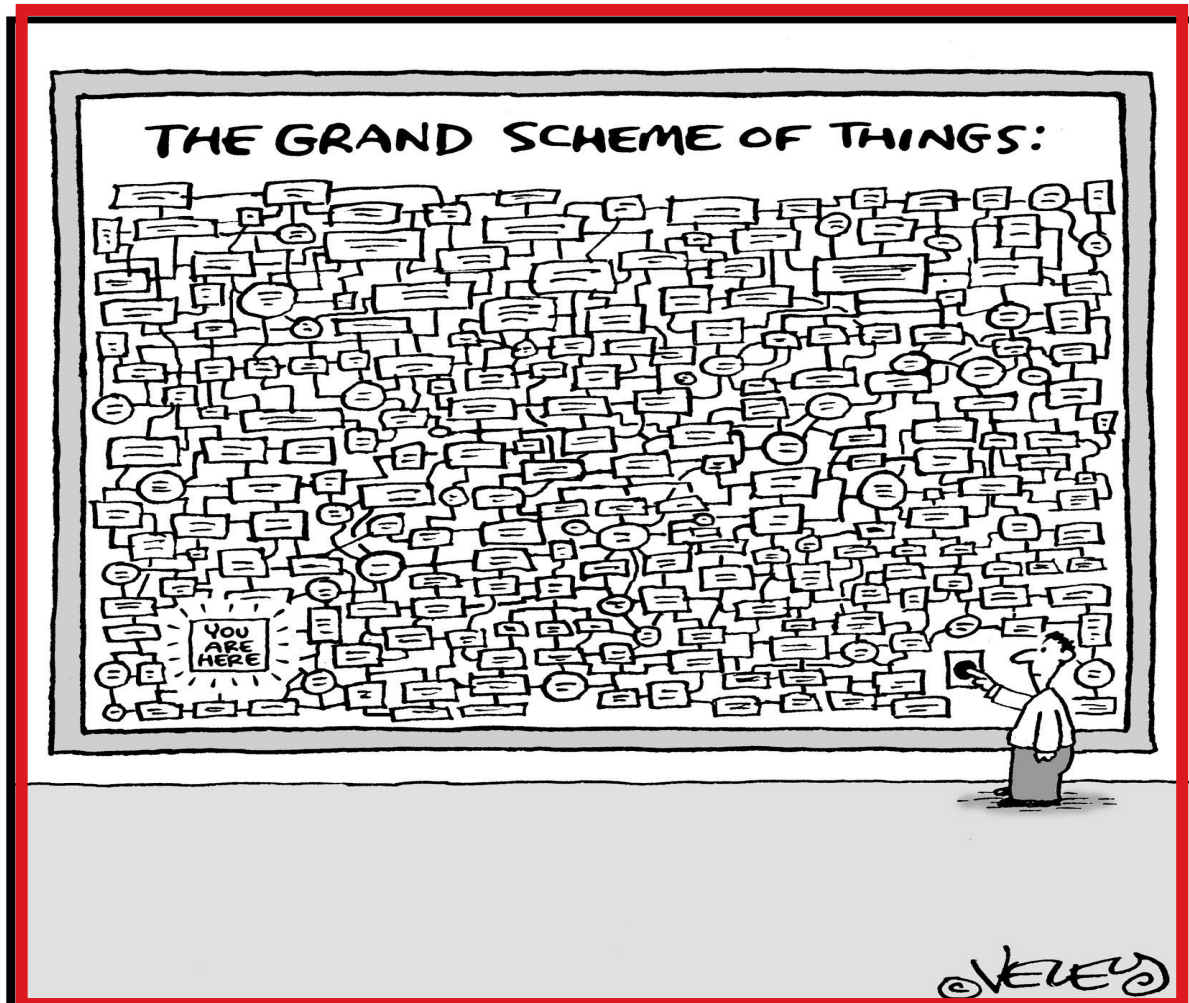


Learning Objectives:



W. Edwards Deming

- Learn the importance of systems thinking when making a change in complex systems like healthcare
- Learn to break down a range of variables that impact the success of change idea, using the 4 lens of W. E. Deming's System of Profound Knowledge
- Learn to apply QI concepts and tools to make system level improvements



Systems thinking makes
change...

manageable

effective

sustainable



Lens of The System of Profound Knowledge

Four **interrelated** components of **knowledge**



Approach to break down – and not oversimplify

Conceptually based on Deming's ideas, a 'lens' activity has been created that supports structured discussions about what is important in a system undergoing change.

A **lens** through which we are provided a rich ability to interpret experience

1. Appreciation for a System
2. Understanding Variation
3. Theory of Knowledge ~ TMI & PDSA Cycle
4. Psychology/Theory of Human Behavior

Profound Knowledge

Subject Matter Knowledge:

Knowledge of the field acquired through formal and informal learning and reinforced with experiences



Subject Matter Knowledge

Increased Capability to Make Improvements

Profound Knowledge



Profound Knowledge

Deep Insight into how to make changes in a variety of settings

W.E. Deming defines it as an interplay of **theories** of systems, variation, knowledge(i.e. PDSA) and psychology

Deming's System of Profound Knowledge

Improving Handwashing Compliance

Appreciation for a System



Involvement? Impact?

Surgery
Emergency Department
Physical Therapy
Administration
Resources
Process/Flow

Understanding Variation



Observe & Measure?

**Variation of practice by
department, times,
quality,
Incidents of preventable
infections?**

Theory of Knowledge



Hypothesis to test?

**Infections are
preventable**
Impact of checklists
**Location of handwashing
stations**

Psychology/Theory of Human Behavior

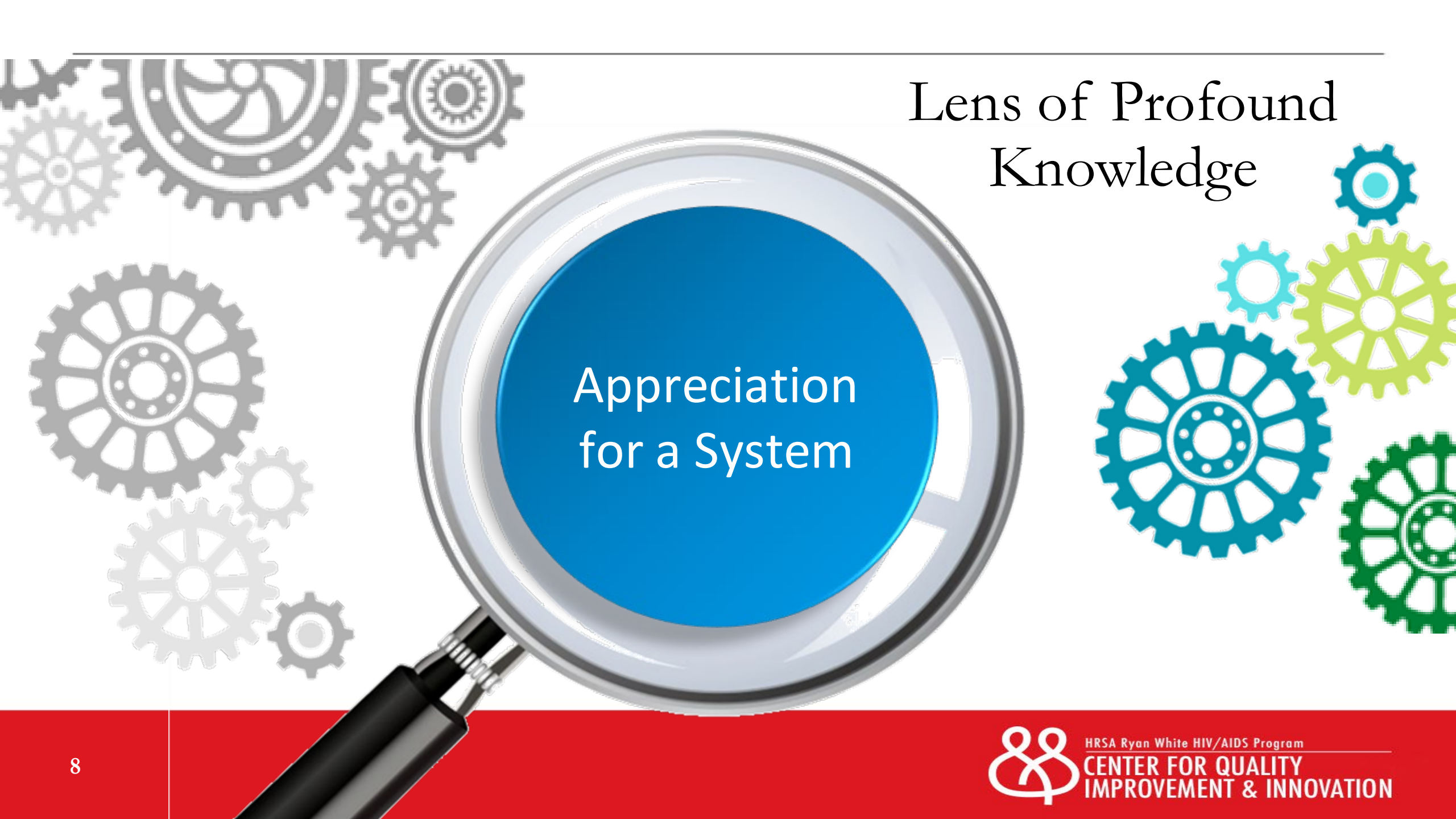


Motivate behavior?

Understand behavior
Intrinsic Motivation
**How staff responds to
change**
**Super-connectors/
Positive influencer**



Lens of Profound Knowledge



Appreciation
for a System



An example of people not understanding the concept of a system....



Appreciating for a System

- A system is
 - an **interdependent** group of **items, people, or processes** with a **common purpose**
 - has boundaries
 - has constraints/bottlenecks
- Change has varying impact on system/subsystem
- Change may not be common sense; systems are not a simple linear cause and effect relationship.
- The whole is greater than the sum of its parts



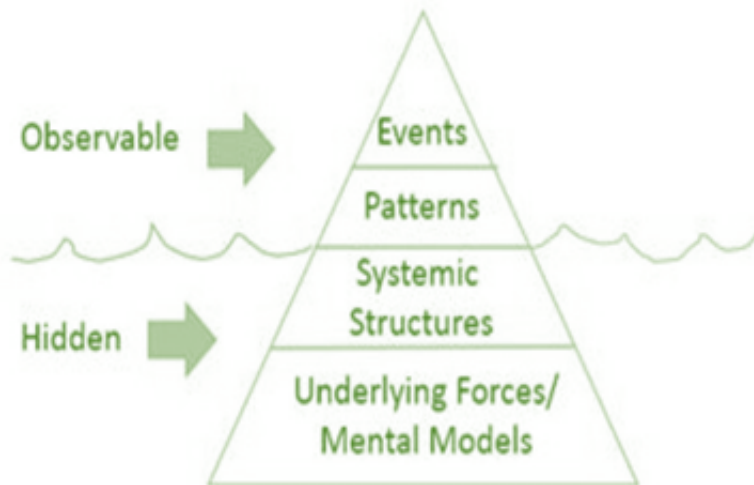
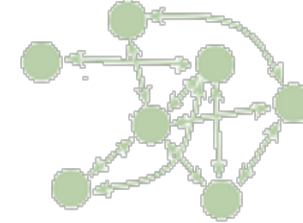
Appreciating for a System (Cont'd)

Systems thinking is a way of making sense of the complexity of the world by looking at it in terms of wholes and relationships rather than by splitting it down into its parts

Linear Thinking



Systems Thinking



Personal Effort/
Individual Care

Systems Thinking/
System Care

I will turn my patient	I will post a note above the bed to remind others	I will ask other nurses about products to prevent ulcers	I will compare our unit ulcer rate with benchmarks
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Example of continuum of systems thinking – preventing ulcers

Monat, J.P.; Gannon, T.F. What is systems thinking? A review of selected literature plus recommendations. *Am. J. Syst. Sci.* 2015, 4, 11–26.

Dolansky, M.A., & Moore, S.M. (2013). Quality and Safety Education for Nurses (QSEN): The Key is Systems Thinking. *Online journal of issues in nursing*, 18 3, 1 .

Appreciating for a System (Cont'd)

- Every system is perfectly designed to deliver the result it produces



Not “appreciating the system” can lead to

- Risk of oversimplifying
- Focus only on low hanging fruit
- Wrong attribution – blame culture
- Temporary fixes



Lens of Profound Knowledge



Understanding Variation



Understanding Variation

- In healthcare we can see variation everywhere in processes, procedures, equipment, ward layouts, patient symptoms and outcomes
- Much of the variation is caused by the way we organize and provide services
- Understanding variation is critical to managing systems effectively. Understanding the source of variation is important as this determines what we should do next



Understanding Variation (Cont'd)

Common Causes

- Those that are inherent in the system, affect everyone working in the process

Special Causes

- That are not part of the system arise because of specific circumstances
- A special cause can be either positive or negative

Track, Observe and Analyze Data

- Develop a Control Chart
- Drill down data by characteristics
- Analyze patterns
- What predictions can you make?

Variation When Producing Uniformed Cartoon Dogs

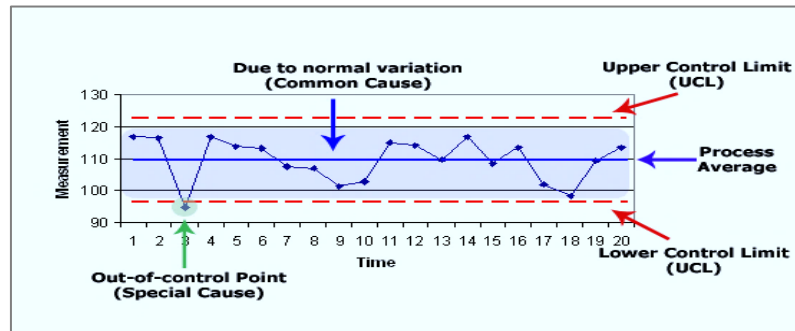


4 workers
One machine
12-hour shifts each
95% met goal, 5% misses



Power outage in March

Every system is perfectly designed to deliver the result it produces



Producing Uniformed Cartoon Dogs

Common Cause:

Variation by worker? Time of day?

Special Cause:

Variation in production in March due to a power outage

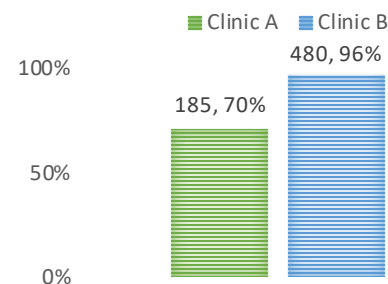
Understanding Variation: Looking at Common Causes

ORAL GONORRHEA TESTING AT GENERIC CLINIC

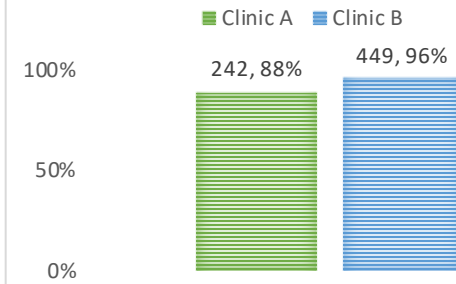


Variation reduced over time

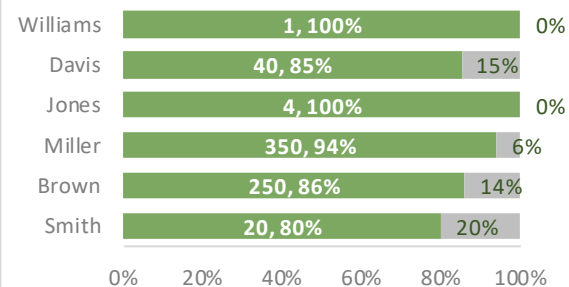
YEAR 1 CLIENTS TESTED FOR ORAL GONORRHEA BY CLINIC



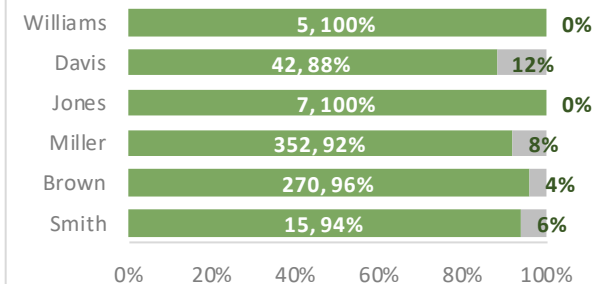
YEAR 2 CLIENTS TESTED FOR ORAL GONORRHEA BY CLINIC



YEAR 1 ORAL GONORRHEA TEST BY PROVIDER



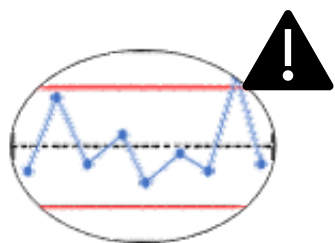
YEAR 2 ORAL GONORRHEA TEST BY PROVIDER



Understanding Variation (Cont'd)

Can you identify which of the following are special causes?

- a. Some doctors make decisions weekly while others do this daily
- b. Covid-19 Pandemic in 2020
- c. Ordering different tests for the same clinical presentation
- d. A hurricane



Not “understanding variation”

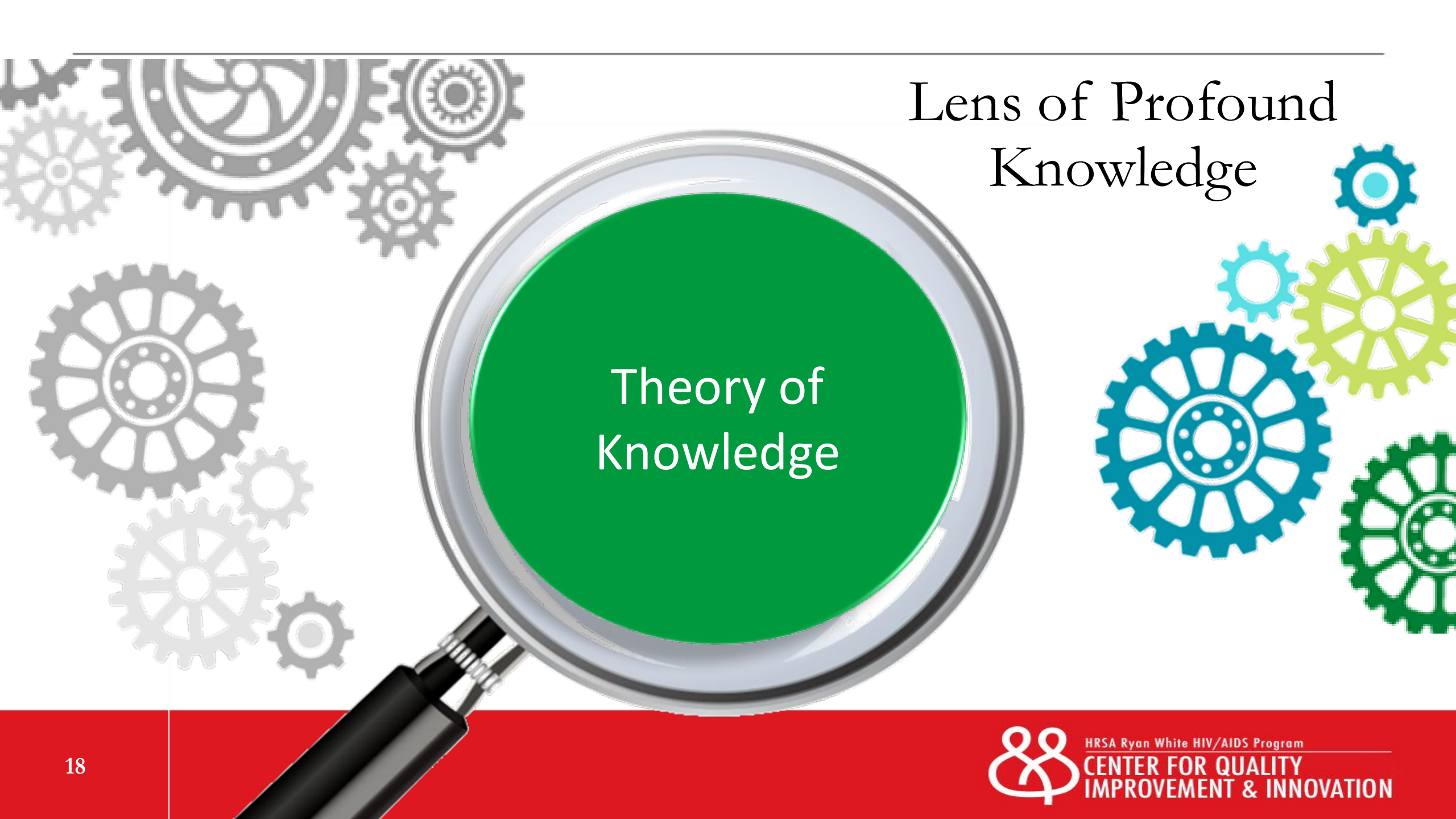
- Fail to recognize predictable patterns
- Treat common cause as a special cause – which leads to short term success
- Accept special cause as common – miss opportunity to fix
- Not taking appropriate actions for that process or system

*Every system is perfectly
designed to deliver the result it
produces*

*Therefore, we must
improve the
system*



Lens of Profound Knowledge



Theory of Knowledge



Theory of Knowledge/Building Knowledge

- In the context of improvement, a change is a prediction: if the change is made, improvement will result
- Plan Do Study Act – (PDSA). The Learning cycle. Gaps to prediction are studied and the theory is updated. Action is then taken on new learning
- Skillfully building knowledge by making changes and observing or measuring the results is the foundation of improvement



- **Not applying “theory of knowledge”**
- Moving towards implementation without testing knowledge
- May have confirmation biases
- Will not know if implementation works in specific contexts

Lens of Profound Knowledge



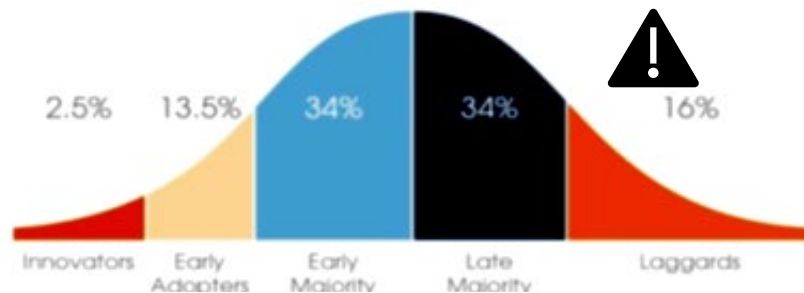
Psychology



The Theory of Human Behavior/Psychology

The Human Side of change


- People's theories (views) affect their behaviors
- Differences in people
- Behavior is driven by motivation
- Intrinsic and extrinsic motivation
- Attracting people to change: more than tangible and technical aspects
- Understanding resistance to change
 - Resistance is a part of change, if you encounter it, you are doing something right



Not “understanding the human side of change/psychology”

- Will be discouraged by resistance to change
- Miss opportunities to provide intrinsic motivation
- Miss opportunities to build ownership of change





Applying the Lens of Profound Knowledge to QI



Applying the Lens of Profound Knowledge

1. Gather a small but diverse team: facilitator and team related to the process for the issue.
2. Use the Profound Knowledge Worksheet, start with the “Appreciating the System” box.
 - Exhaust the different systems and characteristics of the system that’s involved (Use QI tools to assist with brainstorming)
 - Ask the discussion points for each component of the system

Issue: Increasing rectal gonorrhea test among HIV positive adolescents

Appreciating the System

Who is involved?

Adolescent clinic
Provider
Administrator
Managed Care Plan
Insurance
Labs
Client
Client’s guardian

What are the current processes

Standard of care
Policies & Procedures

Resources/Equipment

EMR
Testing kits

Profound Knowledge Worksheet

- If discussion of one lens overlaps with another lens – add pertinent information to that box

Profound Knowledge Worksheet



Appreciation for a System

In relation to the issue, you have chosen to work on...

- Who are the people in your system?
- What is the culture like?
- What are the structures? How do you organize things?
- What are the key processes?

Human Behaviour

- How ready do you think people in your system are for change?
- Are some people more ready for change than others?
- How do you think people feel about the issue you are going to work on?
- Is there anything else external that might be influencing how people experience this work?

Theory of Knowledge

- What is the issue you have chosen to work on?
- Why do you think this is an issue?
- What theories do you have about what will work/help you overcome this problem?

Understanding Variation

- What data do you have already?
- What is it telling you about the issue you have chosen to work on?

Applying the Lens of System of Profound Knowledge

3. The facilitator supports the group to explore each of the lens areas either using natural discussion points to shift the focus or determining that an area is under-explored so more time should be spent on it
4. Discuss prioritization. What area would make the most impact? What opportunities of change have been overlooked? What measures still need to look at to examine variation?
 - Forcefield analysis of current QI projects can help identify areas to be strengthened
 - Driver Diagram can also identify key areas for change

Tools to Build Profound Knowledge

Know who is involved in the system

Know how the system is impacted

Know the subsystems

Know the processes & methods

Know your blind spots

Know the constraints of the system

Fishbone/Cause and Effect

- Organizes brainstorm of issues in characteristics of the systems

Flowchart

- Shows how the current system & subsystem works together

Driver Diagram

- Identify gaps and opportunities

Consumer Feedback/Survey

- Reveals blind spots

Five Whys

Force Field Analysis:

- Identify bottlenecks, identify strengths and restraining forces

Tools to Build Profound Knowledge (Cont'd)

Know how to make system predictions
Know common cause and special causes

Know the beliefs and motivation of people

Know by testing theories on small change
using PDSA the Learning Cycle

Control chart

Drill down data

Fishbone, Driver Diagram & Forcefield Analysis

- To identify shared values, views, that drive their behavior
- To engage all in the improvement process

The Model for Improvement – PDSA

- Focus on learning each cycle, build on prior knowledge
- Think big but start small
- Engage champions of change

Questions?



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Thank you

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