Human Factors: Applications in Health Care Settings

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Background

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HealthInsight

Objectives

- Understand the "Big 3" categories of performance gaps.
- Compare and contrast the "Big 3."
- Understand how the "Big 3" affect performance gaps.
- Learn how to apply the "Big 3" in your nursing home.

In the Beginning . . .

- All of us have used quality improvement (QI) techniques.
- How can we go one step further?
- Can Human Factors help?

What Is Human Factors?

The science of designing tools, tasks, information, and work systems to be compatible with abilities of human users, both physical and mental.

Human Factors

- Includes the study of human error.
- Airline accidents, car accidents.
- So, what is an error?

Error

A planned sequence of mental/physical activities that fails to achieve a desired outcome.

Things to Consider

- Are there different types of errors?
- What are violations?
- How are violations different from errors?
- Why should we care?

What is a Plan?

- Means (includes mental/physical activities) to achieve an objective
- Peanut butter and jelly example
- Not having a plan is a plan (to fail)

The "Big 3" Categories of Performance Gaps

- **Planning Errors**
  - Plan itself was inadequate to achieve the desired outcome
- **Execution Errors**
  - Plan was not executed properly
- **Violations**
  - Deliberate departure from "safe" practice

Planning Errors

- Plan itself was inadequate to achieve desired outcome
  - Expect a depression assessment via the Geriatric Depression Scale without training in place
  - Skin checks by CNAs during biweekly resident shower days

Execution Errors

- Plan was not executed properly
  - Staff not aware to contact pharmacist to review medication orders on admission
  - Braden assessment not available in admission packets

Violations

- Deliberate, not necessarily reprehensible, deviations from those practices deemed necessary (by managers, designers) to maintain safe operations
  - **Not running the emergency generator once in a given month—**perception of risk is low
  - **Restraining a frequently falling resident—**goal conflict
  - **Not knocking before entering a comatose resident's room—**perception that "rule" doesn't apply

Violations

- The act itself is deliberate.
- *Negative* consequences are not intended.
- Certain conditions are more likely to produce violations.
- Still a systems approach.

Violation-Producing Conditions

Condition	Likelihood Multiplier
Perceived low likelihood of detection	x **10**
Inconvenience	x **7**
Apparent authority or status to violate, disregard, or override advice, requests, procedures, or instructions.	x **3**
No disapproving authority figure present	x **2**
Male gender	x **1.4**

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Errors versus Violations

Errors

- Involve individual thought processes
- Unintentional
- Can be product of system design

Violations

- Involve social context (procedures, rules)
- Intentional
- Can be product of system design

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Why Care About The "WHY?"

Different Problems → Different Solutions

Planning Errors

What **may not** work:

- Punishment
- Rewards
- Reminders

Why? They believe they are acting correctly.

Planning Errors

What **may** work:

- Memory aids
- Training or education
- Creating a process

Execution Errors

What **may not** work:

- Punishment
- Rewards
- Training or education of skilled operators

Why? They intended to correctly complete the task.

Execution Errors

What **may** work:

- Prompts
- Reminders
- Memory aids

Violations

What **may not** work:

- Training and education
- Reminders
- Prompts
- Memory aids
- Punishment

Why? Violations are a product of consequences and positive consequences are strongest.

Violations

What **may** work:

- Redesign work to eliminate frustrations
- Use policies and rules only when necessary
- Provide positive feedback for desired behavior

Applied Behavior Analysis—Violations

- Application of the pure science of behavior analysis—based on operant conditioning
- Two events have significant impact on **voluntary** behavior:
  - Antecedents
  - Consequences

What is an Antecedent?

- An event that happens before a **voluntary** behavior (triggers behavior).
  - Goal setting
  - Training, instructions
  - Explanation of rules/policies

Antecedents

- Play a significant role in education and trigger voluntary behavior.
- Are not effective in improving/maintaining performance by themselves.
- Do not have the same effect as consequences in increasing/decreasing chances of voluntary behavior being repeated.

What is a Consequence?

- An event that happens after a **voluntary** behavior occurs:
  - Performance feedback
  - Rewards
  - Anything desirable to someone
  - Removal of something bad
  - Punishment

Consequences

- Thousands of studies support that providing frequent, contingent consequences results in improvement.
- Improvements occur in such areas as productivity, attendance, safety, and sales.

More on Violations . . .

- Violations are primarily the product of consequences, not antecedents.
- Violations are usually intentional.
- How do we usually try to manage violations? (by changing antecedents–training, education, rules, etc.)
- We often get poor results.

Managing Errors

- Both execution errors and planning errors are **unintentional.**
- Focusing interventions on changing antecedents is appropriate for errors, but not for violations.
- Confirms why we stress a thorough analysis of a problem before developing a solution.

Possible Solutions

- Planning Errors
  - Memory aids
  - Training/education
  - Process changes
- Execution Errors
  - Prompts
  - Reminders
  - Memory aids
- Violations
  - Redesign work
  - Use policies only when necessary
  - Provide positive feedback

"Real World" Application

- Explore our processes
  - Human tendency to jump to conclusions
- Identify where Human Factors can improve our processes
  - Reason for "the gap"
- Address barriers to implementation strategies

Take Home Ideas

- The "Big 3" provide a useful model to understanding why performance gaps exist.
  - A gap may have multiple causes
- The "Big 3" are important to consider when choosing interventions.
- Human Factors concepts supplement traditional QI activities and integrate well with other setting-specific methodologies.

Questions or Comments?

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