Certification Prep Course

Certified Professional in Patient Safety (CPPS)™

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Exam Content Areas

January 14	Culture
January 21	Leadership
January 28	Patient Safety Risks & Solutions
February 4	Systems & Risk Deep Dive
February 11	Measurement, Improvement, Review

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Systems Theory in Errors

- Most errors are not due to incompetence
- Underlying flaws in systems create an error prone environment
- Error should be viewed as a consequence of potential latent failures (procedures, process, staffing, equipment)
- Errors must be visible so they can be mitigated or prevented

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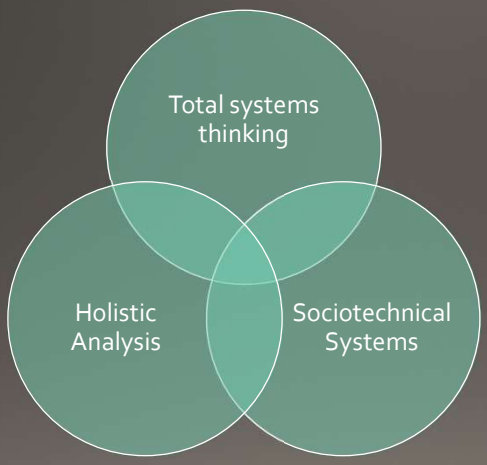
Systems Approaches



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Total Systems Safety

- A total systems approach views healthcare as an **interconnected whole** .
- **Safety must be designed into every component and every connection,** not added on at the end.
- Failures rarely come from a single cause — they emerge from the interaction of multiple system factors.

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Sociotechnical Systems

- Sociotechnical systems examine the relationship between the **social components** of care — people, teamwork, communication, culture — and the **technical components** — tools, technology, tasks, environment, and organizational structures.
- This model is central to patient safety work, including frameworks like SEIPS (Systems Engineering Initiative for Patient Safety).
- One of the key insights is that **changes in one component always affect the others**.

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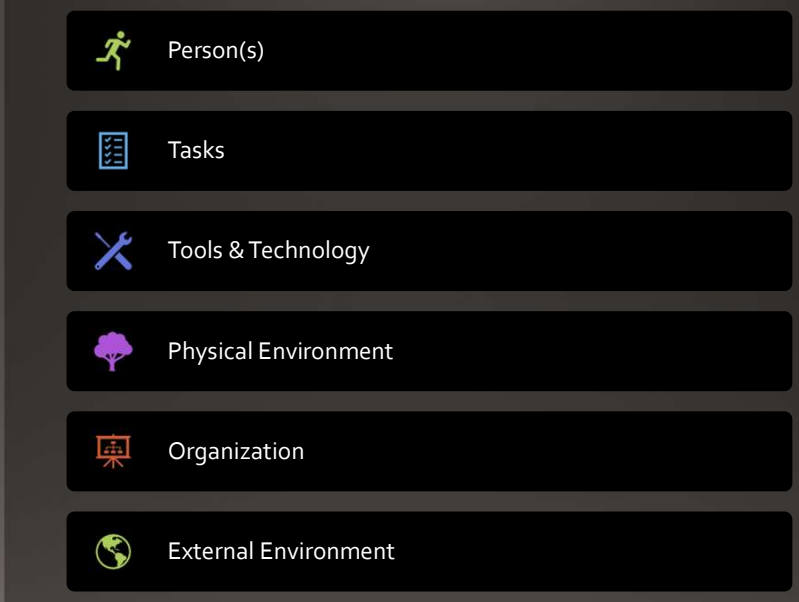
SEIPS (Systems Engineering Initiative for Patient Safety)



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SEIPS

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Holistic Analysis

- Holistic analysis means stepping back and seeing the **full picture**.
- Includes examining system complexity, workflow interactions, human factors, culture, environmental conditions, and unintended consequences.
- Draws on both **proactive** and **reactive tools.**
- Helps us understand how small issues in different parts of the system add up to create larger risks.

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HRO Overview + 5 Characteristics

- Deference to Expertise
- Reluctance to Simplify
- Sensitivity to Operations
- Commitment to Resiliency
- Preoccupation with Failure

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Deference to Expertise

CHARACTERISTICS

- Recognize that the person closest to the work often has the most accurate, relevant knowledge v
- Prioritize expertise over hierarchy
- Encourage all team members to speak up
- Create an environment where people feel safe contributing their knowledge
- Shift decision-making to those with the highest situational expertise
- Cultivate a culture of inquiry and shared learning

STRATEGIES

- Use of structured communication tools
- Huddles at the leadership, middle management, and/or frontline staff level
- Debriefs following a complex procedure or adverse event
- Leadership rounding with frontline staff to openly discuss safety concerns and leaders' commitment to mitigating concerns/risks

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Reluctance to Simplify

CHARACTERISTICS

- Avoid oversimplifying work processes or explanations
- Recognize that healthcare work is complex, dynamic, and constantly changing.
- Seek underlying causes, not surface-level explanations.
- Value standardization but still respect the complexity.

STRATEGIES

- Standard, easy to use process for reporting .
- Standard model for improvement activities.
- Development of a proactive risk assessment tool/process at least annually.
- Standard process to study the systems and human factors that contributed to an adverse event

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Sensitivity to Operations

CHARACTERISTICS

- Maintain constant awareness of real-time operational conditions.
- Develop strong "big-picture understanding"
- Understand how the current state of unit or organization affects safety.
- Monitor what is happening and recognize signals that may support or threaten safety.
- Operational awareness to anticipate problems before they lead to harm.

STRATEGIES

- Culture of safety survey at least once every 2-3 years
- Findings and mitigating actions are shared widely with staff
- Reporting of near misses is encouraged and will be non-punitive.
- Adverse events, near misses, and accidents reported easily and without burden on staff

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Commitment to Resiliency

CHARACTERISTICS

- System failures are unpredictable and inevitable, and plan accordingly.
- Assume the system is always at some risk
- Rapid assessment and rapid response
- Develop strong situation assessment skills to recognize early signs of trouble.
- Engage in cross-monitoring
- Intervene quickly to prevent harm or reduce the severity of safety events when they occur.
- Focus on adaptation and recovery

STRATEGIES

- Uses evidence based, standardized care practices,
- Uses evidence based, standardized physician order sets
- Uses standardized checklists
- Adverse events, near misses, and accidents studied using a standard approach
- Standard approach to care for and support healthcare workers
- Processes and structures to eliminate the need to rely on memory

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Preoccupation with Failure

CHARACTERISTICS

- Constantly aware that failure is possible
- Recognize that new threats can emerge at any time.
- Stay alert to small signs of potential problems, treating weak signals as valuable warnings.
- Avoid complacency
- Treat near misses as learning opportunities
- Use early indicators of trouble to drive improvement and preventative action before harm occurs.

STRATEGIES

- Sharing of errors and near miss data
- Standard process for disclosure to patients and family members when adverse events occur
- Sharing of outcomes and process data in staff areas
- Sharing of outcomes and process data in public areas
- Sharing of lessons learned and actions taken to prevent future harm after events

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Human Factors & Human Factors Engineering

- The science of ***human factors*** is the study of "the interrelationship between humans, the tools and equipment they use in the workplace, and the environment in which they work"
- Human factors ≠ human error
- ***Human factors engineering*** is the design of facilities, equipment, and processes to promote safety, while keeping human characteristics in mind.
- Good design reduces the need for workarounds by building safe systems from the start.

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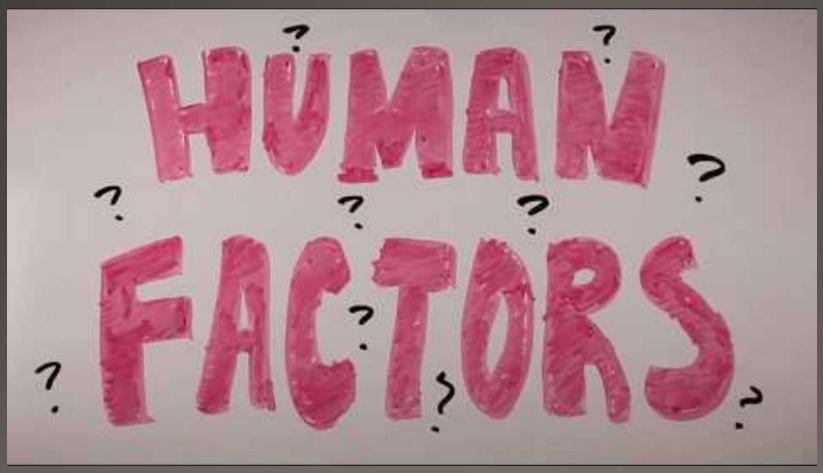
Introduction to Human Factors Engineering



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Human Factors Engineering: System Design Principles

- Understand human limitations, and design processes safety.
- Avoid reliance on memory by providing effective reminders.
- Use constraints, forcing functions, in system designs.
- Simplify and standardize procedures whenever possible.

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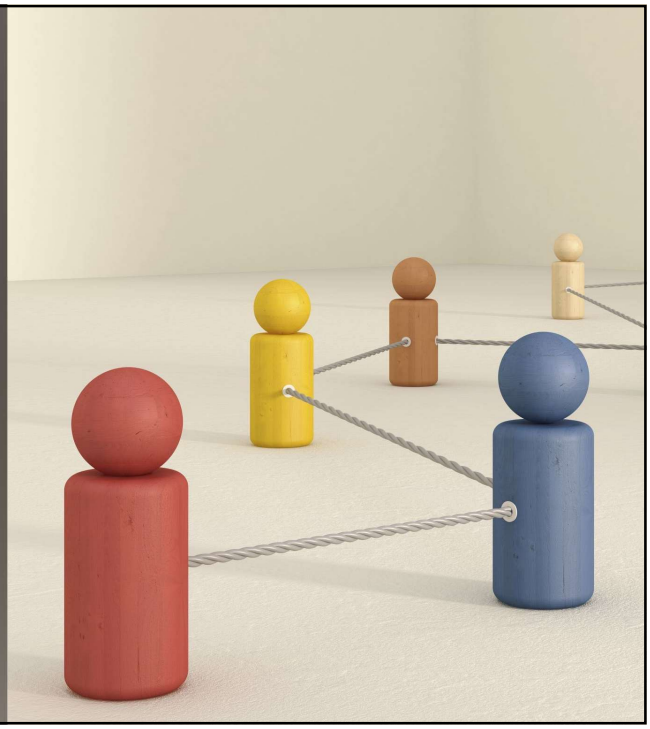
Human-Centered Design Practices

- Promote effective team functioning.
- Encourage reporting of errors and near-misses and use these reports as opportunities to prevent future errors.
- Include the patient in the design of safe processes.
- Plan for failure, and design for recovery.



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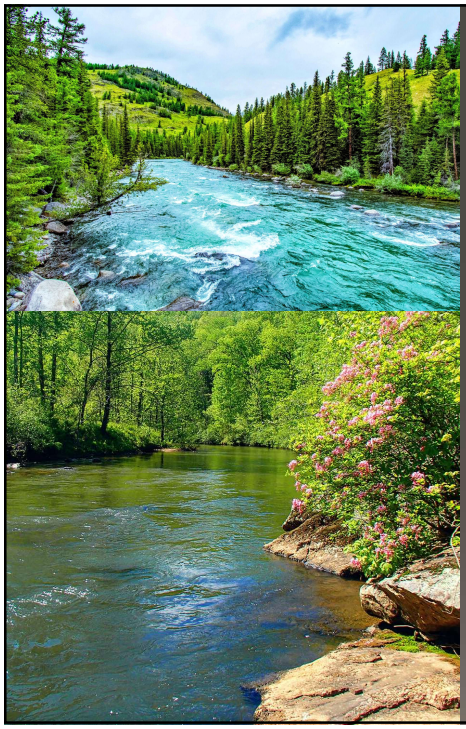

Human Factors in System Design

- Avoid reliance on memory
- Simplify and standardize
- Use forcing functions and constraints
- Design for recovery and resilience

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Impacts on Human Performance

Internal factors:

Fatigue

Stress

Anxiety

Depression

External factors:

Noise

Distractions

Interruptions

Task design

Environmental conditions

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Quickly Say The Color Not The Word

YELLOW BLUE ORANGE
BLACK RED GREEN
PURPLE YELLOW RED
ORANGE GREEN BLACK
BLUE RED PURPLE
GREEN BLUE ORANGE

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Cognitive bias

A *systematic error in thinking* that affects how people interpret information and make decisions.

Confirmation Bias

Anchoring Bias

Availability Bias

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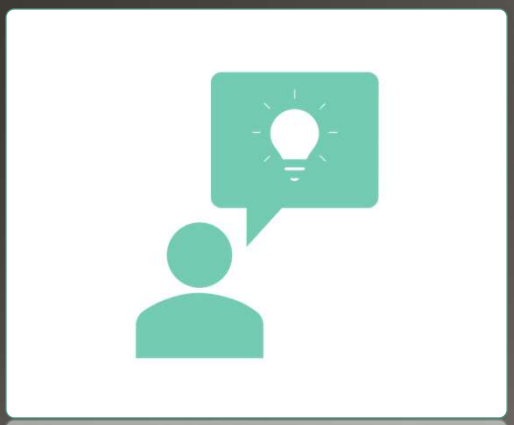
Why Bias Matters in Patient Safety



- Biases shape how we gather and interpret clinical information.
- Biases influence teamwork, communication, and decision-making.
- Under time pressure, biases increase — not decrease.
- Systems must be designed to counteract bias, not assume people can self-correct.

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Drift & Normalization of Deviance

DRIFT

- The *process* by which work slowly shifts away from the designed procedure toward whatever is easiest or fastest.
- Often subtle and unintentional.
- Drift happens because people adapt to real-world constraints (workload, missing tools, time pressure).

NORMALIZATION OF DEVIANCE

- When a deviation from best practice becomes **routine** because "nothing bad has happened yet."
- People *normalize* the workaround or unsafe shortcut.
- Over time, the system accepts the deviation as "just how we do it here."
- **Focus:** *Cultural acceptance* of unsafe practices.

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Drift

- **Why does drift occur?**
  - Design flaws
  - Initiative overload
  - Not learning from close calls
- **Sources of drift?**
  - Compare current outcomes to same time last year.
  - Flowchart
- **How to correct drift?**
  - Choose priority areas
  - Test small, rapid changes

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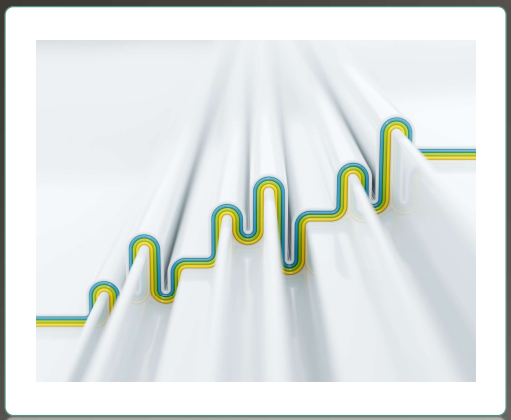
Resilience Engineering



- An approach focused on how systems **adapt, absorb disruptions, and continue functioning safely** despite variability and unexpected conditions.
- Emphasizes supporting frontline capacity, flexibility, and recovery.

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Forcing Function vs. Constraint

FORCING FUNCTION

- A design feature that **prevents incorrect action** by making the unsafe choice *impossible*.

CONSTRAINT

- A design element that **guides** users toward correct behavior by limiting options — but does *not* fully prevent errors.

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Barriers & System Constraints to Safety

- Built In Limitations
- Environmental Factors
- Workload Barriers
- Human and Financial Resources
- Supplies and Shortages
- Technological Factors
- Inequities in Care
- Care fragmentation and Transitions
- Organizational challenges

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Design Principles

- Design for human capability
- Human-technology interaction
- Error-resistant design
- Usability
- Safe user interface (UI) design
- Reducing complexity

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Workflow Design for Safety

Process flow

Efficiency

Eliminating waste

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Resources

Supplies availability

Cost/benefit analysis

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Technology, Equipment & Environment: Designing for Safe Use

Device design

Human-machine interface

Safe environment of care.

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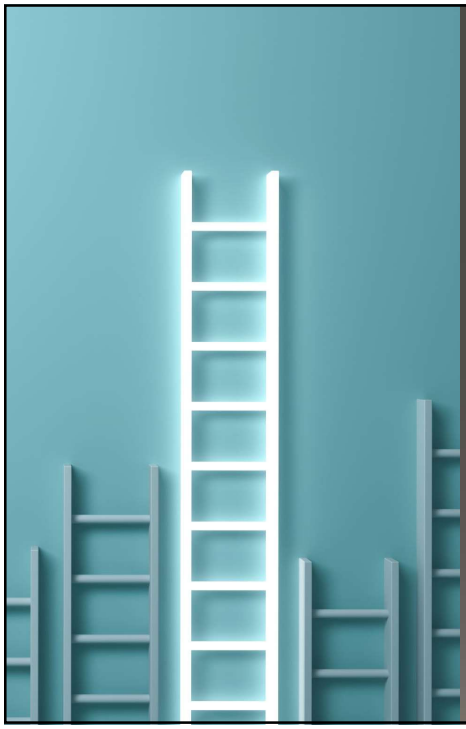

Reviewing Your System Design

Are there steps where….

- people must rely on memory to complete any portion of the step (no reference, tool, etc.)?
- a distraction or interruption during the step would likely lead to failure of the step?
- are there >10 things a person must do at this step?
- a new or untrained person is much more likely to encounter error or failure with the step?

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Process Hardwiring

- Avoid Reliance on Memory
- Make Processes Visible
- Review and Simplify Processes – Remove Waste
- Decrease Reliance on Vigilance
- Assign new processes to a role or function, not a person

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Risk Assessment

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Focus on Failure

- Supports sustainability by encouraging and rewarding the reporting of vulnerabilities and errors
- Helps organization use these reports and data to learn from practice drift, near misses and mistakes to continuously work on improvement
- Track failure rates instead of success rates

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Types of Events & Harm Scales

Types of Events	Harm scales
• Near Miss • Adverse Event • Never Event • Sentinel Event	• No Harm • Mild Harm • Moderate Harm • Severe Harm • Death

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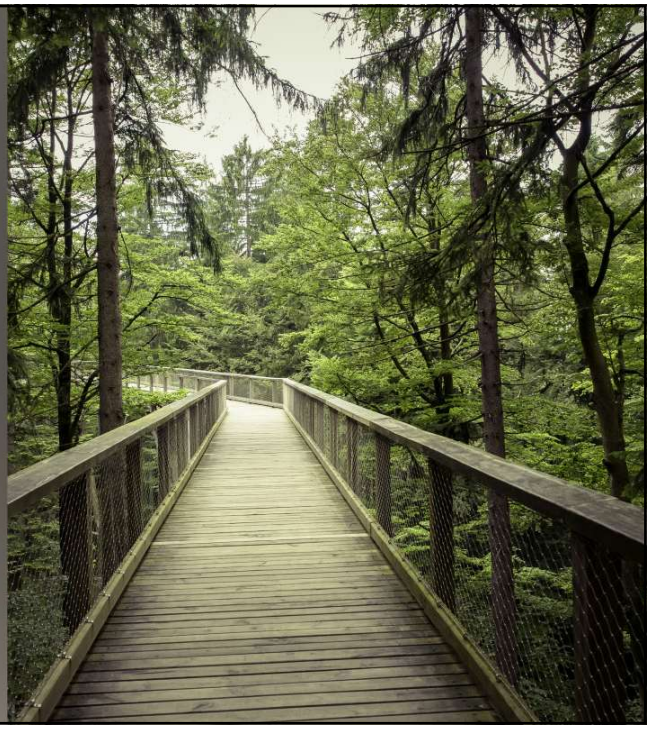
Contextual Risk Factors

- Environment
- Transitions of Care
- Setting/Location



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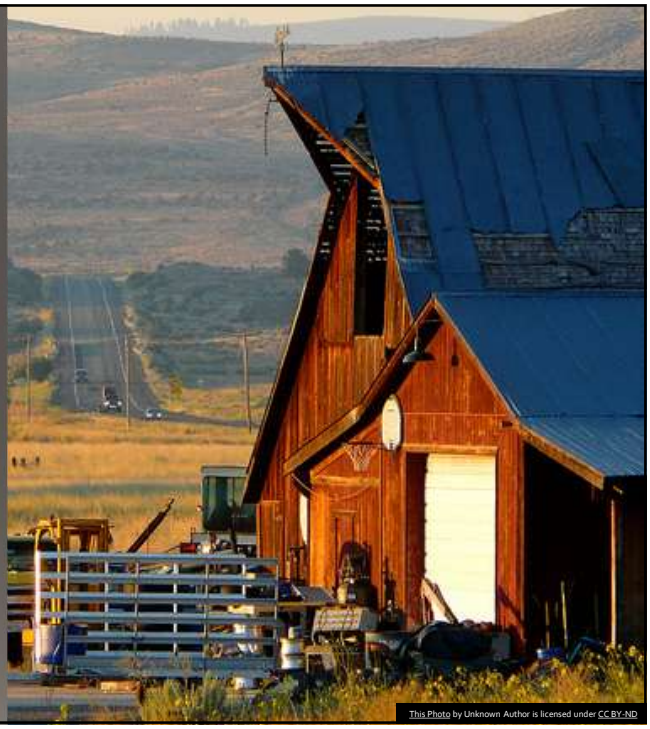
Sociodemographic & Population-Specific Assessment

- Social determinants
- Equity based risk stratification



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Safety Systems

- Event Reporting Systems
- Escalation Pathways
- Communication Structure

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Patient & Workplace Safety Responses

- Protocols and checklists
- Safety Systems
- Risk Management
- Peer/Team Support
- Communication and resolution programs

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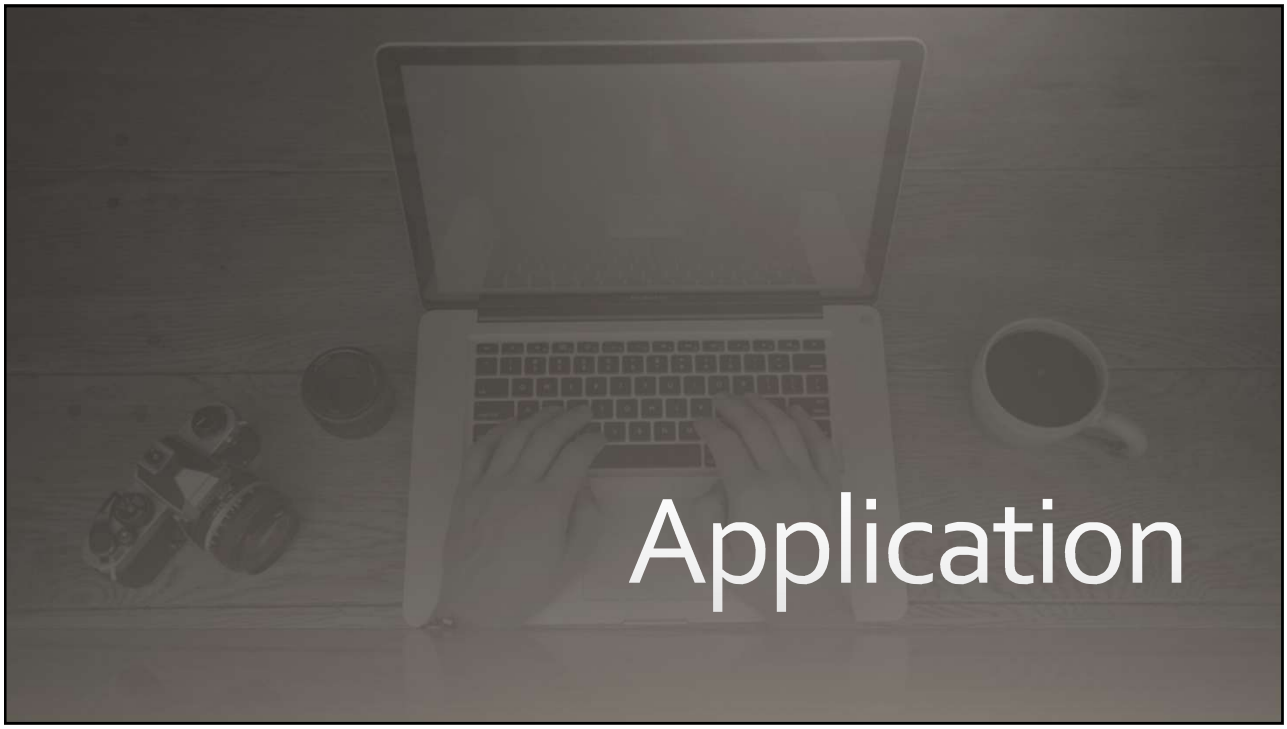

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Case Study: Lewis Blackman

https://youtu.be/WElE_hRucpohttps://youtu.be/WElE_hRucpo

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Case Study: Lewis Blackman

- What system failures contributed to the team's inability to recognize Lewis's deterioration?
- How did communication breakdowns between staff, and between staff and the family, contribute to harm?
- Where do you see failures of "deference to expertise" in this case?
- What warning signs or "weak signals" were present, and how could a system focused on early recognition have responded differently?
- What lessons does this case teach us about human factors and designing safer systems?

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Practice Questions

Barcode scanning is added to reduce specimen ID errors. This uses:

A. Education only

B. Forcing function

C. Checklist

D. Supervisor oversight

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Practice Questions

Human factors engineering aims to

A. Eliminate human error completely

B. Adjust the system to support human use

C. Train staff better

D. Conduct simulations

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Practice Questions

Viewing safety as a property of the system rather than individuals reflects:

A. Person-centered approach

B. Systems Thinking

C. Just Culture only

D. Reactive mindset

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Practice Questions

Which design principle would best reduce medication errors caused by a complex and confusing ordering interface?

A. Increase choices

B. Simplify workflow

C. Add more alerts

D. Remove automation

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Practice Questions

A rural clinic reports frequent medication mix-ups due to similar vials stored together. Which design principle applies?

Which design principle would best prevent this type of error?

A. Add warning labels

B. Increase staff training frequency

C. Implement forcing functions that physically separate or block incorrect vial selection

D. Require manual double-checks before each administration

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Wrap Up

Next Session:

Measurement, Improvement & Review
February 11

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