**Change Your Strategies - Change Your Outcomes**

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**Objectives**

- Understand how human factors engineering is a useful approach for improving patient care and safety  
- Introduce how nurses can use the principles of human factors engineering  
- Understand how Adult Learning Principles impact strategies  
- Verbalize how to improve the potential for learning retention of an audience  
- Verbalize how to develop successful strategies for impactful education

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**The Problem**

- **To Err is Human**  
  - IOM Report 2000, 44,000 to 98,000 preventable deaths per year  
  - Since then...  
    - Implementation of best practices  
    - Publically reported data  
    - Pay for performance  
    - No payment for never events  
      - However...change has been slow  
      - Essentially literature has shown that there has been *LITTLE* to *NO* change in attempts to reduce patient harm

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**The Reality Is....**

“Human beings by their very nature make mistakes; therefore, it is **unreasonable** to expect error-free performance”.

-Shappell & Wiegmann, 1997
"Most serious medical errors are committed by competent, caring people doing what other competent, caring people would do."

- Donald M. Berwick, MD, MPP

"Every system is perfectly designed to achieve exactly the results it gets."

- Donald Berwick, MD (1999)

Human Factors issues are major contributors to adverse events in healthcare

Understanding human factors and performance, it is important to understand that.....

- People do what they think is reasonable given their point of view, focus, experience, knowledge and objectives

Bottom Line: Human error cannot be eliminated

It's about:
- reducing harm
- minimizing the potential for making errors
- creating safer systems and processes of care
- sustaining improvements

Reaching the goal of reducing harm through:
- Utilizing principles of Human Factors Engineering in changing process and practice
- Maximizing the effectiveness of adult learning
- Getting your point across
Human Factors Engineering

Definition:
- The intersection of technology, policy, and work using an approach that draws from:
  - cognitive psychology
  - organizational psychology
  - human performance
  - systems engineering
  - economic theory

Put simply:
- An approach to improving safety through the design of a system or process to fit the people and their environment
- Rather than expecting people to “adapt” to a poorly designed system

Human Factors Engineering

Understanding the impact for nursing

Design the workplace, equipment, processes to best fit human capabilities and limitations
Review and simplify processes:
- Have staff participate in the design of a simpler process
  - Ask "why" you are doing something
  - Tasks need to add value
- Eliminate waste
  - Remove unnecessary steps in a process
- Organize processes around nursing work flow
  - Minimize travel distances on your unit
  - Move supplies closer

30 – 40% of work is considered waste

Standardize Processes
- Follow policies and protocols as designed
  - Established "shared mental models"
    - DATAS
    - SBAR
    - Procedure time-out

Process variation leads to inconsistent quality of care

Take advantage of habits and patterns
- Understand why an event or behavior occurred
- Use tools and techniques that make "sense to people"
- Incorporate "desired tasks" into the current work flow

Promote effective team functioning
- Rounding
- Briefs, huddles, debriefs
- Multi-disciplinary Simulation training

Automate carefully
- Utilize forced functions and constraints
- Test new technology
- Report unintended events
- Identify workarounds and bypassing safety procedures
  - Typically occur with flawed or poorly designed systems

Avoid reliance on memory
- Make things visible and clear
- Simple visual tools that enable understanding at a glance
- Have reference information readily accessible (protocols)

Short term memory is typically weak
Decrease reliance on vigilance
- Nurses work in a complex system
- Interruptions are commonplace
- In general, humans become quickly distracted
  - Avoid interruptions during high risk procedures, ie medication pass
  - Utilize checklists
  - Follow protocols
  - Implement forced functions

Dr. Peter Pronovost targeted reduction in HAI
- Implemented a simple standardized checklist for central line insertion
  - Initially found that doctors skipped at least one step a third of the time
  - Overtime compliance improved
- Outcomes associated with the checklist:
  - Prevented 43 infections
  - Prevented eight deaths
  - Saved the health care system $2 million in costs
- The Pronovost checklist was brought to hospitals in Michigan. In the first 18 months, the measure saved an estimated 1,500 lives and $175 million.

Anticipate what could go wrong
- Report a good catch
- Recognize and report unsafe situations
- Think about unsafe situations, "accidents waiting to happen", and what you can do about it

Not all strategies or interventions to prevent errors have the same reliability

Speak-Up
- Get involved in safety
- Speak-up for patient safety
- Involve patients and families in their care
- Make suggestions for improvements

Stronger actions are more likely to be successful in accomplishing the desired changes

Strong and well-crafted strategies have a clear link to the vulnerabilities and are readily understood
Strength of Strategies

Weaker Actions
- Double checks
- Warnings and labels
- New procedure, memorandum or policy
- Education & Training
- Additional study/analysis

Intermediate Actions
- Increase in staffing/decrease in workload
- Software enhancements or modifications
- Eliminate/reduce distractions
- Checklist/cognitive aid
- Eliminate look and sound alike
- Read back
- Enhanced documentation and communication
- Redundancy

Stronger Actions
- Physical plant changes (room, work area layout, people flow, tools)
- New device with usability testing before purchasing
- Engineering control or interlock (forcing functions)
- Simplify the process and remove unnecessary steps
- Standardize on equipment or process or care maps
- Tangible involvement and action by leadership in support of patient safety

So you have decided on strategies, now what...

- Understanding and applying Adult Learning Principles
  - To have the biggest impact
  - To resonate with people
  - To facilitate a change in practice

Adult Learners
- Are self-directed
- Are practical and problem solving
- Need to know why something is being learned
- Need adult-appropriate content
- Have previous experience as a resource
- Need to be able to apply learning immediately to real-life situations
- Learn best when they are actively engaged in their own learning

Motivation
- Adult learners are motivated to learn when they have a need to know
- What's in it for me?
- Why do I need this information?
- How can I make use of it in a practical, real way?
Experience

- It is important to acknowledge prior knowledge and experiences of learners

- Expand upon and refine this prior knowledge by connecting it to new learning, making the instruction relevant to important issues and tasks

Engagement

- Establish a learning climate of:
  - Mutual respect
  - Collaboration rather than competition
  - Support rather than judgment
  - Mutual trust
  - Fun

- People have hard time focusing on more than one thing at a time

- Provide learning environments that help learners concentrate on their learning tasks

- Content and formats must be interesting in order to compete with other attention-demanding thoughts and environmental intrusions

Learning and Retention

**LEARNING**

- Involves brain, nervous system & environment
- Can learn something for a few minutes and then lose it

**RETENTION**

- Process by which long term memory preserves learning so that it can locate, identify, and retrieve it in the future

- 10% of what we read
- 20% of what we hear
- 30% of what we see
- 50% of what we hear & see
- 70% of what we say
- 90% of what we say & do

- Reading
- Hearing words
- Watching images
- Watching a movie/video
- Looking at an exhibit
- Participating in a discussion
- Giving a talk
- Simulating the real experience
- Doing the real thing

After 2 weeks we tend to remember:
Forgetting

- Many variables affect the amount of what a learner will forget
  - Experience
  - Interests
  - Primacy/recency effect

The Forgetting Curve

- A good part of what a person forgets takes place within 20 minutes of the initial “learning”
- Within one hour, a person forgets nearly half of what was originally “learned”
- After 24 hours, almost 2/3 of the previously “learned” material is forgotten

Combatting the Forgetting Curve

- Realize that learners will forget
- The stronger the memory, the longer we can remember it
  - Connect learning with meaning
    - Discuss and help the learner plan for direct application of the new information
  - The more active the learning process the stronger the memory will be
    - Simulation
  - Help the learner learn in the contexts in which they will have to remember
    - Give overviews, summaries, examples, & use stories to link theory to practice
    - Scenario-based questions, realistic practice
  - Provide practice/rehearsal
    - Ensure the learners have practice retrieving information from memory in ways that are similar to the ways they will have to retrieve the information in future situations

So you have to educate, now what...

“Two’re in a hospital, Nurse Hill. If you collapse from exhaustion, the emergency room is just down the hall.”
Engage your Audience

- Why are people not engaged?
  - Email – junk vs. value
  - FedEx
  - Communicating as if the audience has an unlimited amount of time and attention

Focus on the Need of the Audience

- All about them
  - Serve your audience
  - Learners should want to post your education on “their refrigerator”
    - Pertinent practical information
  - Know your audience

  “People only understand things in terms of their experience, which means that you must get within their experience?”
  - Saul D. Alinsky

Develop a Focus

- Headlines
  - Use the words – “You” and “How To”
  - On average – 5 times as many people read the headline as the body
    - Inverted pyramid – most important at top – least important at bottom
  - Say it Simply
    - What is the one thing I need the audience to know or believe or do?
    - Think Movie Poster – less than 1 second to get your audience to look, then maybe another second to get the idea across – focused, visual, concise

Develop a Focus

- Use all Senses
  - See, hear, smell, taste, touch
- Tell a Story
  - Want to be entertained, not lectured to
  - Stories teach subtly and indirectly
  - Stories allow emotion to be expressed
  - Stories feel genuine
  - Stories draw people together
Make it Visual

- Color
  - For the USA today – the front section is always blue, sports section red, money section green, entertainment section purple
  - Has emotional links – can add impact without words
  - Utilize associated meaning with colors
    - Green – positive
    - Red – alert, alarm, negative
- Layout
  - Easy navigation
  - Grouping Information
    - Like the grocery store (fruits, vegetables)

Make it Visual

- Font
  - Use more than one *typeface*
    - But don't overdo it
  - Make Headlines and Subheads bold
  - All capital letters to call ATTENTION
- Images
  - Utilize icons that have a meaning
  - A picture is worth 1,000 words

Relate to Your Audience

- Short, Simple, and Sweet
  - After you are satisfied with the education
    - Take a break and come back to it
  - Start with the premise that the audience is smart, but don't assume they know exactly what you are talking about
  - Use an "authentic" voice – pleasing to the mind and feelings
    - Personal message or an anonymous mass mailing
    - Communicate in a language to which your audience can relate

You have the tools, now what...

What is wrong with this picture?
**Better solution:** Make "sure" to use the correct color adaptor

**BEST SOLUTION:** Purchase and have available only clear adaptors

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**Soiled-Equipment Room**

Before the intervention

After the intervention

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**Equipment Supply Room**

Before the intervention

After the intervention

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**So you have all of the information, now what...Make a Change**
Humans by their nature make mistakes
We can change the conditions under which people work
Everyone is accountable to patient safety
Think about what you can do in your area to increase the chance of doing the right thing and reducing the risk of harm
Be the dancing man – or the first follower and make a change!