Human Factors: Prevention and Improvement Strategies

The Institute for Healthcare Improvement defines **human factors** as "the study of all factors that make it easier to do work in the right way." When human factors principles are applied during a root cause analysis, they can help your team identify strong strategies to improve patient safety.

Type	Prevention Strategy	Process Improvement Considerations	Strategies
Skill-Based Human Factor Performance of familiar acts in routine environments			
1. Slip	Stop and think before acting	• Automation interruption reduction • Self-checks • Second-person checks	• Eliminate or reduce distractions • Redundancy • Double checks
2. Lapse	Check and review	• Visual cues and reminders • Checklists • Self-checks • Second-person checks • Verification points	• Eliminate look-alikes and sound-alikes • Checklist or cognitive aid • Software enhancements or modifications
3. Fumble	Improve component design	• Component design	• Architectural or physical plant changes • Forcing functions (engineering controls) • Standardizing equipment or processes
Rule-Based Human Factor Performance of acts or tasks that require application of rules accumulated through experience and training			
1. Incorrect rule	Educate	• Procedure correction • Procedure standardization • Procedure detail and clarity	• Forcing functions (engineering controls) • Standardizing equipment or processes
2. Mis-application of a rule	Critical thinking	• Procedure detail and clarity • Educate or train on rule application	• Checklist or cognitive aid • Software enhancements or modifications • Simulation

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3. Non-compliance with a rule	Reduce burden	• Task simplification • Intuitive work environment • Component design • Task location • Distinguish changes or differences • Job aids at the work site	• Simplify processes and remove unnecessary steps • Architectural or physical plant changes • Increase staffing or decrease workload
Knowledge-Based Human Factor Performance of acts related to new or unfamiliar situations that require problem solving or when a rule does not exist or is unknown to the performer			
1. Operating outside of expertise	Stop and find an expert	• Educate or train on rules and rule application • Improve teamwork and communication • Progressive discipline if appropriate (Just Culture Algorithm)	• Enhanced documentation and communication • Give or request a read back • Independent verification • Usability testing for new devices
2. No rule	Establish rule	• Evidence-based best practice	• Eliminate look-alikes and sound-alikes • Checklist or cognitive aid • Software enhancements or modifications

Document adapted from the skills, rules, and knowledge classification scheme, developed by Jens Rasmussen and the Generic Error Modelling System, developed by James Reason.