Open School

Exercise: Human Factors

(http://www.ihi.org/education/IHIOpenSchool/resources/Pages/Activities/ExerciseHumanFactors.aspx)

Frank Federico, *Content Director, Institute for Healthcare Improvement*

Learning Objectives

At the end of this activity, you will be able to:

- Identify human factors in everyday settings.

- Discuss how such human factors contribute to errors.

- Develop strategies to minimize or prevent error in a variety of settings.

Description

Maybe the floor's wet and slippery. Maybe the cash register is confusingly labeled. Maybe medications are hard to tell apart. Everywhere you look — both in health care and in ordinary retail settings — you can spot circumstances that make it easy for regular people to make mistakes. In this exercise, you'll go out and analyze everyday situations to determine what human factors issues are at play. You'll also decide what interventions should be introduced to minimize the opportunities for mistakes.

Related IHI Open School Online Courses:

- [PS 102: Human Factors and Safety](#)
- [PS 101: Fundamentals of Patient Safety](#)
- [PS 100: Introduction to Patient Safety](#)

Key Topics

Environmental design, redesign processes and systems, reliable processes, patient safety, checklists - safety

---

Have you ever driven home when you were tired, and, upon arriving safely in the driveway, realized you couldn't remember making a specific turn? The human brain works in mysterious ways at times. The brain has a protective mechanism, an "autopilot" function that protects you from your own

fatigue by ensuring you do something the way you usually do it. Of course, this can work against us. Sometimes the autopilot kicks in when we don't want it to, steering us in a different direction than we intended to go.

When our actions are not carried out as intended, it may be related to human factors –how our human brain processes information and functions when affected by external and internal conditions. When we're not functioning at our best physically or emotionally – and when we're in an environment that affects our thinking and decisionmaking processes – errors can result. Human factors that contribute to an error can be addressed by using strategies to minimize or prevent risk.

In this exercise, you are asked to complete an analysis of day‐to‐day situations to determine if human factors issues exist. You should consider the interventions that have been or should be introduced to minimize the opportunity for errors. Here are some examples of such interventions:

- Before dispensing your cash, an ATM machine beeps and spits out your card so you won't leave it behind.
- You can't put your car in gear unless your foot is on the brake – a design feature that prevents you from shooting forward accidentally.

Next, you should visit a health care setting looking for human factors issues and remedies. One example:

- Many medications have similar names or look alike, and sometimes patients get the wrong doses as a result. To remedy this problem, some hospitals bar‐code medications and train pharmacists and nurses to scan them before they're dispensed and administered.

Through this exercise, you will gain an awareness of human factors issues that many of us face daily. Raising awareness of these issues and sharing what we learn with our peers will help us develop safer systems.

Instructions and Report-Out

Visit any of the following:

- Restaurant
- Coffee shop
- Transportation system
- Retail store
- Hotel
- Major intersection
- Library
- Health care setting

Take note – can you spot human factors issues that create opportunities for errors?

- What processes rely on memory?

- What tools can be used to eliminate the need to rely on memory?

- How well would the processes you observe work if the individual involved were tired? Distracted?

- What types of errors might occur? How would someone know if these error(s) had occurred?

- Are there steps that can be skipped or bypassed? Is this a good or bad design? Why?

- Would a new person be likely to make more, less or the same number of errors as an experienced person? Why?

- Are there systems in place—or that should be in place—to minimize the opportunities for error?

Group Discussion

Discuss the human factors issues identified and the types of processes and tools put in place to decrease the risk of error (e.g., barcode scanning). Discuss the following:

- What human factors issues did you identify?

- Are processes/tools in place to reduce the opportunities for error?

- How do these reduce the risk of error?

- What types of errors could occur with these processes and tools?

If you did not observe human factors in a health care setting, consider the following questions:

- What are some examples in health care where similar processes and tools might also be helpful? Why?

- What are some examples in health care where these processes and tools would not be helpful? Why?