

## Contributors to human error and how to lower rates of committing error

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*Editor's note: The following is the fourth in a series about human error and its role in medical error. This month, Latino discusses human error and how it is viewed by those involved, those on the outside, and those investigating the error. Go to [www.proactforhealthcare.com](http://www.proactforhealthcare.com) to visit the Reliability Center Web site.*

What does it take to complete a task error-free? This seems like an easy question to answer, yet its roots can be as complex as human beings themselves. To accomplish error-free work, staff members must possess three components: qualifications, energy, and effort.

There is no revelation in these components. However, we seem to have a difficult time meeting all of the requirements at the same time.

When looking at workers' qualifications to work error-free, ask: "Do they possess the ability to work properly?" "Do they have the proper motivation to do the work?" and "Do they have the proper stimulation?" Basically, do they have the fundamental knowledge to work error-free?

If they possess the fundamental qualifications to work error-free, do they have the necessary energy level to do so? Proper energy levels come from our physical, emotional, and cognitive states. Are personnel working two jobs and coming into work without adequate sleep? Are they going through a divorce and coming to work emotionally drained? Are they fatigued and not able to think logically while at work? These are all factors in determining our energy levels.

Finally, if we have proper energy levels and qualifications, will we put forth the effort required to complete our work error-free? Similar to providing proper energy levels, we need to exert the proper physical, emotional, and cognitive effort to complete our tasks error-free. If

a nurse in a hospital stands 5 ft 1 inch, she is likely to have a difficult time transporting a patient who is 6 ft 5 inches and weighs 300 lb.

Emotional effort involves the will to want to do the task error-free. When we are emotionally drained at work, it dulls our senses to our environment. We walk around with "invisible blinders" on and cannot see what is happening around us.

Cognitive effort requires the will to apply knowledge and skill in the appropriate situation and at the appropriate time.

When we have all of these fundamentals in place, we will certainly reduce the risk of human error in our working environment.

### Human performance

Eighty percent of critical or serious events are due to human performance. Of those, 30% are due to individual weaknesses or errors, and the rest are due to organizational systems deficiencies.

As we continue to drill down and understand the major contributors to human error, we will start to see a common denominator—human decision-making. The

### The top three contributors to human error

#### 1. Ineffective supervision:

- Supervisor's role in lowering human error
- In-field supervision

#### 2. Overconfidence:

- Consequences
- Symptoms

#### 3. Distractive environment:

- Alertness management missing: fatigue, distraction, schedule
- No complacency mitigation program: complacency factors

human decision-making process is what triggers conditions in our environment to be a catalyst for causing a physical chain reaction of subsequent events that will result in undesirable outcomes.

This is a complex process. A simple decision involves:

- Information input from external sources
- The value system of the decision-maker
- The physical properties of the decision-maker (physical factors affecting human performance)
- The physiological properties of the decision-maker (fatigue, loss of sleep, drugs, etc.)
- The psychological properties of the decision-maker (frustration, fear, anger, etc.)

When evaluating decisions in hindsight, it is imperative that all of these factors be taken into consideration.

### The PDC Model

The PDC Model stands for prevention of events, detection of precursors to events, and correction of the causes of events.

Prevention would be the most desirable strategy as we seek to be proactive in reducing the risk of human error in the workplace.

Prevention strategies include:

- Establishing a mission, goals, and priorities
- Training workers, supervisors, and managers about comprehensive error avoidance/prevention techniques
- Creating an accountability system to hold everyone responsible for error-rate reduction

The detection strategy is next and includes:

- Conducting periodic error analyses/assessments to identify event “drivers” existing in the organization
- Utilizing “leading,” “real-time,” and “lagging” performance indicators
- Optimizing surveillance and oversight programs

Detection is about assessing your current state and determining where you have opportunities for improvement where human error is concerned. This is

still a proactive strategy because it is striving to identify areas at elevated risk for human error before that risk materializes.

Correction is the last resort. At this stage, we have experienced the undesirable outcome and are in a reactive mode. We are now doing damage control and must investigate the lessons to be learned from the event.

The correction strategy includes:

- Implementing a technology/knowledge-based root cause analysis program for significant events
- Providing technology/knowledge-based human error and organizational/programmatic investigation training for line management and event investigators

Noted human error researcher James Reason coined the term “Swiss cheese model” to reflect this system of defense mechanisms expressed as slices of Swiss cheese. This expression helps us understand that each defense mechanism or barrier that we implement to combat the risk of human error is not fail-safe.

There are holes of varying size and magnitude in each of our defense mechanisms. On any given day, the holes can line up and cause a major event. ■

### Resources

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