

## The effects of distractions on human performance

*Editor's note: The following is part of a series about human error and its role in medical error. This month, author **Robert J. Latino**, executive vice president of the Reliability Center, Inc., in Hopewell, VA, discusses the effect of distractions in the work force, as well as sleep-related problems and how to manage them.*

We all work on a daily basis in environments prone to distractions. Some environments are more distracting than others, but, we can relate to the effect that distractions have on our performance.

The following is a list of common distractions:

- Doing more than one task simultaneously
- Constant interruptions by coworkers and phones
- High frequency of interruptions (one interruption every five to 15 minutes)
- High noise levels in the working environment

These distractions usually affect human performance by causing us to omit procedural steps, forget to complete tasks, and take shortcuts that may not be for the better.

We can all relate to the above distractions, but what is their quantitative effect on our performance?

- Forgetting the as-left conditions: 45%
- Forgetting to return to the original task: 25%
- Original task out of control during distraction: 17%
- Not knowing changes after returning to original task: 13%

We forget where we were in the task at hand nearly half the time after becoming distracted. This causes us to have to refresh our memories to get back to where we were. Think about how much time that takes and multiply it by the number of times it happens per day. The wasted time due to distractions is astounding, not to mention the added risk involved by possibly missing, forgetting, or purposely omitting steps in our work processes.

### Learn about sleep debt

How do our sleep/wake cycles play into our alertness and cognitive performance? To answer this, we must learn about sleep debt. Sleep debt is the difference between the amount of sleep one needs and the amount one receives. Every hour of sleep loss is registered and recorded by the brain as debt and becomes a cumulative process, disrupting a person's steady-state equilibrium.

Dream sleep, or rapid eye movement (REM) sleep, usually lasts a total of 1.5 to two hours each night spread over several periods. REM sleep is generally considered to be related to the quality of short-term and long-term memory. REM sleep deprivation in humans sometimes produces irritability and an inability to concentrate.

Circadian rhythms directly affect our subjective alertness. A circadian rhythm is roughly a 24-hour cycle in the physiological processes of humans, plants, and animals. It partly depends on external cues such as sunlight and temperature. A mechanism for adjustment also exists; plants and animals eventually adjust their internal clock to a new pattern.

The circadian rhythm cycle is relevant because it identifies fatigue points in our workday cycles. Around 4 a.m. and 4 p.m. are our high fatigue points. Knowing this, we can be proactive about assigning highly critical tasks to people who are on this cycle (not everyone will be on the same cycle). As we described earlier, we are more prone to human error when highly fatigued.

What about the effect on performance that staff members who have been out of work (for whatever reason) for a period of time have? We have all heard the rumors that we should not buy a car built on Monday, but is there any merit to that paradigm?

Human performance is lowest during the first workday after days off. This would include those that are returning from vacation, returning to a busy work schedule after four days off, and returning to a new shift schedule (e.g., day shift to night shift or vice versa). So, in our car

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scenario, since there are different shifts and varying vacation schedules and shift changes, it is unlikely that we can get a lemon for that reason. Also, since one person does not make the car, it is unlikely that all those involved in making a single vehicle would be on the same cycle. What is the safest day then in a work cycle? That depends on the definition of a work cycle, and we know the answer would vary because of the number of schedules that people work. This scenario can easily be replicated in the healthcare setting due to the large number of different working shifts.

### Manage fatigue

Many of the following recommendations are used by various regulatory agencies to protect workers from the effects of fatigue:

- Plan eight hours of sleep into every day.
- Sleep in dark, quiet environments to ensure that you get deep, uninterrupted sleep.
- Incorporate 30-minute to three-hour naps in your workday, depending on your schedule. In healthcare, it is not uncommon for residents and interns to work 30-plus hour rotations, so restful naps are needed.
- Compensate for any sleep lost due to long workdays.

The U.S. Bureau of Labor states that by 2010, approximately 50% of the work force will be 55–64 years old. As the work force ages, it will become more susceptible to the effects of fatigue.

### Be proactive in distractive environments

Because we have now been educated in certain conditions that make our work environments ripe for human error, we as supervisors can identify whether they exist in our workplace. When possible, schedule complex tasks during times of high alertness for the individual assigned to the task.

As supervisors, we can also be sure to assign the correct employees to the task for which they are best suited. This includes ensuring that they have the requisite knowledge and skills to do the job properly and successfully. Studies show that effective task management can reduce the risk of human error by 81%. ■

*Editor's note: Visit the Reliability Center's Web site at [www.proactforhealthcare.com](http://www.proactforhealthcare.com).*

### References and acknowledgments

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### Anagram answers: (from p. 11)

1. Timeout
2. Site marking
3. Site verification
4. Preoperative
5. Patient involvement
6. Surgical procedure
7. Correct person identification
8. Availability of implants
9. Active communication
10. Final verification