Insights into Human Nature Can Improve Our Safety Systems

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Medication Errors

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It is widely recognized that system failures cause errors. Well-designed systems that employ technology, where appropriate and when used correctly, offer the best chance of preventing errors. But has our growing attention to systems and technology caused us to overlook interventions that can improve our mental performance? While we are beginning to better understand health care systems, have we devoted equal attention to understanding how the human mind operates and what conditions adversely affect its function? Have we done enough to identify how stress-producing aspects of our home and work environments can affect our job performance and what steps can be taken to help people cope with them? Also, do we consider how personal beliefs, values, and attitudes influence job performance?

The late Anthony Grasha, PhD, professor of psychology at the University of Cincinnati, studied mental performance findings along with specific interventions: our workplaces. Here’s a sampling of his research suggests practical methods of preventing errors and improving safety in our workplaces. Here’s a sampling of his findings along with specific interventions:

1. Periodic self-monitoring. Catching our own mistakes helps to improve performance by learning from our own mistakes and identifying error-prone time periods. However, when pharmacists periodically monitored themselves to detect errors (compared with those who did not monitor themselves), the number of errors was reduced by 21%. In addition, when completed prescriptions (in the “will call” area) were rechecked, 95% of previously overlooked errors were identified.

2. Light and magnification. The actual, as well as the perceived, level of pharmacy lighting can affect job performance. Pharmacists who rated the level of lighting as adequate detected 38% more mistakes while dispensing drugs than those who perceived the lighting as inadequate. Further, the study pharmacists complained that pharmacy lighting did not appear to be as good later on during a shift. This could have been the result of eye fatigue, which occurs over the span of a shift as a person’s eyes adapt to background lighting. When supplied with high-intensity task lights for reading prescriptions, pharmacists who used them “as needed” reduced the number of product verification errors by 10.7%, compared with the control group’s accuracy rate without the lights. A version that combined the light with a magnification lens reduced the same type of errors by 22%.

3. Copyholders. Errors were reduced by 24% after a device to hold prescriptions was installed on the computer monitor. Information that was provided at a comfortable visual angle, closer to eye level, resulted in greater attention to details.

4. Alerts. Posting alerts in strategic locations for 30 error-prone products reduced mistakes with these products by 71% and decreased potentially significant occurrences by 45%.

5. Exaggerated product labels. After certain medication stock bottles were affixed with product sleeves that used exaggerated, unconventional fonts to “better-read” sections of drug names or doses, the number of errors with these products was reduced by 27% to 35%.

6. Cognitive style and coping skills. Pharmacists who were able to attend to details and focus their attention made fewer errors. Approximately 12% of pharmacists had difficulty with details and concentration, and these pharmacists produced 33% of all the mistakes observed. High-intensity lights, copyholders, and exaggerated product labels were especially helpful for such individuals. Pharmacists with adequate coping skills and training in stress management also made fewer errors.

7. Workload. Pharmacists were more vulnerable to mistakes under low workload conditions (15 or fewer prescriptions per hour) and during shifts from high to low workloads. Boredom, a reduced ability to focus on tasks, and disruptions in personal work rhythms made it difficult to accomplish one’s duties. When surveyed, pharmacists with both low and high workloads were equally concerned about their job performance.

8. Breaks. Pharmacists who perceived that break times were adequate and available made fewer errors and detected more errors during self-monitoring.

9. Supervision. Pharmacists who made fewer errors had supervisors who fostered appropriate autonomy and who were perceived as being democratic, facilitative, and helpful in setting goals. Pharmacists who made more errors had supervisors who were perceived as being overly autocratic and punitive. Having a supportive supervisor lowered stress levels and allowed staff members to focus clearly on the tasks at hand.

10. Performance feedback and goal setting. Midway through the project, half of the pharmacists were asked to calculate the percentage of errors they observed during self-monitoring. On the basis of a chart of the average percentage of errors made by pharmacists in the study, they were then asked to set a performance goal for the remainder of the study. Pharmacists who set a goal to maintain their current level of performance increased error detection by 22%,
compared with the control group of pharmacists, who were not given feedback. Pharmacists who established goals to improve their performance increased their ability to detect and prevent errors by 103%. With a heightened awareness of their performance, they became more adept at noticing problems. Establishing personal improvement goals, combined with receiving constructive feedback about errors, proved beneficial. Pharmacists ranked feedback and goal setting among the most effective strategies investigated by the researchers.

These interventions are not uniquely suited to pharmacists. Mental performance and psychosocial factors have similar effects on people in all environments. Although differences in specific facilities, processes, and temperament can influence the success of these interventions, they are widely applicable.

According to Grasha’s research, an ongoing understanding of how people react to a variety of factors and integrate them into their mental structures may enable us to find new ways to enhance workflow, physical workspaces, sensory input, and memory. We should also be able to identify new applications for technology as well as improve training for supervision, conflict resolution, and stress management. In the long run, such interventions will lead to increased professional satisfaction, workforce retention, enhanced efficiency and productivity, and improved patient care and safety.

REFERENCES

*The reports described in this column were received through the USP–ISMP Medication Errors Reporting Program (MERP). Errors, close calls, or hazardous conditions may be reported on the ISMP (www.ismp.org) or the USP (www.usp.org) Web site or communicated directly to ISMP by calling 1-800-FAIL SAFE or via e-mail at ismpinfo@ismp.org.*