

## Hospital workers wash hands less frequently toward end of shift, study finds

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Hospital workers who deal directly with patients wash their hands less frequently as their workday progresses, probably because the demands of the job deplete the mental reserves they need to follow rules, according to new research published by the American Psychological Association.

Researchers led by Hengchen Dai, a PhD candidate at the University of Pennsylvania, looked at three years of hand-washing data from 4,157 caregivers in 35 U.S. hospitals. They found that "hand-washing compliance rates" dropped by an average of 8.7 percentage points from the beginning to the end of a typical 12-hour shift. The decline in compliance was magnified by increased work intensity.

"Just as the repeated exercise of muscles leads to physical fatigue, repeated use of executive resources (cognitive resources that allow people to control their behaviors, desires and emotions) produces a decline in an individual's self-regulatory capacity," the researchers wrote.

More time off between shifts appeared to restore workers' executive resources - they followed hand-washing protocol more carefully after longer breaks.

"Demanding jobs have the potential to energize employees, but the pressure may make them focus more on maintaining performance on their primary tasks (e.g., patient assessment, medication distribution), particularly when they are fatigued," Dai said. "For [hospital](#) caregivers,

hand-washing may be viewed as a lower-priority task and thus it appears compliance with hand hygiene guidelines suffers as the workday progresses."

Hand-washing in hospitals has been demonstrated to reduce infections and save money. In a 2000 study of Swiss hospitals, researchers found that a 1 percentage point increase in hand-washing compliance reduced the number of infections by 3.9 per 1,000 patients. Another study, in 2009, estimated that the cost per patient with a health care-acquired infection is \$20,549. Using these data, Dai and her colleagues extrapolated their findings to all 5,723 registered hospitals in the United States and estimated that there would be an additional 600,000 infections per year at a cost of approximately \$12.5 billion annually.

"We believe ours is the first study investigating whether accumulated work demands can affect rule compliance over the course of a single workday, as opposed to over weeks, months or years," said Katherine L. Milkman, PhD, another member of the research team. "We think this line of research could be applied to other types of workplace compliance, such as ethics standards in banking, safe driving behaviors in trucking and safety standards in manufacturing."

The researchers used data from Proventix, a company that focuses on helping [health care providers](#) improve their [hand hygiene](#). Proventix uses [radio frequency identification](#) (RFID) technology to monitor whether [health care workers](#) are washing their hands as recommended - i.e., within a specified number of seconds of entering and leaving a patient's room. Communication units attached to hand soap and sanitizer dispensers read the workers' RFID badges.

Sixty-five percent of the caregivers in the sample were nurses. The remainder were patient care technicians (12 percent), therapists (7 percent), physicians (4 percent) and a handful of other types of

employees.

**More information:** "The Impact of Time at Work and Time Off From Work on Rule Compliance: The Case of Hand Hygiene in Health Care," Hengchen Dai, PhD candidate, and Katherine L. Milkman, PhD, The Wharton School, University of Pennsylvania; David A. Hofmann, PhD, and Bradley R. Staats, PhD, University of North Carolina Kenan-Flagler Business School; online Nov. 3, 2014, *Journal of Applied Psychology*.

Provided by American Psychological Association

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