

# Medication errors prevented with optimized lighting

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Western societies currently face the challenge of maintaining the high standard of health care (both affordable and available), with a growing shortage of care professionals. A well-designed hospital environment can

positively contribute to the performance of care professionals. Healthy and engaged nurses are key in maintaining good health care. Mariëlle Aarts found that optimizing the lighting is a simple, non-invasive means to support the work and health of nurses, preventing medication errors. She also established that light can reduce problems like sleepiness associated to night shift work. Aarts will defend her thesis on this work tomorrow at Eindhoven University of Technology.

A healthy, fit, satisfied, and engaged workforce is essential to make health care affordable and available. Light is known to impact people through the [visual system](#). Recently, researchers have discovered that [light](#) also induces responses unrelated to vision, the so-called non-image-forming effects. These comprise the impact that light has on the biological clock.

## **Light prevents medication errors**

The process of medication handling by preparing, dispensing and monitoring is a main task of nurses. Aarts demonstrated that more light, as recommended in the guidelines, can reduce reading errors, e.g., misreading text on medication labels. This impact of light was minor for people with perfect vision. However, people with farsightedness, a condition that starts roughly at the age of 35 years, did encounter problems.

With farsightedness, smaller details become more difficult to distinguish, as typically observed in small print on medication labels. Visual aid devices like glasses or [contact lenses](#) overcome this problem, but often, the use of such devices is postponed. For this group, the readability of small printed medication labels showed improvement under optimized light; specifically, when [visual acuity](#) was sufficient but not perfect, more light helped nurses to correctly read the labels.

## Sleep quality deteriorates when using light glasses

Working forward rotating shifts is common practice for nurses. They have to go against nature by being awake during the night and sleeping during the day. One of the consequences is that nurses tend to miss out on sleep, which negatively impacts their health. Nurses are also less alert during nightly working hours, potentially impacting patient safety. Several routines, like more light via a lightbox during the night, are recommended, but the researchers found that this was rarely applied. A practical reason was that it was difficult to fit in the working schedule.

Therefore, Aarts examined whether light glasses could be a useful and practical method to reduce sleepiness during night shifts. She found that sleepiness did not increase during the night shift. When wearing light glasses, sleepiness on the commute home decreased after the first night shift. Sleep quality, on the other hand, decreased after the first night shift. Notably, the majority of the nurses wanted to wear the light glasses even though the effects were minor.

Provided by Eindhoven University of Technology

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