

User-friendly medication packaging design can boost patient safety

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Medication errors are a common patient safety issue in the United States, with 1.5 million adverse drug events reported annually, often occurring in a home or other outpatient setting. Past research has indicated that inadequate or confusing labeling on packages of over-the-counter (OTC) medications is a likely contributor to many unintentional overdoses, particularly among the elderly population. "Package Design Affects Accuracy Recognition for Medications," published in the December issue of *Human Factors*, suggests that a simple redesign of medication packages can lead to a decrease in the frequency of patient errors and accidental overdoses.

Tor Endestad, an associate professor in the Department of Psychology at the University of Oslo, reported, "Although [human factors](#) guidelines for the design of medication packages exist, they do not ensure that patients are receiving consistent information about the medicine they take. We were surprised by the variation and inconsistency of the [drug information](#) presented on medication packages and decided to manipulate design elements to evaluate whether that could reduce the risk of labeling-related user errors."

Endestad, along with coauthors Laura Wortinger, Steinar Madsen, and Sigurd Hortemo, evaluated user responses to the original packages of generic OTC medication compared with packages that they redesigned in a number of ways. The redesigned packages featured a reduction in the size of the brand name, varied placement of the [active ingredient](#) and dosage information, and several different color schemes. The

researchers presented 84 adults ages 18 to 86 with sets of computer images showing different packages of the same medications in the original packaging. The participants were then asked to indicate - within three seconds - whether the medications contained the same active ingredient. Endestad et al. repeated the process using images of the redesigned packages.

Error rates were high with the original packaging but decreased for the redesigned packages: from 41% to 8% among younger users and, significantly, from 68% to 16% among elderly users. The authors found that minor changes such as highlighting the drug information on a high-contrast background color and positioning it in a dedicated place on the package helped users identify the medications faster and more accurately.

"Our study found an enormous potential for patients to believe that they are taking two different medications, when in fact they're taking a double dose of the same one," adds Endestad. "A simple redesign of medication package labels to highlight the name and dosage of the active ingredient on a high-contrast background reduces the probability of user errors."

More information: T. Endestad et al, Package Design Affects Accuracy Recognition for Medications, *Human Factors: The Journal of the Human Factors and Ergonomics Society* (2016). [DOI: 10.1177/0018720816664824](https://doi.org/10.1177/0018720816664824)

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