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An Improvement to Medication Safety—Or a Weakness?

To the Editor:

Drug administration errors continue to occur frequently in the operating room,[1] and yet the safest way to administer medications in the operating room continues to be discussed. For instance, opinions vary on whether it is safer to use plain white labels *versus* color-coded labels.[2] The use of prefilled syringes replaces the traditional error-prone process of placing several drugs into different syringes with a streamlined process whereby a manufacturer prepares numerous syringes of the same drug, while also incorporating standardized labeling.[3] Another practice is the use of label printers that legibly print the name and dose of the drug with a corresponding barcode that can then be scanned by a barcode reader before administration. Label printers may also function as a "two-person" check for the correct drug selection by audibly announcing the name of the drug.[4]

Our institution, which uses label printers and barcode scanners in the operating room, recently had an event in which prefilled phenylephrine syringes were mistakenly substituted with a higher concentration (40 *vs.* 80 mcg/ml). Root cause analysis determined that the error was predicated on the purchasing technician team ordering the incorrect concentration and additionally "teaching" the automated medication dispensing system that the higher-concentration phenylephrine syringes were actually the lower concentration. Remarkably, it took 3 weeks before an anesthesia provider noticed and reported the concentration substitution. Psychologic factors including in-filling (when we read part of a word and our brain fills in the rest) and confirmation bias (when the brain interprets information that confirms its expectations) were likely responsible.[2,5,6] In other words, multiple human errors subverted the safety technologies we had put in place. As a result of our event, our department now advocates that prefilled syringes be scanned by the label printer to obtain a visual and auditory confirmation of the prefilled drug name and concentration.

Systems approaches such as the medication administration practices described focus on building defenses to prevent human errors.[7] Technology is intended to make our practice safer, but overreliance on technology comes with its own risks, especially when the accuracy of technology is highly dependent on inputs provided by error-prone humans. At the end of the day, there is no substitution for reading and rereading the label.[8]

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Competing Interests

The authors declare no competing interests.

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