Perception of drug-name legibility by pharmacists and pharmacy technicians

Illegible prescriptions require pharmacists to clarify more than 150 million prescriptions annually and are a continuing source of potential error. Computerized prescriber order entry (CPOE) holds promise in eliminating illegible prescriptions. However, only 21–32% of U.S. office practices are projected to implement CPOE by 2010.

We sought to determine which of three ways of writing medication names is most legible—freestyle cursive script, freestyle printed, or block lettered using letter guides (small boxes printed on the prescription form to encourage writing one letter per box). This study was part of a larger project that collected carbon copies of prescriptions handwritten by 100 providers from four states. The first 100 prescriptions by each provider used typical paper forms. The second 100 prescriptions used modified forms that encouraged block lettering of medication names by providing letter guides.

We randomly selected 10 pairs of prescriptions in which each part of the pair was written by the same prescriber for the same medication; 1 was written freestyle and the other block lettered using letter guides. Five of the freestyle names were in cursive and five were printed. The medication names were photocopied from the prescriptions (figure) and appeared 1 per page in random order.

A convenience sample of pharmacists and pharmacy technicians indicated how legible they thought each medication name was to them, and would be to a patient, on an 11-point scale ranging from 0 (totally illegible) to 10 (totally legible). The participants were not told that the 20 medication names were paired by provider.

The primary hypothesis was that block-lettered medication names are more legible (receive a higher score) to a pharmacist or pharmacy technician than freestyle names. Additionally, short papers on practice innovations and other original work are included in the Notes section rather than in Letters. Letters commenting on an AJHP article must be received within three months of the article’s publication. Letters should be submitted electronically through http://ajhp.msubmit.net. The following conditions must be adhered to: (1) the body of the letter must be no longer than two typewritten pages, (2) the use of references and tables should be minimized, (3) the number of authors should be no more than three, and (4) the entire letter (including references, tables, and authors’ names) must be typed double-spaced. After acceptance of a letter, the authors are required to sign an exclusive publication statement and a copyright transferal form. All letters are subject to revision by the editors.
analyses addressed the estimates of legibility to patients and compared cursive and printed subgroups. All hypotheses were analyzed with Wilcoxon signed rank tests for paired ordinal data. The a priori level of significance (two-tailed) was 0.05. The study was approved by the University of Vermont Committees on Human Research.

Twenty nine subjects participated. They included 19 pharmacists (66%), 9 pharmacy technicians (31%), and 1 whose position was unknown (3%). Pharmacists’ experience ranged from 3 to 33 years, with a mean of 20 years and a median of 22.5 years. Pharmacy technicians’ experience ranged from 2.5 to 32 years, with a mean of 14.7 years and a median of 12 years.

The participants perceived block-lettered medication names as more legible than freestyle names (median score 9.4 versus 8.1, respectively; \( p < 0.001 \)). The participants also estimated block-lettered medication names as more legible to a patient than the freestyle counterparts (median score 7.7 versus 4.6, respectively; \( p < 0.001 \)).

Block-lettered names were rated as more legible than the matched cursive samples to the study participants (median score 9.6 versus 8.2, respectively; \( p < 0.001 \)) and to patients (median score 8.2 versus 4.4, respectively; \( p < 0.001 \)). Similarly, block-lettered names were perceived as more legible than the matched printed samples to the study participants (median score 9.2 versus 8.0, respectively; \( p < 0.001 \)) and to patients (median score 7.2 versus 4.8, respectively; \( p < 0.001 \)).

Block-lettered medication names using letter guides are perceived to be more legible than either cursive or printed freestyle writing. Individual providers and institutions should consider using letter guides to encourage block lettering and improve prescription legibility, which may reduce errors and improve safety.

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**Letters**

**Effect of a distraction-free environment on medication errors**

Most of the published data regarding medication errors comes from health systems and hospitals. However, health-system pharmacies serve only a small portion of the total population that receives medications. Errors reported in ambulatory care or community pharmacies are poorly documented in the literature. In these settings, error rates are estimated at 1–24% of all prescriptions dispensed. Up to 4% of reported errors in the ambulatory setting have the potential to result in patient harm.

The Institute of Safe Medication Practices has suggested that pharmacy practice should model the airline industry; specifically, the “sterile cockpit” model used by pilots in flight. The sterile cockpit model applied to pharmacy would involve systems and procedures to control, minimize, or eliminate unnecessary distractions and interruptions during the critical steps of prescription verification. Implementation of a distraction-free work zone in an outpatient pharmacy has the potential to increase the ability of the pharmacist to detect medication errors. We characterized errors and distraction types before and after implementation of a distraction-free work zone in a clinic-based outpatient pharmacy.

After obtaining approval from the institutional review board, a retrospective analysis of pharmacy errors before implementation of the distraction-free work zone was conducted using facility records and MEDMARX, the United States Pharmacopeia’s national database. A consecutive two-month period of prescriptions was analyzed for the number of reported errors, and each error was analyzed for documented contributing factors of distraction or workflow disruption. During this period, 7429 pre-