

## CLINICAL SUMMARY

# Drug name confusion: evaluating the effectiveness of capital (“Tall Man”) letters using eye movement data

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### TYPE OF STUDY

Prospective Study

### AIM

Medication errors commonly involve confusion between drug names that look or sound alike. One possible method of reducing these errors is to print sections of the names in “Tall Man” (capital) letters, in order to emphasize differences between drugs with similar names.

### METHODOLOGY

Twenty pairs of drugs with similar names were compiled, 16 pairs of which were from the FDA Name Differentiation Project. The remaining four were selected from the database. One drug from each pair was presented as a target to search for (e.g., chlorpromazine), and the other drug was present in the array as a distractor (e.g., chlorpropamide). The array consisted of the distractor plus 19 other drug products. Half of the drugs had names in lowercase, and half contained capital letters.

On occasion, to prevent participants from noticing the target was never present in the array, 20 trials were added in which the target drug name was present.

Stimuli were displayed 615 mm from participants’ eyes on a 21-in Sony FD Trinitron Model GDM F520 flat screen color monitor, with a resolution of 1600\_1200 pixels and 32-bitcolor depth. An Applied Science Laboratories (ASL) 504 remote eye tracking system discreetly monitored participants’ eye movements as they performed the task, with the ASL EYENAL (v 5.44) analysis software used to process the information recorded by the tracker.

They could view the target for as long as they needed, before pressing a button to continue. The target was replaced by a pattern mask, which remained on the screen for 0.5 s before being replaced by a fixation cross appearing in a random location on the screen (for 1.5 s). Participants were then shown an array of packs and had to indicate whether the target was present or absent by pressing one of two buttons, marked “Y” and “N.”

Participants were instructed to respond as quickly and accurately as possible. The experiment took between 30 and 60 minutes, after which participants were debriefed.

The independent variable was whether or not the names contained “Tall Man” letters. There were four dependent variables:

1. The number of errors (e.g., participants indicating that a pack was present in the array when it was not)
2. Search time (time taken to make this decision)
3. Total time spent fixating the distractor pack in the array
4. Total number of eye fixations on the distractor

### RESULTS

Participants made more errors if the name was in lowercase 7.75% vs 3.00% ( $P < 0.005$ ) than if it contained “Tall Man” letters. There was no difference in search time across the lowercase vs “Tall Man” letters, 9.82 s vs 10.11 s. The total time spent fixating the distractor pack was longer for packs with lowercase names than with “Tall Man” letters 1.90 vs 1.42 s ( $P < 0.005$ ). Participants also made a greater number of fixations on the distractor pack when the name was in lowercase letters than “Tall Man” containing letters, 5.6 fixations vs 4.6 fixations ( $P < 0.05$ ).

### CONCLUSION

This study has demonstrated the utility of the use of “Tall Man” letters as a possible systems change that could be made by both pharmacies (on medication labels, shelf labels) and manufacturers (on medication packages and labels, computer software) in an effort to reduce error caused by drug name confusion.

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