THE IMPACT OF AN ENHANCED DATA VISUALIZATION TOOL FOR HYPERTENSION IN THE ELECTRONIC HEALTH RECORD ON PHYSICIAN JUDGMENTS ABOUT HYPERTENSION CONTROL

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Introduction: Uncontrolled hypertension is a significant US health problem, despite existing effective treatments. This study assessed the impact of variations in patterns of blood pressure data on physician perceptions of hypertension control using different forms of data visualization.

Method: Physicians (N=57) reviewed 8 brief vignettes describing a fictitious patient; each included a graph of the patient’s blood pressure data. We examined how variations in mean systolic blood pressure (SBP), blood pressure standard deviation (SD), and form of visualization (e.g., line graph with raw values or smoothed values only) affected judgments about hypertension control and need for medication change.

Results: Judgments about hypertension control were influenced by mean SBP value, SD, and data visualization type (P < .05). For controlled hypertension, judgments about hypertension data presented as a smoothed graph were significantly more positive (i.e., hypertension deemed to be better controlled) than judgments about the same data presented as raw data. These main effects are qualified by significant interactions between SBP mean and data visualization type (P<.05). Differences in judgments between methods of data visualization are greatest when hypertension is controlled (i.e., SBP mean = 130). However, when hypertension is uncontrolled (i.e., SBP mean = 145), physician judgments are uniformly negative.

Conclusion: Data visualization can direct physicians to attend to more clinically meaningful information, thereby improving their judgments of hypertension control. As a result, well-designed data visualization has the potential to reduce clinical uncertainty around blood pressure measurements, which is one of the key drivers of clinical inertia and uncontrolled hypertension.