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A computerized physician order entry set designed to improve safety of intravenous haloperidol utilization

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The risks of antipsychotic-induced corrected QT (QTc) prolongation and sudden cardiac death have been documented since the early 1960s. Prolongation of the QT interval can lead to torsades de pointes (TdP), a ventricular tachyarrhythmia associated with presyncope, syncope and sudden death. All antipsychotics have the propensity to lengthen the QTc; however, a 2007 US FDA alert highlighted increased risk of QTc prolongation, TdP and sudden cardiac death with the off-label intravenous administration of haloperidol and prompted specific language in haloperidol's package insert. In response, haloperidol's package insert now recommends cautious use in patients with predisposing risk factors for QT-prolongation and recommends ECG monitoring.

The purpose of this study was to examine the effects of implementation of the CPOE set on adherence to monitoring parameters, maximum and cumulative doses, and identification or mitigation of risk factors for QTc prolongation in patients prescribed intravenous haloperidol. The study was designed to test the null hypothesis that the cumulative daily dose of intravenous haloperidol, the frequency of baseline and routine ECG monitoring, and routine electrolyte monitoring would be the same before and after implementation of the CPOE set; the experimental hypothesis was that these parameters would differ after implementation of the CPOE set.

This study reports on the successful implementation of a CPOE set designed to improve the safety of intravenous haloperidol administration, which is commonly used for the off-label treatment of agitation among medically ill and delirious patients. The findings from this study demonstrate that the use of an order set improved a number of patient safety measures, important when prescribing intravenous haloperidol, such as ECG and electrolyte monitoring. Additionally, there was a reduction in the proportion of subjects who received intravenous haloperidol ≥2 mg in 24 hours. Rates of concomitantly-prescribed QTc-prolonging medications were unchanged following order set implementation. Decision support or other mechanisms to help prescribers identify and minimize concomitant QTc-prolonging medications may be a beneficial strategy for future interventions aimed at optimizing the safety of intravenous haloperidol prescription.

Biography

Andrew J. Muzyk completed his PharmD from Mercer University Southern College of Pharmacy and Health Sciences followed by two years of postdoctoral training to specialize in Medicine-Psychiatry. He is currently an Assistant Professor at Campbell University College of Pharmacy and Health Sciences in the Department of Pharmacy Practice and has an adjunct appointment in the Department of Psychiatry and Behavioral Sciences at Duke University. He rounds with the Medicine-Psychiatry team at Duke and with his colleagues. He publishes and performs research on the treatment of delirium, alcohol withdrawal, and use of psychotropics in a medically ill patient population. Additionally, he is active in several medicine and pharmacy organizations and has served as a reviewer for multiple journals.

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