Impact of utilization guidelines on injectable hydralazine use in hypertensive crises

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Background

Injectable hydralazine is a vasodilatory medication that is widely used to treat hypertension and is generally thought to be safe and effective. However, it is only FDA-approved as an alternative treatment for hypertensive emergency and has no approved indication for use in hypertensive urgency, and patient safety concerns such as prolonged hypotension and reflex tachycardia have been reported. A single center drug utilization evaluation revealed that only 36% of doses were administered to patients experiencing a blood pressure (BP) ≥ 180/120 mmHg, the BP threshold used as part of the diagnosis of a hypertensive crisis (e.g. hypertensive emergency and hypertensive urgency). Additionally, post-dose BP monitoring was performed according to institution guidelines for only 51% of administered doses. This information revealed opportunities for improved patient safety through increased appropriate use and monitoring of injectable hydralazine. To address these patient safety concerns, utilization guidelines were developed and supporting medication order questions were added to the electronic medical record (EMR).

Methods

This was a single center, quasi-experimental chart review study that included patients greater than or equal to 18 years old who were administered at least one dose of injectable hydralazine. Interventions included new utilization guidelines for injectable hydralazine use, order questions within the EMR to support the appropriate use, and updated monitoring recommendations. Data was compared in the pre- and post-implementation groups. The primary outcome was the percentage of injectable hydralazine doses administered to patients with a BP ≥ 180/120 mmHg. The secondary outcome was the percentage of injectable hydralazine doses with post-dose BP monitoring performed according to institution guidelines.

Results

The utilization guidelines and supporting medication order questions resulted in a 2.3% increase in the proportion of doses given to patients with a pre-dose BP >/= 180/120 mmHg (36% vs 38.3%, P= 0.584). There was an 8.8% increase in the percentage of doses that met post-dose BP monitoring criteria in the post-implementation group (50.8% vs 59.6%, P= 0.041).

Conclusion

Implementation of utilization guidelines in tandem with supporting medication order questions for injectable hydralazine resulted in no difference in the proportion of doses administered to patients with a BP >/= 180/120 mmHg. However, the implementation did increase the proportion of doses that met the institution-specific post-dose BP monitoring criteria.