IMPACT OF UTILIZATION GUIDELINES ON INJECTABLE HYDRAZONE

USE IN HYPERTENSIVE CRISSES

Myles Dice, PharmD; Abebe Abebe, MD; Dennis Grauer, PhD, MS; Joann Moore, RPh, DPLA; Shannon Stittsworth, PharmD
The University of Kansas Health System (TUKHS), Kansas City, KS

BACKGROUND

- Injectable hydralazine is a vasodilator that is FDA-approved as an alternative treatment for hypertensive emergency and has no approved indication for use in a hypertensive urgency.
- Patient safety concerns exist regarding the use of injectable hydralazine, such as prolonged hypotension and reflex tachycardia.
- Therefore, the appropriate utilization of injectable hydralazine and monitoring of patients who have been administered the medication is necessary.
- A single center drug utilization evaluation at TUKHS revealed that only 36% of injectable hydralazine doses were administered to patients experiencing a BP ≥ 180/120 mmHg.
- 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 for injectable hydralazine use, order questions within the EMR to support the appropriate use, and updated monitoring recommendations were implemented.

OBJECTIVES

Primary outcome:
- To compare the percentage of injectable hydralazine doses administered to patients with a BP ≥ 180/120 mmHg before and after implementation of utilization guidelines.

Secondary outcome:
- To compare the percentage of injectable hydralazine doses with post-dose BP monitoring performed according to institution guidelines before and after implementation of utilization guidelines.

METHODS


RESULTS

- Table 1: Baseline Characteristics
  - Pre-Implementation (n=1148) vs Post-Implementation (n=3075)
  - P Value
  - Demographics
    - Age ≥ 65yo, n (%) 529 (46) 40 (51) 0.373
    - Hispanic, n (%) 560 (49) 44 (56) 0.192
    - Race/ethnicity
      - White, n (%) 1052 (92) 75 (96) 0.269
      - Other, n (%) 90 (8) 3 (4)
    - Clinical features
      - Diagnosed with hypertension prior to admission, n (%) 469 (41) 31 (40) 0.847

- Table 2: Study Endpoints
  - Pre-Implementation (n=1108) vs Post-Implementation (n=1561)
  - P Value
  - Proportion of administered doses with a pre-dose BP ≥ 180/120 mmHg, n (%) 1108 (36) 54 (38.3) 0.584
  - Proportion of administered doses that met post-dose BP monitoring requirements, n (%) 1561 (50.8) 84 (59.6) 0.041

DEFINITIONS:
- Hypertensive urgency: BP ≥ 180/120 mmHg without target organ damage
- Hypertensive emergency: BP ≥ 180/120 mmHg with target organ damage

STUDY LIMITATIONS

- Retrospective design at a single center
- Different data collection time frames in the pre- vs post-implementation groups
- Data on signs/symptoms of target organ damage was not collected
- The study did not address all the reasons a patient may have received injectable hydralazine, including but not limited to:
  - Patient was NPO
  - Patient was allergic to all other BP medications
  - Patient was at high risk for end organ dysfunction
  - Prior to admission BP medications had not been restarted

CONCLUSIONS

- 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.
- The implementations increased the proportion of doses that met the institution-specific post-dose BP monitoring criteria.
- The utilization guidelines and supporting medication order questions reduced the overall use of injectable hydralazine based on annualized projections.
- These outcomes could increase patient safety around the use of injectable hydralazine.

FUTURE DIRECTIONS

- This study reveals the opportunity to use utilization guidelines and supporting medication order questions to increase patient safety around other medications.
- Moving forward, the validity of the responses to the order questions can be further analyzed to determine what percentage of doses were administered for the indication of hypertensive emergency vs hypertensive urgency.
- Future studies can assess the impact of injectable hydralazine utilization guidelines in the EMR on clinical outcomes, such as reflex tachycardia and prolonged hypotension.

REFERENCES


CONTACT INFORMATION

Myles Dice: mdice2@kumc.edu
Authors have no disclosures