

The Effectiveness of Drug Therapy on Achieving Rate Control in Hospitalized Patients: A Retrospective Chart Review

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ABSTRACT

Background: Atrial fibrillation is the most common arrhythmia seen in clinical practice and it can have serious consequences if left untreated. These include stroke, myocardial infarction, and mortality. Its prevalence in the U.S. is estimated to increase by more than 100% between the years 2010 and 2030. Controlling patients' heart rates (also known as rate control) is one of the backbones of treatment for atrial fibrillation because it has been proven to reduce morbidity and improve patients' quality of life and cardiac function. However, it is currently unknown if hospitalized patients with atrial fibrillation are achieving adequate rate control as defined by the most recent guidelines. Therefore, the primary objective of this study is to determine if a sample of hospitalized patients with atrial fibrillation are achieving rate control. It will also evaluate the efficacy of their rate control medications, as previous data regarding their safety and efficacy have been inconclusive.

Methods: This retrospective study reviewed charts from 50 patients who were hospitalized at SSM Health St. Mary's Hospital in St. Louis, MO. Patients aged 18-89 years with an active diagnosis or history of atrial fibrillation or atrial flutter were included. Patients' heart rates and medication data were collected and analyzed. Patients were counted as achieving rate control and their medications were considered effective if their average heart rates were considered to be controlled as defined by the ACC/AHA's 2014 atrial fibrillation guidelines. Rate control medications were assessed for effectiveness by calculating the percentage of patients on each medication who achieved rate control. Medication doses were also assessed to determine if patients were on the maximally tolerable dose of their rate control medications.

Results: Most patients included in the study (82%) were achieving rate control. Notably, 5 out of the 9 patients who did not achieve rate control weren't receiving the maximally tolerable dose of their rate control medications. The number of patients who had strict vs. lenient rate heart rate goals is uncertain, but this information could be inferred for 26 patients. Nineteen of these patients (73%) were in the lenient rate control group, whereas the remaining 7 patients (27%) were in the strict rate control group. The highest percentages of patients who were achieving rate control were found in those who had received either sotalol or verapamil (100%), followed by diltiazem (87.5%), carvedilol (83.3%), metoprolol (79.5%), and digoxin (75%). The lowest percentage was found in patients who had received amiodarone (58.3%).

Conclusion: This study found that most hospitalized patients with atrial fibrillation are achieving rate control. A majority of patients who did not achieve rate control were not receiving the maximally tolerable dose, which underscores the importance of optimizing the dose of patients' rate control medications. This study also found that metoprolol appeared to be the most effective and commonly used rate control agent, whereas amiodarone appeared to be the least effective. Given this study's design and limitations, however, these results are questionable and cannot

necessarily be generalized to all patients. More studies with larger and more variable samples should be conducted to confirm these findings. This will enable health care providers (including pharmacists) to optimize patients' rate control medications and, ultimately, improve their health and quality of life.