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## Improving the Process of Making Preoperative Home-Medication Recommendations

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## **Introduction of the Problem**

Many patients presenting for surgery have a list of prescribed medications they take daily to treat various comorbidities. Even though prescription drugs may offer patients therapeutic benefits during the perioperative period, they may also cause adverse effects when used in conjunction with anesthesia during surgery (Marley, Calabrese, & Thompson, 2014). Therefore, identification of medications for the preoperative patient to take or withhold is necessary. Various clinical practice guidelines have been developed in order to help clinicians make appropriate decisions regarding medication management during this time. Every effort should be made by clinicians preoperatively to ensure patients correctly take or omit their home medications on the day of surgery. Incorrect management of medications during the preoperative period has been associated with increased complication rates during the operative and postoperative period (Notaras, Demetriou, Galvin, & Ben-Menachem, 2016).

A regional hospital in central Illinois was found to need the development and implementation of a medication management guideline to help preoperative nursing staff make accurate and efficient medication recommendations to patients about which home medications to take or withhold during the preoperative period. A review of literature identified evidence-based recommendations for the management of patients' home medications during this period. The evidence was used to develop and implement a guideline which increased the nursing staff's ability to accurately and efficiently make home medication recommendations preoperatively.

## **Literature Review**

A literature review was conducted to best discern which home medications should be taken or withheld during the immediate preoperative period, and how compliance with these recommendations could be best achieved. The literature revealed that for most drug classes

examined, preoperative management recommendations were uniform in nature. Drug classes with more heterogeneity in terms of recommendations were examined more closely in order to best determine the appropriate preoperative management.

It was determined that the following drug classes should be continued as normal preoperatively: antianginals, antiarrhythmics, antiseizure drugs, benzodiazepines, beta blockers, calcium channel blockers, histamine-two antagonists, proton pump inhibitors, long acting insulins, respiratory inhalers, statins, steroids, thyroid medications, and pain medications excluding non-steroidal anti-inflammatory drugs (Antoniou et. al., 2015; Ballotta, Toniato, Farina, & Baracchini. 2017; Bodnar & Gianchandani, 2017; Brallier & Deiner, 2015; Castanheira, Fresco, & Macedo, 2011; De Martino, 2015; Desai et. al., 2010; Fleisher et. al., 2014; German Society of Anesthesiology and Intensive Care, German Society of Internal Medicine, & German Society of Surgery, 2017; Hollevoet, Herregods, Vereecke, Vandermuelen, & Herregods, 2011; London, Schwartz, Hur, & Henderson, 2017; O'Donnell et. al., 2018; Takegahara, Usuda, Inoue, Ibi, & Sato, 2017; Vaduganathan et. al., 2010; Wijesundera et. al., 2014; Yamanashi et. al., 2015). Intermediate acting insulins may be continued at half of the normal dose on the day of surgery (Bodnar & Gianchandani, 2014; German Society of Anesthesiology and Intensive Care et. al., 2017; Hollevoet, Herregods, Vereecke, Vandermuelen, & Herregods, 2011; Joshi et. al., 2010). Angiotensin converting enzyme inhibitors, angiotensin receptor binders, diuretics, erectile dysfunction drugs, herbal supplements, oral antidiabetics, vitamins, and rapid acting insulins should be held prior to surgery (AANA, 2016; Castanheira, Fresco, & Macedo, 2011; Duceppe et. al., 2017; German Society of Anesthesiology and Intensive Care et. al., 2017; Hollevoet, Herregods, Vereecke, Vandermuelen, & Herregods, 2011; Hollmann, Fernandes, & Biccadd, 2018; Joshi et. al., 2010; Marley, Calabrese, &

Thompson, 2014; Nielson, Hennrikus, Lehman, & Mets, 2014; Tagawa, Ogata, & Hamano, 2015). Anticoagulants, antiplatelets, and non-steroidal anti-inflammatory drugs require individualized management and therefore require expert consultation for each individual patient (Brallier & Deiner, 2015; De Martino et. al., 2015; Fleisher et. al., 2014; German Society of Anesthesiology and Intensive Care et. al., 2017; Gielen et. al., 2015; Hollevoet, Herregods, Vereecke, Vandermuelen, & Herregods, 2011). It was also discovered that the development of a standardized guideline with reference tool could help increase the frequency with which patients receive appropriate preoperative medication instructions (Renew et. al., 2015).

### **Project Methods**

**Purpose and goals.** The purpose of this project was to increase the accuracy and efficiency with which nurses were able to make preoperative home medication recommendations to their patients.

**Setting.** The setting was a regional hospital in central Illinois. The procedures performed at this facility are all non-cardiac and routine in nature. Services provided include orthopedics, urology, gastrointestinal, general, and ear, nose, and throat.

#### **Institutional Review Board (IRB) approval**

This project did not directly involve any patient interaction or collection of patient data. Therefore, this quality improvement project was submitted as an exempt IRB proposal to Southern Illinois University-Edwardsville, and was approved. It was then submitted to the review board of the hospital of implementation in the same manner and approved. These actions were completed prior to implementation of the project. The confidentiality of nurses who participated in the project was maintained as no personal identifiers were listed on the administered surveys.

## **Evaluation**

In order to improve the process by which nurses were giving home medication recommendations, an evidence-based protocol was developed. After completion, the protocol was transposed onto a standardized color-coded reference tool which was placed and used in several common areas where preoperative phone calls took place. Effectiveness of the project was evaluated based upon nursing staff's perceptions after the reference tools had been in use for longer than one month.

The strategy for the collection of data to evaluate the effectiveness of this project had to be slightly modified due to unforeseen circumstances. The objectives being evaluated, however, remained constant despite changes being made to the evaluation methods. The primary objective of the project was to increase the nursing staff's ability to accurately and efficiently instruct patients about appropriate home medication management during the preoperative period. As such, nurses' perceptions of how this project impacted their abilities to accurately and efficiently give home medications instructions to patients was the primary assessment point for the project.

The original plan for evaluation of the project was to have the nursing staff take a survey which targeted their subjective feelings of accuracy and efficiency related to giving preoperative medication instructions. This was to be done prior to the implementation of the home medication tool, and then again after the tool had been in place for approximately one month. However, due to the needs of the staff at the facility of implementation, the project was implemented early without this author's knowledge. This precluded this author's ability to administer the survey prior to project implementation. As a contingency plan for evaluation, a post-survey was developed. The survey questions were slightly modified so that comparison of

the pre-implementation and post-implementation time periods could still be made. The objectives being evaluated, however, remained constant.

The preoperative home medication management tool was implemented in the beginning of August. In early September, after discovering that the project had already been implemented, post-surveys were left with nursing staff with instructions for completion. Three weeks were allotted for completion. At the end of September, surveys were collected.

## **Results**

Only two post-surveys were completed. This was not unexpected, however, given that very few nurses at this site fully participate in preoperative care prior to the day of surgery. All nurses who completed the surveys strongly agreed that the preoperative home medication management tool improved their accuracy and efficiency in making recommendations to patients. They each gave scores of five out of five on a Likert scale in rating the efficacy of the tool in each of these areas. Nursing staff also indicated in an informal way that they found the tool to be very helpful.

## **Discussion**

After review of the data and speaking with nurses at the facility, it seems that the development and implementation of the preoperative home medication tool did help to fill a void in the way that preoperative home medication recommendations were being given. The nurses who are responsible for educating patients regarding preoperative medication requirements indicated that they feel more empowered to accurately and efficiently provide the information. Evaluation methods were limited. Only two nurses completed post-surveys. This, however, is likely due to the fact that only a few nurses actually do the job that the tool is meant to help with,

rather than nurses' refusal to participate in the evaluation of the project. The original plan of comparing pre-survey results to post-survey ones may arguably have yielded more objective data than only doing post-surveys did.

### **Impact on Practice**

The immediate impact at the hospital of implementation is that nursing staff are now better equipped to accurately and efficiently give home medication management recommendations to their patients. It is likely that this will result in patients receiving the optimal medication regimen during the preoperative period. The home medication management protocol was based upon the latest available literature. However, since empirical evidence was lacking for many of the drug classes reviewed, many of the listed recommendations are based on theory and expert opinion. As more literature and empirical evidence become available in the future, it will be necessary to update the protocol in order to ensure that recommendations are based upon the best available evidence. Also, given that there are numerous drug classes that may be prescribed to patients, not every drug class was listed in the protocol. If staff at the hospital of implementation notice that a certain drug class that is frequently encountered is not listed, it may be in their best interest to update the protocol to include that drug class.

### **Conclusion**

The implementation of a color-coded tool listing a home medication management protocol at a regional hospital improved nurses' perceptions of their abilities to accurately and efficiently make preoperative home medication recommendations to their patients. The protocol will need to be updated periodically in order to ensure that it is based upon the latest evidence and adequately meets the changing needs of the hospital. It will also be important to continually

evaluate whether the tool remains efficacious at meeting the desired goals. Since this project primarily focused on increasing clinicians' abilities to make recommendations rather than on patients' abilities to understand them, future projects which focus on improving patient comprehension of instructions may be useful.