Evaluating the Effectiveness of Preoperative Education on Medication Compliance at a Midwest Hospital Surgery Center

Joey Glahn, SRNA & Jason Besse, SRNA
Faculty Advisor: Daniel King, CRNA, DNP

Joey Glahn

Jason Besse

Objectives

Define intraoperative hypotension and its correlation with ACE inhibitors and ARBs.

Demonstrate how the use of preoperative education to staff can influence patient medication compliance

Background

- Perioperative risk variables
- Medication instructions
- Intraoperative hypotension
- Project indications

https://www.shutterstock.com/search/anesthesia-team

Significance of the Problem

- The use of angiotensin receptor blockers (ARBs) or angiotensin-II inhibitors (ACE-I) prior to anesthesia can impact the perioperative course by inducing intraoperative hypotension resulting in inadequate perfusion, or even death, if left untreated.

- The Veterans Affairs (VA) Puget Sound found that nearly 23% of its patients were noncompliant with their perioperative medication instructions. Among the system's surgical cancellations, up to 7% were attributed to medication nonadherence and inadequate patient education (Norby et al., 2017)

Evidence

Hypotension

- ACE-I or ARB use on day of surgery is more likely to develop intraoperative hypotension
- Intraoperative hypotension significantly increased the risk of 30-day mortality.

Compliance

- Medication compliance tools can improve patient compliance with medication instructions.
- Written and color-coded preoperative medication instructions with pictographs have been found to be advantageous.

Education

- In-service PowerPoint.
- Feedback surveys to educate healthcare clinicians on medication compliance.

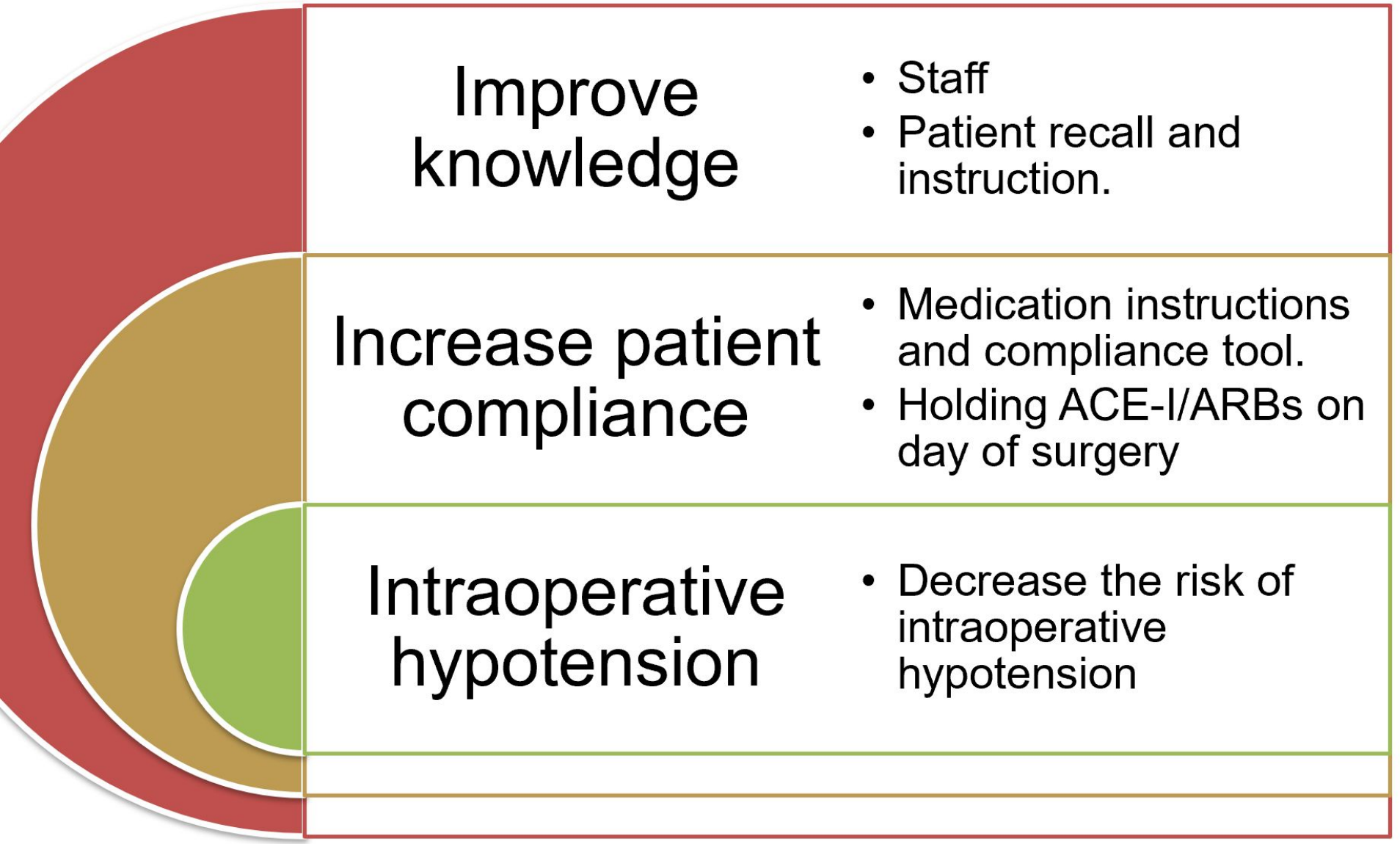
Purpose of the Project

Build an evidence-based consensus-validate preoperative medication instruction guide

To improve compliance rates regarding holding ACE-I/ARBs prior to surgery.

Enhance trust and communication between the patient and the staff through personalized preoperative education.

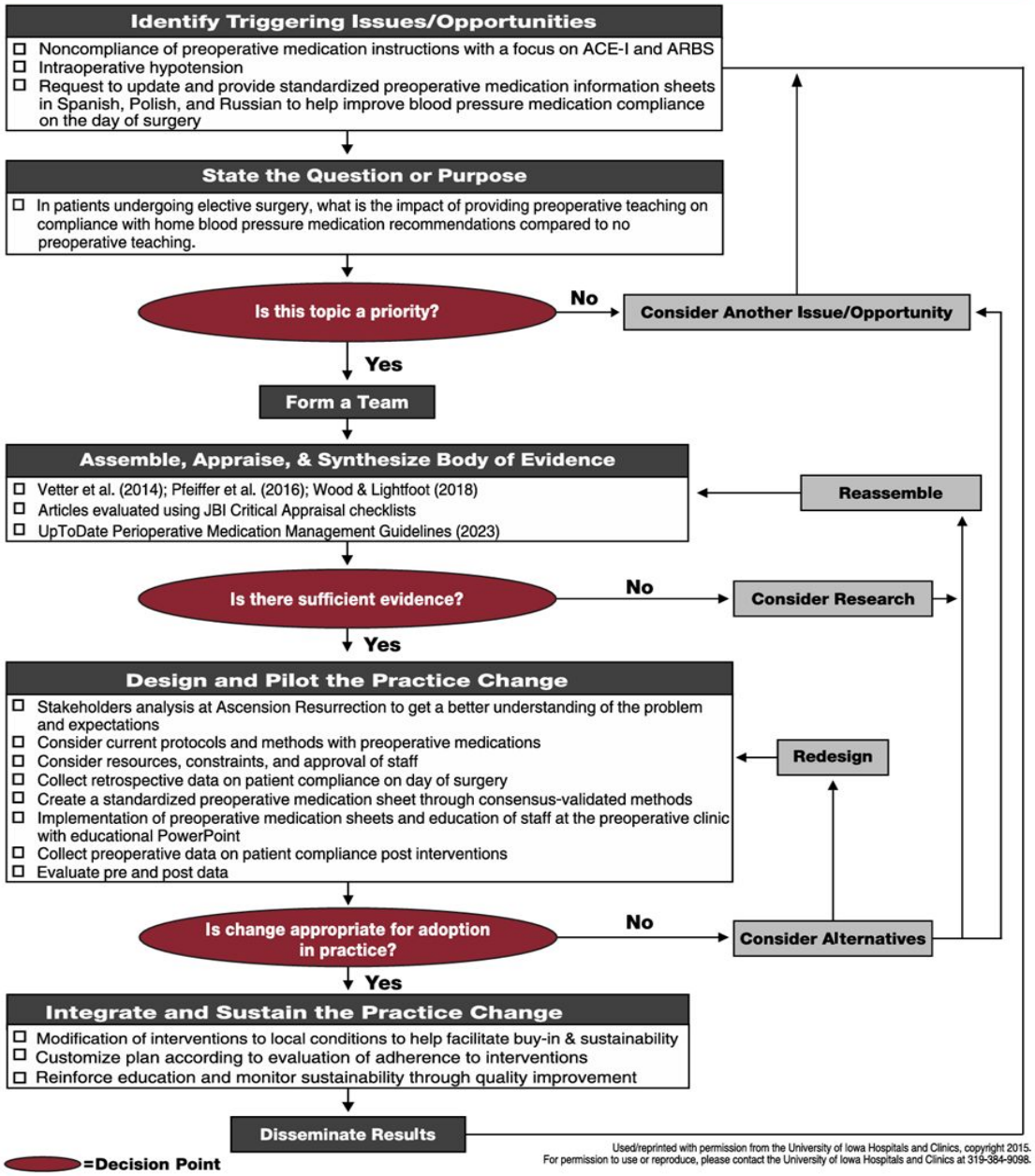
Project Aims



Barriers and Challenges

- Issues with getting entire full-time perioperative RN staff present for tool education presentation (section often utilized float nurses as well)
- Two spot checks revealed nurses were not actively using the tool consistently or at all
- Roll out of compliance tool occurred simultaneously with another orthopedic team led research project.
- Extensive statistical analysis was unable to be performed due to a small sample size of 50 for each group.

The Iowa Model Revised:
Evidence-Based Practice to Promote Excellence in Healthcare



Project Implementation

Phases of Implementation

- Initial survey created using modified Delphi method
- Compliance tool validation
- Staff education
- Tool implementation
- Post-intervention data procurement via hospital IT staff

Compliance Tool

Instructions for Taking Your Medicines on the Morning of Your Surgery

An anesthesia provider is a clinician who provides care to patients like you during surgery. During your visit today to our Pre-Anesthesia Clinic, your medicines have been reviewed by one of our anesthesia providers. The anesthesia provider asks that you follow these instructions for taking your medicines on the morning of your surgery.

By taking your medicines, as we have listed on this sheet, you can help us to give you the best and safest care for your planned surgery.

Please **DO TAKE** the following medicines on the morning of your surgery:

1. _____
2. _____
3. _____
4. _____
5. _____
6. _____

You may use small sips of water but use the smallest amount of water possible to comfortably swallow any pills on the morning of your surgery.

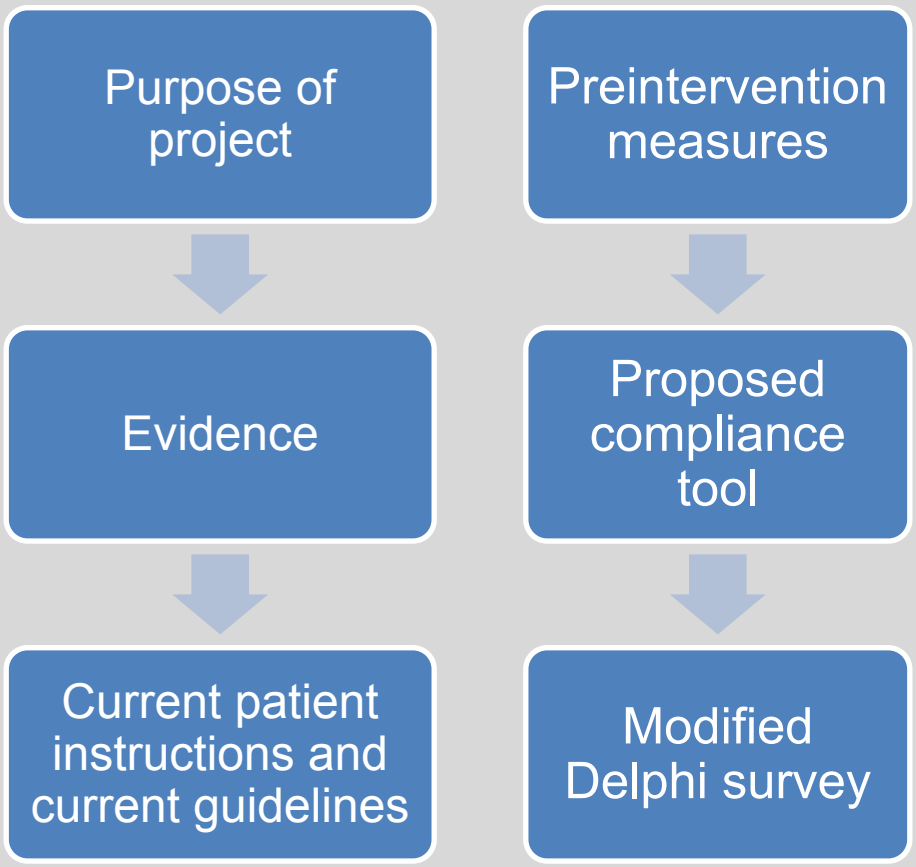
Please **DO NOT TAKE** the following medicines on the morning of your surgery:

1. _____
2. _____
3. _____
4. _____
5. _____
6. _____

The following medicines are up to you. **YOU CAN DECIDE** to take or not to take the following medicines on the morning of your surgery.

1. _____
2. _____
3. _____
4. _____
5. _____
6. _____

Staff Education



Data Analysis

- Pearson's Chi-square test
- IBM SPSS statistics software 29
- Data gathered from Ascension IT department and organized via Excel?

Results

Baseline Data

	Gender	Race	Native Language	Age (30-89)	Category of Surgery	Home Antihypertensive Medications	# of Preoperative Medications
Pre-intervention	Female: 25 Male: 25 N=50	White: 40 (80%) Other: 6 (12%) Black: 2 (4%) Asian: 1 (2%) American Indian or Alaskan Native: 1 (2%) Native Hawaiian or Other Pacific Islander: 0 (0%)	English: 38 (76%) Polish: 8 (16%) Spanish: 3 (6%) Italian: 1 (2%)	30-39: 0 (0%) 40-49: 2 (4%) 50-59: 5 (10%) 60-69: 14 (28%) 70-79: 21 (42%) 80-89: 8 (16%)	ENT: 1 (2%) General: 10 (20%) Gynecology: 2 (4%) Neurosurgery: 2 (4%) Obstectrics: 1 (2%) Orthopedic: 25 (50%) Pulmonary: 1 (2%) Urology: 6 (12%) Vascular: 2 (4%)	ACE inhibitors: 25 (50%) ARBs: 25 (50%) Beta Blockers: 19 (38%) CCBs: 16 (32%) N=50	Average: 10 SD: 6.0
Post-intervention	Female: 25 Male: 25 N=50	White: 39 (78%) Other: 7 (14%) Black: 1 (2%) Asian: 3 (6%) American Indian or Alaskan Native: 0 (0%) Native Hawaiian or Other Pacific Islander: 0 (0%)	English: 39 (78%) Polish: 6 (12%) Spanish: 4 (8%) Italian: 1 (2%)	30-39: 0 (0%) 40-49: 3 (6%) 50-59: 5 (10%) 60-69: 14 (28%) 70-79: 21 (42%) 80-89: 7 (14%)	ENT: 1 (2%) General: 12 (24%) Gynecology: 2 (4%) Neurosurgery: 6 (12%) Obstectrics: 2 (4%) Orthopedic: 16 (32%) Pulmonary: 4 (8%) Urology: 4 (8%) Vascular: 3 (6%)	ACE inhibitors: 20 (40%) ARBs: 30 (60%) Beta Blockers: 21 (42%) CCBs: 16 (32%) N=50	Average: 11 SD: 5.7

Note: ACE = Angiotensin Converting Enzyme Inhibitor, ARB = Angiotensin Receptor Blockers, CCBs = Calcium Channel Blockers SD= Standard Deviation

Home antihypertensive medications are limited to these classes. Inclusion criteria included patients prescribed an ACE or ARB.

Post Implementation Data

	Compliant holding ACE and ARB antihypertensives	Non-compliant holding ACE and ARB antihypertensives	Statistics
Pre-intervention	**Total: 17 (34%)** Female: 10 Male: 7	**Total: 33 (66%)** Female: 15 Male: 18	
Post-intervention	**Total: 38 (76%)** Female: 18 Male: 20	**Total: 12 (24%)** Female: 7 Male: 5	Chi-square: 17.8 P-value: < .001 (significant at p < .05)

Discussion

Compliance rates improved despite the tool not being consistently used by the perioperative nurses.

Patient recall of information via the perioperative nurses improved as evidence by the ACE-I/ARB compliance rates.

Unclear if intraoperative hypotension rates improved as this was not a researched in this project.

https://www.shutterstock.com/search/anesthesia-team

Clinical Impact

- Based on the current literature, improved compliance with ACE-I and ARB cessation could result in:

  - Less day of surgery cancellations
  - Improved cost efficiency/revenue from avoided cancellations
  - Less intraoperative hypotensive events
  - Less risk for overall all morbidity and mortality related to intraoperative hypotension

Image supplied by Microsoft PowerPoint 365

Translation to Practice

- Based on the available evidence, it remains best practice to withhold ACE-I and ARBs at least a day before surgery.
- Medication compliance tools and nursing education appear to be effective at disseminating these recommendations to patients.
- If this research project was carried over to another facility, we recommend continuing with perioperative education and surveys prior to initiating a compliance tool (as it may not be necessary).

Sustainability

- Compliance tool could be adapted for other hypertensive medications or used for the common GLP-1 inhibitor medications.
- The tool could be distributed to affiliated local clinics and PCPs who do preoperative clearance. This could potentially extend the reach of compliance efforts beyond the original clinical site.

References