KAPC Practice Guideline

Title: Presurgical Medication Guidelines

Date Approved: 2/16/16

Policy Overview: Most maintenance medications may be safely withheld on the morning of elective surgery, and some patients may prefer to not take their medications on an otherwise empty stomach. On the other hand, there is little evidence that patients who take their morning medications with a small amount of water are at any increased risk for anesthetic complications, and some patients will be overly concerned about not taking some or all of their medications. The result of these two principles is that it usually makes little difference whether a surgical patient takes his / her last dose of maintenance medications on the evening prior to, or on the morning of elective surgery. There are, however, a small number of medications for which there is stronger support for continuation up to and including the morning of elective surgery, and a small number for which there is evidence or opinion to support discontinuation for some period of time prior to elective surgery. This guideline, while not exhaustive, will identify those medications for which Kalamazoo Anesthesiology takes a particular position on this matter, and will suggest a reasonable approach for categories of medications for which specific recommendations are unjustified. As always, clinical judgment may lead responsible physicians to make reasonable exceptions to these guidelines in some cases.

Definitions:

Should be taken: Strong evidence or published guidelines support continuation up to the time of surgery, including planned morning dosage on the morning of surgery. A systematic attempt should be made to confirm continuation of scheduled medication. If dosing has been interrupted, the anesthesiologist should document his / her decision to proceed with surgery as planned, administer a substitute medication and proceed as planned, or postpone elective surgery.

Should be withheld: Strong evidence or published guidelines support interruption of dosing schedule for some period of time prior to surgery. A systematic attempt should be made to confirm that scheduled doses have been withheld. If dosing has been continued, the anesthesiologist should document his / her decision to proceed with surgery as planned, take corrective action and proceed as planned, or postpone elective surgery. Note that, as this is an anesthesia guideline, medications that may be withheld due to surgical considerations will be described as “may be withheld.”

May be taken: Common anesthesia practice is to recommend that dosing be continued up to the time of surgery, including planned morning dosage on the morning of surgery. No harm is expected if these medications are withheld on the day of surgery.

May be withheld: Common anesthesia practice is to recommend interruption of dosing schedule for some period of time prior to surgery, OR medication is commonly withheld due to surgical considerations and by the order of the surgeon. Except where otherwise noted, dosing should be continued up to and including the day prior to surgery, and should only be withheld on the day of surgery. For medications withheld on the surgeon's order, the surgeon should specify the time of last dose and any substitute medications to be taken. The vast majority of medications fall into the category of **May be withheld**, and it can generally be assumed that, unless otherwise noted, patients may withhold their medications on the day of surgery without ill effects. No harm is expected if these medications are taken on the day of surgery.

Policy Steps:

1. Ascertain patient's usual medications. This is usually done through the preadmission evaluation process.
2. On the day of surgery, confirm most recent dosing of each of patient's usual medications. This is usually done by the preoperative nursing staff, but should be confirmed by the anesthesiologist for **Should be taken** and **Should be withheld** medications.
    a. Identify exceptions to these guidelines.
    b. Alert anesthesiologist to any exceptions.
3. Document decisions regarding any exceptions identified in step 2.

Medications for which special considerations frequently apply

1. Beta blockers: should be taken on the day of surgery. If skipped, a substitute should be considered.[i]
2. Calcium channel blockers: may be taken on the day of surgery.
3. ACE Inhibitors and Angiotensin Receptor Blockers: all scheduled doses should be withheld during the 24 hours prior to scheduled surgery. ACE Inhibitors can be identified by generic names ending in "-pril." ARBs can be identified by generic names ending in "-sartan."[ii]
4. Other antihypertinsives: may be taken on the day of surgery.
5. Diuretics: may be withheld on the day of surgery. The concern is that patients may become hypovolemic if they take diuretics while NPO. This concern may particularly apply to patients scheduled for afternoon surgery, or who have undergone a bowel prep regimen.
6. Statins: Should be taken on the day of surgery.[iii]
7. Antiplatelet Agents: In the particular case where a patient has had a drug-eluting coronary stent placed within the previous twelve months, there is a significant risk for in-stent thrombosis if antiplatelet agents are withheld and surgery is performed. The risks of performing surgery vs. postponing surgery and of continuing vs. withholding antiplatelet agents must be assessed by the surgeon

and cardiologist. The ACC has issued recommendations regarding this matter,[iii] and the following approach is consistent with those recommendations.

- Elective procedures for which there is significant risk of bleeding should ideally be deferred until at least 12 months after DES placement.
- Regardless of time since DES placement, patients on dual antiplatelet therapy should have both aspirin and clopidogrel continued through the perioperative period if possible.
- Regardless of time since DES placement, patients on dual antiplatelet therapy who undergo surgery requiring discontinuation of clopidogrel should have their aspirin continued through the perioperative period if at all possible.
- When elective surgery is scheduled within 12 months of DES placement AND the patient has been instructed to discontinue both aspirin and clopidogrel, consultation should be obtained with the treating cardiologist (or responsible colleague).

Because the balance of risks described above relates directly to surgical and cardiologic considerations, the role of the pre-anesthesia and presurgical testing departments will be limited:

- If the surgeon has given no specific instructions to the contrary, both aspirin and clopidogrel should be taken throughout the perioperative period, including the day of surgery.
- If the surgeon has instructed the patient to withhold both aspirin and clopidogrel, and surgery is scheduled within 12 months of DES placement, the anesthesia department should be notified and the preanesthesia evaluation may include a request for consultation with the treating cardiologist (or responsible colleague).

The subject of coronary stents and antiplatelet agents is considered in more detail elsewhere on the Kalamazoo Anesthesiology website under Guidelines and Links > Guidelines Documents

8. Coumadin: May be withheld on the day of surgery, or longer at the discretion of the surgeon. This is generally for surgical concerns regarding excessive bleeding.
9. Insulin: May be withheld on the day of surgery. Diabetic patients should have their glucose checked preoperatively (on the day of surgery), and treated based on individual consideration. If institution-specific guidelines are developed and approved, they should be followed.
10. Metformin: Concern over metformin's possible ability to cause dangerous lactic acidosis is probably unwarranted[iv], and the half-life of metformin is less than six hours. Still, careful glucose control using intravenous insulin has become more commonplace, particularly in the inpatient setting.
    a. For outpatient surgery, metformin may be taken on the day of surgery.

b. For same day admission or inpatient surgery, metformin may be withheld on the morning of surgery.

11. Anticonvulsants: may be taken on the morning of surgery.
12. MAO Inhibitors: Examples are tranylcypromine (Parnate), selegiline (Emsam), isocarboxazid (Marplan), phenelzine (Nardil), and moclobemide (Manerix). Primary concern is avoidance of meperidine and indirect-acting sympathomimetics, including ephedrine and dopamine. These medications may be withheld on the day of surgery, but may be continued up until that time. An institution-specific approach should be adopted which clearly identifies these patients in order to prevent their receiving meperidine, ephedrine, or dopamine.
13. Partial Narcotic Agonists: Examples are buprenorphine (Suboxone, Subutrex, Buprenex), butorphanol (Stadol). Optimally, these patients will be converted to full opioid agonists during the two weeks prior to elective surgery. This will require the involvement of the prescribing physician. A shorter duration of conversion is better than none. If no conversion is possible, partial agonists should be withheld on the day of surgery, with full narcotic agonists substituted upon arrival.

Medication / Class		**Instructions / duration (DOS = day of surgery**	**Notes**	
Antihypertensives	Beta blockers	**Should be taken**	Consider substitute dose if pt failed to take within 24 hours	
	Ca channel blockers	May be taken		
	ACE inhibitors	**Should be withheld** 24 hours prior to surgery		
	ARBs	**Should be withheld** 24 hours prior to surgery		
	Diuretics	May be withheld		
	Other	May be taken		
Antiarrythmics		May be taken		
Anti-anginals		May be taken		
Cholesterol lowering agents	Statins	**Should be taken**		
	Other	May be withheld on DOS		
CHF agents	Digitalis	May be withheld on DOS		
	Other			
Antiplatelet agents	Aspirin: s/p DES		**See above**	
	Aspirin: other	May be withheld		
	Clopidogrel: s/p DES		**See above**	
	Clopidogrel: other	May be withheld		
	Ticlopidine, Prasugrel, Ticagrelor		Treat as Clopidogrel	
Anticoagulants	Coumadin	May be withheld		
	Heparin, LMWH	May be withheld		
	Other	May be withheld		
Respiratory agents	Inhaled agents	**Should be taken**	Applies to routine, not PRN, meds	
	Oral bronchodilators	**Should be taken**		
Renal agents		May be taken		
GI agents	Anti-reflux meds, H-2 blockers, PPIs	**Should be taken**		
	Antacids	May be withheld	Consider Bicitra in preop	
	Antiemetics	May be taken		
CNS agents	Anticonvulsants	May be taken		
	Antipsychotics			
	Antidepressants			
	Anti-Parkinson's			
	Anti-dementia	May be withheld on DOS		
	MAO inhibitors	May be withheld on DOS		

Analgesics	Narcotics - conventional	May be taken			
	Narcotics – partial agonists	May be withheld for 2 wks prior to surgery		Conversion to full agonist preferred; see above	
	NSAIDs, COX-2 inhibitors	May be withheld			
Antimicrobials		May be withheld			
Cancer medications		May be taken			
Anti-diabetes agents	Insulin	May be withheld (baseline SQ infusion may be continued)		Institutional protocols take precedence	
	Oral hypoglycemic agents	May be taken for outpatient procedures; otherwise may be withheld		See above	
	Non-insulin injected agents	May be withheld		e.g., pramlintide (Symlin), exenatide (Byetta)	
Thyroid replacement		May be taken			
Steroids		May be taken			
Herbals / supplements		May be withheld X 14 days		Hold until DOS if assessed less than 14 days prior to DOS	

[i] Fleisher LA, Fleischmann KE, Auerbach AD, Barnason SA, Beckman JA, Bozkurt B, Davila-Roman VG, Gerhard-Herman MD, Holly TA, Kane GC, Marine JE, Nelson MT, Spencer CC, Thompson A, Ting HH, Uretsky BF, Wijeysundera DN. 2014 ACC/AHA guideline on perioperative cardiovascular evaluation and management of patients undergoing noncardiac surgery: a report of the American College of Cardiology/American Heart Association Task Force on Practice Guidelines. J Am Coll Cardiol 2014;64:e77–137.

[ii] Sear, JW. Perioperative Renin-Angiotensin Blockade: To Continue or Discontinue, That Is the Question. Anesth Analg 2014; 118: 909-11.

[iii] Fleisher et. al.

[iv] Salpeter, et. al. Risk of Fatal and Nonfatal Lactic Acidosis with Metformin Use in Type 2 Diabetes Mellitus. Cochrane Database Syst Rev 2006; (1): CD002967.