



Effective Health Care

Perioperative Management for Urologic Procedures Nomination Summary Document

Results of Topic Selection Process & Next Steps

- The topic, *Perioperative Management for Urologic Procedures*, is not feasible for a full systematic review due to the limited data available for a review at this time.
- *Perioperative Management for Urologic Procedures* could potentially be considered for new research in comparative effectiveness.

Topic Description

Nominator(s): Organization

Nomination Summary: The nominator is interested in assessing the evidence base for 1) antibiotic prophylaxis for shock wave lithotripsy or laparoscopic and/or robotically assisted urologic laparoscopic procedures; and 2) perioperative prevention of venous thromboembolism (VTE) and management of anticoagulation in patients undergoing urological surgery or procedures (including transurethral surgery, anti-incontinence and pelvic reconstructive surgery, urologic laparoscopic and/or robotically assisted urologic laparoscopic procedures, and open urologic surgery) and 3) the adverse events associated with surgical positioning during urological surgery / procedures including prone, flank, and steep Trendelenburg positions.

Staff-Generated PICOs

KQ1- Antimicrobial Prophylaxis

Population(s): Patients undergoing shock wave lithotripsy or laparoscopic and/or robotically assisted urologic laparoscopic procedures

Intervention(s): Antimicrobial prophylaxis including duration, and timing of initiation and discontinuation of therapy

Comparator(s): No antimicrobial prophylaxis or antimicrobial prophylaxis with a different agent

Outcome(s): Prevention of infection

KQ2 – Comparative Effectiveness of Anticoagulation and Antiplatelet Prophylaxis

Population(s): Adults undergoing urological surgery or procedures including transurethral surgery, anti-incontinence and pelvic reconstructive surgery, urologic laparoscopic and/or robotically assisted urologic laparoscopic procedures, and open urologic surgery

Intervention(s): Anticoagulation/antiplatelet agents including aspirin (ASA) 81mg, ASA

full dose, clopidogrel, heparin, and warfarin

Comparator(s): No anticoagulation/antiplatelet agent or a different anticoagulation/antiplatelet agent

Outcome(s): Prevention of deep vein thrombosis (DVT) and pulmonary thromboembolism (PE), bleeding during or after the surgery

KQ2 – Safety of Anticoagulation and Antiplatelet Prophylaxis

Population(s): Adults who are already on anticoagulation/antiplatelet agent for another indication undergoing urological surgery or procedures including transurethral surgery, anti-incontinence and pelvic reconstructive surgery, urologic laparoscopic and/or robotically assisted urologic laparoscopic procedures, and open urologic surgery

Intervention(s): Stop anticoagulant/antiplatelet therapy

Comparator(s): Continue anticoagulant/antiplatelet therapy

Outcome(s): Prevention of bleeding during or after the surgery or DVT/PE/other blood clots

KQ3 – Surgical Positioning

Population(s): Adults undergoing urological surgery or procedures including transurethral surgery, anti-incontinence and pelvic reconstructive surgery, urologic laparoscopic and/or robotically assisted urologic laparoscopic procedures, and open urologic surgery

Intervention(s): Surgical positioning including prone, flank, and steep Trendelenburg positions

Comparator(s): A comparison of the above surgical positions

Outcome(s): Prevention of nerve and brachial plexus injuries, myonecrosis/rhabdomyolysis, and ocular injury

Key Questions from Nominator:

In consultation with the nominator, the original key questions were modified. The following key questions were identified by the nominator as being of high priority:

1. What is the effectiveness/comparative effectiveness of antimicrobial prophylaxis in patients undergoing:
 - a. shock wave lithotripsy
 - b. laparoscopic and/or robotically assisted urologic laparoscopic procedures?
2. In patients undergoing urological surgery or procedures what is the comparative effectiveness of anticoagulants to prevent DVT?
3. In patients already on anticoagulation/antiplatelet agents who are undergoing urological surgery, what is the comparative effectiveness and the safety of interrupting anticoagulation/antiplatelet agents (dose and timing of interruption)?
4. In patients undergoing urological surgery or procedures what are the adverse events associated with different surgical positioning including:
 - a. Prone (non-supine)
 - b. Flank (non-supine)
 - c. Steep Trendelenburg (supine)

Considerations

- The topic meets EHC Program appropriateness and importance criteria. (For more information, see <http://effectivehealthcare.ahrq.gov/index.cfm/submit-a-suggestion-for-research/how-are-research-topics-chosen/>.)
- Perioperative considerations in urologic surgery is an important topic not only because of the large number of patients who undergo urologic surgery, but also because of the potential for variation in clinical practice and outcomes. Effective perioperative management of urologic surgeries and procedures involves the following types of interventions:
 - Antimicrobial prophylaxis to prevent hospital-acquired infections (HAIs) such as catheter-associated urinary tract infections (CAUTIs) and surgical site infections (SSIs);
 - Anticoagulation and antiplatelet agents to prevent deep-vein thrombosis (DVT), pulmonary embolisms (PEs) and venous thromboembolisms (VTEs); and
 - Surgical positioning to prevent adverse events, including skin breakdown, irreparable nerve damage, and death.
- A broad search for relevant studies identified only limited primary research addressing the nominator's key questions. However, a number of systematic review and clinical practice guidelines were identified
 - On the effectiveness/comparative effectiveness of antimicrobial prophylaxis, one systematic review that supported the use on antibiotic prophylactic use for percutaneous nephrolithotomy, but did not address antibiotic prophylactic use for laparoscopic/robotic surgery:
 - Bootsma AM, Laguna Pes MP, Geerlings SE, et al. Antibiotic prophylaxis in urologic procedures: a systematic review. *Eur Urol.* 2008;54(6):1270-86.
 - On the comparative effectiveness of anticoagulants to prevent DVT and the safety of interrupting anticoagulation/antiplatelet agents, one American College of Chest Physicians (ACCP) guideline on antithrombotic therapy and prevention of thrombosis for non-orthopedic surgery patients includes those undergoing urological surgery; however, the guideline does not appear to cover minimally invasive procedures, and only covers pharmacologic prophylaxis with low-dose unfractionated heparin (LDUH), low-molecular-weight heparin (LMWH), fondaparinux, and aspirin.
 - Guyatt GH, Akl EA, Crowther M, et al. Antithrombotic Therapy and Prevention of Thrombosis, 9th ed: American College of Chest Physicians Evidence-Based Clinical Practice Guidelines. *CHEST* 2012; 141(2)(Suppl):7S–47S.
 - On adverse events associated with different surgical positioning, only one systematic and one randomized controlled trial (RCT) were identified. Both assessed outcomes for patients undergoing percutaneous nephrolithotomy, one compared supine to prone and the second flank to prone. However, neither found a significant difference in outcomes for patients undergoing percutaneous nephrolithotomy for supine vs. prone and flank vs. prone.
 - Basiri A, Mohammadi Sichani M. Supine percutaneous nephrolithotomy, is it really effective? A systematic review of literature. *Urol J.* 2009;6(2):73-7.
 - Karami H, Rezaei A, Mohammadhosseini M, et al. Ultrasonography-guided percutaneous nephrolithotomy in the flank position versus fluoroscopy-guided percutaneous nephrolithotomy in the prone position: a comparative study. *J Endourol.* 2010; 24(8):1357-61.

- Perioperative management of urologic procedures is an important topic that lacks primary evidence for newer procedures and certain medications. A large evidence gap still remains.