

# VA/DoD CLINICAL PRACTICE GUIDELINE FOR THE MANAGEMENT OF POST-OPERATIVE PAIN

## Guideline Summary

### EXECUTIVE SUMMARY

- Formulate an efficient and effective initial preoperative assessment. Pain management in the postoperative patient is best initiated in the preoperative period through appropriate patient assessment and education.
- Develop a collaborative pain management plan with the patient. Clinical management should be multimodal, including both pharmacologic and non-pharmacologic modalities.
- Provide appropriate patient and family education. Education for both the patient and family in the preoperative, postoperative and discharge settings improves pain management, decreases anxiety and improves patient outcomes.
- Optimize the use of therapeutic techniques to control pain. Assess patient response to treatment, which should include pain relief, side effects, and function. Documentation of this response is an integral aspect of management. The plan of care may need to be modified by changing the drug, route, interval, amount, or treatment, or by addressing side effects.
- Reduce the incidence and severity of postoperative pain.
- Minimize preventable postoperative complications and morbidity.
- Discharge planning should begin immediately after surgery to ensure continuity of care. This should include an evaluation of the feasibility of continuation of the plan of pain management within the discharge environment.

### GOAL OF THERAPY

The ideal goal for postoperative pain relief is minimal pain and maximal function. This goal needs to balance patient function, pain and side effects of treatment.

## **KEY POINTS OF THE PAIN MANAGEMENT GUIDELINE:**

- An effective pain relief program is based on an understanding of the scientific foundation of postoperative pain and pain management options.
- Preprocedural patient evaluation is necessary to provide safe and effective pain management.
- Medical or surgical stabilization must be provided prior to or in conjunction with effective pain management.
- Pain management requires systematic patient assessment postoperatively, at scheduled intervals, in response to new pain, and prior to discharge.
- The components of a good assessment will vary depending on the patient's situation, but should include both severity of pain and its impact on functioning.
- Education of the patient and those involved in patient care is a central component of effective pain management:
  - Pain management education should provide the patients with realistic expectations about pain, the postoperative and discharge treatment plan and expected outcomes.
  - Pain management education decreases emotional distress, enhances coping skills, and enables the patient to participate in treatment.
- Postoperative pain management should be multimodal and individualized for the particular patient, operation, and circumstances. Understanding the range of available interventions and considering the type of surgery are essential to safe and effective pain management.
- Selection of a pain management option should be determined by balancing the advantages, disadvantages, contraindications, and patient preference. In most patients, more than one modality will be needed for successful pain management.
- Interventions for postoperative pain management include both pharmacologic (using the main classes of medication: opioids, nonsteroidal anti-inflammatory drugs (NSAIDs), and local anesthetics) and non-pharmacologic (cognitive and physical modalities).
- Evaluation of the balance between pain control and side effects should be routine, timely, and specific. The management plan should be modified, if indicated.
- The discharge plan should include a plan for continued pain management. It should be in place prior to discharge and be effectively communicated to the patient and their caregiver if appropriate.

## **CHOOSING AN ANALGESIC:**

### **Opioids**

- Opioids offer safe and effective postoperative pain control and can be used safely in conjunction with other agents and techniques.
- The evidence indicates that there is no significant risk of addiction with short-term use of opioids for postoperative pain management. Addiction is often a concern of patients and should be addressed preoperatively.
- There is no ceiling dose for agonist opioids. Pain management with opioids should be individually tailored to patient/pain response.
- Respiratory depression should not be a concern if appropriate dosing, routes, and frequency are used with adequate patient monitoring.
- Opioids have significant side effects that can be modified by changing dose or route, and adding adjunctive agents.

## **Acetaminophen (APAP) and NSAIDs**

- APAP and NSAIDs are not sufficiently effective as the sole agent for pain management after major surgery in most patients; they are often effective after minor or moderate surgery.
- APAP and NSAIDs often decrease opioid requirement.
- The quality of opioid analgesia is often improved or enhanced with APAP and NSAIDs.
- NSAIDs often increase bleeding time and some studies have shown increased blood loss with their use.
- For patients who are unable to tolerate routine use of NSAIDs, APAP can often be used as an opioid-sparing adjunct.
- Avoid the use of NSAIDs in the following situations:
  - ◇ Hypersensitivity to NSAIDs, particularly in patients who have developed NSAID- or aspirin-induced asthma, rhinitis, nasal polyps, or other symptoms of allergic or anaphylactoid reactions;
  - ◇ Hypersensitivity to sulfonamides (avoid celecoxib);
  - ◇ Peptic ulcer disease; or
  - ◇ Significant renal impairment.
- Use NSAIDs with caution in patients who:
  - ◇ Are 65 years old or older
  - ◇ Have hypertension;
  - ◇ Have renal impairment; or
  - ◇ Have congestive heart failure.

## **Safer alternatives to the use of meperidine exist.**

Use of meperidine in the recovery room and postoperatively should be limited to less than 24 h in doses less than 600 mg/24 h because of the potential accumulation of normeperidine, a neurotoxic metabolite. Regular dosing or high doses may increase the risk of seizures. Because meperidine has a short duration of action, there is also a risk of inadequate pain control.

## **Local Anesthetics**

Used in combination with other agents (e.g, epinephrine, clonidine, opioids, or mixed agonist-antagonist opioids), many local anesthetics may have prolonged duration of action.

## **Glucocorticoids**

Glucocorticoids may be used as adjuvant agents for certain types of postoperative pain. There is limited evidence to support their use.

## **ROUTES AND APPROACHES:**

Contemporary delivery systems (PCA instead of intermittent dosing via IM or SC) and techniques (neuraxial) improve postoperative pain control and patient satisfaction.

### **Oral Route**

The oral route is easy to administer. Clinicians need to make sure the dose is adequate. The oral route may not be appropriate for patients with swallowing or airway problems

### **Intramuscular (IM)**

The most common use of IM pain control is for patients who are hospitalized for major surgical procedures, or for outpatients prior to discharge. This technique is successfully used to control moderate to severe pain in all regions of the body. Commonly used IM medications include NSAIDs, opioids, agonist-antagonist opiates and opioid-antihistamine combinations.

IM has been the most common route of administration for postoperative pain. Due to the variable absorption and the time and staff necessary to administer IM analgesia, other routes are preferred. Ideally, patients with moderate to severe postoperative pain should receive pain medication through the IV route.

### **Intravenous (IV)**

IV drug administration has distinct advantages over other routes of administration, providing better efficacy at lower doses.

### **Patient Controlled Analgesia (PCA)**

The development of PCA has advanced the delivery of IV medications. Patients are capable of self-administering drugs in adequate doses that produce better pain control.

### **Regional**

Regional analgesia is a preferred method of providing postoperative pain control to a specific area of the body. This technique can also be used as the anesthetic for the operation either solely or in combination with other anesthetic techniques. Regional analgesia ranges from local wound or joint infiltration to specific peripheral nerve block techniques affecting specific regions of the body. Examples include: interscalene block, lumbar plexus block, Bier block, intercostal block, paravertebral block, ankle block, sciatic nerve block, popliteal block, and incisional infiltration.

Studies have shown improved patient outcomes with better pain control using these techniques compared to other methods of pain control. The role of regional anesthesia/analgesia in the production of preemptive analgesia remains controversial. Several clinical studies have demonstrated benefit in the perioperative period following regional anesthesia/analgesia initiated prior to surgical incision. These benefits include decreased pain immediately after the operation and well into the recovery period. Some of the beneficial effects may last beyond the duration of the anesthetic/analgesic technique.

- **Epidural**

Epidural is one of the techniques used to provide regional anesthesia/analgesia. It is widely used and accepted. Epidural analgesia provides improved analgesia with decreased doses of opiates as compared with IM, PO, and IV because the medication is delivered to opioid receptors in the dorsal horn of the spinal cord.

- **Spinal**

Intrathecal drug administration is one of the techniques used to provide regional anesthesia/analgesia. It is widely used and accepted; however, it is not recommended as a continuous technique for postoperative pain management due to inherent risks. However, a single injection of opioid analgesics is effective for providing analgesia up to 24 hours in some settings.

## **COGNITIVE MODALITIES**

### **Distraction, Relaxation**

Distraction and relaxation training are useful as an adjunct to analgesic interventions. Many relaxation techniques are available. Biofeedback—assisted relaxation—uses an external device to help the patient learn to relax specific muscle groups. Distraction can include music and imagery. These techniques may benefit the patient by reducing muscular arousal and distracting from painful sensations. They also reduce anxiety and increase the patient's sense of control. Relaxation/distraction techniques have been widely evaluated. Relaxation techniques do not have to be complex to be effective.

### **Hypnosis**

Hypnosis is a state of focused attention with a reduction of external awareness and a suspension of critical judgment. Contrary to popular belief, hypnosis does not imply suggestibility but rather the ability to focus attention to the exclusion of other stimuli. There are several mechanisms by which hypnosis is thought to have its beneficial effect.

## **PHYSICAL MODALITIES**

### **Transcutaneous Electrical Nerve Stimulation (TENS)**

TENS is a method of producing electro-analgesia through the spinal cord gating mechanism. An electrical impulse is conducted through electrodes applied to the skin. TENS has been used as an effective adjunct for providing postoperative pain control. Its relatively rapid onset (30-60 minutes), patient controlled features and absence of appreciable side effects make it a reasonable adjunct for postoperative pain management. TENS facilitates movement and exercise by decreasing pain perception and improved physical functioning.

### **Cold**

Cold, or cryotherapy, is the application of cold for therapeutic effects. Cooling agents may include cold packs, cold baths, vapocoolant sprays, cold compression, continuous-flow cold therapy, and ice massage. Cold alters the pain threshold, reduces local swelling and decreases tissue metabolism and/or bleeding, muscle spasm and spasticity.

### **Exercise**

Exercise may include active or passive range of motion, continuous passive motion machine (CPM), active exercise, bed mobility, or ambulation, i.e., getting out of bed and walking to the bathroom. Exercise can increase or maintain range of motion, increase blood flow, prevent muscle guarding, spasms, and contractures.

### **Heat**

Heat can usually be initiated 48 hours following the operation, and is usually used in combination with other treatments (AHCPR, 1992). Thermal agents are used to apply heat superficially or as deep heating applications. Superficial methods include hot packs, warm whirlpools and paraffin. Deep heat, such as ultrasound, can increase the temperature of the tissues three to five centimeters in depth.

### **Positioning**

Positioning is used to support or assist the patient. It may be accomplished with pillows, wedges, supports, specialty beds, and weight shifting. Repositioning increases blood flow and prevents muscle guarding and spasms, which reduces acute pain or prevents additional pain.

### **Immobilization/Rest**

Patients may be immobilized, as in casting, traction, or prescribed bed rest. Immobilization facilitates the healing process after the operation, but is not recommended as a sole intervention for pain control. An example of immobilization would be for a fracture, for rest, or for back surgery. Immobilization also may reduce edema formation.

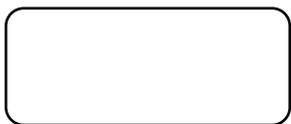
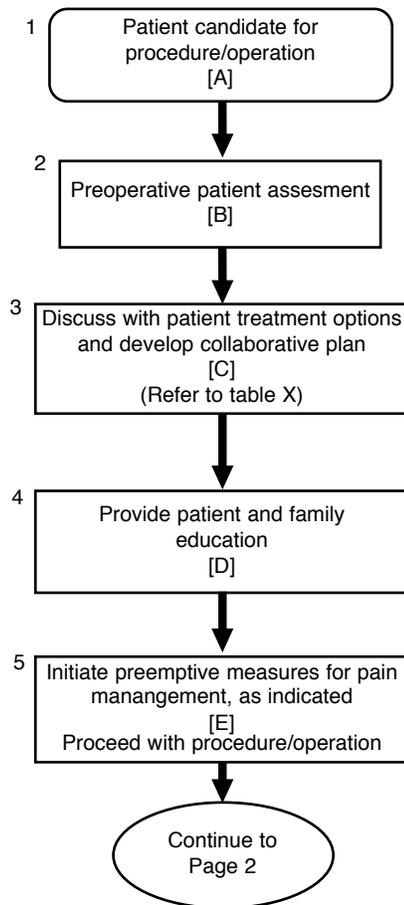
### **Massage**

Massage is the repetitive movements of the therapist's hands or the use of devices such as effleurage, petrissage, tapotement and friction. A medium may be used on the skin such as lotions, oil, powder or ice. Massage may be used to stretch muscle length and is usually used in combination with other treatments.

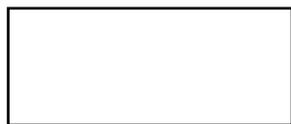
# CLINICAL PRACTICE FOR MANAGEMENT OF POSTOPERATIVE PAIN

## PREOPERATIVE MANAGEMENT

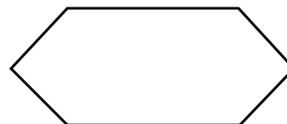
Page 1



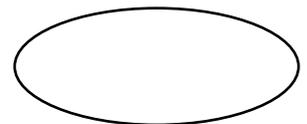
Rounded Rectangle -  
Clinical state box/condition



Rectangle -  
An Action in the process of care



Hexagon -  
A decision point in the process  
Answer Yes or No

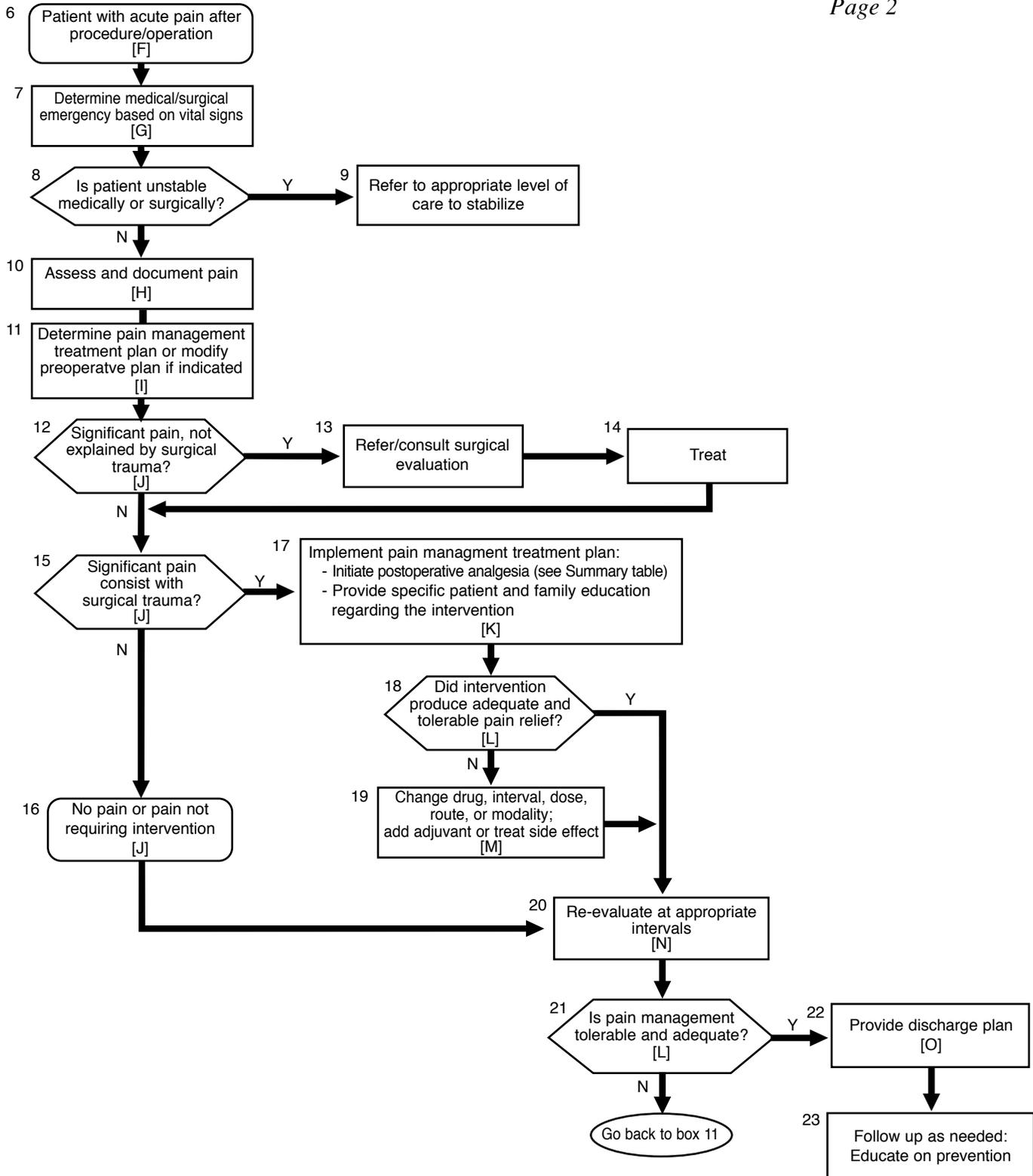


Oval -  
A link to another section in the  
guideline

# CLINICAL PRACTICE GUIDELINE FOR MANAGEMENT OF POSTOPERATIVE PAIN

## POSTOPERATIVE MANAGEMENT

Page 2



## THE PAIN TRAJECTORY RELATIVE TO THE OPERATIVE PROCEDURE

Type of Surgery	What does it feel like? (Quality)	How bad is it? (Severity w/o pain medication)	How long does it last? (Duration)	How can we control it? (Interventions)
<b>Head &amp; Neck Surgeries</b>				
Eye (Ophthalmic)	Little nociceptive pain. Enucleations & retinal surgeries produce both nociceptive & neuropathic.	Mild to severe	Several days Phantom eye pain may develop following enucleation and last for months to years.	<ul style="list-style-type: none"> <li>• <i>Regional</i> - preferred based on evidence</li> <li>• <i>IV/PO opioids and PO NSAIDs</i> - consensus</li> <li>• Oral pain medication-consensus</li> </ul>
Craniotomies	Nociceptive in nature	Mild to moderate	Lasts days	<ul style="list-style-type: none"> <li>• <i>IM/IV opioids and NSAIDs and PO opioids</i> – consensus</li> <li>• Oral medicine (Codeine preferred because of its lessor effect on brain/blood flow)</li> <li>• NSAIDs – controversial</li> <li>• PCA - a consideration but controversial</li> </ul>
Radical Neck Dissection	Nociceptive & neuropathic	Moderate to severe	Days to years	<ul style="list-style-type: none"> <li>• <i>PCA opioids</i> – consensus</li> <li>• Controlled with IM, IV, or PCA opiates</li> </ul>
Oral-Maxillofacial	Nociceptive & neuropathic	Mild to severe	1-3 days (outpatients)	<ul style="list-style-type: none"> <li>• <i>Cold, Immobilization</i> - preferred based on evidence</li> <li>• <i>Oral opioids, NSAIDs</i> - consensus</li> <li>• Oral opioids and NSAIDs - following surgery</li> <li>• IM or IV – if oral not effective</li> </ul>
<b>Thorax (Non-cardiac)</b>				
Thoracotomy	Nociceptive & neuropathic Can develop chronic post-thoractomy pain syndrome	Moderate to severe	Days to weeks Months to years	<ul style="list-style-type: none"> <li>• <i>Epidural, TENS</i> - preferred based on evidence</li> <li>• Thoracic epidural analgesia (opioid &amp; local anesthetic) - greatest beneficial effects</li> <li>• PCA opioids improve pain control vs. IM opioids</li> </ul>
Mastectomy	Nociceptive & neuropathic Can develop chronic post-mastectomy pain syndrome	Moderate to severe	Days to weeks Months to years	<ul style="list-style-type: none"> <li>• <i>IV NSAIDs, IV/PCA opioids</i> - consensus</li> <li>• <i>IV/IM or PCA for 24 hours followed by PO opioids and NSAIDs</i></li> </ul>
Thoracoscopy	Nociceptive and rarely neuropathic	Mild to moderate Occasionally severe	Days	<ul style="list-style-type: none"> <li>• <i>IV opioids and NSAIDs</i> - consensus</li> </ul>
<b>Thorax (Cardiac)</b>				
CABG	Nociceptive	Moderate to severe	Days to weeks	<ul style="list-style-type: none"> <li>• <i>IV opioids, NSAIDs</i> - preferred based on evidence</li> <li>• IV rapidly transitioning to PCA or local</li> </ul>
MID-CAB	Nociceptive	Mild to moderate	Days to weeks	<ul style="list-style-type: none"> <li>• <i>IV opioids and NSAIDs</i> - consensus</li> <li>• IV rapidly transitioning to PCA or local</li> </ul>
<b>Upper Abdomen</b>				
Laparotomy	Nociceptive (Somatic and visceral) and neuropathic	Moderate to severe	Days to weeks	<ul style="list-style-type: none"> <li>• <i>Epidural opioids, Regional, TENS</i> - preferred based on evidence</li> <li>• <i>PCA opioids, Exercise</i> – consensus</li> </ul>
Laparoscopic Cholecystectomy	Nociceptive (Somatic and visceral) and neuropathic	Mild to moderate	Days	<ul style="list-style-type: none"> <li>• <i>PO, IM, IV NSAIDs, Opioids, TENS, exercise</i> – consensus</li> </ul>
Nephrectomy	Nociceptive (Somatic and visceral) and neuropathic	Mild to severe	Days to weeks	<ul style="list-style-type: none"> <li>• <i>Epidural opioids, local</i> – preferred based on evidence</li> <li>• <i>Exercise</i> – consensus</li> </ul>

## THE PAIN TRAJECTORY RELATIVE TO THE OPERATIVE PROCEDURE

Type of Surgery	What does it feel like? (Quality)	How bad is it? (Severity w/o pain medication)	How long does it last? (Duration)	How can we control it? (Interventions)
<b>Lower Abdomen/Pelvis</b>				
Hysterectomy	Nociceptive and neuropathic	Mild to severe	Weeks	<ul style="list-style-type: none"> <li>• PCA opioids, exercise – consensus</li> <li>• IM, IV/PCA or intraspinal drug administration, oral opioid or NSAID often sufficient once bowel function has returned</li> <li>• Epidural can also be considered for abdominal hysterectomy</li> </ul>
Radical Prostatectomy	Nociceptive	Moderate to severe	Weeks	<ul style="list-style-type: none"> <li>• Epidural opioid, exercise – preferred based on evidence</li> <li>• IM, IV or PCA opiates, epidural analgesia may reduce pain for several subsequent weeks postoperative</li> </ul>
Hernia	Nociceptive and neuropathic	Mild to severe	Weeks, neuropathic pain may last weeks to years	<ul style="list-style-type: none"> <li>• Regional - preferred based on evidence</li> <li>• PO opioids – consensus</li> <li>• Regional anesthesia may prevent postoperative pain</li> <li>• Opioids combined with NSAIDS to treat pain</li> </ul>
<b>Extremities and Vascular</b>				
Vascular	Nociceptive	Mild to moderate	Days to weeks	<ul style="list-style-type: none"> <li>• Epidural opioids, regional, exercise - preferred based on evidence</li> <li>• Oral, IM IV/PCA, or intraspinal</li> <li>• Epidural may also be used for intra- and postoperative pain control</li> </ul>
Total Hip Replacement	Nociceptive	Mild to Severe	Several days to weeks	<ul style="list-style-type: none"> <li>• Epidural opioids, regional, exercise, cold, and TENS - preferred based on evidence</li> <li>• IM, IV/PCA, intraspinal opioids, local anesthetics, may be effective</li> <li>• Continue femoral and continuous epidural gives better pain relief with movement</li> <li>• If anticoagulation used, epidural may need to be removed postoperative day #1 or sooner</li> </ul>
Total Knee Replacement	Nociceptive	Moderate to severe	Days to weeks	<ul style="list-style-type: none"> <li>• Regional, Exercise, Cold, TENS - preferred based on evidence</li> <li>• Epidural opioids – consensus</li> <li>• Continuous epidural and regional or epidural/ femoral blocks have better pain control than IM, IV/PCA</li> </ul>
Knee arthroscopy/ Arthroscopic joint repair	Nociceptive	Mild to moderate	Days to weeks	<ul style="list-style-type: none"> <li>• Exercise, TENS, Cold – preferred based on evidence</li> </ul>
Amputation	Nociceptive and Neuropathic	Moderate to severe	Days to years	<ul style="list-style-type: none"> <li>• Exercise - preferred based on evidence</li> <li>• Epidural, Intrathecal opioids and local, regional – consensus</li> <li>• Treat preoperative pain aggressively</li> <li>• Postoperative epidural, intraspinal, IV, IM PO may be effective</li> <li>• May use oral agents in 2-3 days</li> </ul>
Shoulder	Nociceptive	Moderate to severe	Weeks	<ul style="list-style-type: none"> <li>• Exercise, TENS, Cold, Immobilization - preferred based on evidence</li> <li>• Regional – consensus</li> </ul>

## THE PAIN TRAJECTORY RELATIVE TO THE OPERATIVE PROCEDURE

Type of Surgery	What does it feel like? (Quality)	How bad is it? (Severity w/o pain medication)	How long does it last? (Duration)	How can we control it? (Interventions)
<b>Back / Spinal Surgery</b>				
Laminectomy, Discectomy	Nociceptive and neuropathic	Mild to severe	Weeks	<ul style="list-style-type: none"> <li>• <i>Exercise</i> - preferred based on evidence</li> <li>• <i>IV opioids, NSAIDs</i> – consensus</li> <li>• <i>IV NSAIDs, PCA, IV, IM and PO, NSAIDs</i> may be effective</li> <li>• Epidural can be used for superior pain control</li> <li>• Local infiltration may be helpful</li> </ul>
Fusion	Nociceptive and neuropathic	Moderate to severe	Months	<ul style="list-style-type: none"> <li>• <i>Exercise, Immobilization</i> – preferred based on evidence</li> <li>• <i>IV, PCA opioids</i> – consensus</li> <li>• <i>PCA, VI IM</i> with conversion to <i>PO</i> over days</li> <li>• Intra-spinal morphine may be used to provide intra- and postoperative pain</li> </ul>