

Post operative analgesia

:Supervised by
Dr. Saad Azawi

:Done by
Qais Maaitah
Muhammed Takhieneh
Nasser Majali
Nojoud Foqaha
Raneem Qrara'a





Definition of pain

An unpleasant sensory and emotional experience associated with actual or potential tissue damage

Incidence of moderate pain range from 50% to 75% of postoperative patients

Pathophysiology of postoperative pain

Acute postoperative pain

- is a normal response to surgical intervention
- a cause of delayed recovery and discharge after surgery
- a cause of increased risk of wound infection and respiratory and cardiovascular complications .

Pathophysiology of postoperative pain

Untreated acute pain leads to reduced patient satisfaction and increased morbidity and mortality and places a burden on the patient and health system finances.

Acute pain that becomes intractable and persists is referred to as chronic postsurgical pain

Etiology

- Post-surgery pain is a type of neuropathic (nerve) pain which is thought to result from injury to a major peripheral nerve during a surgical procedure.
- Surgery involves the cutting of tissues and nerves, which activate the body's automatic injury responses such as inflammation.
- Sometimes, these reactions can result in changes to how the nervous system processes pain signals, which can lead to chronic pain.

Aim of post operative analgesia

Minimize patient discomfort

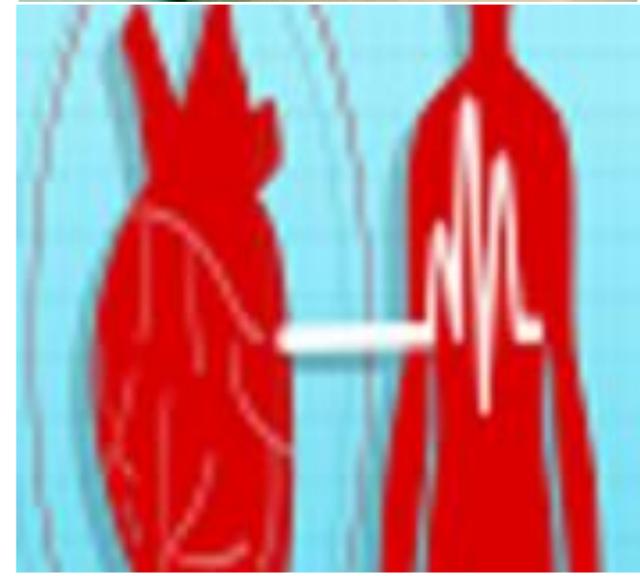
Facilitate functional recovery

Prevent acute pain developing into chronic pain

Reduce length of hospital stay

Negative effect of poor postoperative pain control

- Increase incidence of nausea and vomiting
- Cardiovascular instability “tachycardia and hypertension
- Increased risk of pulmonary complications from inhibition of effective respiration.
- Sleep disturbance



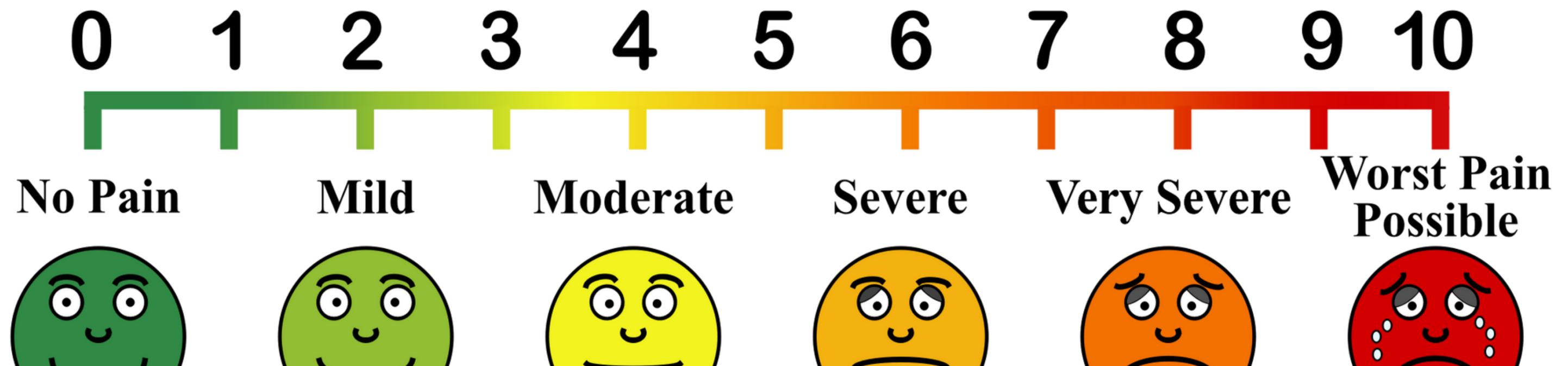


- **Note:**
 - **preoperative screening may identify patients who are at an increased risk of chronic pain and could facilitate targeted pre-op interventions to reduce pain and increase patient's ability to cope with pain**

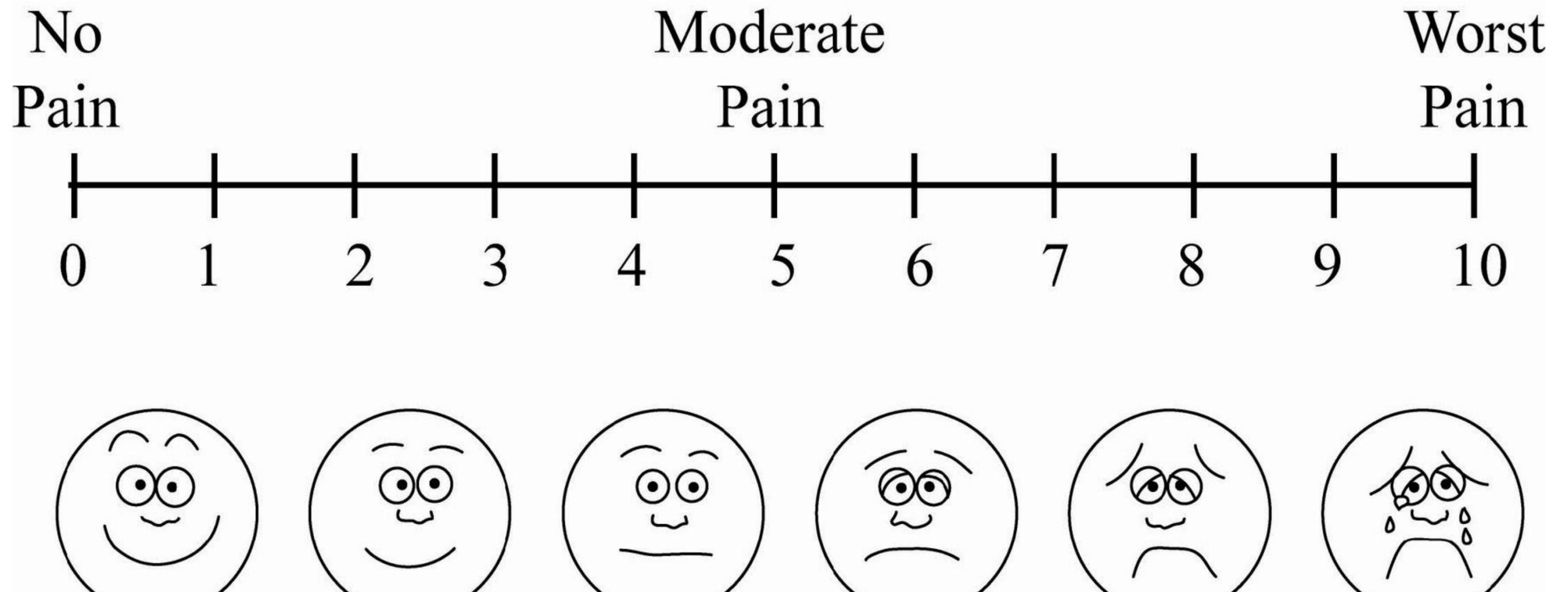
Evaluation of adequate pain control

- Pain needs to be quantified to be treated effectively.
- The gold standard is the patient's self-assessment done routinely after surgery to measure the efficacy of pain management.
- Several scoring tools are available, but it's usually accomplished using a 10-point pain assessment.
- Acute pain, such as that experienced in the postoperative period, is commonly measured using unidimensional pain scales.
- While there are many different pain scales available, the Visual Analogue Scale (VAS) is the most frequently used scale to evaluate postoperative pain.

- The pain VAS is a unidimensional measure of pain intensity, used to record patients' pain progression, or compare pain severity between patients with similar conditions.
- **The scale involves the use of a metered line marked from 0 to 10 with word descriptions of pain at either extreme of the scale, where 0 represents “no pain” and 10 represents the “worst possible pain.”**



Visual Analogue Scale (VAS)



Choice of post operative analgesia

Patient factors:

Allergy

Age

Pre-operative analgesics and preexisting pain

Regular medications and potential interactions with analgesics prescribed

Mental health and opioid dependence

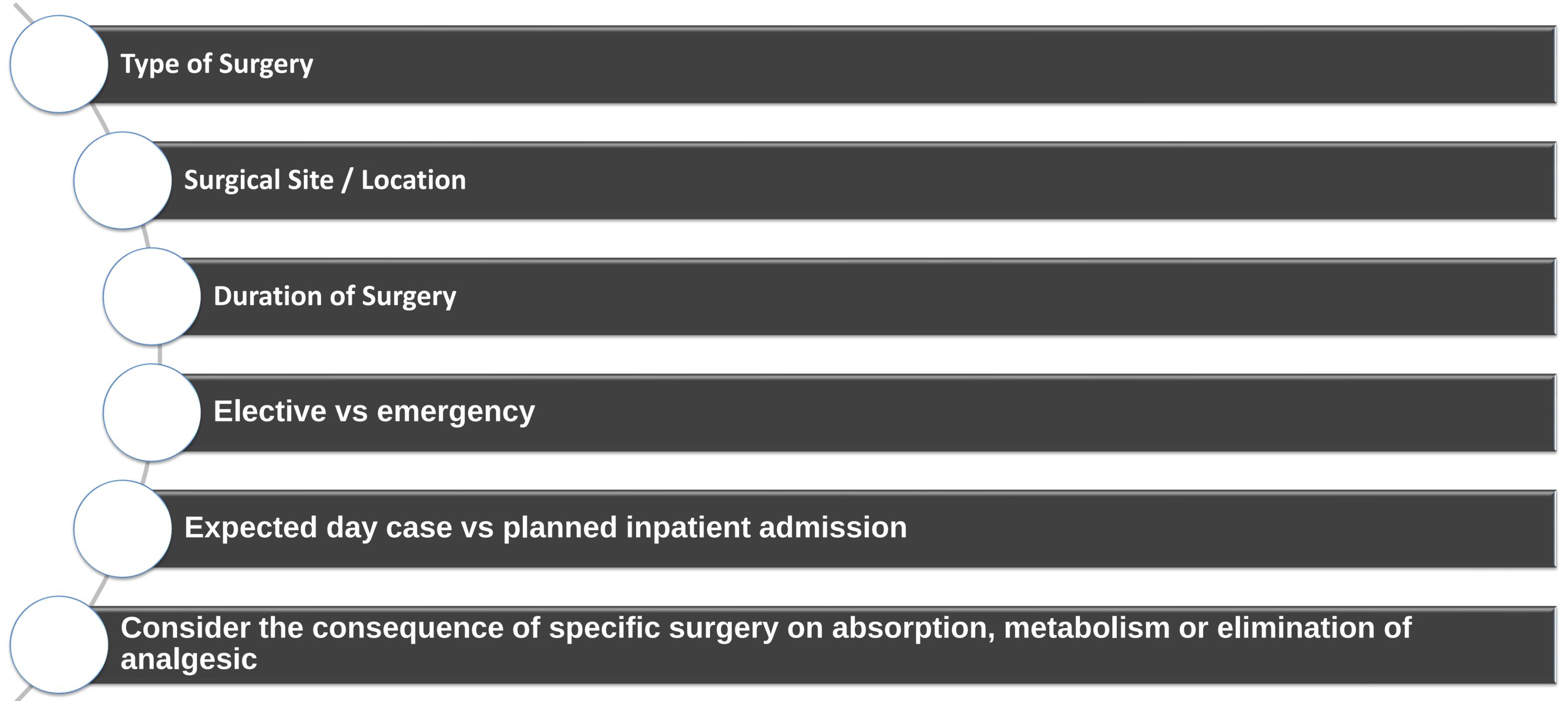
Renal/hepatic impairment

Co-morbidities

Factors limiting delivery or absorption of analgesics; rheumatism, ileus

Choice of post operative analgesia

:Surgical factors



Regimes of analgesia

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graph TD; A[Regimes of analgesia] --- B[PRN]; A --- C[Regular]; A --- D[PCA]; A --- E[Multimodal]
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PRN

Regular

PCA

Multimodal

Multimodal

The best treatment plan for a patient's postsurgical pain is **the multimodal approach**.

Although traditionally the mainstay of postoperative analgesia is opioid based, more evidence supports a multimodal approach to reduce opioid side effects.

Familiarity with the efficacy of available agents and routes of administration is **important to tailor the post-operative regimen to the needs of the individual patient.**



Treatments utilized for the multimodal treatment of pain in postsurgical patients:

1 .Systemic pharmacologic therapy

2 .Local, Intra-articular, or topical techniques

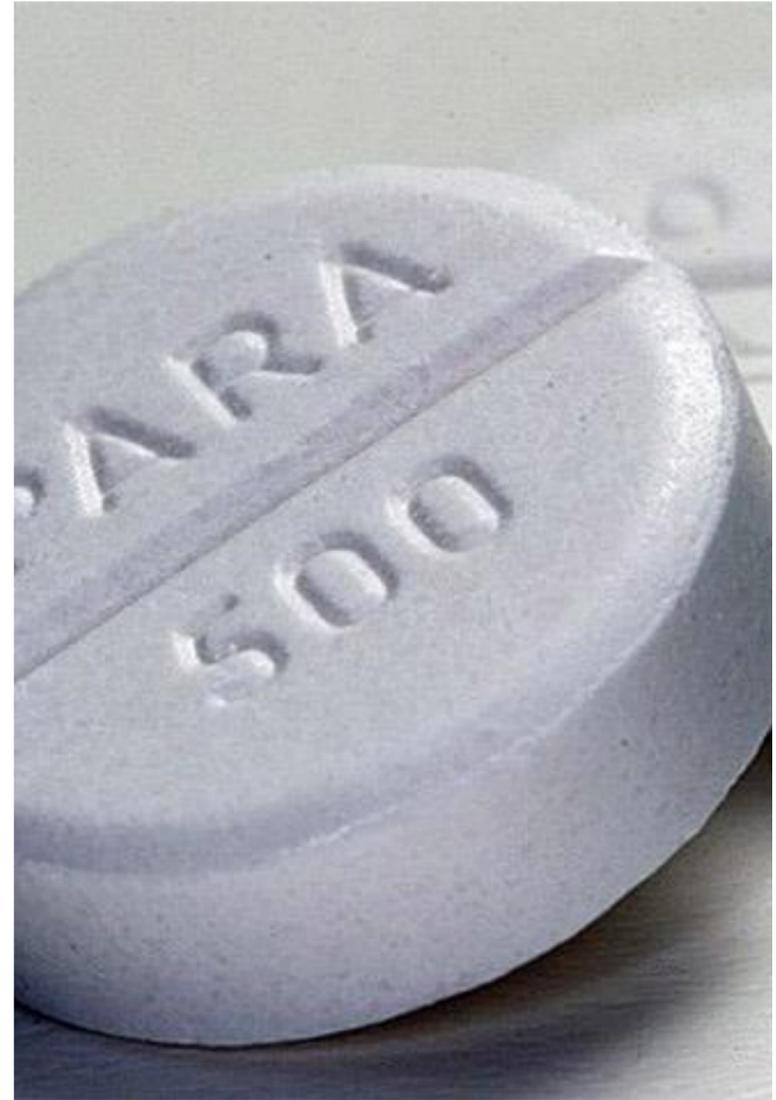
3 .Regional anesthetic techniques

4 .Neuraxial anesthetic techniques

5 .Nonpharmacologic therapies- ex, cognitive modalities, physical therapy.

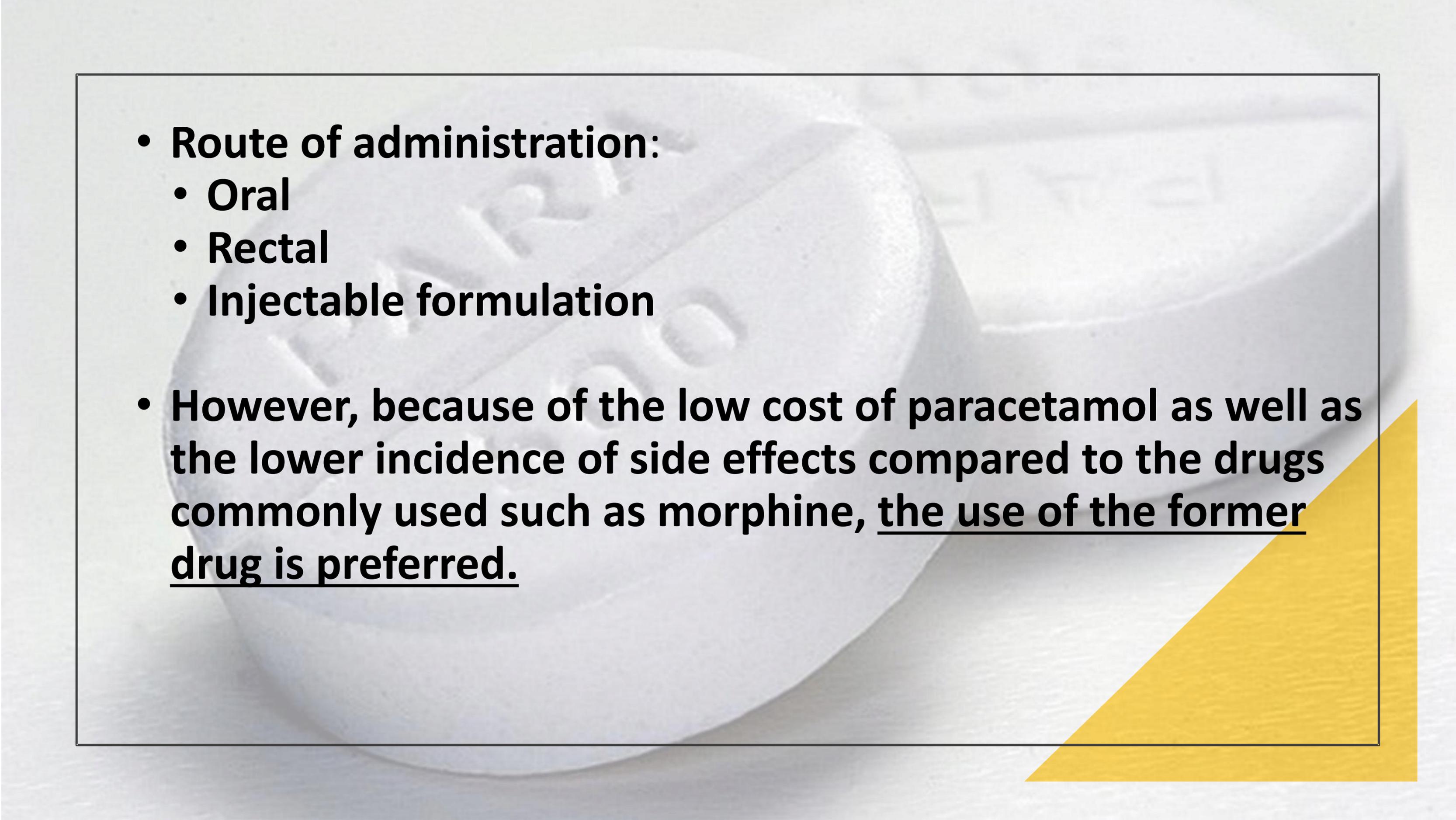
Paracetamol

- **Paracetamol is a commonly used medicine that can help treat pain and reduce a high temperature (fever).**
- **Contraindications to using acetaminophen include:**
 - **Hypersensitivity to acetaminophen**
 - **Severe hepatic impairment**
 - **Severe active hepatic disease.**



Paracetamol

- **MOA: Paracetamol is**
 - **A selective cyclooxygenase-2 (COX-2) inhibitor.**
 - **Exerts a central analgesic effect.**
 - **Through the activation of the descending serotonergic pathways.**
- **This drug is**
 - **An effective analgesic agent.**
 - **Has no side effects that are observable in opioids or non-steroidal anti-inflammatory drugs (NSAIDs).**



- **Route of administration:**

- **Oral**

- **Rectal**

- **Injectable formulation**

- **However, because of the low cost of paracetamol as well as the lower incidence of side effects compared to the drugs commonly used such as morphine, the use of the former drug is preferred.**

NSAIDS

- They are class of drugs having the capacity to
 - Suppress the signs and symptoms of inflammation (relieve pain, swelling, redness and stiffness caused by inflammation).
- They also are effective option for regular anesthesia for mild and moderate pain.

Mechanism of action



NSAIDs act by inhibiting cyclooxygenase enzymes that catalyze first step in prostanooids biosynthesis, leading to decreased PGs synthesis with both beneficial & unwanted effects



Most NSAIDs are non-selective i.e. they inhibit both Cox-1 and Cox-2. Their anti-inflammatory action is due to inhibition of Cox-2, but side effects are due to inhibition of Cox-1

Drugs available include:

- **Nonselective:**
Ibuprofen, diclofenac, naproxen, ketorolac.
- **Selective:**
Parecoxib
- **NSAIDs are available as:**
Oral medications such as tablets, capsules and liquids, topical creams, gels, and ointments.

- **ketorolac is widely used during the Perioperative period for short-term treatment of acute pain and as an adjunct to opioids for the treatment of moderate to severe postoperative pain.**
- **Maximal benefit occurs when the NSAID is continued for 3 to 5 days**

Possible side effects of NSAIDs include:

1. Indigestion –

- including stomach aches, feeling sick and diarrhea

2. Stomach ulcers –

- these can cause internal bleeding and anemia; extra-medicine to protect the stomach may be prescribed to help reduce the risk.

3. Headaches

4. Drowsiness

5. Dizziness

6. Allergic reactions

NSAIDs: contraindications

Nursing and pregnancy

3rd trimester

- Delayed labour

- Low Birth weight

- greater post partum Blood loss

- premature closure of Ductus Arteriosus

Serious bleeding

Acetaminophen
is safer

Aspirin 20G

Allergy/ Asthma/ Angioedema

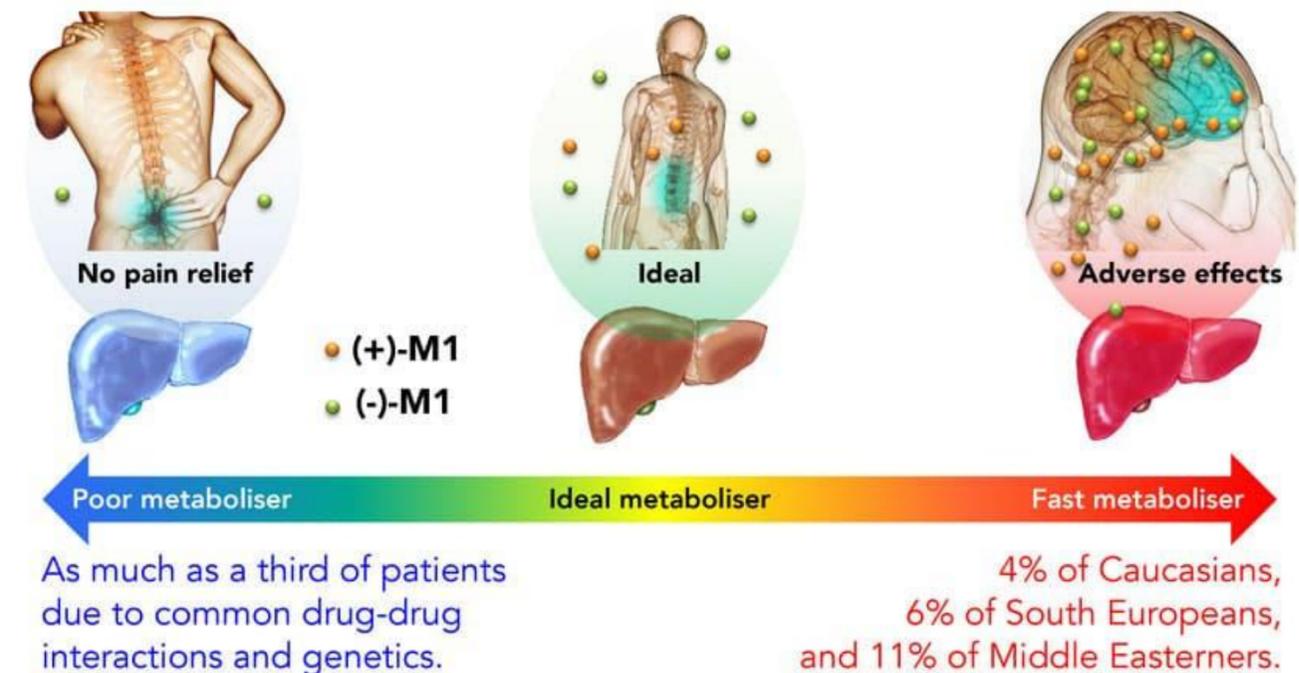
Impaired renal function

Drug (anticoagulant)

Opioids

- Opioids are substances that act on opioid receptors to produce morphine-like effects.
- Medically they are primarily used for pain relief, including anesthesia.
- Other medical uses include suppression of diarrhea, replacement therapy for opioid use disorder, reversing opioid overdose, and suppressing cough.

- **Contraindications:**
 - **respiratory depression**
 - **increased intracranial pressure.**



The metabolic liabilities of tramadol

Route of administration of opioids:

They can be administered via:

- Oral
 - Transdermal
 - Parenteral
 - Neuraxial
 - rectal routes
-
- IV opioids provide rapid and effective analgesia for patients with moderate to severe pain.

Drug available include:

The most commonly used intravenous opioids for postoperative pain are Morphine, Hydromorphone (dilaudid), and Fentanyl.

- **Morphine** is the standard choice for opiates and is widely used. It has a **rapid onset of action** with **peak effect occurring in 1 to 2 hours**.

Adverse effect of opioid

Respiratory depression

Nausea and vomiting

Pruritus

Reduction in bowel motility leading to ileus and constipation

Longer-term use of opioids can lead to dependence and addiction

The background of the slide is a dense, abstract pattern of overlapping circles. The circles vary in size and are colored in a palette of muted blues, purples, and reds, some appearing semi-transparent. The overall effect is a textured, bokeh-like background.

Thank you