
بسم الله الرحمن الرحيم

ACUTE PAIN MANAGEMENT

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OBJECTIVES

1. Introduction
   - Definitions, Causes & Types
2. Assessment of Acute Pain
3. Management of Acute Pain
   - Rules for the Management
   - Treatment Modalities:
     - Pharmacotherapy.
     - Regional Techniques
4. Summary

ACUTE PAIN MANAGEMENT

DEFINITION & CAUSES & TYPES

WHAT IS THE DEFINITION OF PAIN?

- **Pain:**

"Sensory and/or emotional experience associated with actual or potential tissue damage or expressed in such terms"

- **Acute Pain:**

"Pain of Recent onset, Probable limited duration, has an Identifiable temporal & causal relationship to the injury"

(Ready & Edwards, 1992). IASP Press

Classification of Pain (2/3)

A) According to the Duration

1. Acute pain,
2. Subacute pain,
3. Chronic Pain.

Classification of Pain (1/3)

B) According to the Pathophysiology

1. **Nociceptive pain**
   - Identifiable stimuli
   - Subtypes:
     - Somatic
     - Visceral
     - Bony
2. **Neuropathic pain**
3. **Mixed Pain**
4. **Idiopathic**

Classification of Pain (3/3)

C) According to the Cause

1. Postoperative pain,
2. Labor pain,
3. Trauma,
4. Sickle cell crisis,
5. Cancer,
6. LBP,
7. Musculoskeletal pain,
8. Others.

WHAT ARE THE CAUSES OF POST-OPERATIVE PAIN?

▪ Incision	Skin & SC. tissue
▪ Deep	Cutting, Coagulation, Trauma
▪ Laparoscopic	CO_2 Insufflations
▪ Positional	Nerve compression, traction & bed sore.
▪ IV site	Needles, extravasation, venous irritation
▪ Tubes	Drains, NGT, catheters,…
▪ Respiratory	ETT, coughing, deep breathing
▪ Rehab.	Physiotherapy, movement
▪ Surgical	Complication of surgery
▪ Others	Cast, dressing too tight, urinary retention

What is the importance of APP Relief?

IMPACTS OF UNCONTROLLED ACUTE PAIN

- *Clinical Perspective:*
  - Delayed wound healing
  - ↑ risk of pulmonary morbidity
  - ↑ risk of thrombosis
  - ↑ morbidity / mortality risk
  - Sustained neuro-endocrinal stress response
- *Patient Perspective:*
  - ↑ Pt's suffering
  - Fear and Anxiety
  - Poor quality of life
  - ↑ length of hospital stay
  - ↑ Costs

IASP Newsletter 2011 (In press)

ACUTE PAIN MANAGEMENT

1. Assessments
2. Methods
3. Protocols

PAIN MEASUREMENTS

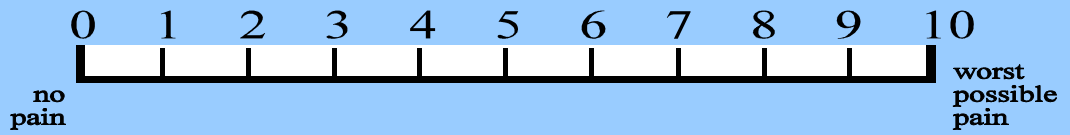
Subjective		Objective
Uni-Dimensional	**Multidimentional**	❖ Behavioral.
❖ VRS, VAS & NRS. ❖ Facial expression.	❖ McGill P Q, ❖ Pain Inventory.	❖ Physiological. ❖ Neuro-endocrinal. ❖ Algometry.
❖ ACUTE PAIN	❖ Chronic Pain	❖ Both

PAIN MEASUREMENTS

- **Timing:**
  - *Before & after analgesia.*
  - *Before & after incident.*
  - *On regular basis*
- **Same score**
- **Recorded**

Visual Analogue Scale (VAS)

Numeric Rating Scale (NRS)

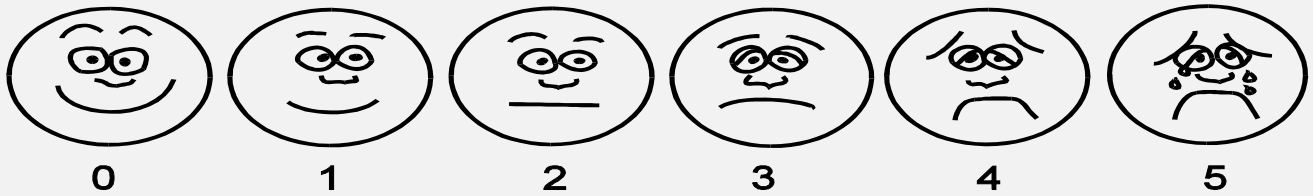


Verbal Rating Score

PAIN MEASUREMENTS

- **Pediatric Score:**

Facial expression



ACUTE PAIN MANAGEMENT MODALITIES

Pharmaco-Therapy

1. Non Opioid Analgesics
   - NSAADs
     - ASA
     - Paracetamol
   - NSAIDs
     - Non-selective COX inhibitors
     - Selective COX-2 inhibitors
2. Opioids
   - Weak Opioids.
   - Strong Opioids.
   - Mixed agonist-antagonists
3. Adjuvants
   - α-2 Agonists
   - LA
   - SP inhibitors
   - NMDA inhibitors
   - Anticonvulsant / Antidepressants
   - Calcitonin
   - Relaxants
   - Cannabinoids
   - Others

Regional Techniques

1. Local infiltration
2. Wound perfusion
3. Intra-abdominal inj. of LA/Analg.
4. Intercostal & Interpleural
5. Paravertebral
6. USG-RA: e.g. TAP, Plexus & PNB
7. Neuraxial:
   - Epidural:
     - Thoracic
     - Lumbar
   - Spinal
     - Single shot
     - CSA
   - CSE

WHO Ladder
Updated

WHO III Strong opioids

± Adjuvant

Pain Persists or Increases

Moderate pain (4-6)

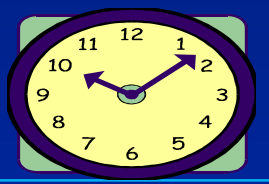
WHO class II Weak opioids

± Adjuvant

Mild pain (0-3)

WHO class I NSAIDs

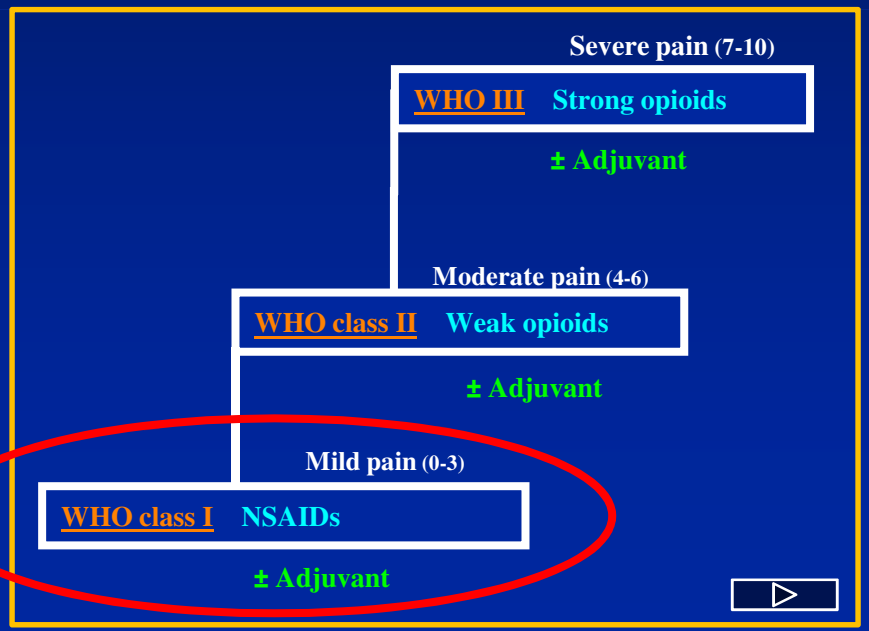
± Adjuvant



- ✓By the mouth
- ✓By the clock
- ✓By the ladder

WHO (I) Non Opioid Analgesics

1. **Non Opioid Analgesics**
   - **NSAADs**
     - **Analgesic / Anti-inflam / Antipyretic / Anticoagulant**
       - *ASA*
     - **Analgesic / Antipyretic**
       - *Paracetamol*
   - **NSAIDs**
     - **Non-selective COX inhibitors:**
       - *Diclofenac & Ketoprofen*
     - **Selective COX-2 inhibitors**
       - *Celecoxib & Rofecoxib*



Acute Pain Management - Scientific Evidence - AAGBI Guidelines 2010

WHO Ladder II - Weak Opioids:

1. TRAMADOL: *(Tramal : Morphine = 1 : 10)*

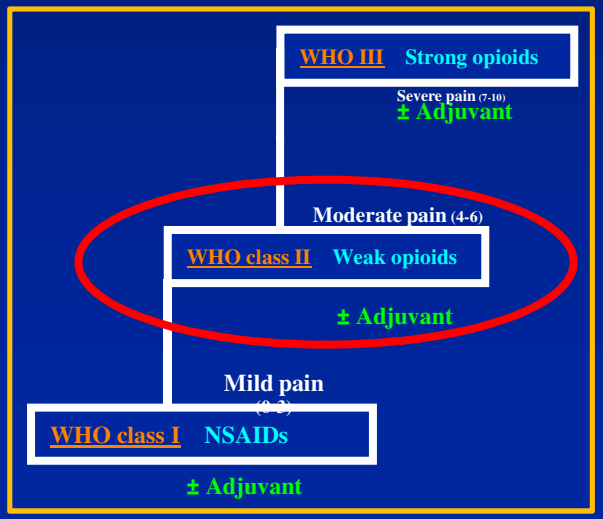
- It has a lower risk of respiratory depression *(Level II).*
- It is an effective treatment for NP pain *(Level I*
- Side effects: N/V

2. Codeine: *(Codeine : Morphine = 1 : 10)*

- A very weak mu-receptor agonist
- Metabolized to morphine.

3. Dextro-propoxyphene:

- Methadone Derivative
- Has a low analgesic efficacy
- Prolongation of Q-T interval

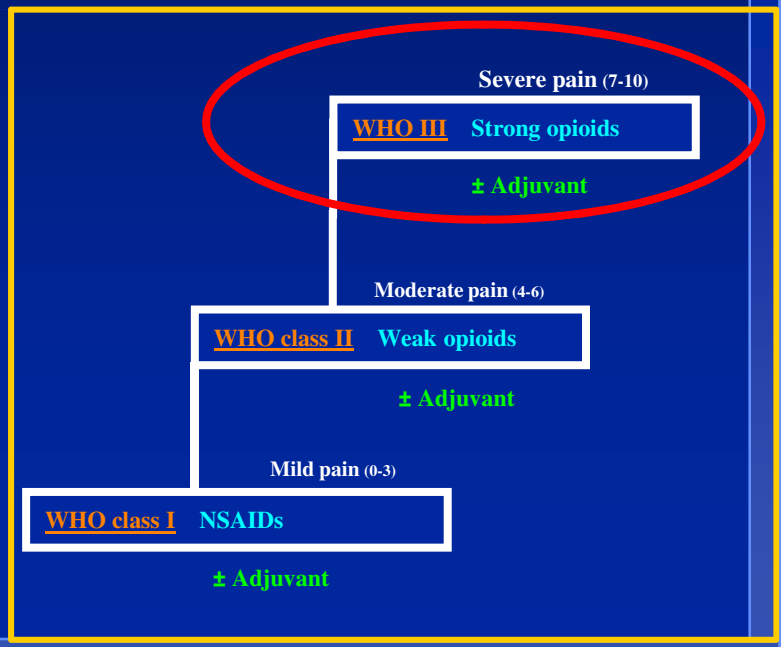


Acute Pain Management - Scientific Evidence - AAGBI Guidelines 2010

WHO Ladder III - Strong Opioids

1. **Morphine:**
   - Standard opioid for pain managements
   - Used by all route of administrations
   - Side effects:
     - Sedation,
     - PONV,
     - Respiratory Depression

1. **Fentanyl:** *(Fentanyl : Mophine = 1:10)*
   - Commonly used in acute pain
   - Rapid action & Short duration.
   - Forms: iv, sc, transnasal, NXL, TTS



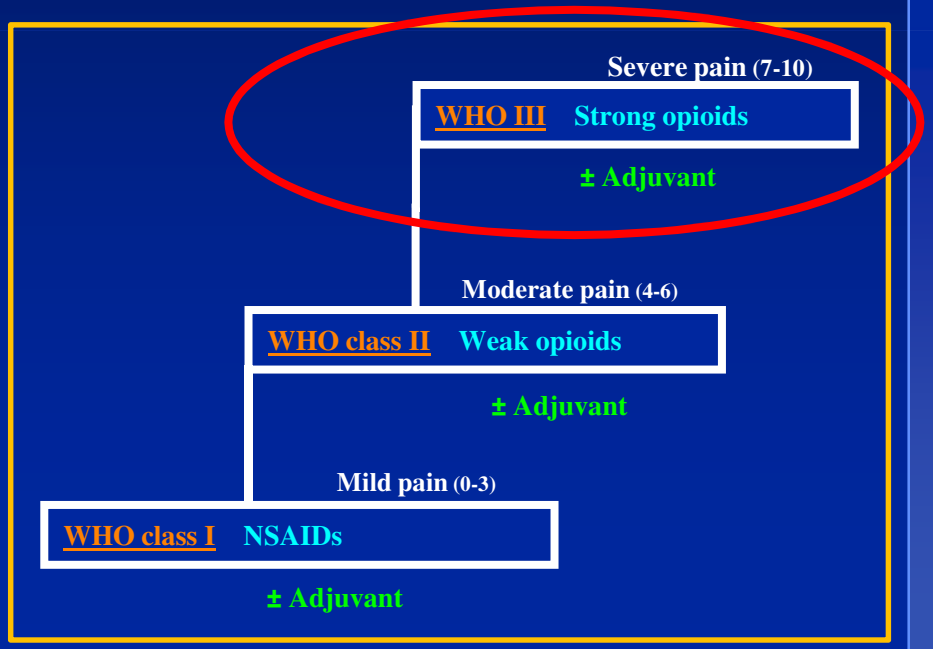
WHO Ladder III - Strong Opioids

3. Pethidene: *(Pethidine : Morphine = (1:10)*

- May be used ⇒ postop. shivering
- Side effects:
  - Active metabolite: ↑ t½ .
  - More N/V > morphine

4. Hydromorphone:

- Powerful > Morphine (1 : 5)
- Rapidly acting.
- ↓ PONV
- ↑ Respiratory ---



OPIOID THERAPY - Prescribing Principles

1. Drug selection
2. Route of administration
3. PCA
4. Dose Adjustments
5. Treating side effects

OPIOID THERAPY: 1. Drug Selection

1. Right: *Analgesic, Dose, Route & Schedule*
2. At any given time:
   - Only one long acting opioid should be ordered.
3. Increase the dose *(but not the number of opioids)* until:
   - Pain relief is adequate, or
   - Intolerable side effects occur.
4. Anticipate & Prevent:
   1. Side effects.
   2. Breakthrough pain.
5. If ++ side effects $\Rightarrow$ *Opioid Rotation.*

OPIOID THERAPY: 2. Routes of Administration

- Oral
- Rectal
- S.C.
- Intranasal
- Sublingual
- IM
- IV
- TTS
- Neuraxial
  - Spinal
  - Epidural
- Others

ROUTES OF OPIOID ADMINISTRATIONS – 3. PCA

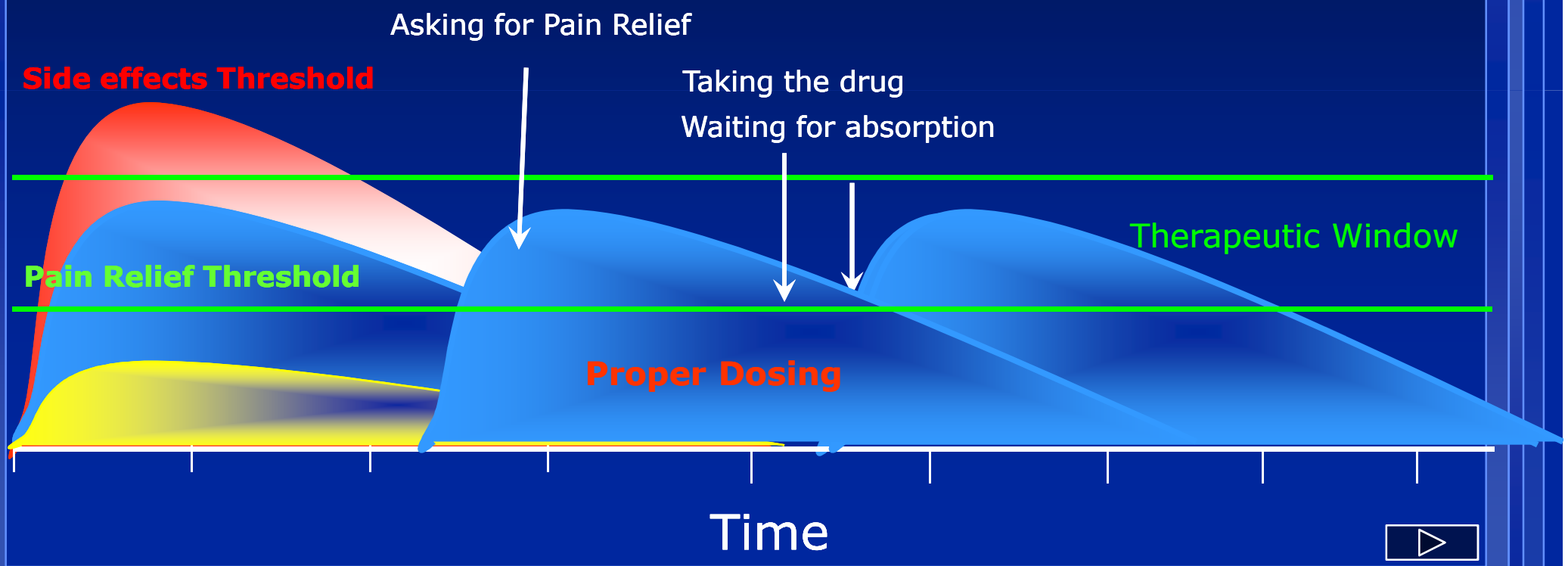
- **Systemic:** IV & SC
- **Regional:** Neuraxial, Plexus & PNB.
- **Sitting:**
  - Pre-set by the physician.
  - Activated by the patient.
  - Programming modalities include:
    1. Loading dose or infusion.
    2. Demand bolus dose.
    3. Constant background infusion rate.
    4. Lock-out interval.
    5. Maximum hourly dose.

} ← Safety

Roman S et al. Perioperative Care & Pain Management in Weight Loss Surgery. OBESITY RESEARCH 2005;13(2):254-266

OPIOID THERAPY: 4. Dose Adjustments

Therapeutic Window

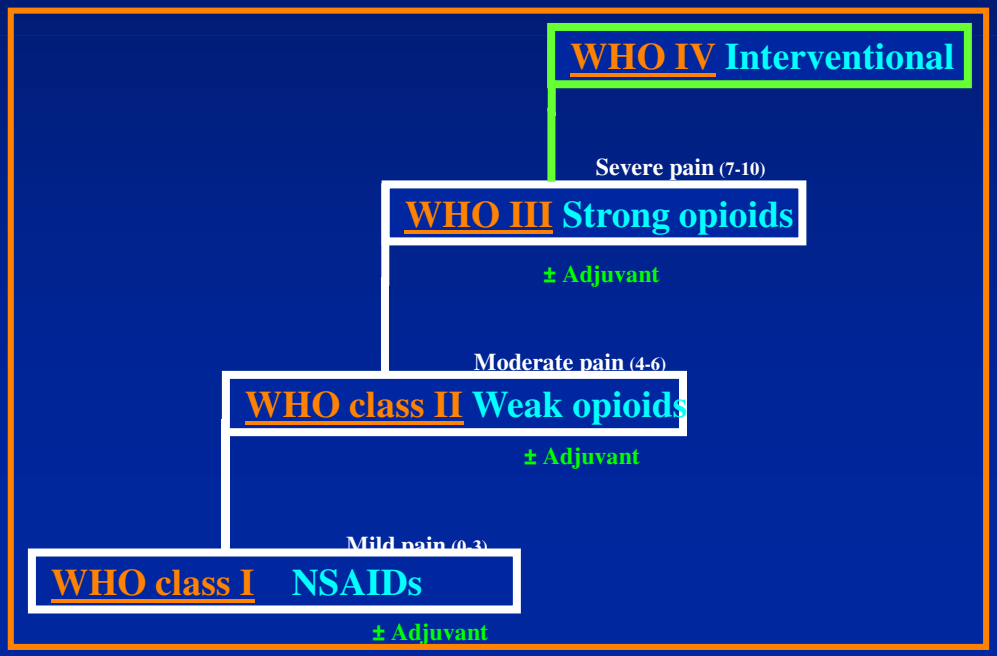


OPIOID THERAPY: 5. Side Effects in Acute Pain

- **Sedation / Dizziness** (49-70%)
- **Nausea / Vomiting** (31-48%)
- **Respiratory depression** (20-41%)
- **Itch / Rash** (0.5-5%)
- **Tolerance ***
- **Urinary retention**
- **Drug interactions**
- **Constipation (30-70%)**
- **Dependence**
- **Addiction**
- **Opioid induced pain**

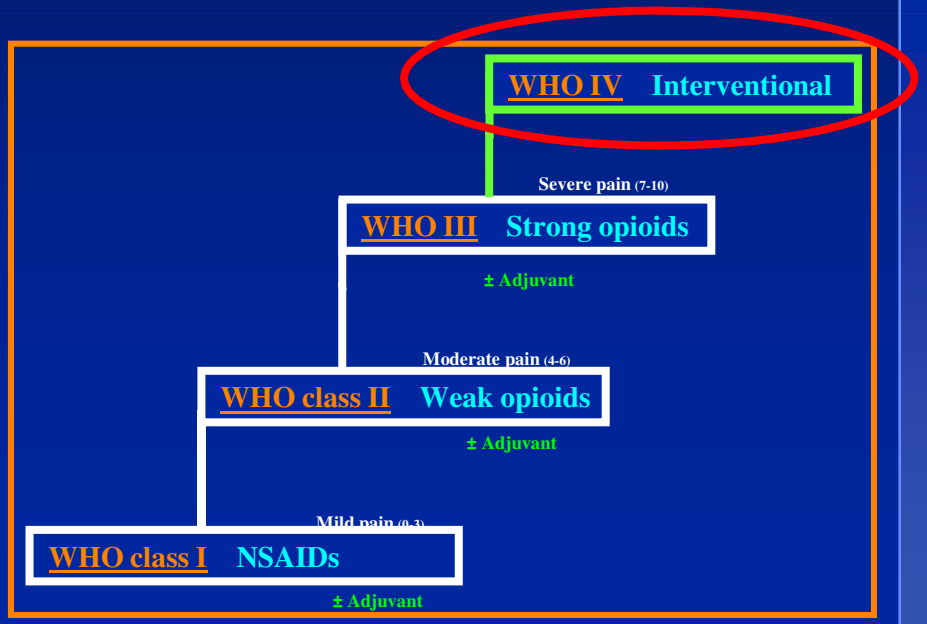
WHO Ladder IV

Regional Anesthetic Techniques



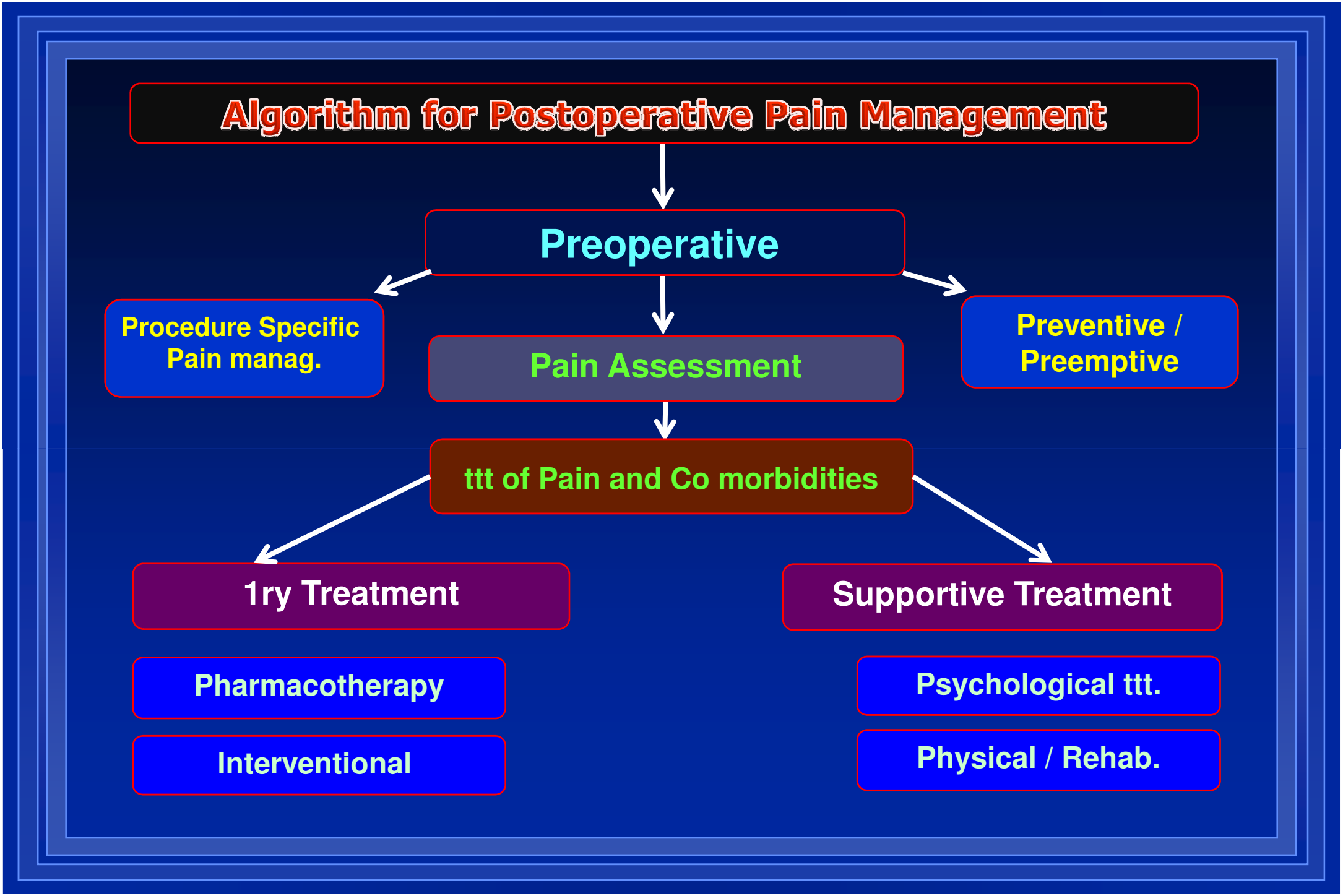
WHO Ladder IV – Regional Anesthetic Techniques

1. Local infiltration
2. Wound perfusion
3. Intra-abdominal LA
4. Intercostal
5. Interpleural
6. Paravertebral
7. USG - PNB: BPB, TAP, Femoral
8. Neuraxial:
   - ❖ Epidural:
     - ❖ Thoracic
     - ❖ Lumbar
   - ❖ Spinal
     - ❖ Single shot
     - ❖ CSA
   - ❖ CSE



ACUTE PAIN MANAGEMENT

Summary & Conclusion


Algorithm for Postoperative Pain Management
Preoperative
Procedure Specific Pain manag.
Pain Assessment
Preventive / Preemptive
ttt of Pain and Co morbidities
1ry Treatment
Supportive Treatment
Pharmacotherapy
Interventional
Psychological ttt.
Physical / Rehab.

SUMMARY – *Scientific Evidence*

- **WHO Ladder System should be followed.** (Evidence III)
- **Analgesia should be selected depending on the initial *Pain Assessment*.** (III)
- **If the disease is not controlled on a given step ➔**
  ➔ *Move directly to the Next Step*. (III)
- **For continuous pain:**
  - ***Analgesics should be prescribed on a Regular Basis.***
- **Only one strong opioid should be ordered at a given time.**

ACUTE PAIN MANAGEMENT

Thank You

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