

بِسْمِ اللَّهِ الرَّحْمَنِ الرَّحِيمِ

ACUTE PAIN MANAGEMENT

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OBJECTIVES

1. Introduction
2. Classification of Pain
3. Assessment of Acute Pain
4. Management of Acute Pain
 - ❖ Pharmacotherapy.
 - ❖ Regional Techniques.
5. Summary

ACUTE PAIN MANAGEMENT

DEFINITION & TYPES & CAUSES

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:

- ❖ Recent onset,
- ❖ Limited duration,
- ❖ Has an identifiable causal
- ❖ Proportional to to the injury.

(Ready & Edwards, 1992). IASP Press

Classification of Pain

A) According to the Duration

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

Classification of Pain

B) According to the Pathophysiology

1. **Nociceptive pain**

➤ Pain without:

➤ Organic inj.

2. **Neuropathic pain**

➤ Disproportionate
with injury.

3. **Idiopathic**

4. **Mixed Pain**

Classification of Pain

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 | CO₂ Insufflations |
| <hr/> | |
| ▪ 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 / CVS 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

3. ASSESSMENTS OF ACUTE PAIN



PAIN MEASUREMENTS

Subjective		Objective
Uni-Dimensional <ul style="list-style-type: none">❖ VRS, VAS & NRS.❖ Facial expression. 	Multidimensional <ul style="list-style-type: none">❖ McGill P Q,❖ Pain Inventory.	<ul style="list-style-type: none">❖ Behavioral.❖ Physiological.❖ Neuro-endocrinal.❖ Algometry.
❖ ACUTE PAIN	❖ Chronic Pain	❖ Both

PAIN MEASUREMENTS

- **Timing:**

- *Before & after analgesia.*
- *Before & after incident.*
- *On regular basis*

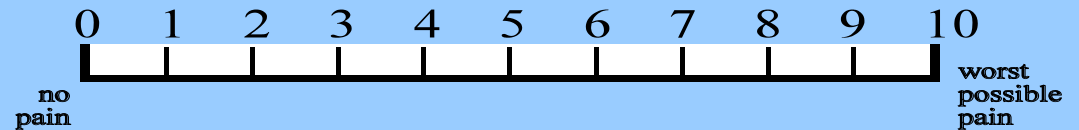
- **Same score**

- **Recorded**

Visual Analogue Scale (VAS)



Numeric Rating Scale (NRS)



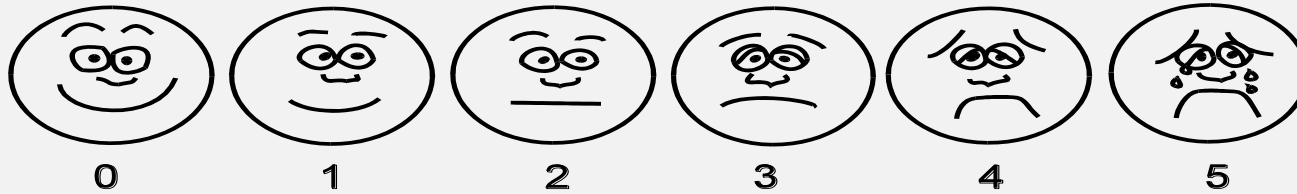
Verbal Rating Score



PAIN MEASUREMENTS

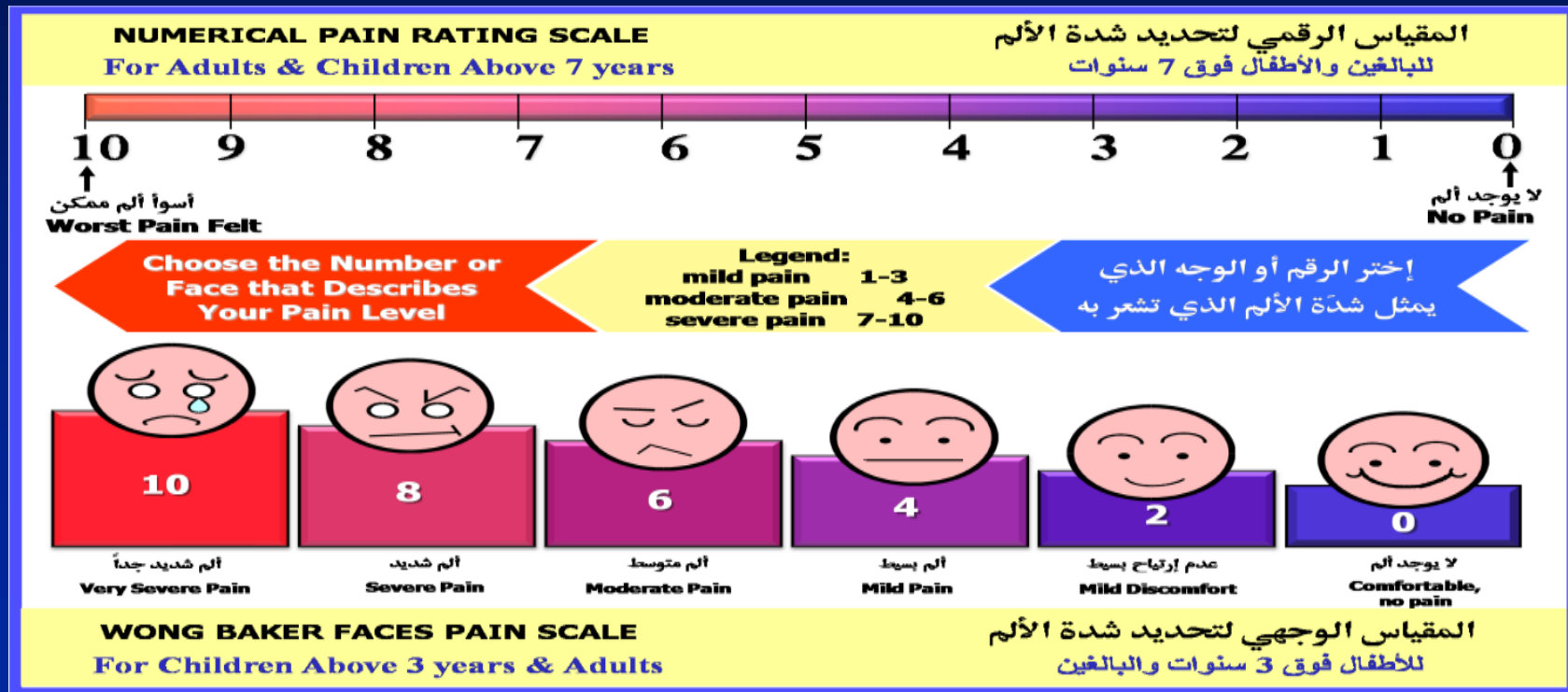
- **Pediatric Score:**

Facial expression



PAIN MEASUREMENTS

- All Scores:



4. MANAGEMENTS OF ACUTE PAIN



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

Pain Persists or Increases

WHO III Strong opioids

± Adjuvant

Moderate pain (4-6)

WHO class II Weak opioids

± Adjuvant

Mild pain (1-3)

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*

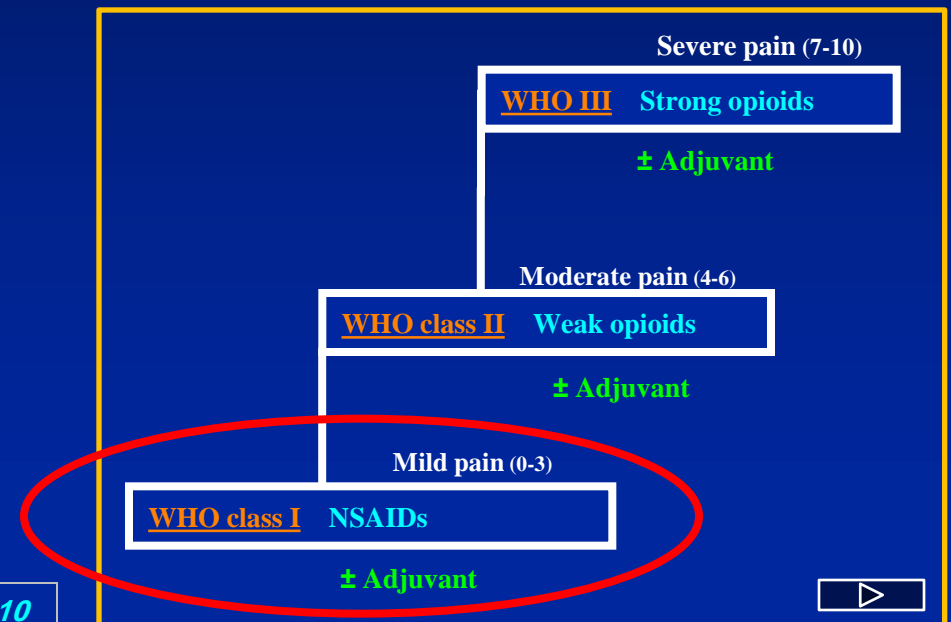
❖ NSAIDs

❖ Non-selective COX inhibitors:

❖ *Diclofenac & Ketoprofen*

❖ Selective COX-2 inhibitors

❖ *Celecoxib & Rofecoxib*



WHO Ladder II - Weak Opioids:

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

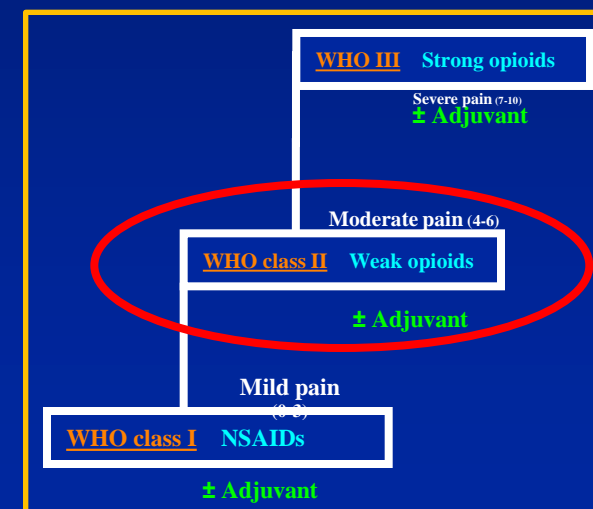
- ❖ It has a lower risk of respiratory depression (*Level II*).
- ❖ It is an effective treatment for NP pain (*Level I*)
- ❖ Side effects: N/V

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



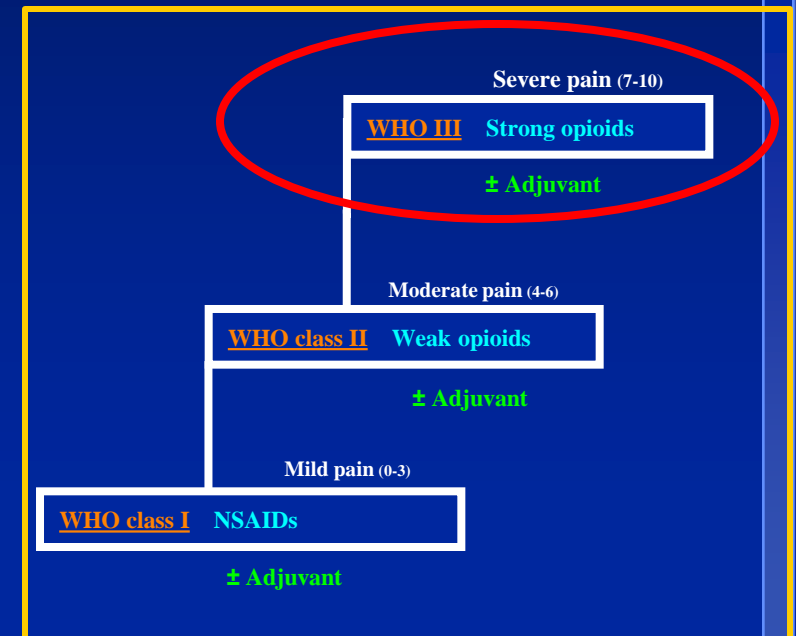
WHO Ladder III - Strong Opioids

1. Morphine:

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

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

- ❖ Commonly used in acute pain
- ❖ Rapid action & Short duration.
- ❖ Forms: iv, sc, transnasal, NXL, TTS



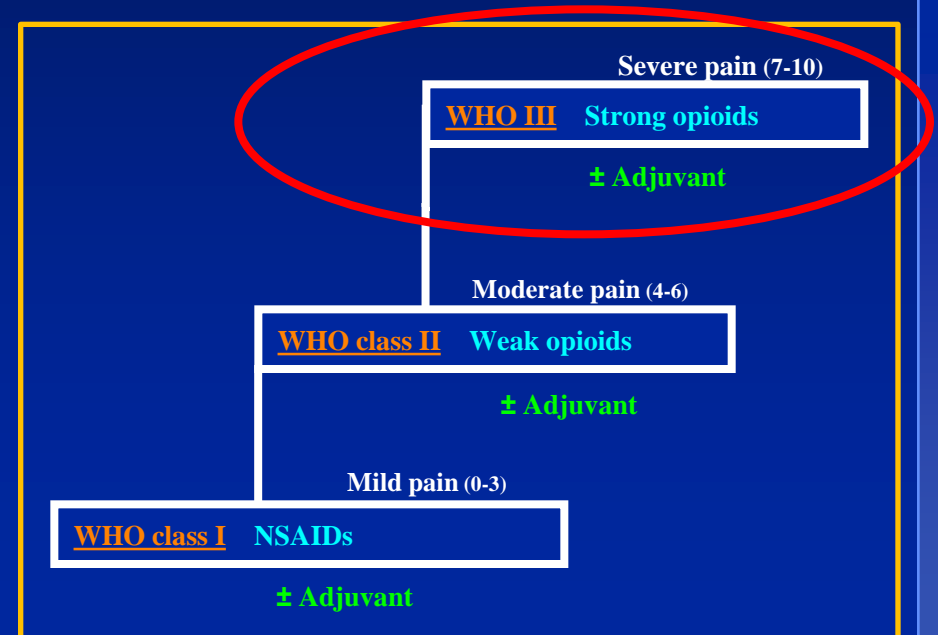
WHO Ladder III - Strong Opioids

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

- ❖ May be used \Rightarrow postop. shivering
- ❖ Side effects:
 - ❖ Active metabolite: $\uparrow t_{1/2}$.
 - ❖ More N/V > morphine

4. Hydromorphone:

- ❖ Powerful > Morphine (1 : 5)
- ❖ Rapidly acting.
- ❖ \downarrow PONV
- ❖ \uparrow 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:
 - Adequate pain relief, or
 - Intolerable side effects occur.
4. Anticipate & Prevent:
 - Side effects.
 - 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

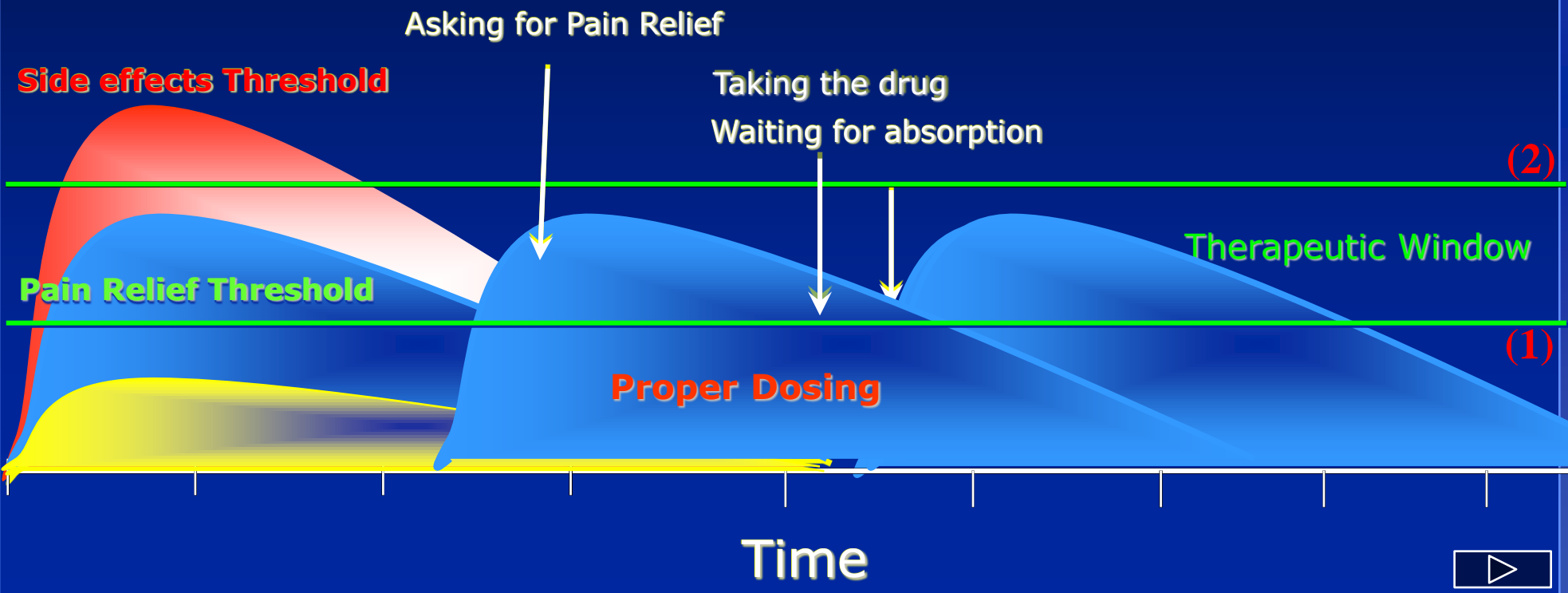
Patient Controlled Analgesia

- ❖ **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.**



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%)**

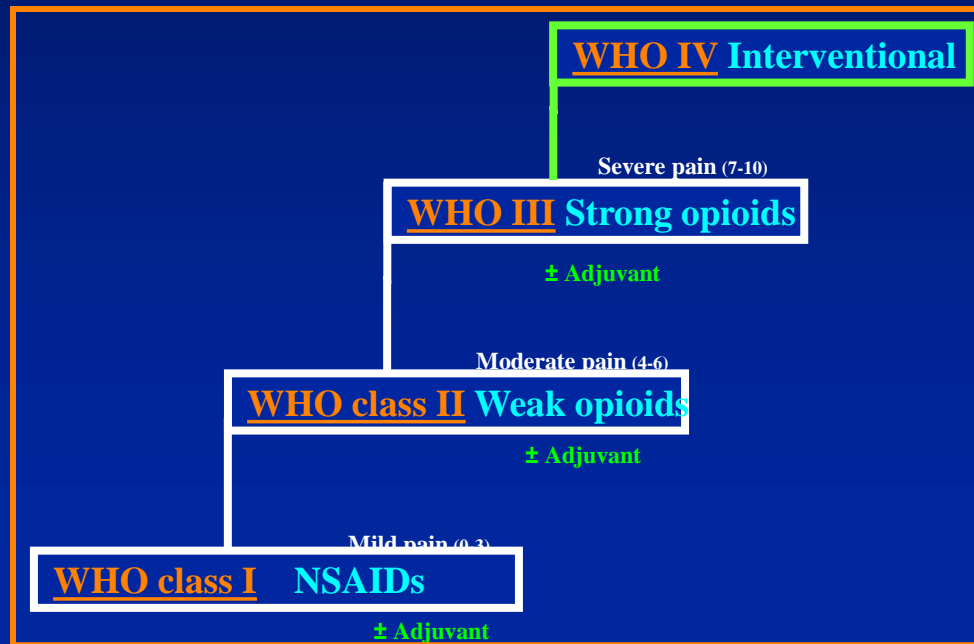
❖ **Dependence**

❖ **Addiction**

❖ **Opioid induced pain**

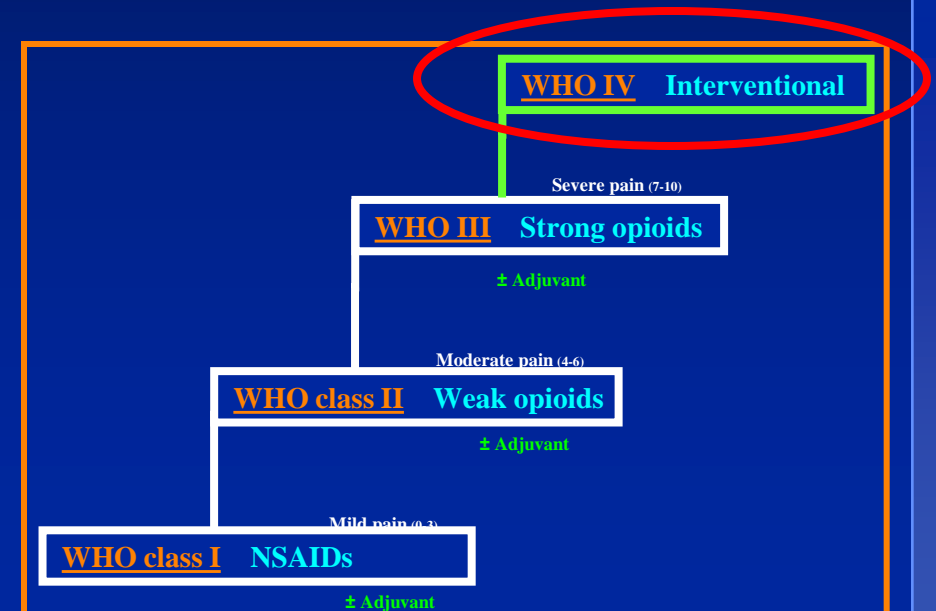
WHO Ladder IV

Regional Anesthetic Techniques



WHO Ladder IV – Regional Anesthetic Techniques

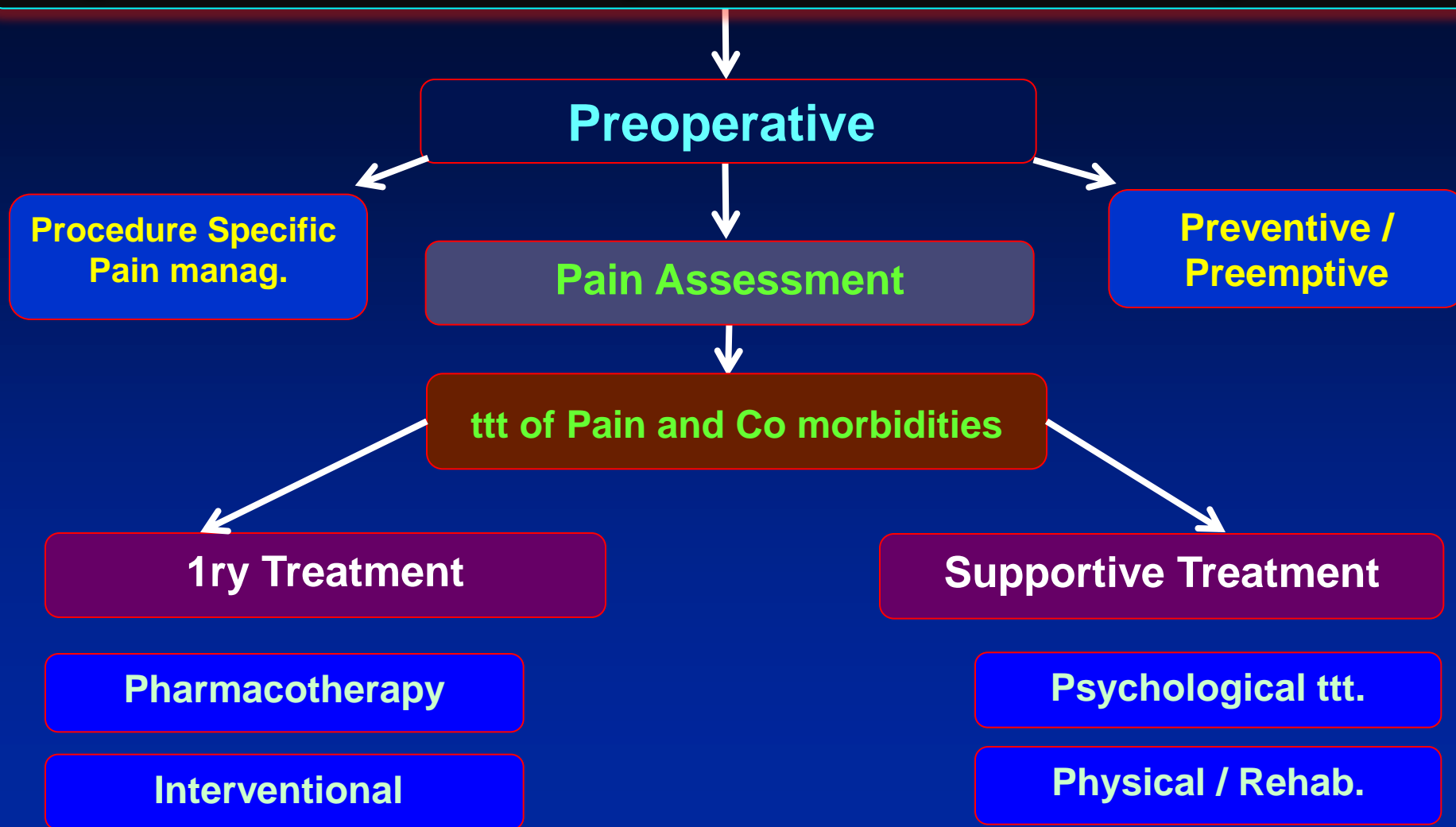
1. Local infiltration
2. Wound perfusion
3. Intra-abdominal LA
4. Intercostal
5. Interpleural
6. Paravertebral
7. USG - PNB: BPB, TAP, Femoral
8. Neuraxial:
 - ❖ Epidural:
 - ❖ Thoracic
 - ❖ Lumbar
 - ❖ Spinal
 - ❖ Single shot
 - ❖ CSA
 - ❖ CSE



ACUTE PAIN MANAGEMENT

Summary & Conclusion

Algorithm for Postoperative Pain Management



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.

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Thank You

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