

بِسْمِ اللَّهِ الرَّحْمَنِ الرَّحِيمِ

السلام عليكم ورحمة الله وبركاته

ACUTE PAIN MANAGEMENTS

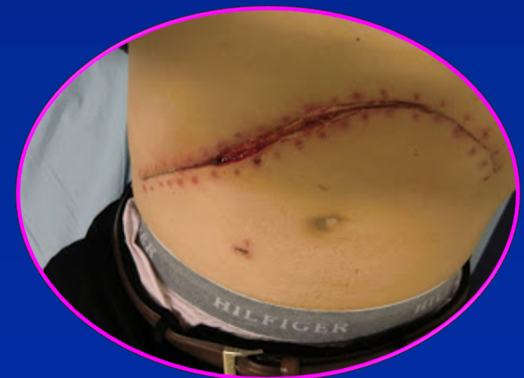
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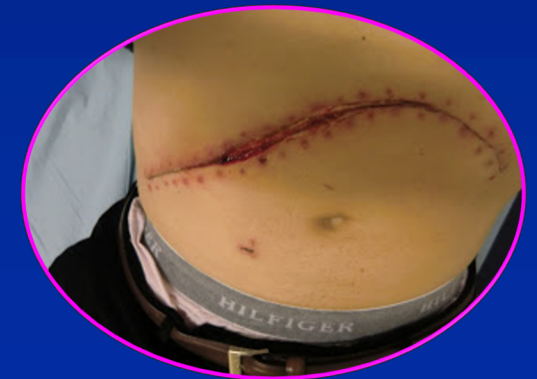
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OBJECTIVES

1. Introduction
2. Classification
3. Assessment
4. Management

Acute Pain



1. INTRODUCTION TO ACUTE PAIN

DEFINITION & INCIDENCE



What is the definition of pain?

❖ Pain:

“An unpleasant sensory and/or emotional experience associated with actual or potential tissue damage or expressed in such terms”



Introduction:

Incidence of Postoperative Pain

EJA

Eur J Anaesthesiol 2016; 33:160–171

REVIEW

Current issues in postoperative pain management

Narinder Rawal

- Overall Postop pain > 80 %
- Adequate Analgesia < 50 %
- Pain on discharge → 74% pain after discharge
- Persistent Postop. Pain → 10 - 12 %

(NIH 2016)

What are the “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



Traditional

❖ *Patient Perspective:*

- ❖ ↑ Pt's suffering
- ❖ Fear and Anxiety
- ❖ Poor quality of life
- ❖ ↑ length of hospital stay
- ❖ ↑ Costs
- ❖ ↑ Risk of CPOP



Non-Traditional

Introduction: Benefits of effective Postoperative Pain Management

- ↑ Improving quality of life**
- ↑ Enhance early mobilization**
- ↑ Enhance Tissue healing**
- ↑ Eliminates the perioperative stress response**
- ↓ Postop complications e.g**
- ✓ Optimizing patient outcomes**
- ✓ Improving overall survival**

2. CLASSIFICATIONS

OF

ACUTE PAIN



(2) Classification of Pain

A) According to the “Duration”

1. Acute pain:

- Recent onset,
- Limited duration,
- Identifiable cause.

2. Subacute pain:

- Pain that persists after subsiding the of acute stage

3. Chronic Pain:

- Recurrent / persistent pain after complete tissue healing

(2) Classification of Pain

B) According to the “Pathophysiology”

1. Nociceptive pain

➤ Identifiable stimuli

➤ Subtypes:

➤ Somatic

➤ Bony

➤ Visceral e.g.

Dull, diffuse, poorly localized,
Colicky, Referred, ± N/V

2. Neuropathic pain

3. Idiopathic

4. Mixed Pain

(2) Classification of Pain

B) According to the “Pathophysiology”

1. Nociceptive pain

2. Neuropathic pain

3. Idiopathic

4. Mixed Pain

➤ Abnormality:

➤ PNS / CNS

➤ Subtypes:

➤ Peripheral

➤ Central

(2) Classification of Pain

B) According to the “Pathophysiology”

1. Nociceptive pain

2. Neuropathic pain

3. Idiopathic

4. Mixed Pain

➤ Pain without:

➤ Organic inj.

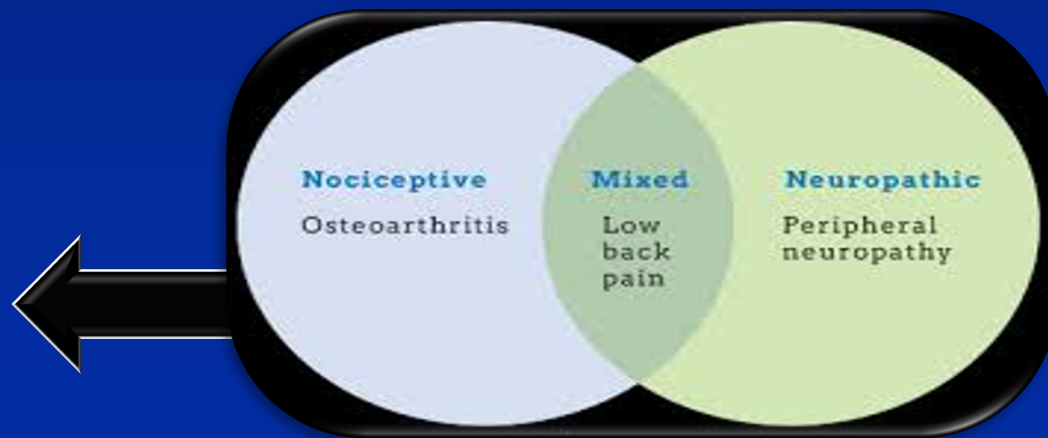
➤ Disproportionate

➤ with injury.

(2) Classification of Pain

B) According to the “Pathophysiology”

1. Nociceptive pain
2. Neuropathic pain
3. Idiopathic
4. Mixed Pain



(2) 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.**

D) According to the “Source”

▪ Incision

Skin & SC. tissue

▪ Deep

Cutting, Coagulation, Trauma

▪ Laparoscopic

CO₂ 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


3. ASSESSMENTS

of

ACUTE PAIN



3) PAIN ASSESSMENTS

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

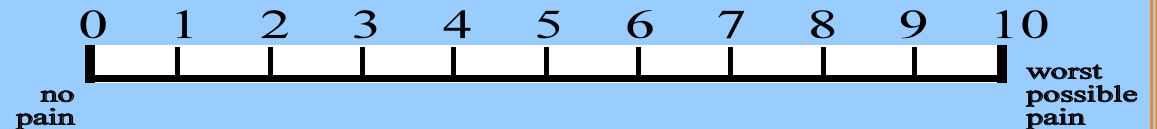
PAIN MEASUREMENTS

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

Visual Analogue Scale (VAS)



Numeric Rating Scale (NRS)

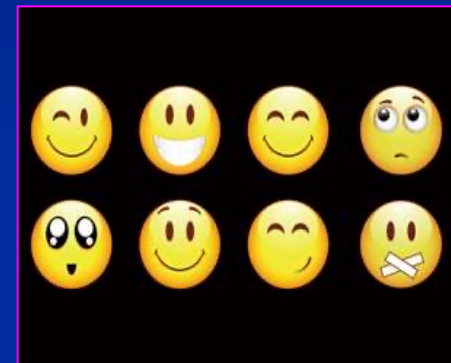
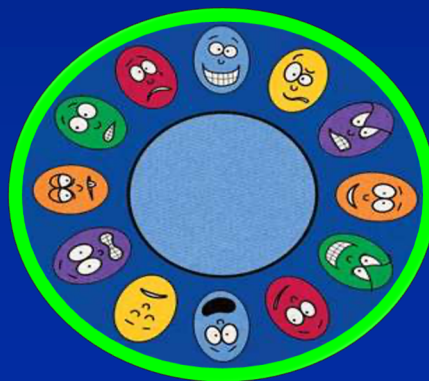
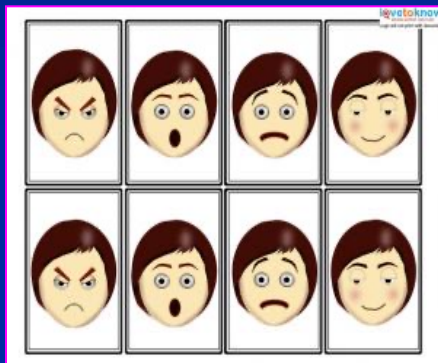
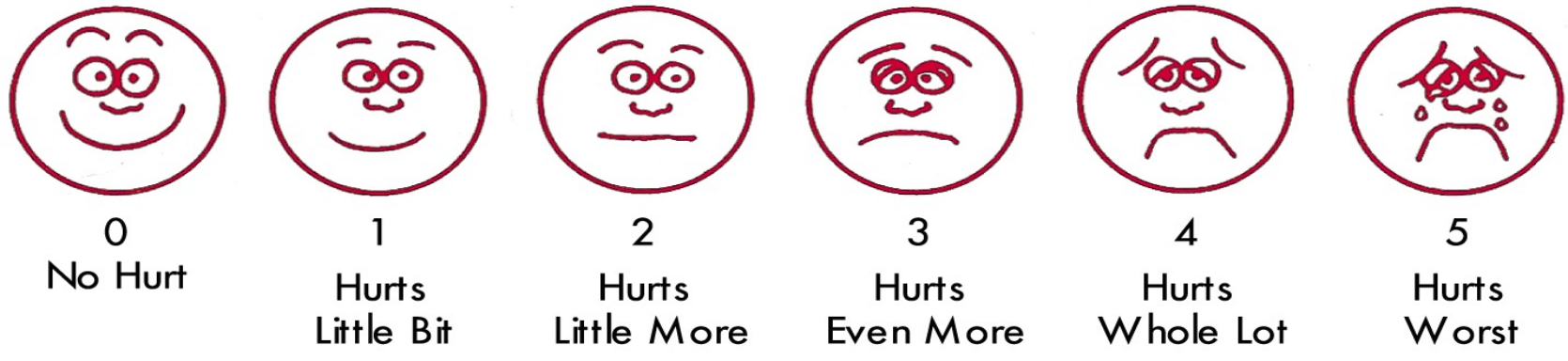


Verbal Rating Score



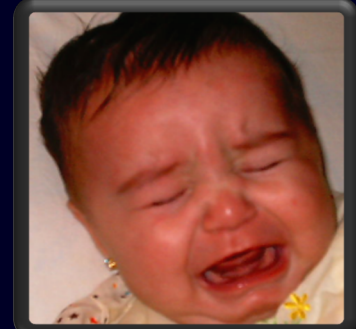
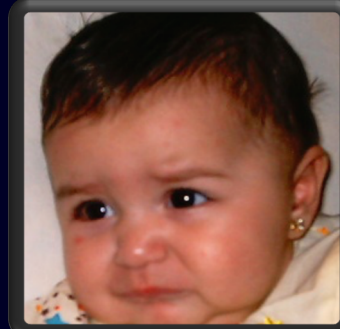
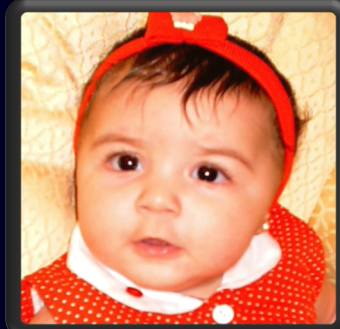
PAIN MEASUREMENTS

Pediatric Scores “Facial expression”



Pediatric Pain Assessment: Behavioral Scales

III. b.) Neonatal Facial Coding



4. MANAGERMENTS

of

ACUTE PAIN



"MANAGEMENT OF ACUTE PAIN"

Pharmacology - Therapy

1. Non Opioid Analgesics

❖ NSAIDs

- ❖ 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:

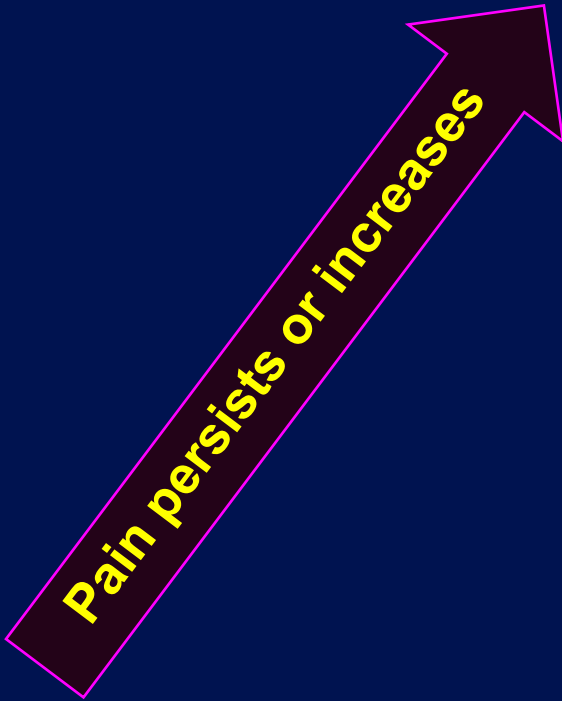
- ❖ Thoracic
- ❖ Lumbar

❖ Spinal

- ❖ Single shot
- ❖ CSA

❖ CSE

WHO Ladder Updated



WHO (I) Non Opioid Analgesics

1. Non Opioid Analgesics

❖ NSAADs

❖ Analgesic / Anti-inflam / Antipyretic / Anticoagulant

❖ ASA

❖ Analgesic / Antipyretic

❖ Paracetamol

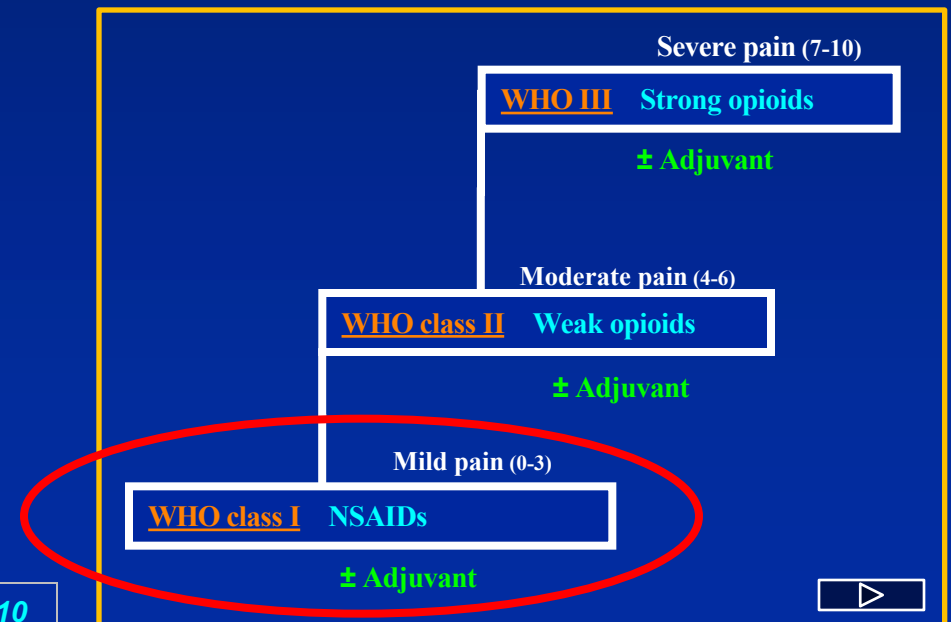
❖ NSAIDs

❖ Non-selective COX inhibitors:

❖ Diclofenac & Ketoprofen

❖ Selective COX-2 inhibitors

❖ Celecoxib & Rofecoxib



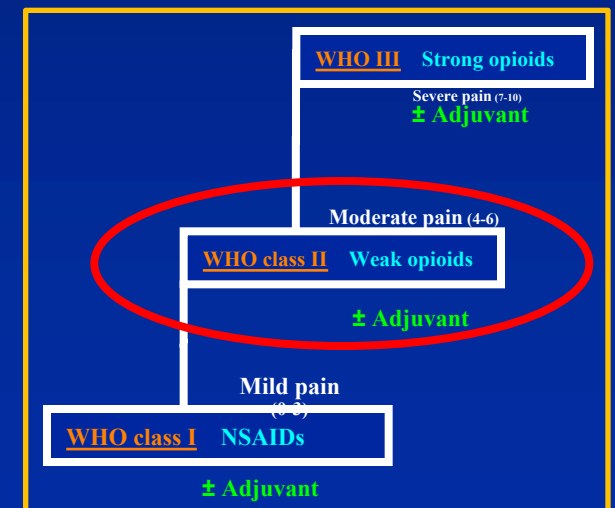
WHO Ladder II - Weak Opioids:

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

- ❖ Dose: 200 – 400 mg/d
- ❖ It has a lower risk of respiratory depression (*Level II*).
- ❖ It is an effective treatment for Neuropathic pain (*Level I*)
- ❖ Side effects: Sedation & N/V

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

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



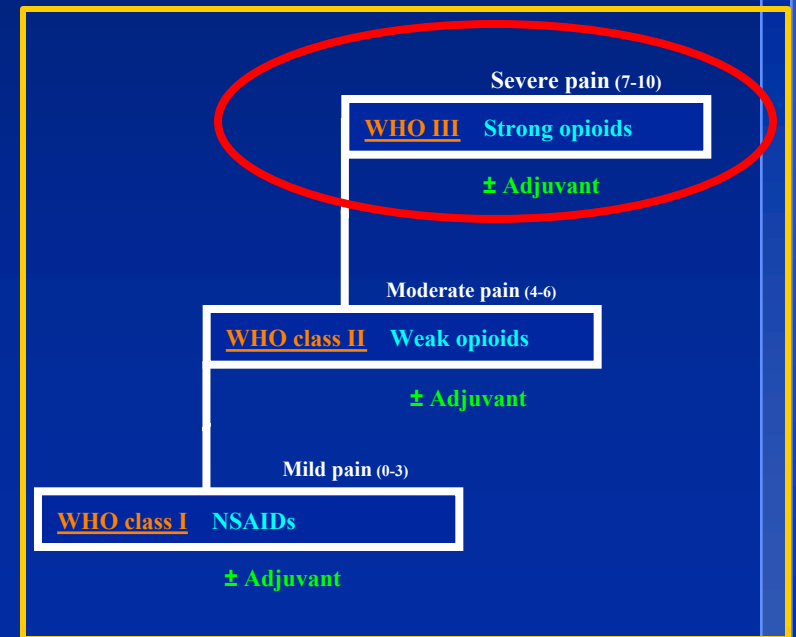
WHO Ladder III - Strong Opioids

1. Morphine:

- ❖ Standard opioid
- ❖ All route of administrations
- ❖ Metabolites: + M6G & - M3G
- ❖ Side effects:
 - ❖ Sedation,
 - ❖ PONV,
 - ❖ Respiratory Depression

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

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



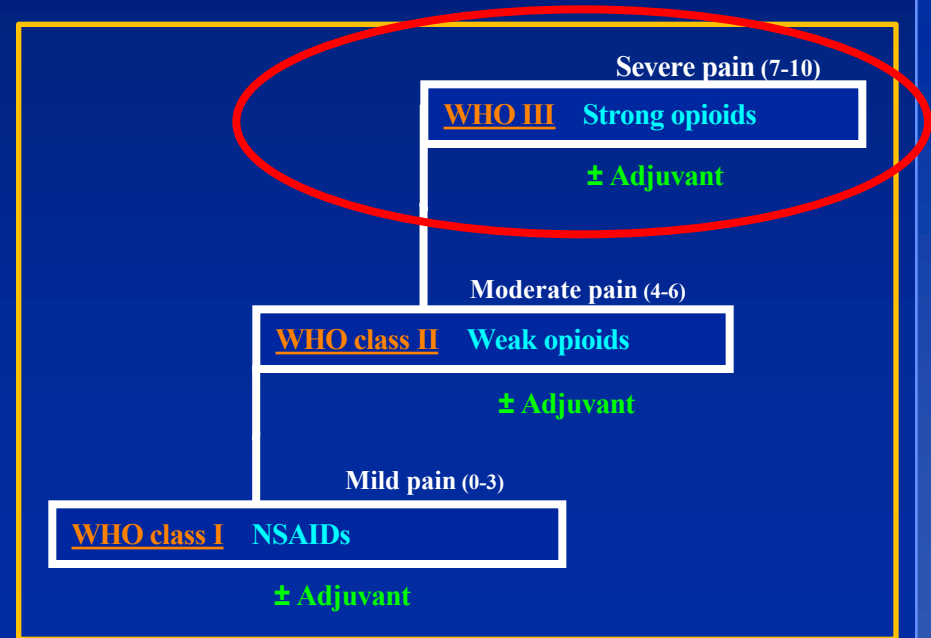
WHO Ladder III - Strong Opioids

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

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

4. Oxycodone:

- ❖ Powerful > Morphine (1 : 1.2)
- ❖ Rapidly acting & Long duration.
- ❖ ++ Visceral & + Neuropathic pain
- ❖ \downarrow PONV
- ❖ Less sedation



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 ⇒ *Opioid Rotation*.

2. Routes of Administration

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



3. Methods of Administration

❖ Continuous infusion

❖ Regular



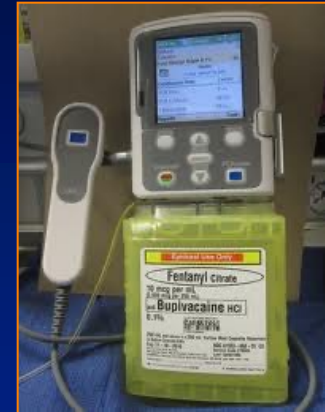
❖ On-demand analgesia / or “PRN” :

❖ Patient → Nurse → Physician → Nurse → Patient

❖ Combined → → →

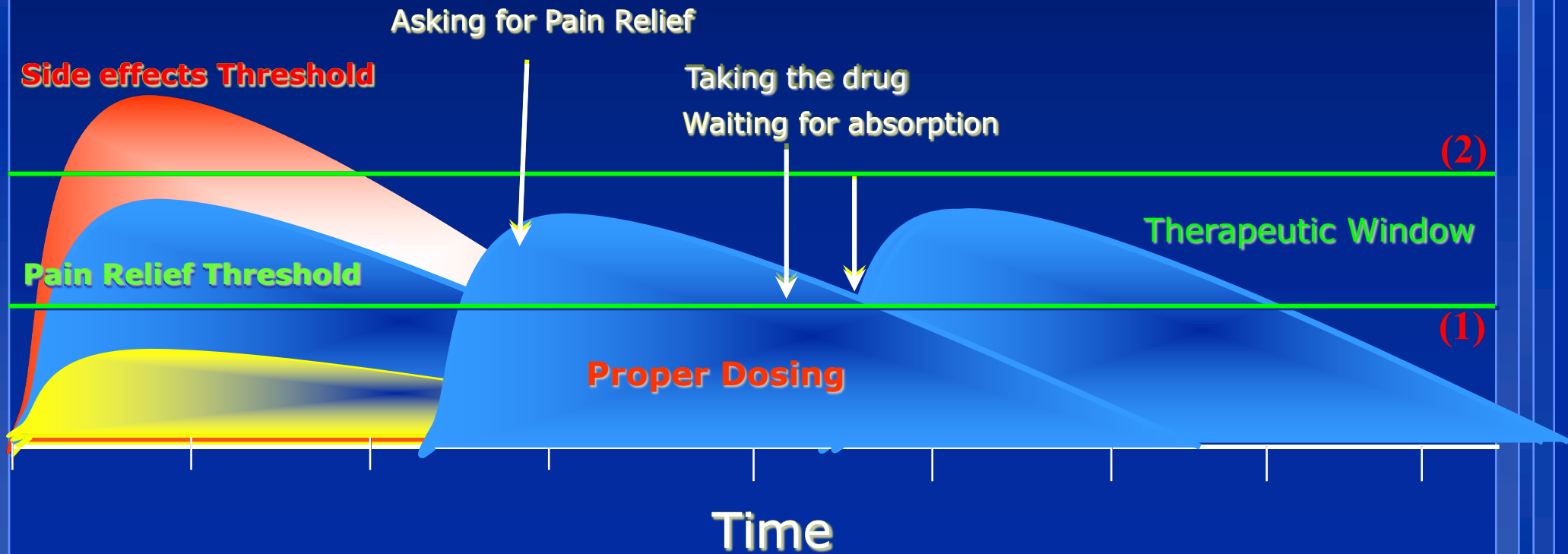
3. Patient Controlled Analgesia "PCA"

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



OPIOID THERAPY: 4. Dose Adjustments

Therapeutic Window



OPIOID THERAPY: 5. Side Effects in Opioids

- ❖ **Sedation / Dizziness** (49-70%)

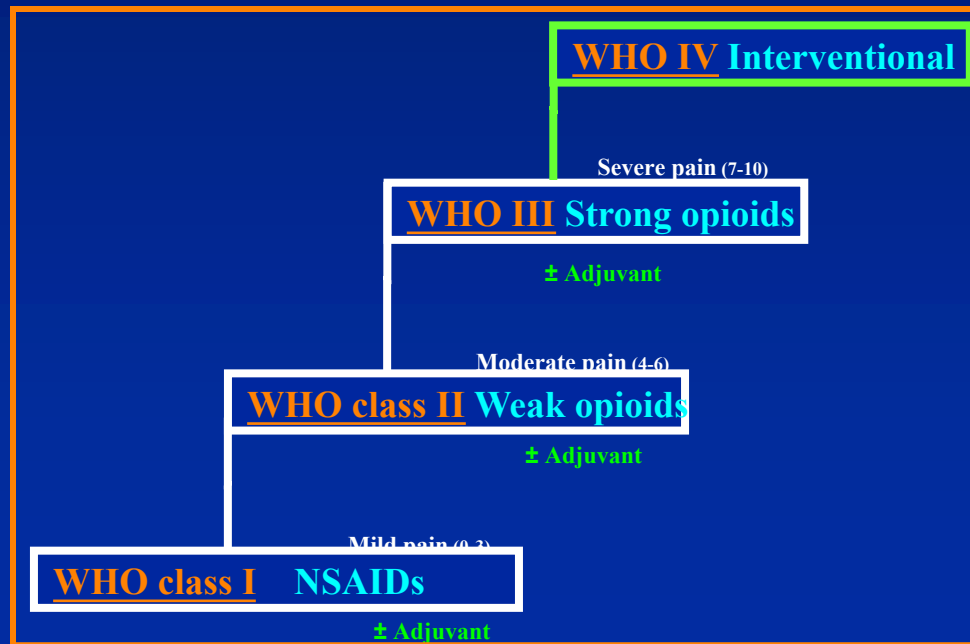
- ❖ **Nausea / Vomiting** (31-48%)

- ❖ **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:

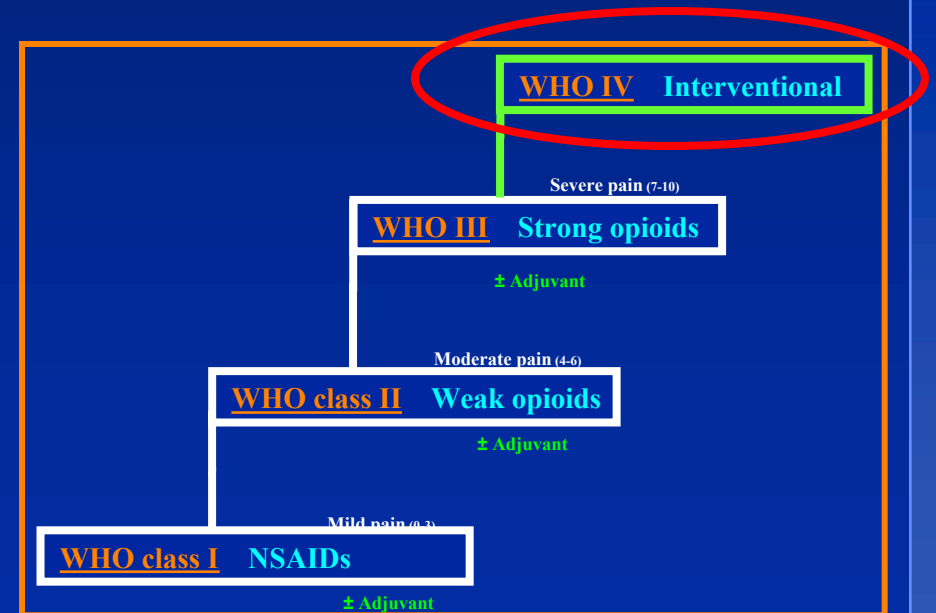
❖ Epidural:

- ❖ Thoracic
- ❖ Lumbar

❖ Spinal

- ❖ Single shot
- ❖ CSA

❖ CSE



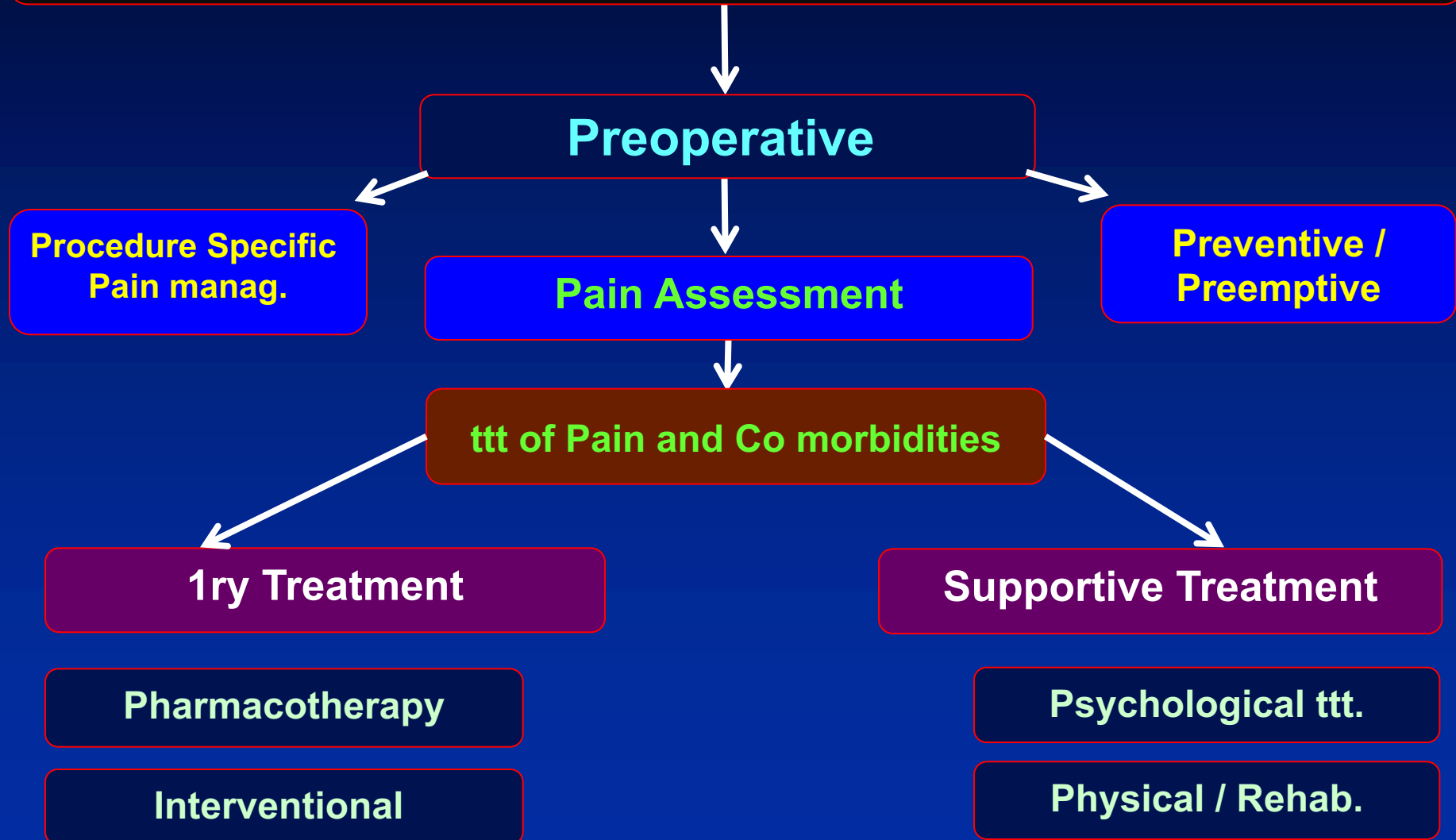
Summary

&

Conclusions



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.

ACUTE PAIN MANAGEMENT

Thank You

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