



# ACUTE PAIN MANAGEMENT

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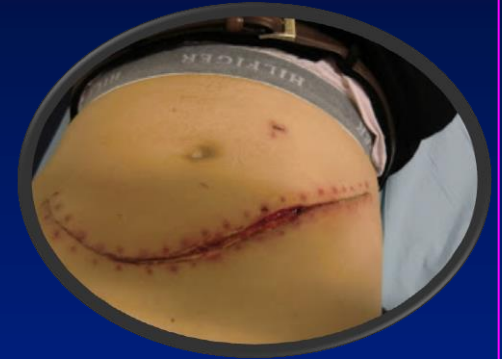
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# OBJECTIVES

1. Introduction
2. Classification
3. Assessment of Acute Pain
4. Management of Acute Pain
5. Summary



# 1. INTRODUCTION TO ACUTE PAIN

## 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”



## **(2) Classification of Pain**

### **A) According to the “Duration”**

#### **1. Acute pain:**

- Pain of Recent onset,
- Limited duration,
- Has an Identifiable Cause.

#### **2. Subacute pain**

#### **3. Chronic Pain**

# Classification of Pain

## B) According to the “Pathophysiology”

1. Nociceptive pain

2. Neuropathic pain

3. Idiopathic

4. Mixed Pain

➤ Identifiable stimuli

➤ Subtypes:

➤ Somatic

➤ Bony

➤ Visceral e.g.

Dull, diffuse, Referred,  $\pm$  N/V

# 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**      **CO<sub>2</sub> Insufflations**

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- **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



**Traditional**

### ❖ *Patient Perspective:*

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



**Non-Traditional**

# 3. ASSESSMENTS of Acute Pain

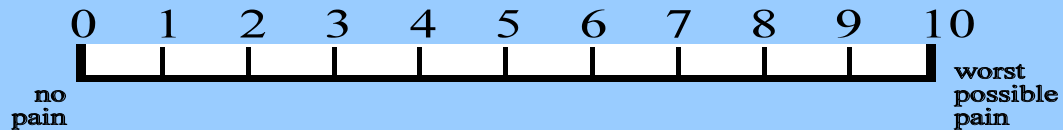


# PAIN MEASUREMENTS

## Visual Analogue Scale (VAS)



## Numeric Rating Scale (NRS)



## Verbal Rating Score



# PAIN MEASUREMENTS

## Pediatric Scores “Facial expression”



0  
No Hurt



1  
Hurts  
Little Bit



2  
Hurts  
Little More



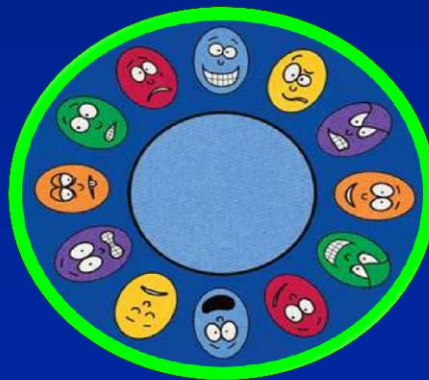
3  
Hurts  
Even More



4  
Hurts  
Whole Lot



5  
Hurts  
Worst



# 4. MANAGERMENTS

of

# Acute Pain



# Modalities of the "ACUTE PAIN MANAGEMENT"

## 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

- ❖  $\alpha$ -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:

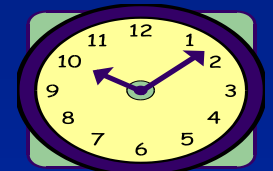
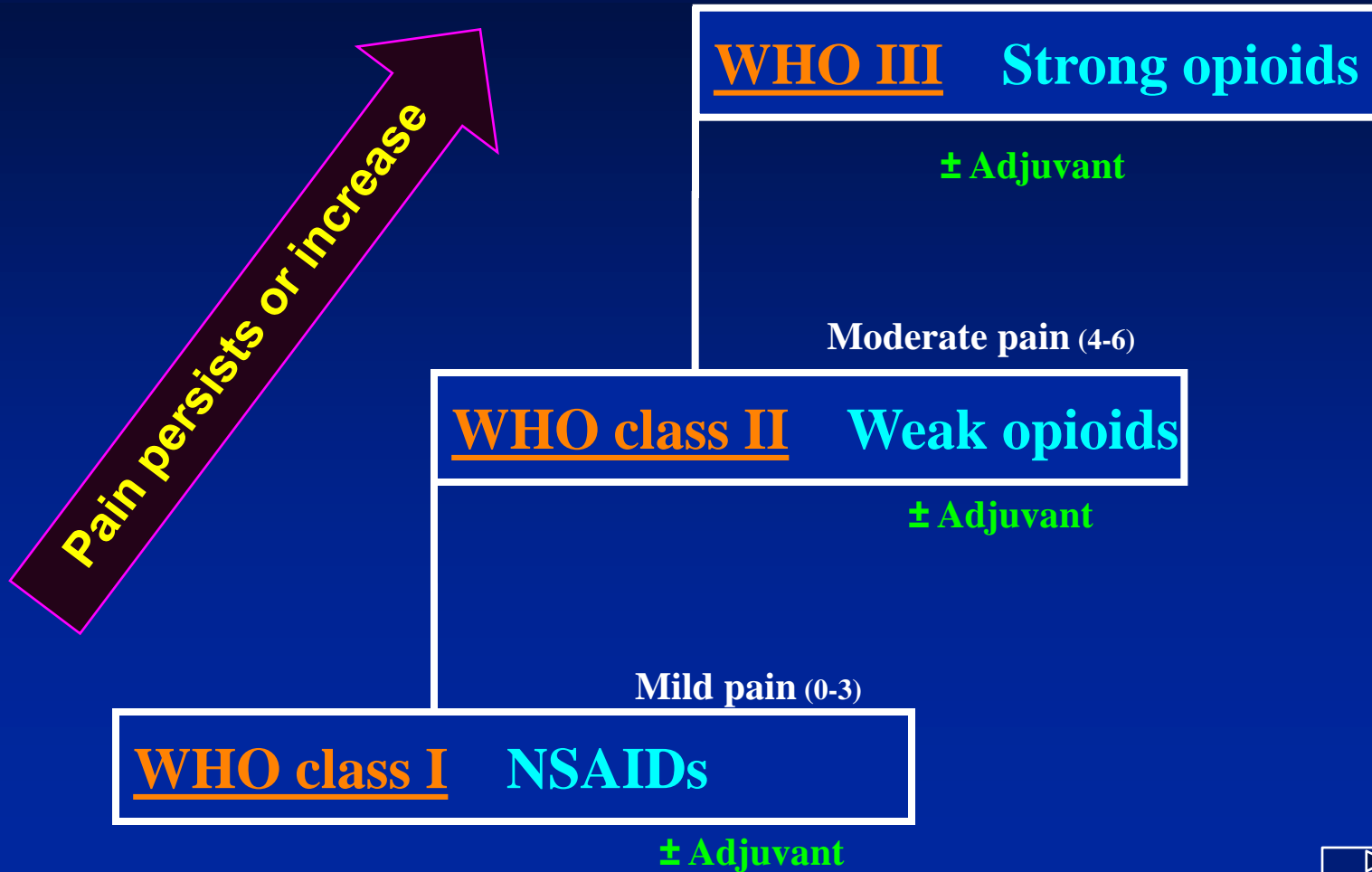
- ❖ Thoracic
- ❖ Lumbar

#### ❖ Spinal

- ❖ Single shot
- ❖ CSA

#### ❖ CSE

# WHO Ladder System



- ✓ 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*

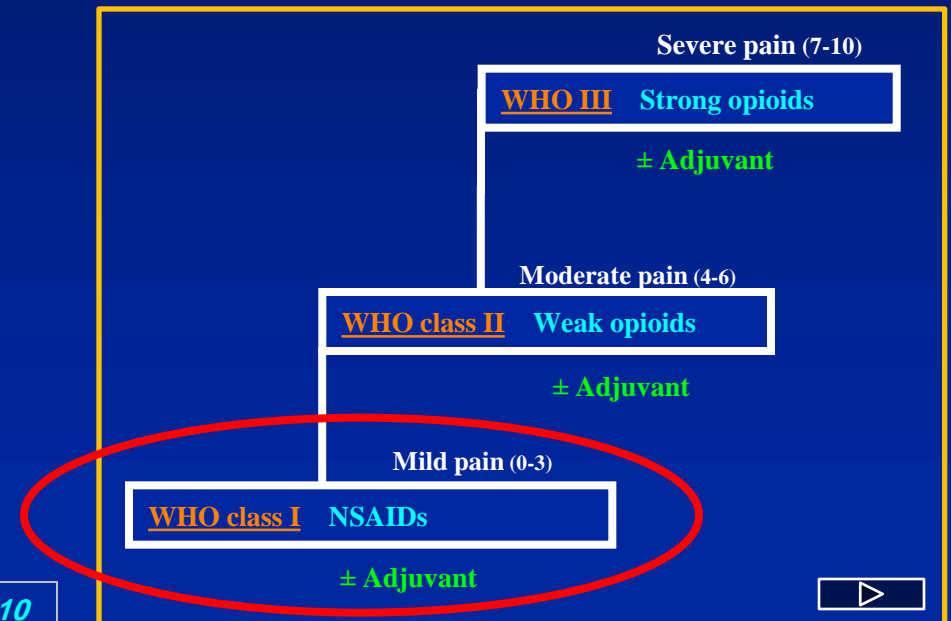
### ❖ NSAIDs

❖ Non-selective COX inhibitors:

❖ *Diclofenac & Ketoprofen*

❖ Selective COX-2 inhibitors

❖ *Celecoxib & Rofecoxib*



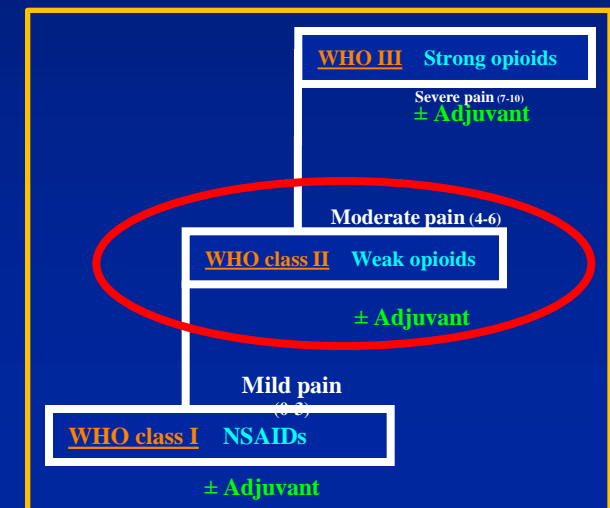
# WHO Ladder II - Weak Opioids:

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

- ❖ Dose: 20 – 400 mg/d
- ❖ 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.



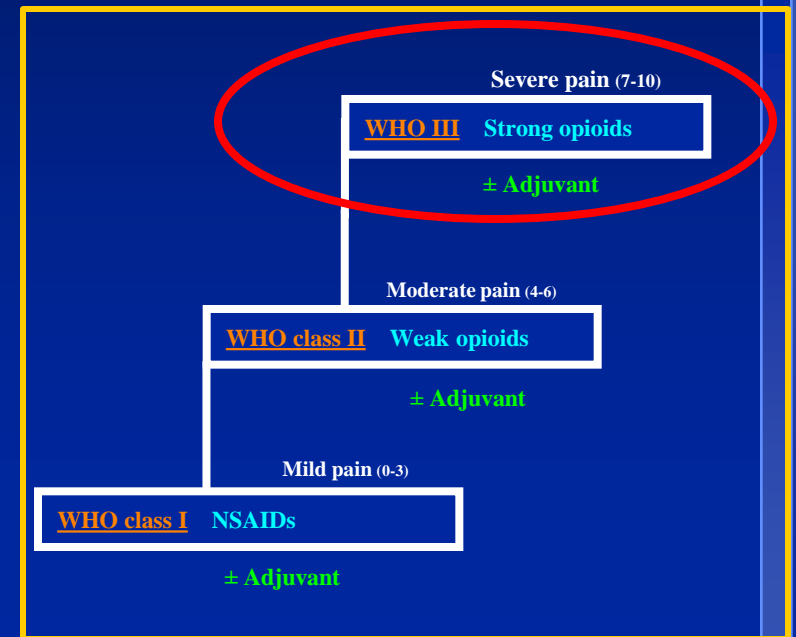
# WHO Ladder III - Strong Opioids

## 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, transnasal, NXL, TTS



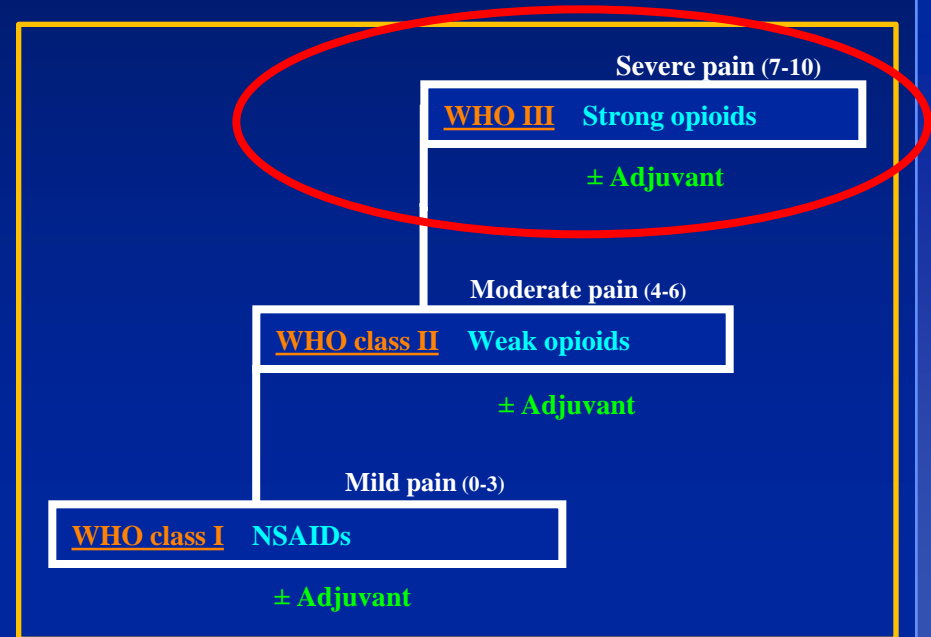
# WHO Ladder III - Strong Opioids

## 3. Pethidene: (*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 ⇒ *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**



❖ **Boluses (on-demand analgesia):**

❖ **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 or infusion.
    2. Demand bolus dose.
    3. Constant background infusion rate.
    4. Lock-out interval.
    5. Maximum hourly dose.



# OPIOID THERAPY: 5. Side Effects in Opioids

- ❖ **Sedation / Dizziness** (49-70%)

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- ❖ **Nausea / Vomiting** (31-48%)

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- ❖ **Respiratory depression** (20-41%)

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- ❖ **Itch / Rash** (0.5-5%)
- ❖ **Tolerance \***
- ❖ **Urinary retention**
- ❖ **Drug interactions**
- ❖ **Constipation (30-70%)**
- ❖ **Dependence**
- ❖ **Addiction**
- ❖ **Opioid induced pain**

# 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



## **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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