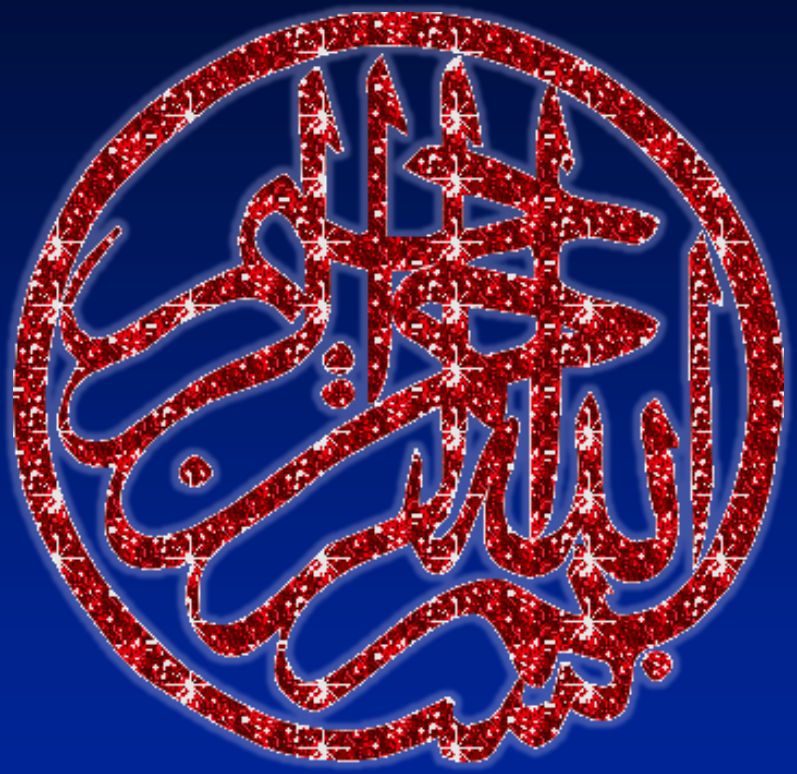

بسم الله الرحمن الرحيم

ACUTE PAIN MANAGEMENT

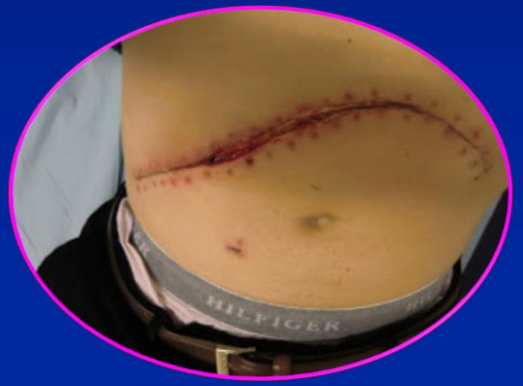
Salah N. El-Tallawy

Prof. of Anesthesia and Pain Management

Faculty of Medicine - Minia Univ & NCI - Cairo Univ - Egypt

Assc Prof. KKUH, King Saud Univ., KSA

http://faculty.ksu.edu.sa/salaheltallawy



OBJECTIVES

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

Acute Pain

1. INTRODUCTION TO ACUTE PAIN

DEFINITION & CAUSES & TYPES

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"

(Ready & Edwards, 1992). IASP Press

(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

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, poorly localized,

Colicky, Referred, ± N/V

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

Classification of Pain

B) According to the "Pathophysiology"

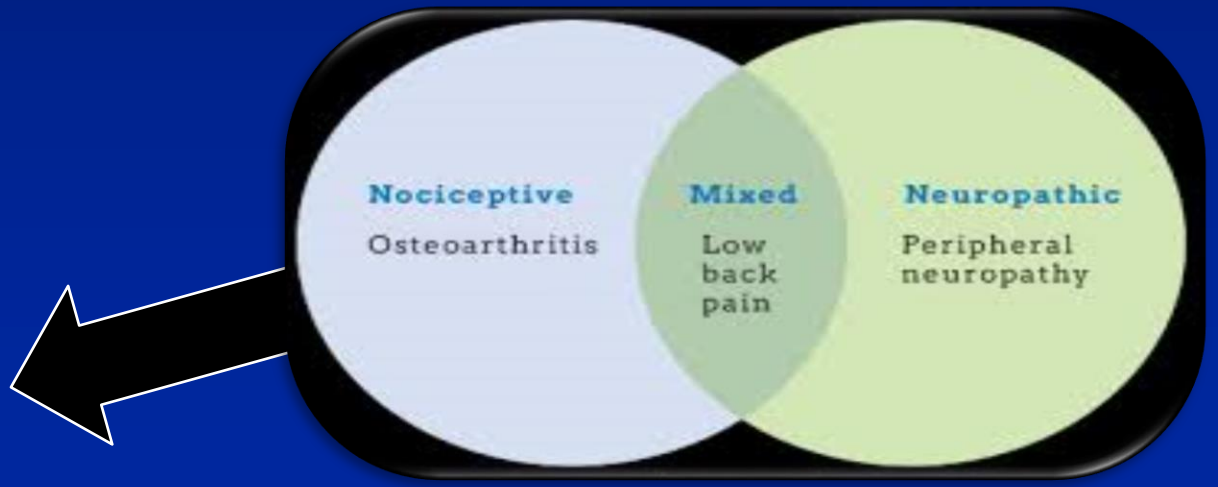
1. Nociceptive pain
2. Neuropathic pain
3. Idiopathic
4. Mixed Pain

- Pain without:
  - Organic inj.
- Disproportionate
  - with injury.

Classification of Pain

B) According to the "Pathophysiology"

1. Nociceptive pain
2. Neuropathic pain
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.

D) According to the "Source"

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**
Rehabs	**Physiotherapy, movement**
Surgical	**Complication of surgery**
Others	**Cast, dressing too tight, urinary retention**

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

IASP Newsletter 2011;4:1-3

3. ASSESSMENTS

of

Acute Pain

3) PAIN ASSESSMENTS

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

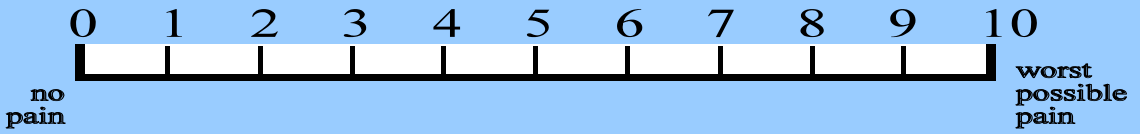
PAIN MEASUREMENTS

Rules:

- Timing:
  - Before & after analgesia
  - Before & after any procedure
  - On regular basis
- Same score
- Recorded

Visual Analogue Scale (VAS)

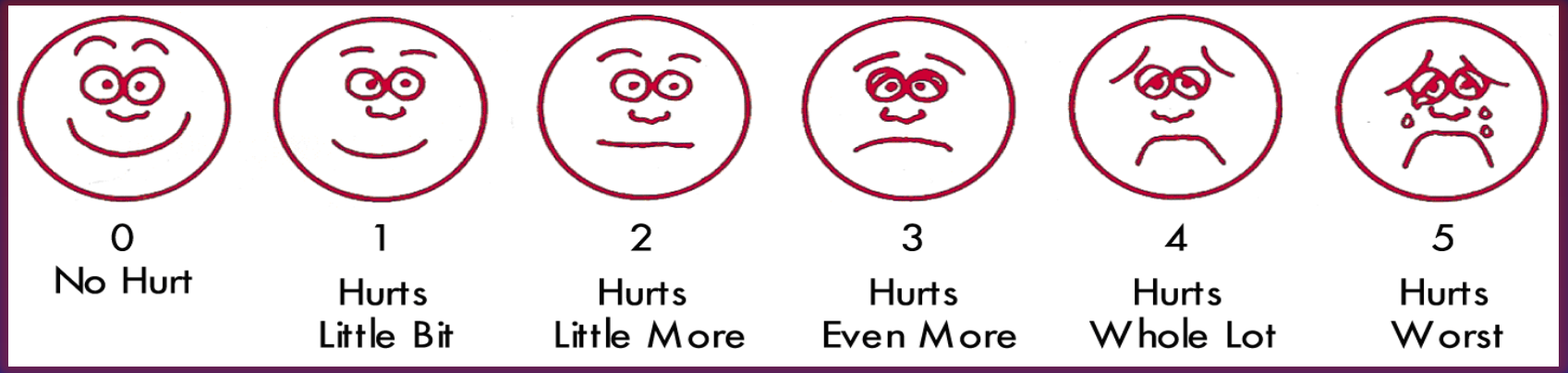
Numeric Rating Scale (NRS)

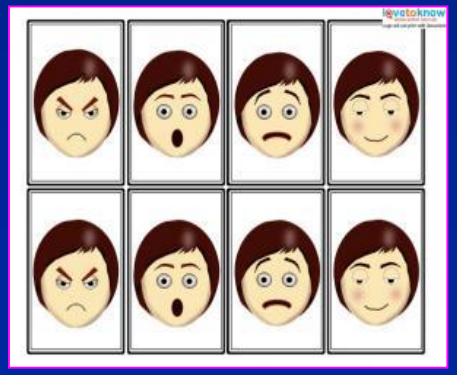


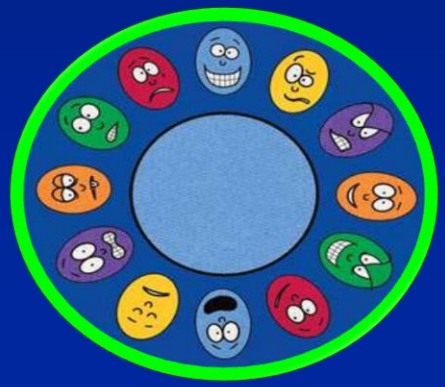
Verbal Rating Score

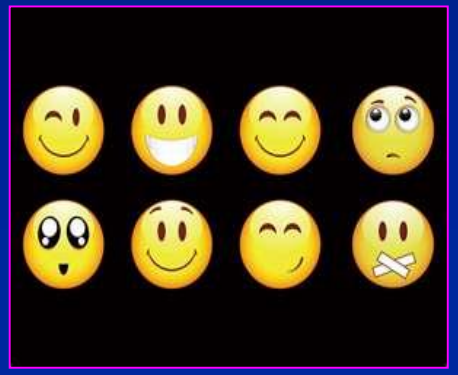
PAIN MEASUREMENTS

Pediatric Scores "Facial expression"









4. MANAGEMENTS

of

Acute Pain

"MANAGEMENT OF ACUTE PAIN"

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 IV Interventional

Severe pain (7-10)

WHO III Strong opioids

± Adjuvant

Moderate pain (4-6)

WHO class II Weak opioids

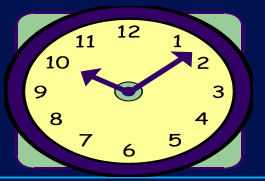
± Adjuvant

Mild pain (0-3)

WHO class I NSAIDs

± Adjuvant

Pain persists or increases



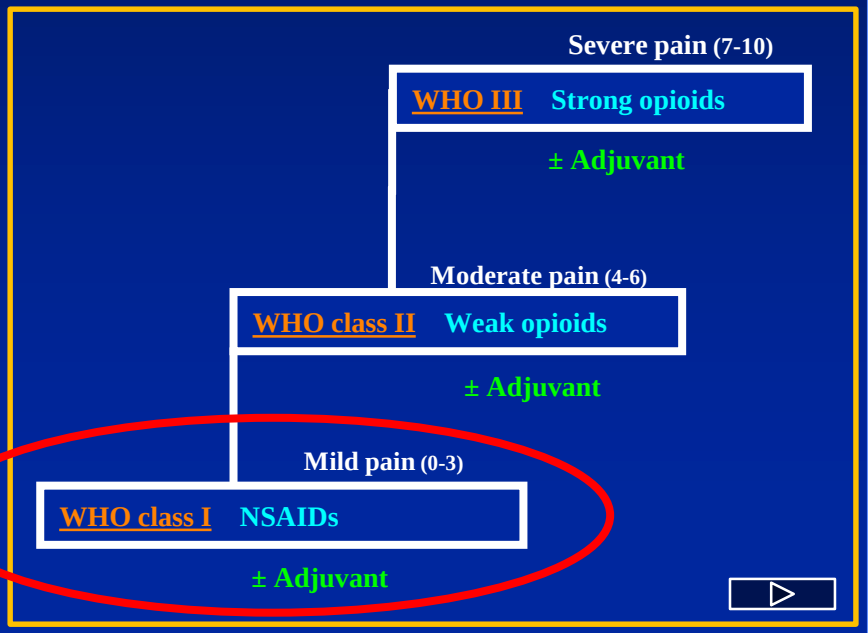
- ✓By the mouth
- ✓By the clock
- ✓By the ladder

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.*



Acute Pain Management - Scientific Evidence - AAGBI Guidelines 2010

WHO (I) Non Opioid Analgesics

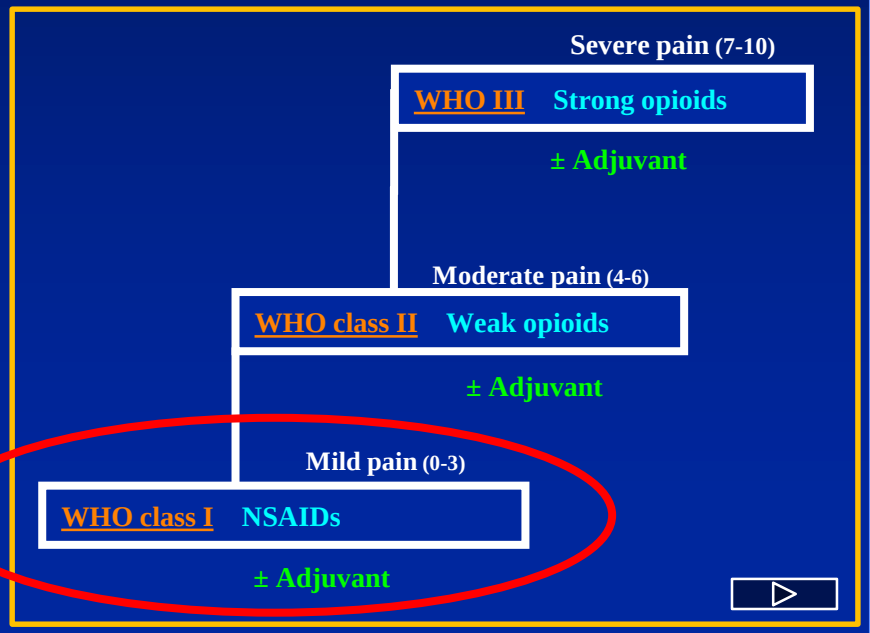
1. **Non Opioid Analgesics**

   - **Gabapentoids:**
     - **Gabapentin**

       (Neurontin 400 mg)

     - **Pregabalin**

       (Lyrica 75 – 150 mg)



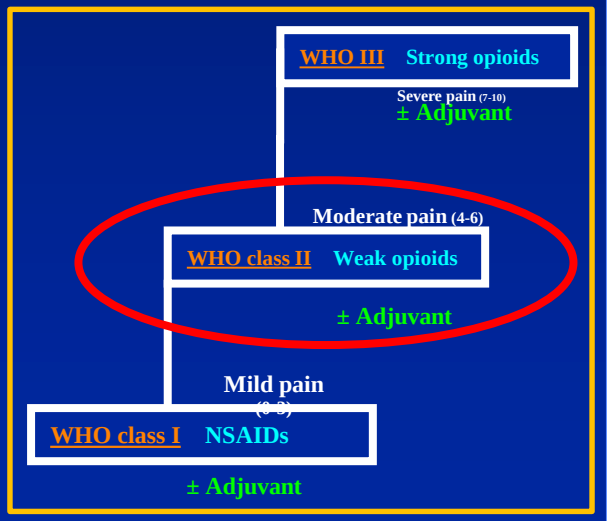
WHO Ladder II - Weak Opioids:

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.



Acute Pain Management - Scientific Evidence - AAGBI Guidelines 2010

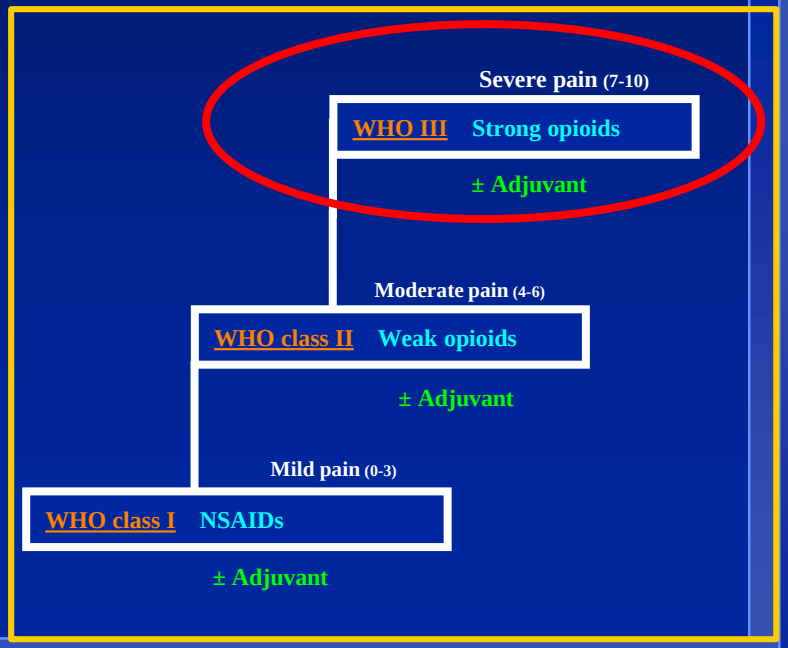
WHO Ladder III - Strong Opioids

1. Morphine:

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

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

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



WHO Ladder III - Strong Opioids

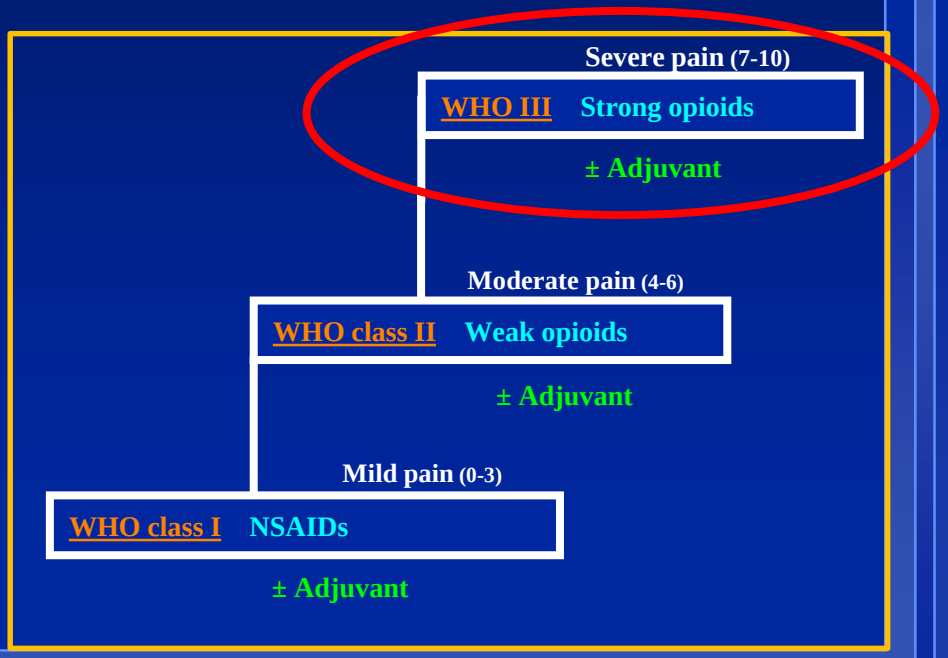
3. Pethidene: *(Pethidene : Morphine = (1:10)*

- May be used ⇒ postop. shivering
- Side effects:
  - Toxic active metabolite: ↑ t½ .
  - ↑ N/V > morphine
  - ↑ Addiction liability

4. Oxycodone

- Available Oral & IV
- It has a faster onset > morphine,
- Longer duration of action,
- Lower rate of adverse effects
- Effective in visceral pain
- Better oral bioavailability

➔ Used in pts who can use oral route. *(Level 1)*



OPIOID THERAPY - Prescribing Principles

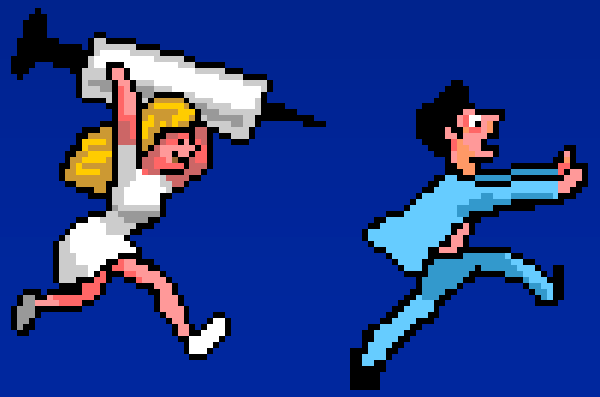
1. Drug selection
2. Route of administration
3. PCA
4. Dose Adjustments
5. Treating side effects

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

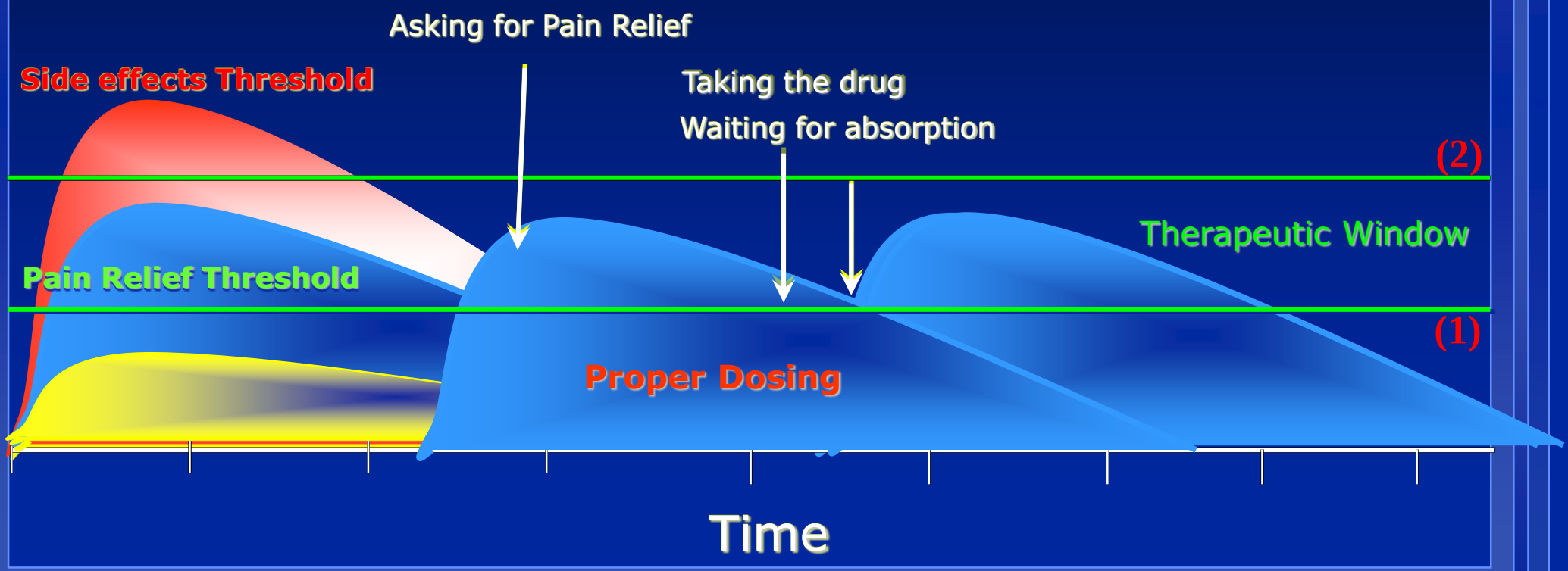
Safety

Patient Controlled Analgesia (PCA) Pain Pump

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

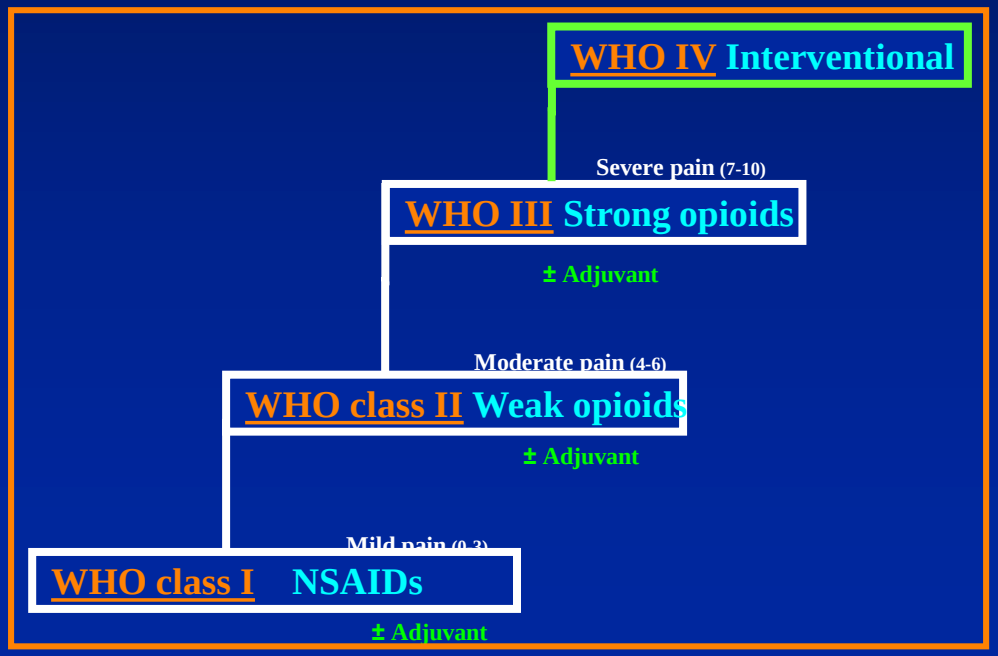


OPIOID THERAPY: 5. Side Effects in Opioids

- **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**

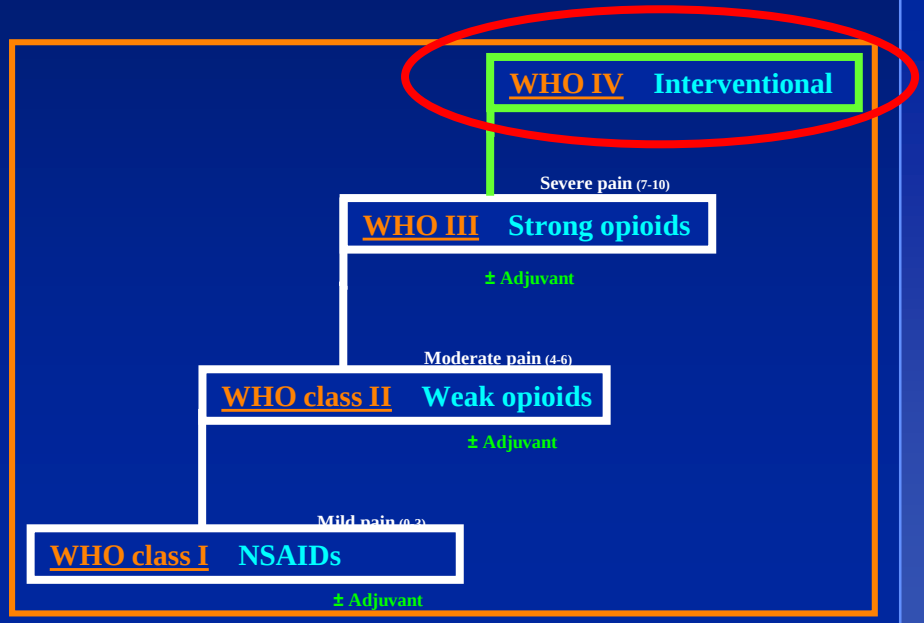
WHO Ladder IV

Regional Anesthetic Techniques



WHO Ladder IV – Regional Anesthetic Techniques

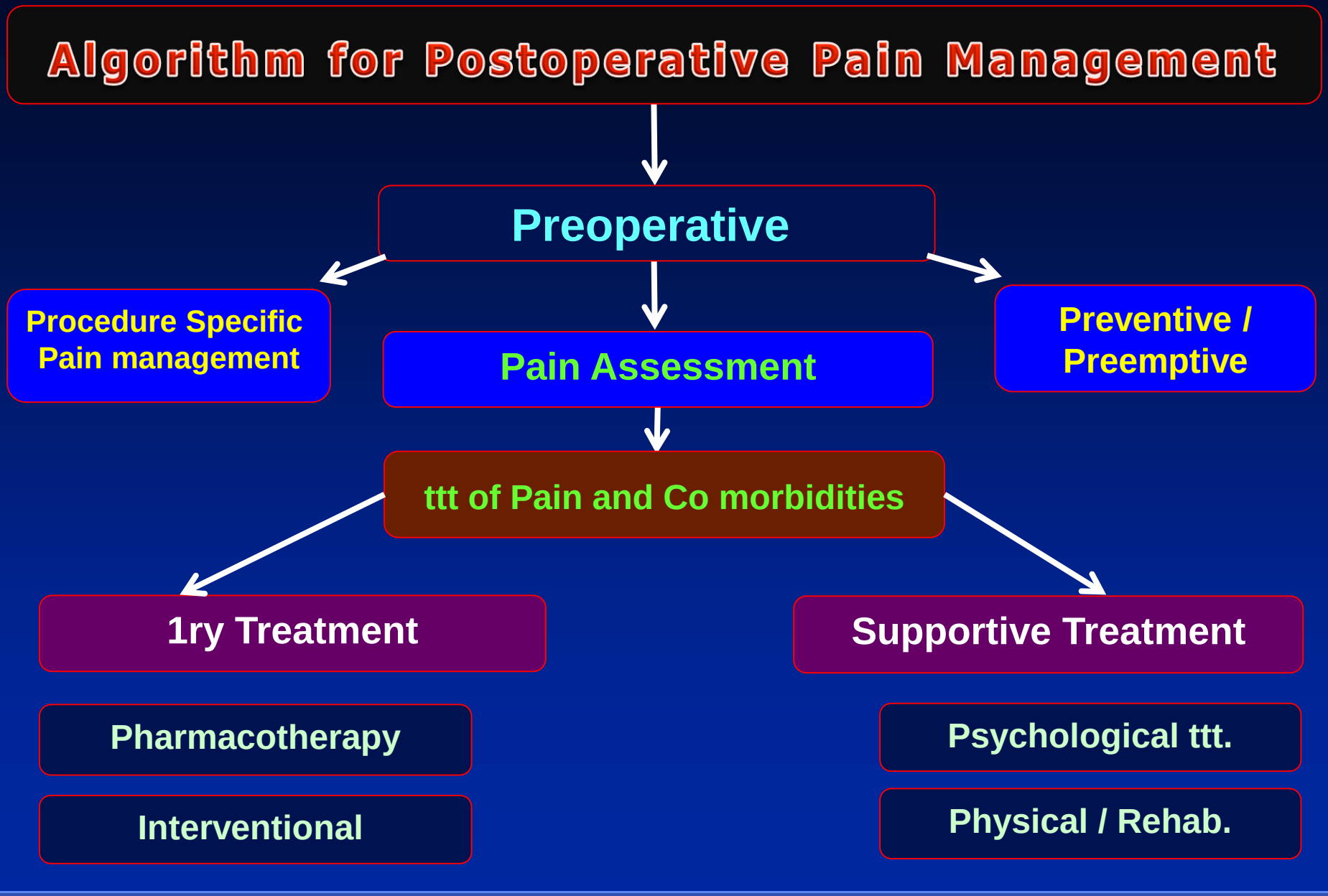
1. Local infiltration
2. Wound perfusion
3. Intra-abdominal LA
4. Intercostal
5. Interpleural
6. Paravertebral
7. USG - PNB: BPB, TAP, Femoral
8. Neuraxial:
   - ❖ Epidural:
     - ❖ Thoracic
     - ❖ Lumbar
   - ❖ Spinal
     - ❖ Single shot
     - ❖ CSA
   - ❖ CSE



Summary

&

Conclusions


Algorithm for Postoperative Pain Management
Preoperative
Procedure Specific Pain management
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

Salah N. El-Tallawy

Prof. of Anesthesia and Pain Management

Faculty of Medicine - Minia Univ & NCI - Cairo Univ - Egypt

Assc Prof. KKUH, King Saud Univ., KSA

http://faculty.ksu.edu.sa/salaheltallawy