Post operative pain management

Dr.Mahshid Karimi

The management of pain is a multidisciplinary team effort involving physicians, psychologists, nurses, and physical therapists

GOAL OF PAIN TREATMENT

- Improve quality of the pt .
- Facilitate rapid recovery &return to full function .
- Reduce morbidity .
- Allow early discharge from hospital .

Physiologic response

- **Cardiovascular**
  : ⇧ HR, ⇧ BP ,⇧PVR, ↑myocardial O_2 consumption
  MI, DVT, pulmonary embolism
- **Respiratory**
  :⇩ lung volume → atelectasis
  :⇩cough, sputum retention →infection, hypoxemia
- **Gastrointestinal**
  : ⇩gastric & bowel motility,
  :⇧risk of bacterial transgression of bowel wall

Physiologic response

- **Musculoskeletal**

  :muscle spasm, immobility → ⇧risk DVT

  :muscle wasting→ prolong recovery

- **Central nervous**

  : central sensitization → chronic pain

- **Psychological**

  : anxiety, fear, sleep deprivation, leading to ⇧ pain

Physiologic response

- **Neuroendocrine**

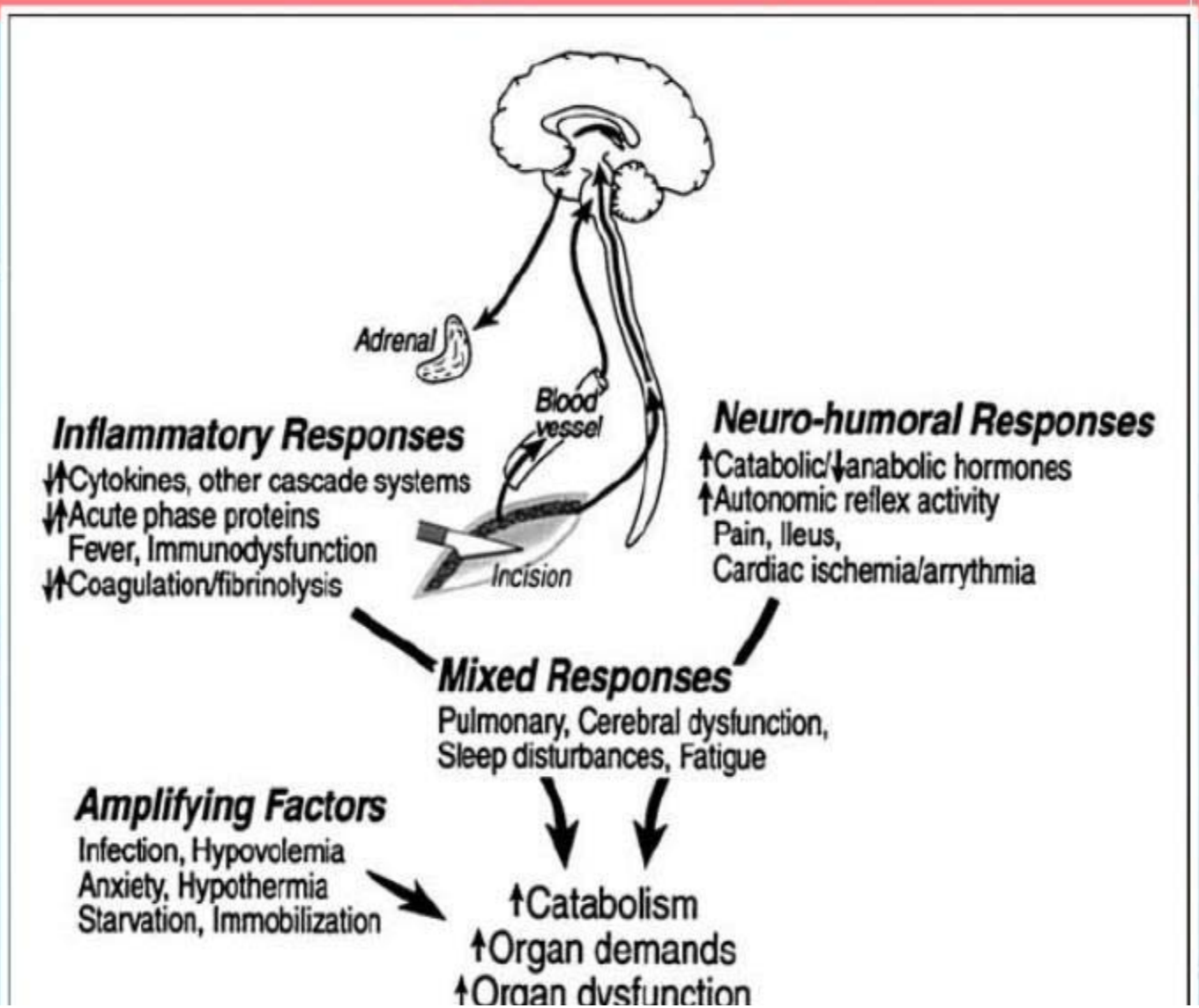
  : ⇧*catabolic hormone*

  (glucagon, growth hormone, vasopressin, aldosterone, renin angiotensin)

  → hyperglycemia, impaired wound healing

  : ⇩*anabolic hormone* (insulin, testosterone)

Surgical pain



Surgical pain

Surgical procedure

Minor surgery

Herniotomy

Varicose vein

Gynecological laparotomy

Moderate surgery

Hip replacement

Hysterectomy

maxillofacial

Major surgery

Thoracotomy

Major abdominal surgery

Knee surgery

Paracetamol /NSIADs / weak opiods

Wound infiltration

Peripheral nerve block

Paracetamol /NSIADs
+Wound infiltration
Peripheral nerve block
Systemic opioids
PCA

Paracetamol /NSIADs
Epidural anesthesia
systemic opioids
PCA

Treatment modality

Pain management

1. Patient education
2. Drugs & non drugs treatment
3. Monitoring requirement
4. Treatment of side effects

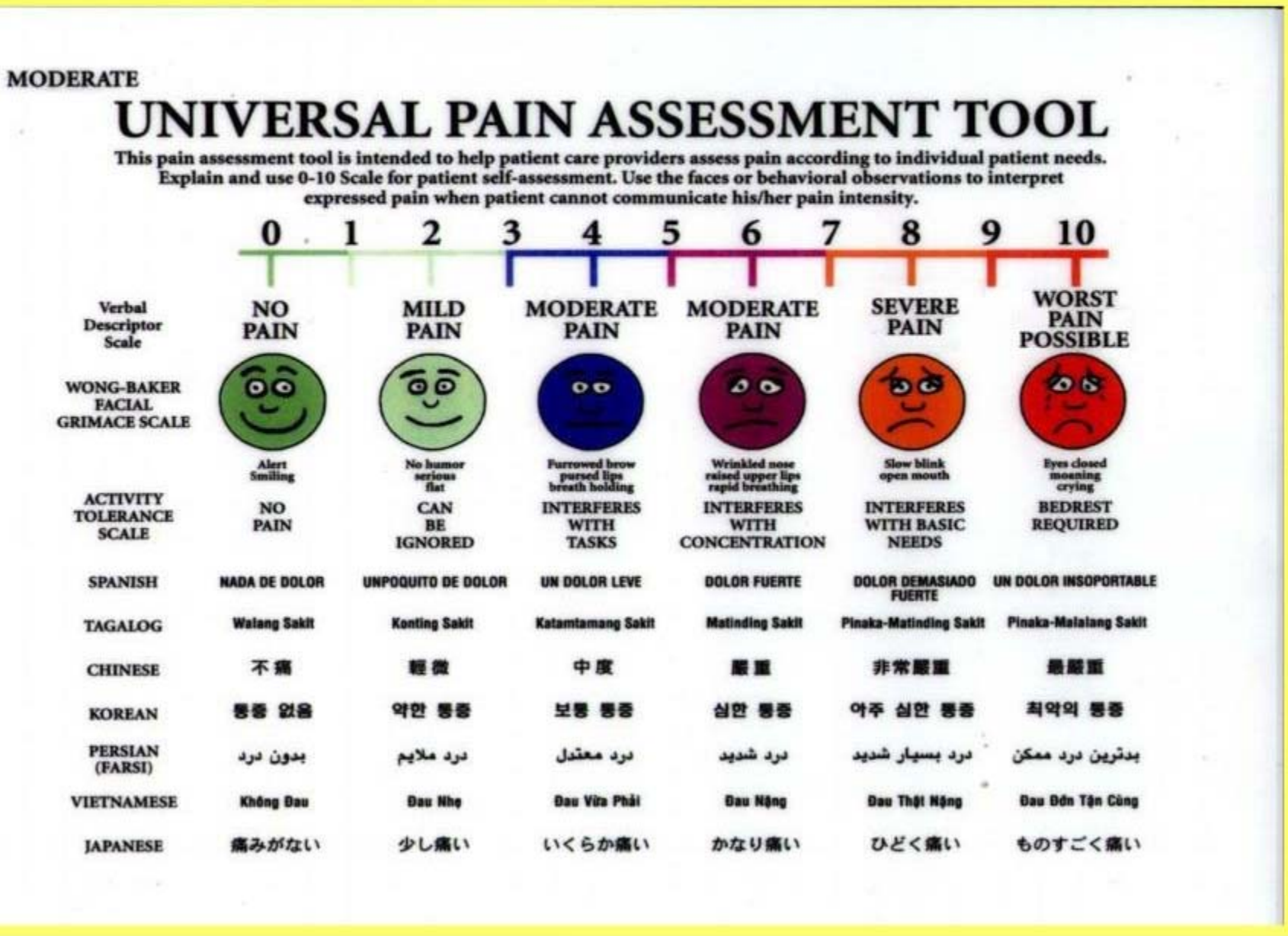
Acute Pain management

- Pain management continues to be a challenge to doctors and nurses.
- PCA &epidural analgesia are advance in analgesia that may assist nurse with this challenge
- Pain management can be evaluated in terms of its ability to meet 2 main goals:
  - To relieve postoperative pain.
  - To relieve patient of inhibition of respiratory movement without sedation.

Pain evaluation

- Physical examination
- Psychological examination

Pain assessment tools



MODERATE

UNIVERSAL PAIN ASSESSMENT TOOL

This pain assessment tool is intended to help patient care providers assess pain according to individual patient needs. Explain and use 0-10 Scale for patient self-assessment. Use the faces or behavioral observations to interpret expressed pain when patient cannot communicate his/her pain intensity.

	0	1 2	3 4 5	6 7	8 9	10
Verbal Descriptor Scale	NO PAIN	MILD PAIN	MODERATE PAIN	MODERATE PAIN	SEVERE PAIN	WORST PAIN POSSIBLE
WONG-BAKER FACIAL GRIMACE SCALE	Alert Smiling	No humor serious flat	Furrowed brow pursed lips breath holding	Wrinkled nose raised upper lips rapid breathing	Slow blink open mouth	Eyes closed moaning crying
ACTIVITY TOLERANCE SCALE	NO PAIN	CAN BE IGNORED	INTERFERES WITH TASKS	INTERFERES WITH CONCENTRATION	INTERFERES WITH BASIC NEEDS	BEDREST REQUIRED
SPANISH	NADA DE DOLOR	UNPOQUITO DE DOLOR	UN DOLOR LEVE	DOLOR FUERTE	DOLOR DEMASIADO FUERTE	UN DOLOR INSOPORTABLE
TAGALOG	Walang Sakit	Konting Sakit	Katamtamang Sakit	Matinding Sakit	Pinaka-Matinding Sakit	Pinaka-Malalang Sakit
CHINESE	不痛	輕微	中度	嚴重	非常嚴重	最嚴重
KOREAN	통증 없음	약한 통증	보통 통증	심한 통증	아주 심한 통증	최악의 통증
PERSIAN (FARSI)	بدون درد	درد ملایم	درد معتدل	درد شدید	درد بسیار شدید	بدترین درد ممکن
VIETNAMESE	Không Đau	Đau Nhẹ	Đau Vừa Phải	Đau Nặng	Đau Thật Nặng	Đau Đớn Tận Cùng
JAPANESE	痛みがない	少し痛い	いくらか痛い	かなり痛い	ひどく痛い	ものすごく痛い

Pain Assessment tools

FLACC Behavioral Pain Assessment			
Categories	**Scoring**		
	0	**1**	**2**
Face	No particular expression or smile	Occasional grimace or frown, withdrawn, disinterested	Frequent to constant quivering chin, clenched jaw
Legs	Normal position or relaxed	Uneasy, restless, tense	Kicking, or legs drawn up
Activity	Lying quietly, normal position moves easilyl	Squirming, shifting back and forth, tense	Arched, rigid or jerking
Cry	No cry, (awake or asleep)	Moans or whimpers; occasional complaint	Crying steadily, screams or sobs, frequent complaints
Consolability	Content, relaxed	Reassured by occasional touching hugging or being talked to, distractable	Difficulty to console or comfort

Each of the five categories is scored from 0-2, resulting in a total score between 0 and 10.
The FLACC scale was developed by Sandra Merkel, MS, RN, Terri Voepel-Lewis, MS, RN, and Shobha Malviya, MD, at C. S. Mott Children's Hospital, University of Michigan Health System, Ann Arbor, MI.

- Pain Management

There are many different techniques,non-pharmacological &pharmacological , both regional and non-regional to provide post op analgesia.

Treatment ...

Pharmacologic

- Opioid
- Non opioid
- Adjuvant

Pharmacological approach

NON OPIOID

Acetamenophen

NSAIDs

OPIOID

WEAK OPIOID

Tramal

Strong Opioids

morphine

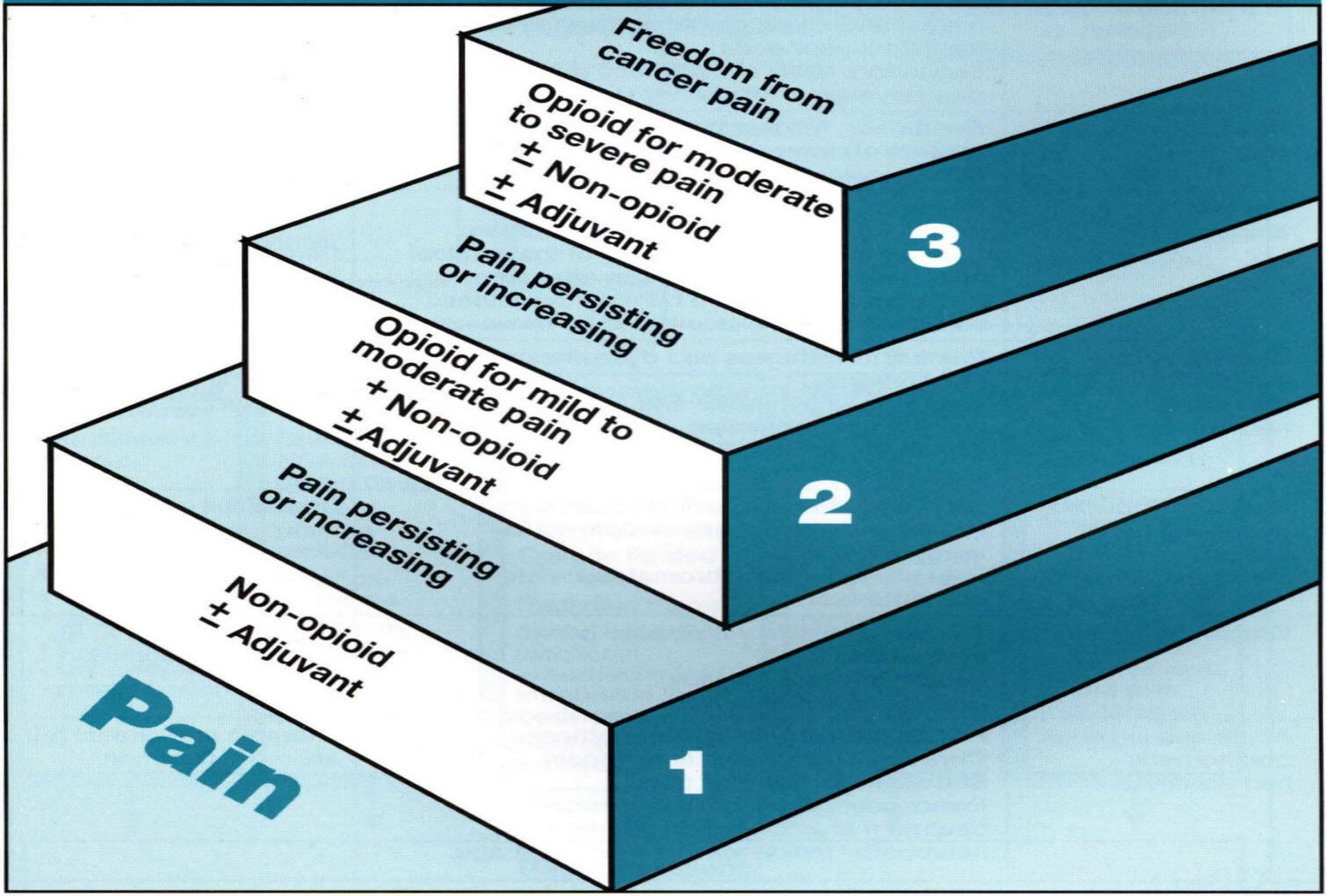
- Adjuvents therapy
  - Anticonvulsant
  - Antidepressants
  - NMDA antagonists
  - Muscle relaxants
  - Clonidine
  - Corticosteroids
  - Local Anesthetics
  - Sedatives

PHARMACOLEGICAL

WHO Ladder

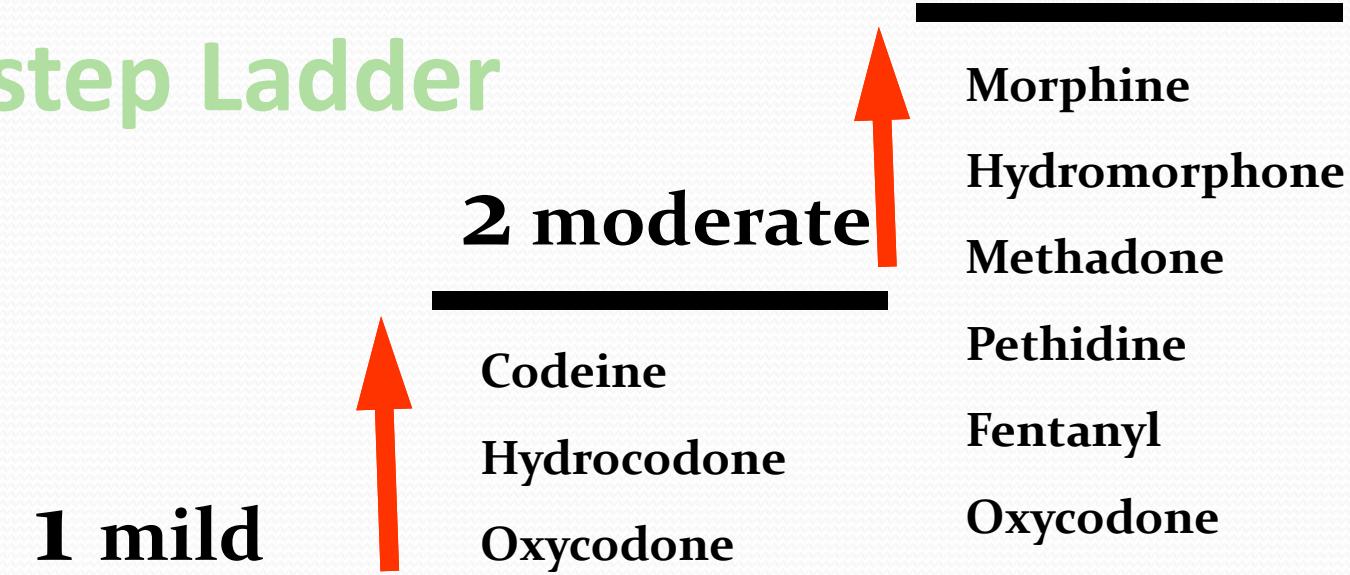
An essential principle in using medications to manage pain is to individualize the regimen for the patient

Figure 3. WHO three-step analgesic ladder

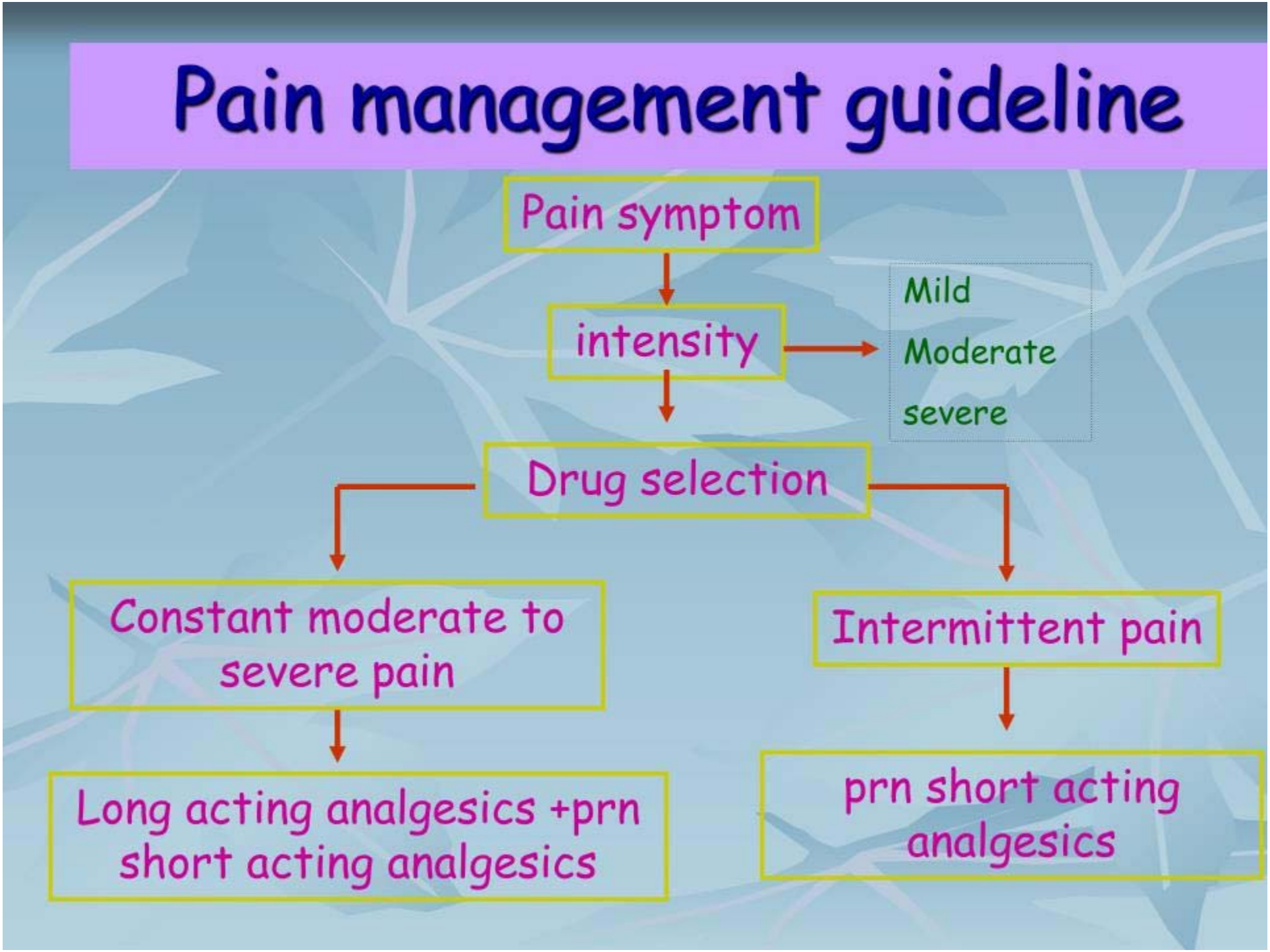


Source: World Health Organization, 1990. Used with permission.

WHO step Ladder



Pain management guideline



Methods of Acute Postoperaive Pain Relief

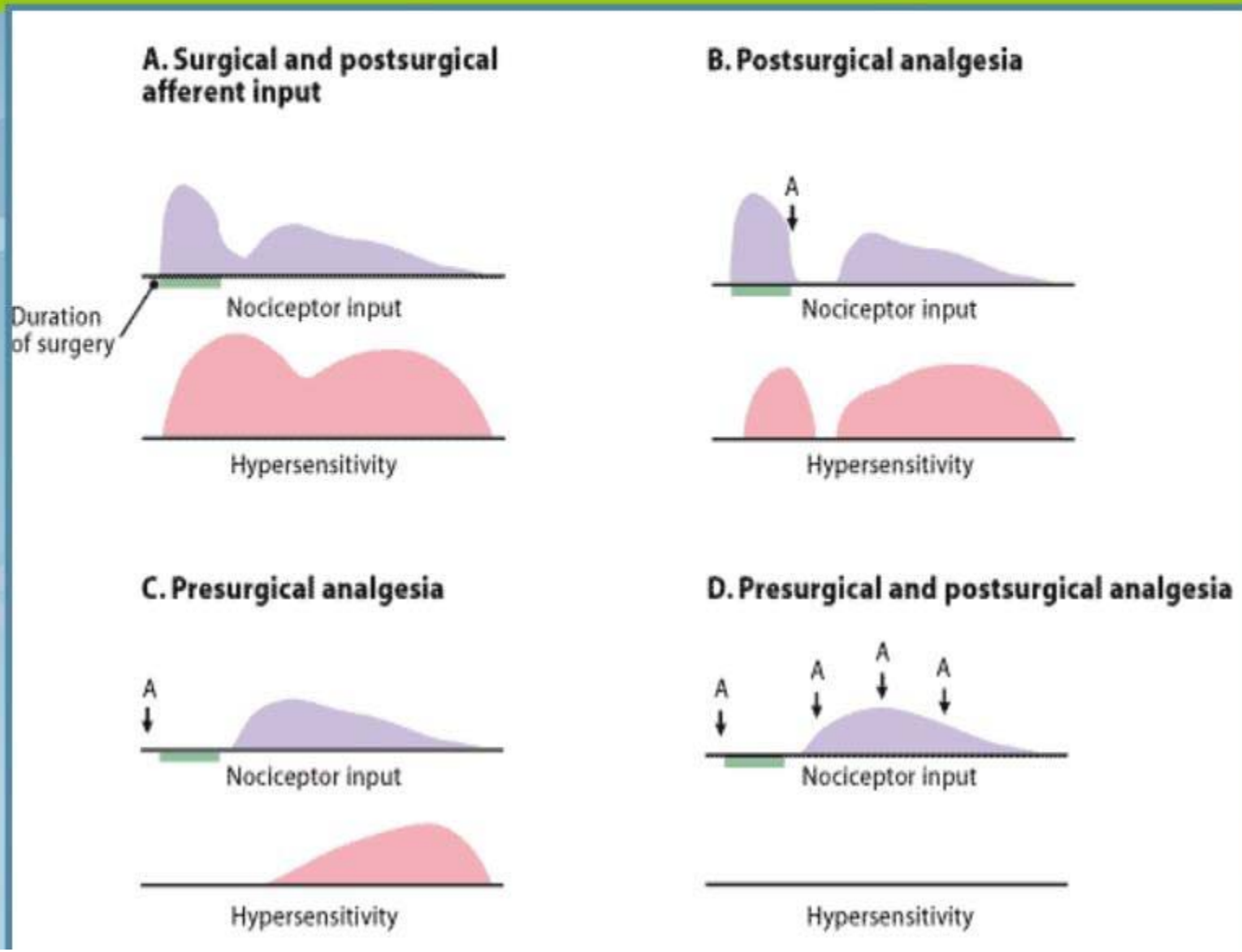
Methods of Acute Postoperaive Pain Relief

- Intramuscular
- Intravenous - Intermittent Bolus
- Intravenous-Continuous Infusion
- Patient Control Analgesia (PCA)
- Epidural analgesia
- Peripheral Blocks

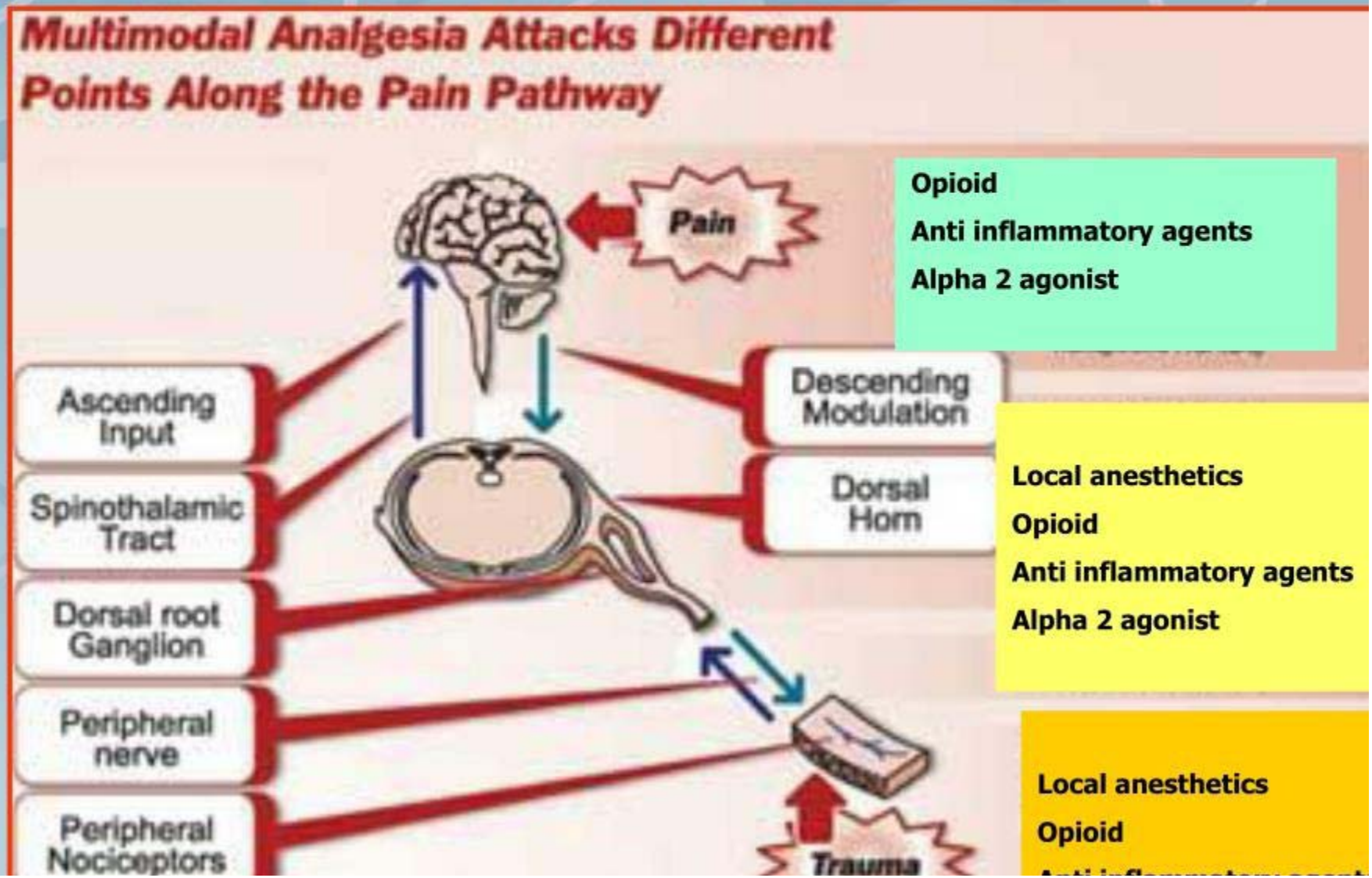
Pain management

- Preemptive analgesia & Multimodal analgesia
  - ⇩ doses of each analgesic
  - Improved actinociception due to synergistic/additive effects
  - may⇩ reduce severity of side effect of each drugs

Preemptive analgesia



Multimodal analgesia



OPIOIDS

Morphine

: standard treatment

: metabolism : liver

M-3-G : no analgesic property

M-6-G : more potent than morphine(2X)

: histamine release

Meperidine

: atropine like effect : tachycardia ,dry mouth

: metabolism liver

Normeperidine → CNS excitation

: shivering treatment

: interaction with MAOI → hyperpyrexia, convulsion ,hypertension ,coma

Fentanyl

: rapid onset & short duration

: inactive metabolite

: no histamine release

:100X potent than morphine

Codeine

: weak opioids

: orally plus with paracetamol " TWC"

: mild to moderate pain.

:Doses 15-60 mg 4 hourly
(with a maximum of 300 mg daily)

Tramadol

- ***Multiple mechanism***
  - Weak μ-receptor agonist
  - Inhibit serotonin & NE reuptake

- ***Application*** : neuropathic component
- Dose : 50-100 mg PO q 4-6 hr.
- Max. 400 mg/d

Opioids

Table 3 Characteristics of various opioids

Agonist	Route	Equianalgesic dose, mg	Onset, min	Peak effect, min	Duration of effect, h
Morphine	IV Oral	10 30	5–10 15–60	10–30 90–120	3–5 4
Codeine	Intramuscular Oral	120 200	10–30 30–45	90–120 60	4–6 3–4
Hydromorphone	IV Oral	1.5 7.5	5–20 15–30	15–30 90–120	3–4 4–6
Oxycodone	Oral	20	15–30	30–60	4–6
Methadone	IV Oral	10* 20*	10–20 30–60	60–120 90–120	4–6 4–12
Fentanyl	IV	0.1	<1	5–7	0.75[1]–2+[3]
Oxymorphone	IV Oral[k]	1 10	5–10	30–60 (meaningful relief: 60)	3–6 4–6
Tramadol	Oral	100[l]	60	120–180	3–6

*These doses are based on single administrations and should only be used to convert between oral and IV methadone. If co
ing a patient who has been taking a different opioid, use the following formula that takes into account the dose-dependent p

Potential side effects of Opioids

- Respiratory & cardiovascular depression
- Nausea, vomiting, ileus , Constipation
- Urinary hesitency & retention
- Pruritus
- Sedation dizziness ,delirium
- Myoclonus/seizure
- Tolerance dependence

REVIEW ARTICLE WHITE ANESTH ANALG
NON-OPIOID ANALGESICS AND ACUTE POSTOPERATIVE PAIN 2005;101:S5–S22

Treatment opioid adverse effects

- *Respiratory depression:* most serious

  Sedation score

  0 : wide awake

  1 : easy to rouse

  2 : easy to rouse but unable to stay awake

  early respiratory depression

  3 : somnolent, difficult to rouse

  severe respiratory depression

Treatment opioid adverse effects

- *Nausea:* tolerance within 7–10 days
  Px haloperidol , ondansetron or domperidone
- *Vomiting:*
  Px domperidone or metoclopramide
- *Constipation:* not tolerance
  Px laxative and stool-softeners

Treatment opioid adverse effects

- *Drowsiness:* tolerance over 5–7 days oxycodone or meperidine
- *Itching:* antihistamine

Treatment opioid adverse effects

- *Drowsiness:* tolerance over 5–7 days oxycodone or meperidine
- *Itching:* antihistamine

Naloxone

: Px opioid intoxication

: dilute to 10 ml. titration

: side effect : withdrawal symptoms, hypertension, tachycardia, pain, pulmonary edema

Naloxone

Respiratory depression & somnolence

: 1-4 mcg/kg repeat q 2-3 min

: 3-5 mcg/kg/hr continuous infusion

Urinary retention & Pruritus

: 1-2 mcg/kg

Nausea vomitting

: 0.5-1 mcg/kg

Goal! treatment

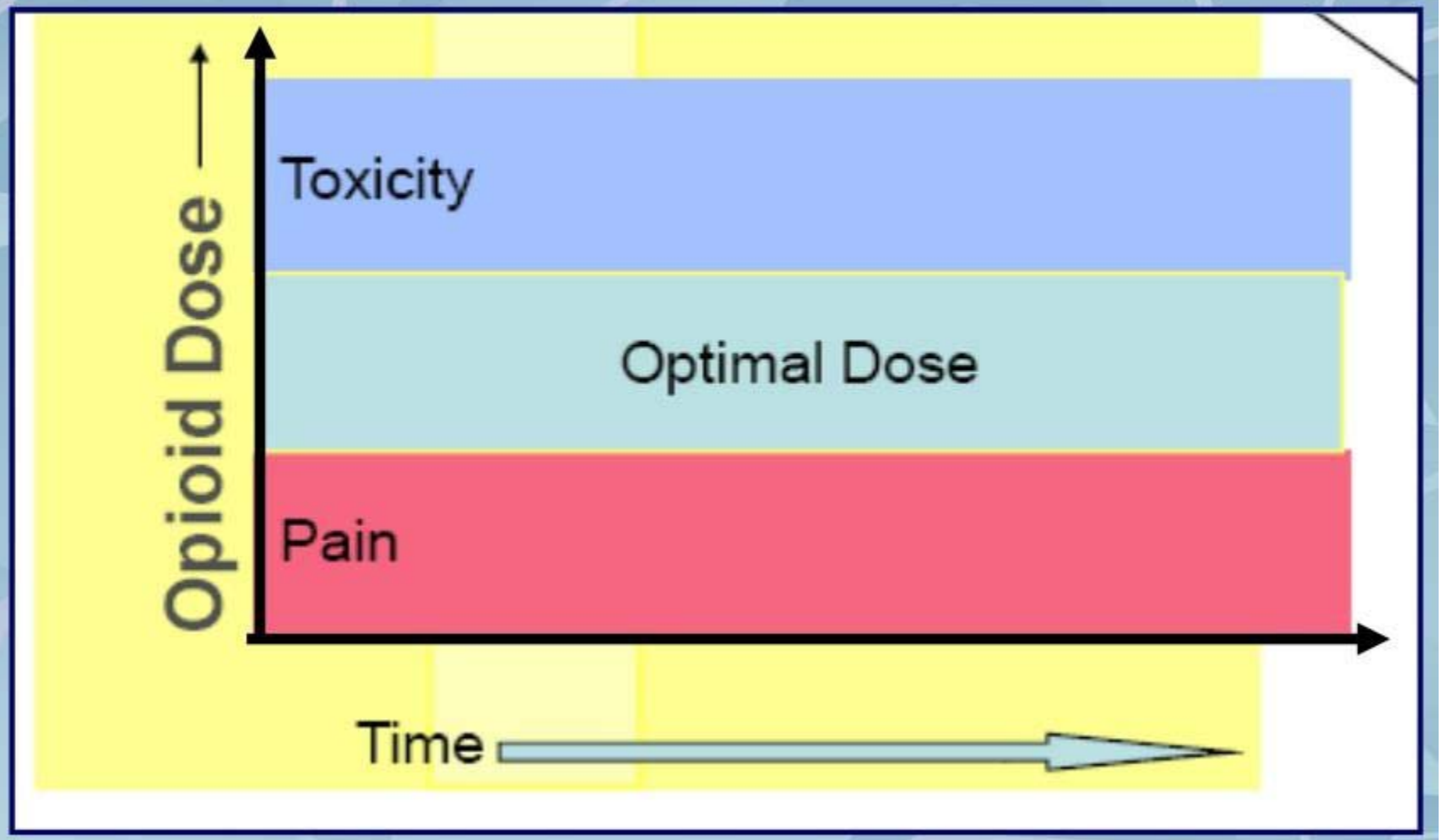
: Right opioids

: Right route

: Right dose

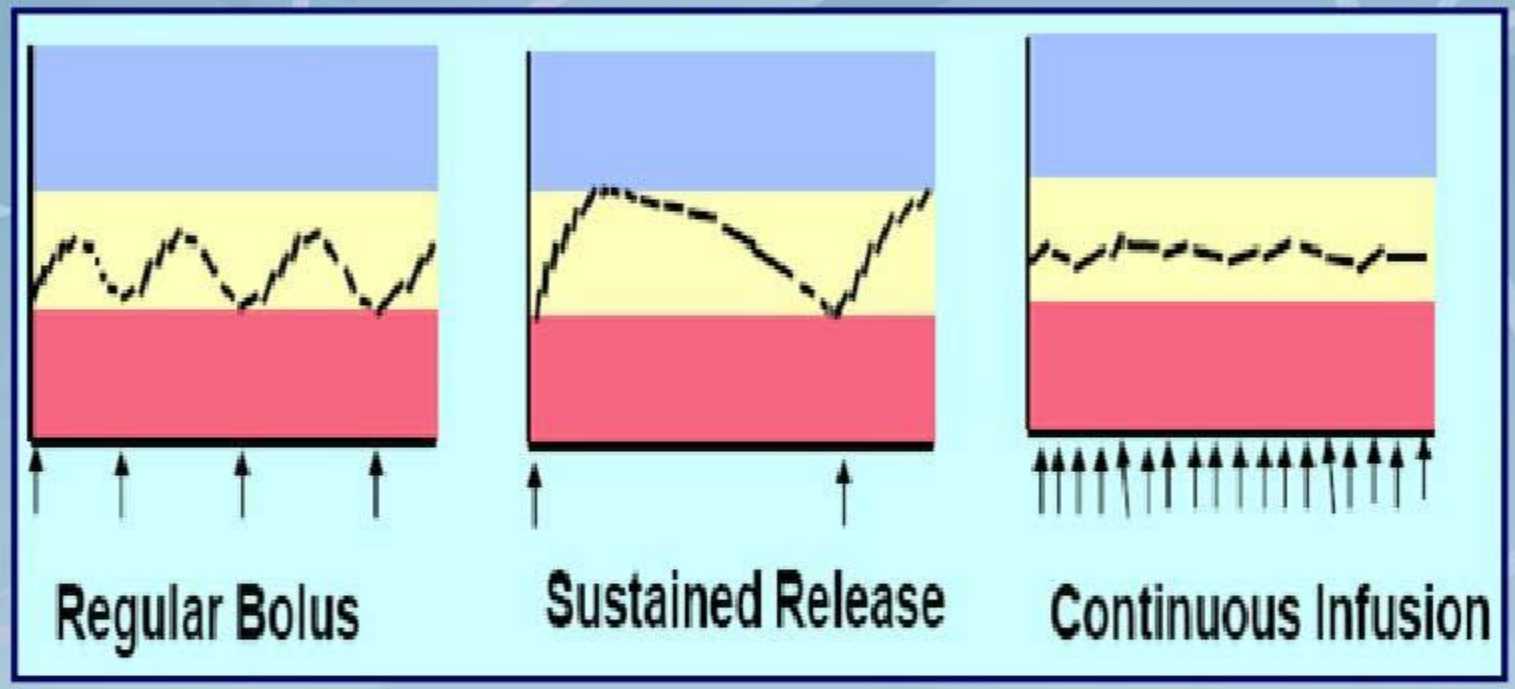
: Right interval

Opioids Administration



Analgesic corridor

Opioids Administration

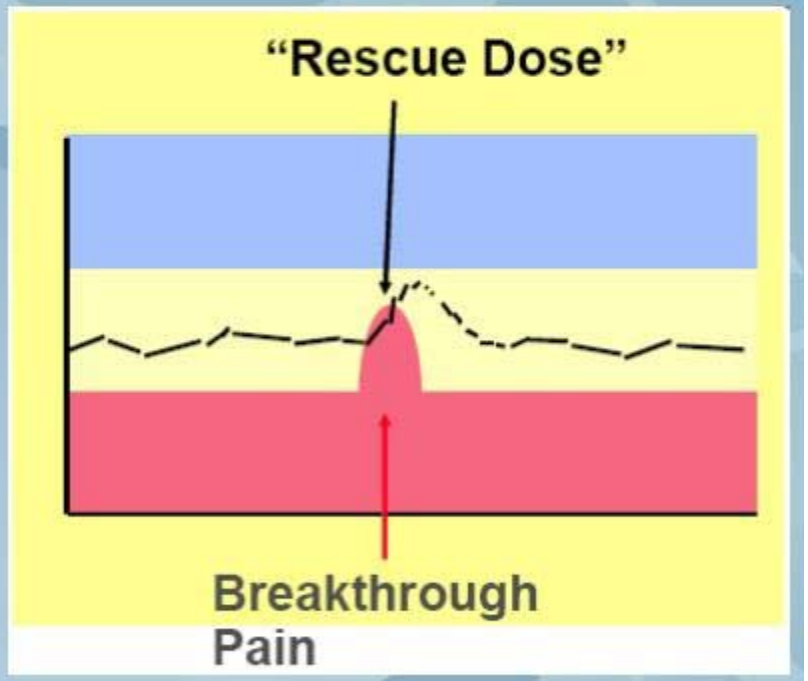


Around the clock

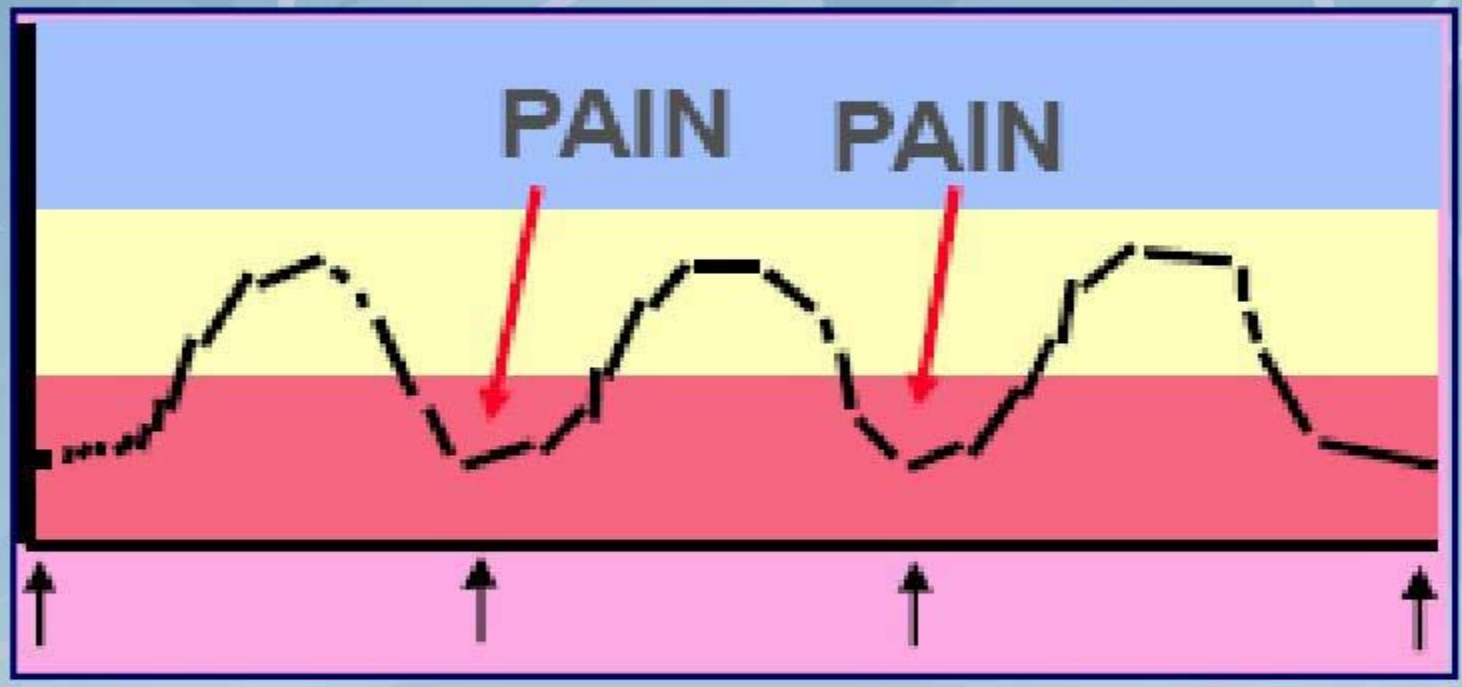
Opioids dose

Breakthrough pain

Promt
Short action
easy to give



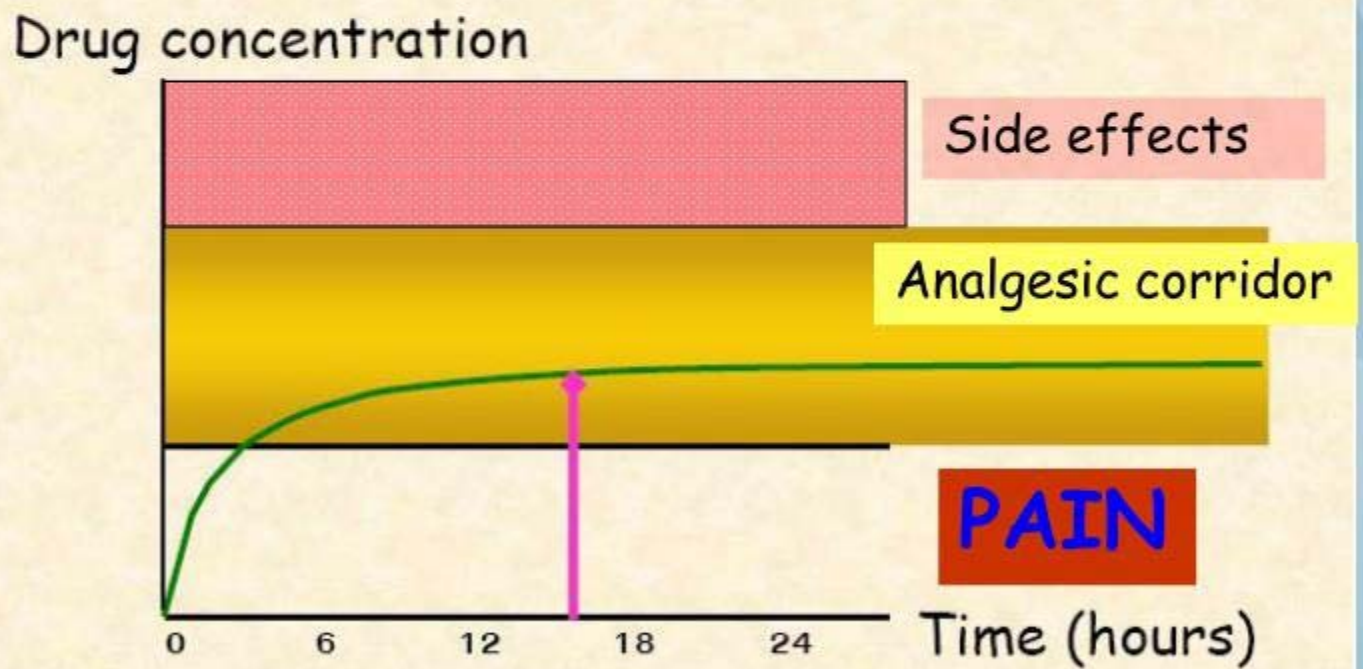
Opioids Administration



prn for pain q ...

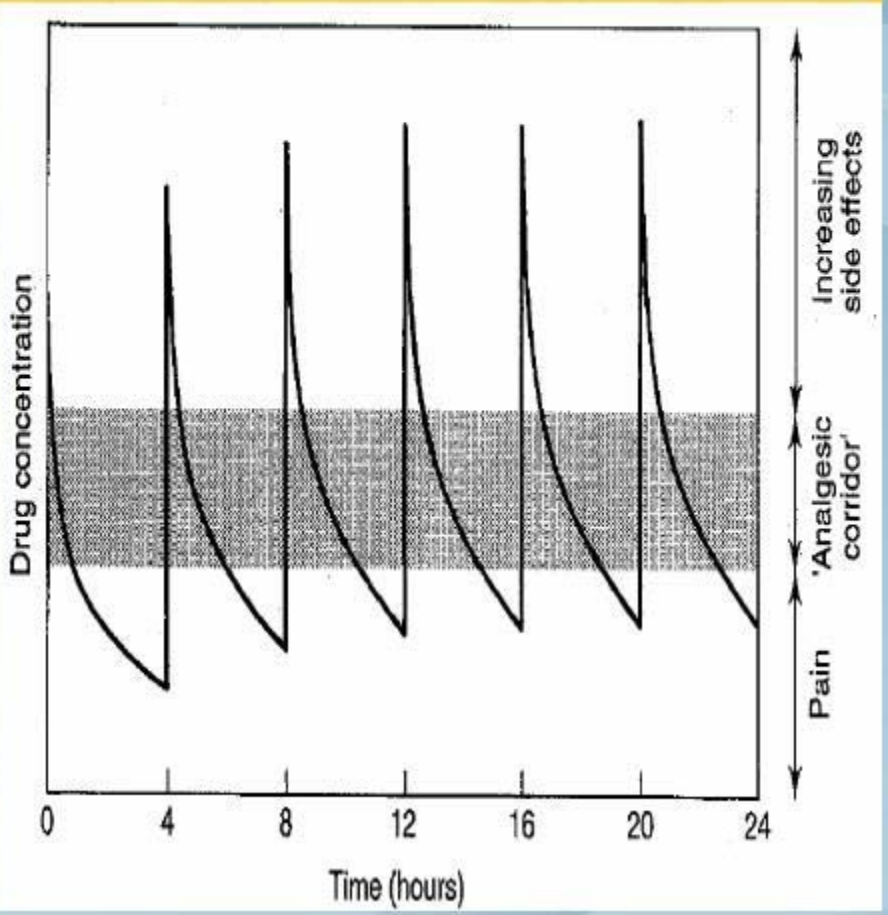
Opioids Administration

1.Intravenous continuous drip

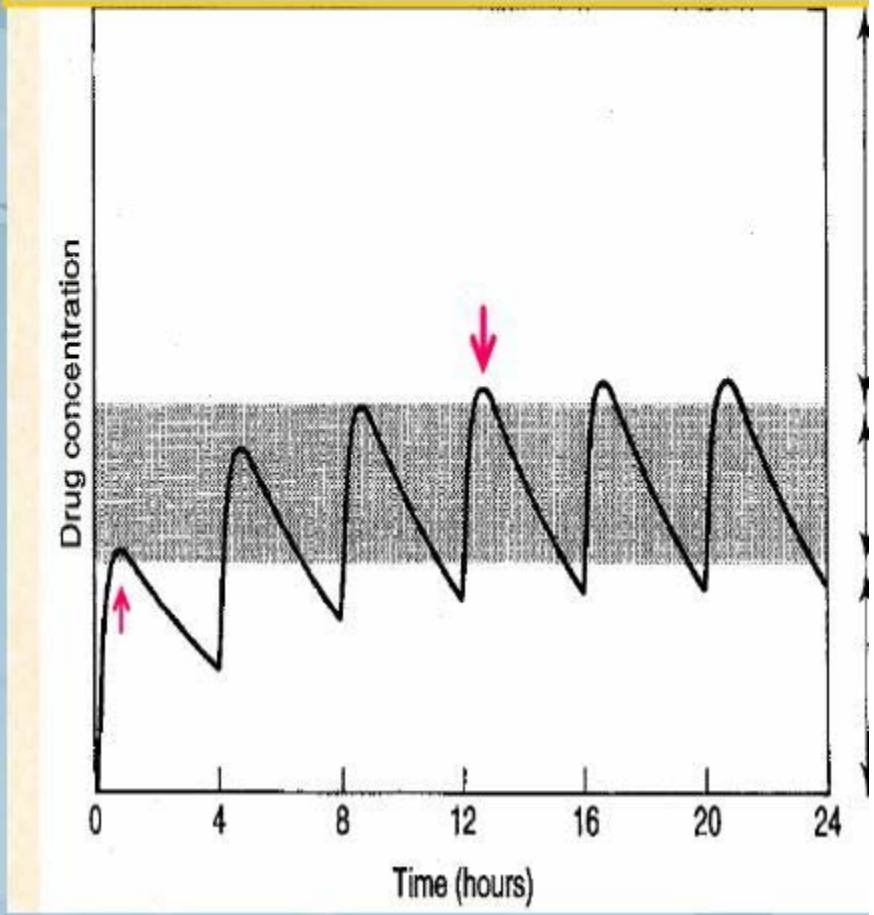


Opioids Administration

2.Intravenous q 4 hr

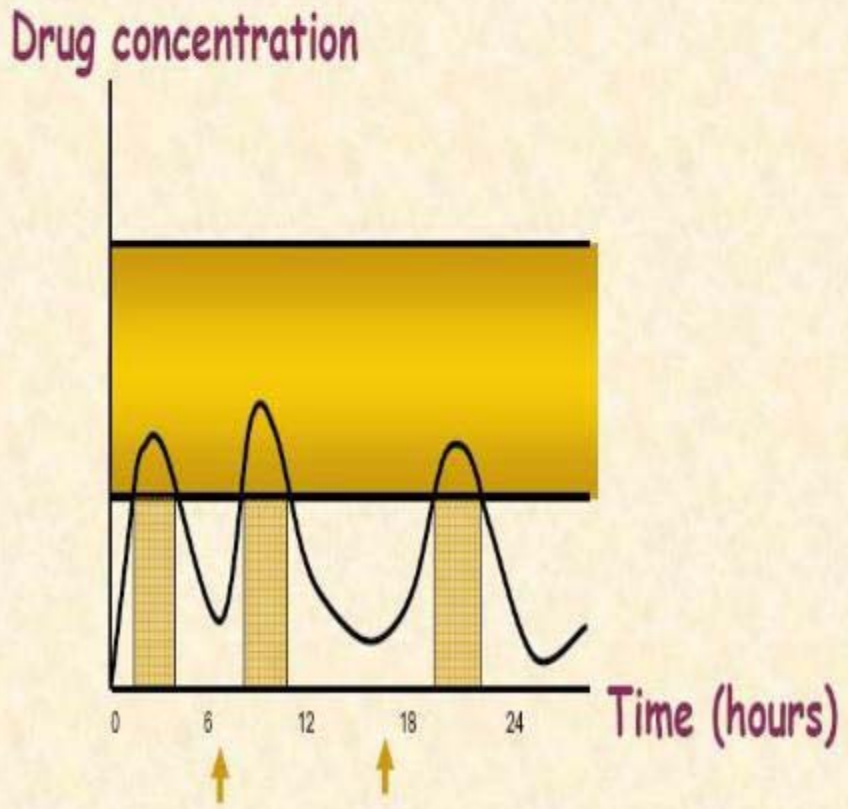


3.Intramuscular q 4 hr

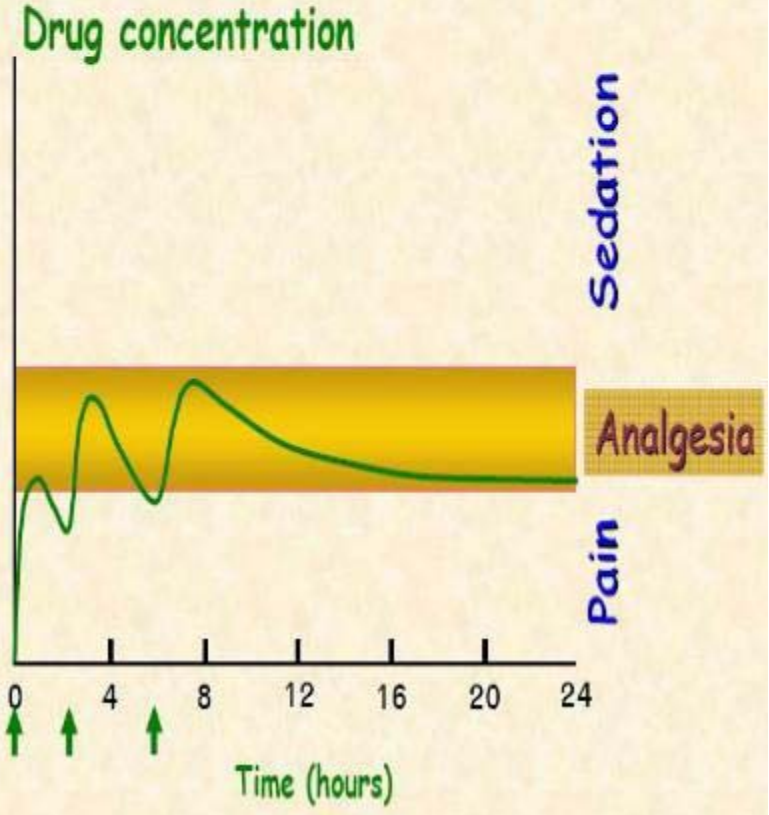


Opioids Administration

4. IM prn q 6 hr



5. IM prn q 2 hr



Patient controlled analgesia