

Analgesia and pain control in surgery

What is pain?

- The word **pain** comes from the Latin word **poena**, which means punishment



The surgeon's knife and pain are inseparable notions with which the patient never contacts separately. Painless operation is a fantasy that will never be realized.

A. Velpeau, French surgeon (1839)

A brief history of the treatment of pain

- Pain is described on Babylonian clay tablets, Egyptian papyri and the remains of ancient Persia and Troy. People have always experienced pain and have always been searching for ways to combat it.
- The earliest used herbs were poppy, mandrake, hemp, henbane and nepenthe. Egyptian papyrus ca. 1550 BC recalls treating "pain in the flesh" with a mixture of beer, juniper and wheat, which had to be taken for four days.

A brief history of the treatment of pain

- **About 2600 BC, the Chinese began to treat pain using acupuncture; a technique also used in modern medicine.**
- **The plant longest and most commonly used to treat pain is poppy and opium derivatives from it. This was enhanced in 1805, when morphine was isolated from opium.**
- **Revolution of the XIXth century: paracetamol, aspirin, general anesthesia, cocaine**

What is pain?

- **Pain** – a subjectively unpleasant and negative sensory and emotional impression, arising under the influence of tissue-damaging stimuli (ie. nociceptive), or threat of damage. Pain is a subjective sensation, so it is all that patient calls pain, regardless of the objective symptoms associated with it.

According to the International Association for the Study of Pain

American Society of Pain Treatment

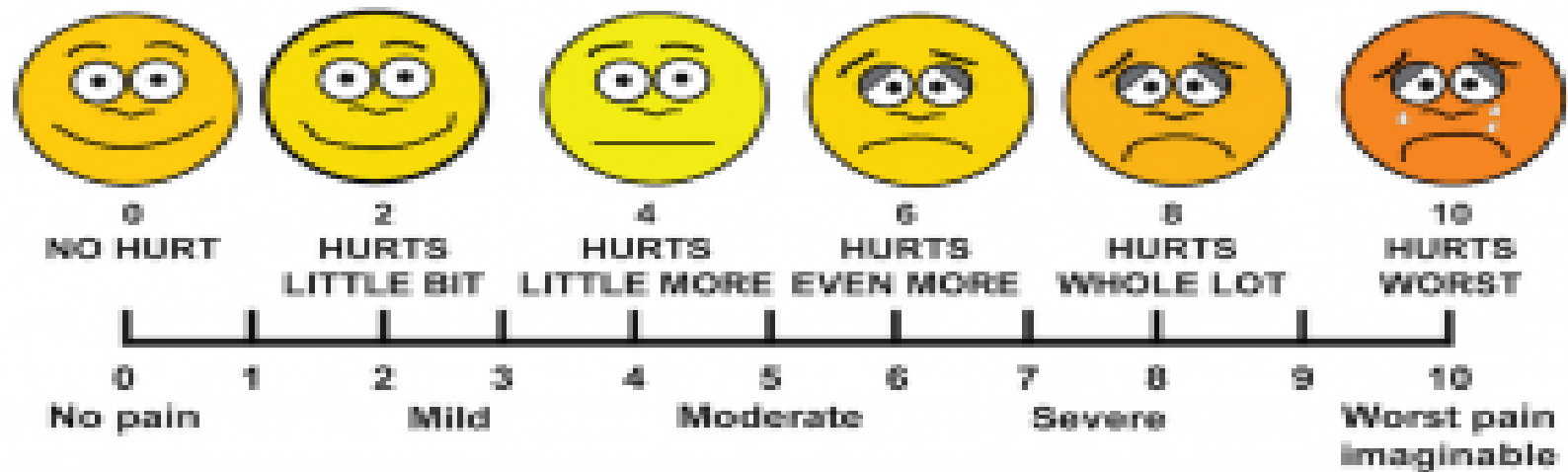
- Pain is the 5th „vital parameter“
- Blood pressure
- Temperature
- Pulse
- Respiratory rate

Are we doing this?

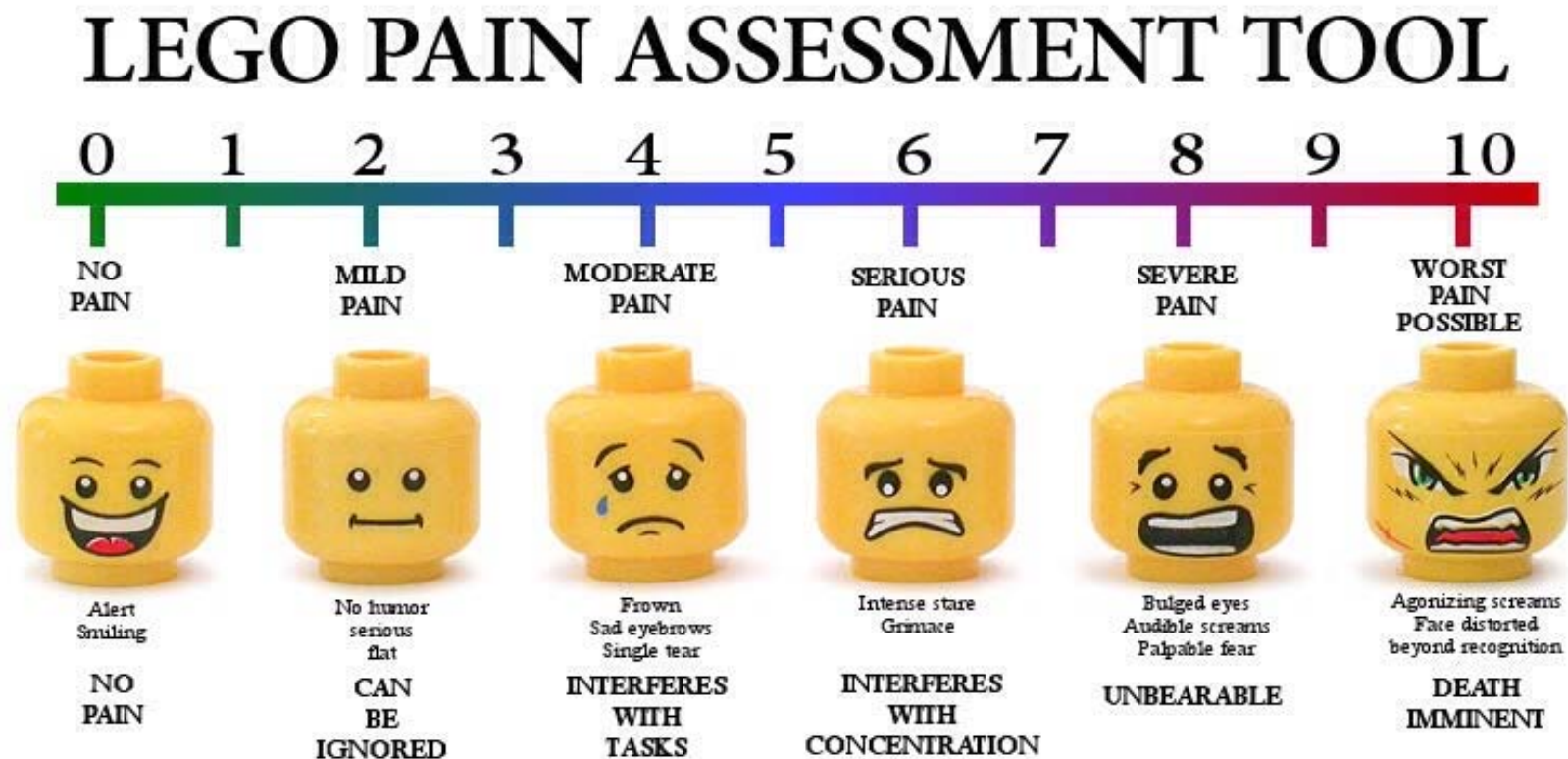
- Vital signs are taken seriously into account. If pain were evaluated with the same zeal as other vital signs, it would be much more likely that it will be properly treated. We need to train doctors and nurses to treat pain as a parameter in life.
- Quality of care consists in that the pain to measure and treat

How to measure pain?

PAIN MEASUREMENT SCALE



How to measure pain?



Created by Brendan Powell Smith www.TheBrickTestament.com This chart is not sponsored, authorized, or endorsed by the LEGO Group.

PHHPS

– Prince Henry Hospital Pain Score

Pain is estimated during elementary physical activity:

0 - no pain, cough,

1 - pain when coughing, lack during deep breathing,

2 - pain during deep breathing, lack of rest,

3 - slight pain at rest,

4 - severe pain at rest

The source of pain

- **Postoperative pain is one of the types of acute pain.**
- **It is caused by damage to tissue during surgery**
- **Its range is proportional to the severity of surgical trauma and should continue until healing of the surgical wound.**
- **It appears after surgery, after anesthetic agents stop working**

Somatic pain

The source of the pain are damaged tissues:

- superficial (skin, subcutaneous tissue)**
- deep (muscles, fascia, ligaments, periosteum).**

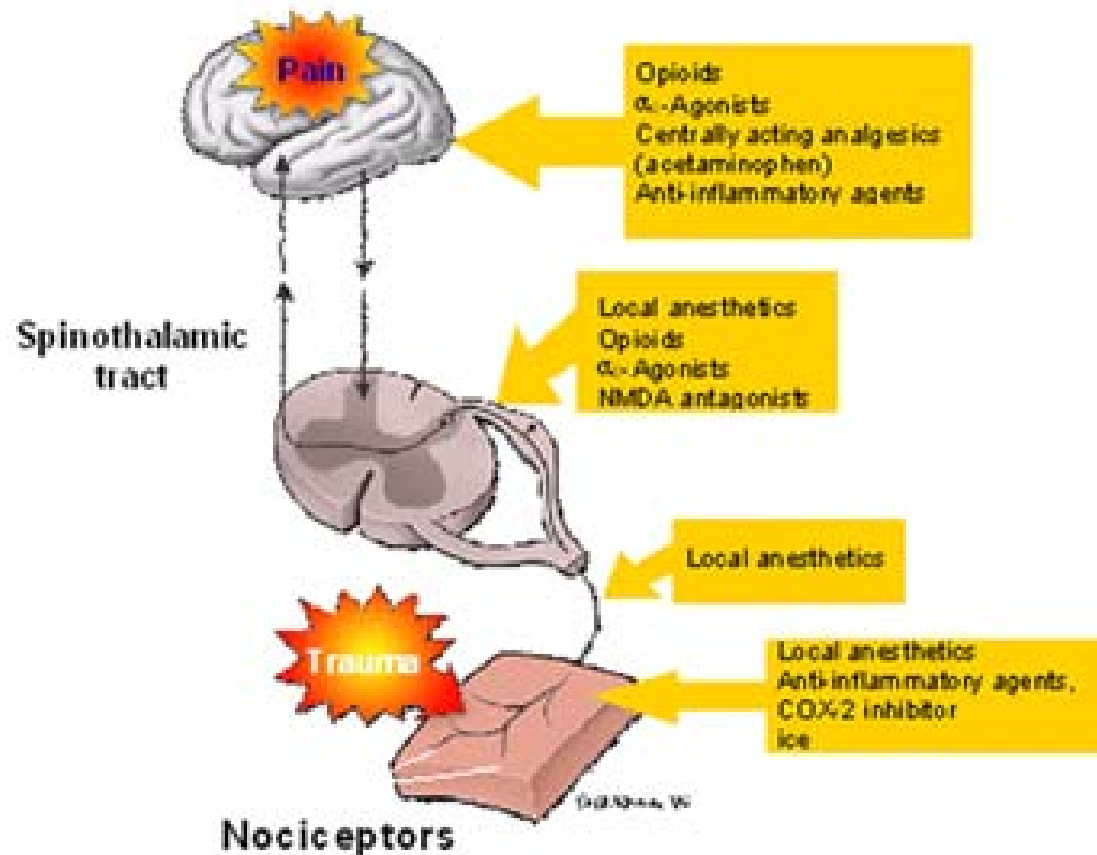
• But also: examining the patient, nursing activities or medical procedures.

To remember (to take home)

Do not wait until it starts to hurt!

Stay ahead of the pain!

Multimodal concept of relieving acute pain



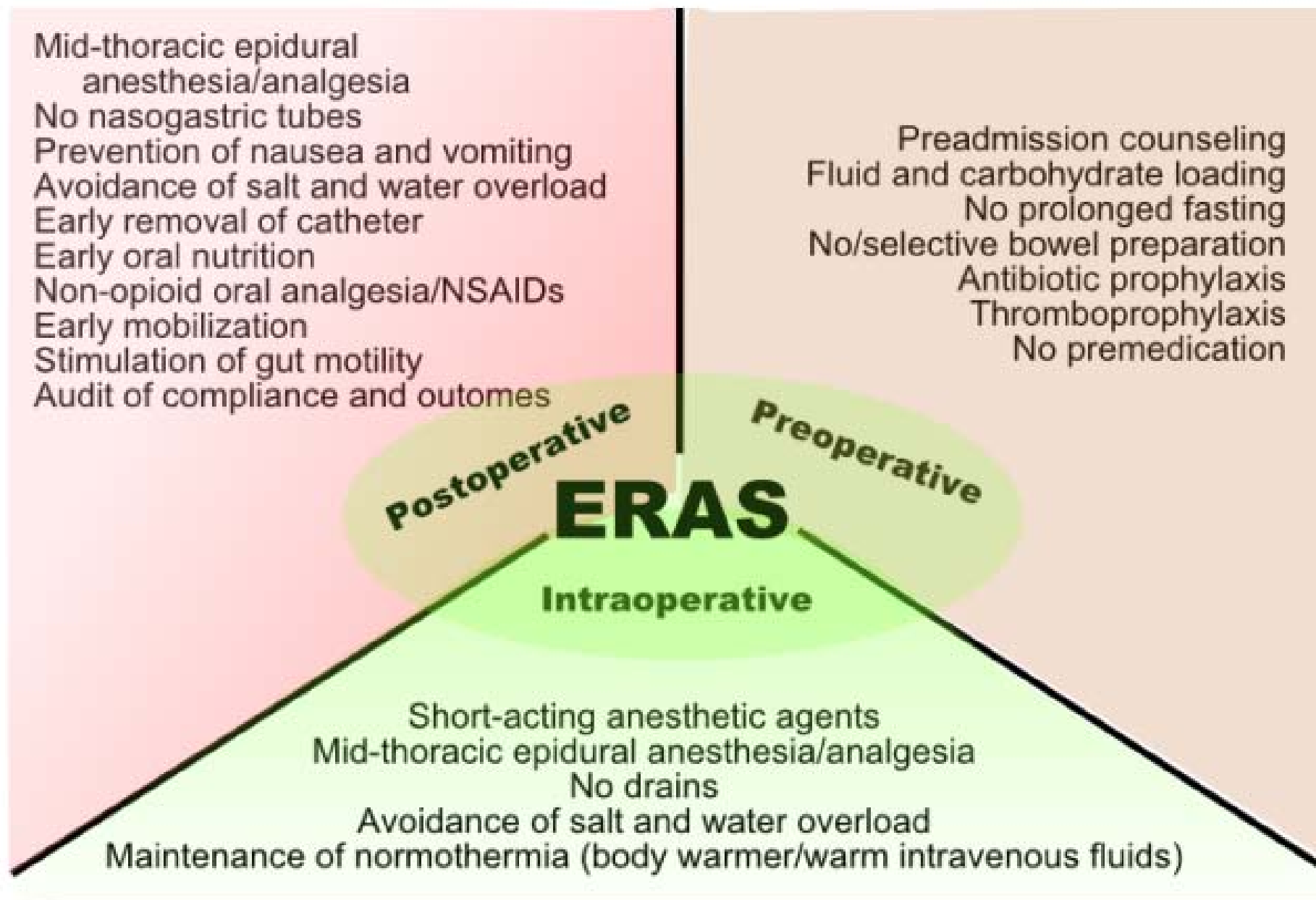
Multimodal concept of relieving acute pain

I. The action on many levels of formation and processing of pain stimulus:

- peripheral**
- spinal cord,**
- supraspinal centers,**

II. and for each component of pain:

- analgetics,**
- co-analgetics (adjuvants)**
- non-pharmacological methods (lock, nerve stimulation, acupuncture...)**



ERAS protocol

- Preoperative preparation and planning of the different stages of treatment
- Explanations (reduced level of anxiety before surgery)
 - nature of the disease,
 - stages of treatment,
 - the planned anesthesia,
 - postoperative course,
 - postoperative pain management, which reduces the level of anxiety preoperatively

ERAS protocol

- **Surgery - with a preference for minimally invasive methods, the choice of surgical access burdened with fewer complications and less pain**
- **Handling of catheters and drains - early removal**
- **Postoperative fluid therapy, reducing sodium intake and early initiation of oral feeding**
- **Early rehabilitation.**

ERAS protocol

Pain management:

- acceleration of rehabilitation,
 - reduce the stress response to surgery
 - acceleration of the return of peristalsis.
-
- Adequate measurement of pain intensity

ERAS protocol

- Multimodal analgesia
- During the first 24-48 hours the drugs are administered hourly (at fixed times)
- Opioids are not used as first choice - (sedation, constipation, inhibiting gastrointestinal motility, nausea and vomiting).
- As soon as possible - usually from 2 day – transit to oral medication.
- Regional analgesia

Guidelines

for post-operative pain - 2014

- **Procedure - specific pain management (pain therapy regimen adapts to the type of surgery)**
- **Multimodal Analgesia, reviewed the degree of pain intensity, measured on a regular basis.**

Guidelines

for post-operative pain - 2014

The selection of a specific agent:

- there are no contraindications for each drug**
- registration indications of the each drug**
- calculate the dose per kg of body weight**
- adjusting the dose depending on the age and degree of renal impairment.**

Guidelines

for post-operative pain-2014

Preventive analgesia (preemptive analgesia) - before surgery:

- It is to prevent the development of hypersensitivity perioperative**
- protection of central nervous system against unfavorable, nociceptive stimulation**

- Intraoperatively - during anesthesia:
Intravenous lidocaine or lidocaine into the surgical wound**

Guidelines

for post-operative pain-2014

- Preventive analgesia (preemptive analgesia)
- Analgesics orally: Metamizol (pargyline), paracetamol, ketoprofen (Ketonal), ibuprofen, diclofenac
- Additionally:
 - Oral: clonidine, dexmedetomidine, gabapentin, pregabalin.
 - i.v lidocaine, ketamine

PCA - Patient Controlled Analgesia

- The participation of the patient in the supply of painkillers.
- Infusion pump operated in several modes, using the remote patient can give an extra dose of pain medication.
- The most common intravenous supply of opioids,
- Other routes of drug administration (subcutaneous, spinal, epidural).

PCA - Patient Controlled Analgesia



An adequate supply of patient medications at discharge



Anesthesia



Etymology

- gr. αν- an- “without” +
αἴσθησις aisthesis “sense”



Definition

- **Anesthesia** - an interruption of the conduction of nerve impulses from the afferent and efferent receptor cells to effector cells; allows for safe and painless surgical procedure or any other potentially painful or uncomfortable medical procedure.

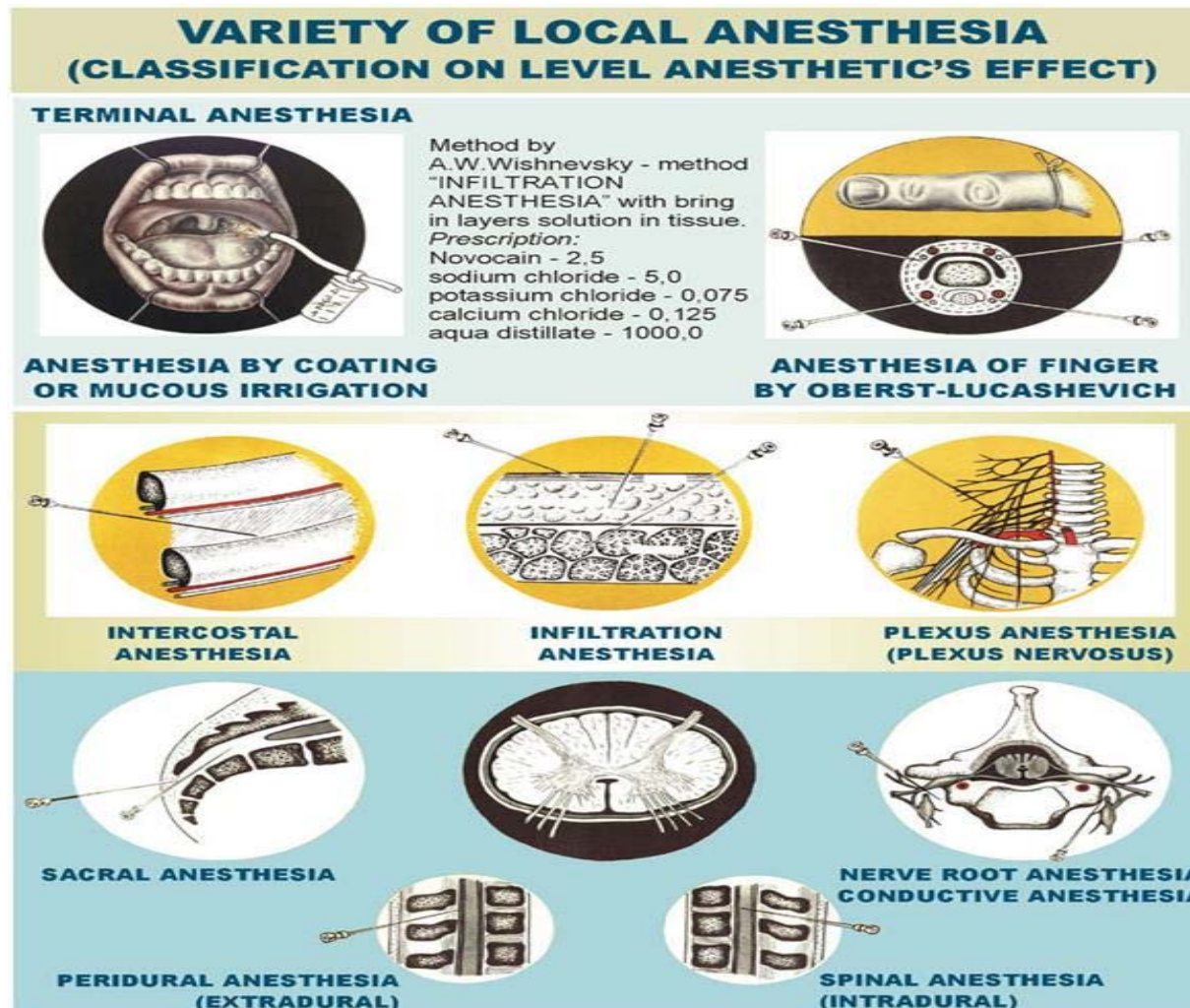
- **Analgesia** - a phenomenon of no pain feeling; Also anesthesia in hypnosis (induced suggestion). This may concern pain arising due to physical factors (eg. Stroke) and chemicals (chemical) (eg. acid burns).

Types of anesthesia

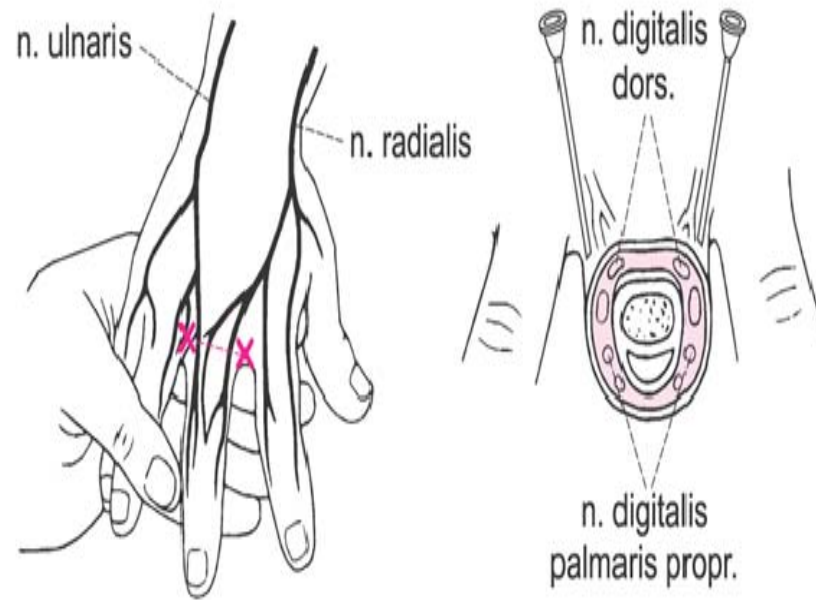
- Analgosedation
- General anesthesia
- Regional anesthesia
- local anesthesia
 - superficial
 - Infiltration
 - 1. central locking
 - spinal anesthesia (spinal)
 - epidural
 - caudal anesthesia
 - 2. peripheral blockade
 - paravertebral blockade
 - peripheral nerve block
 - 3. special locks

Combined anesthesia, containing elements of several types of anesthesia

Varieties of local-regional anesthesia



Oberst's method



Components of general anesthesia

- Exclusion of consciousness
(pharmacological sleep)
- Relaxation of striated muscle (intubation)
- Analgesia

Important!

- After the surgery: recovery room or ICU
- Patient cardiovascularly and respiratorily stable (aspiration of the stomach content)
- The patient's condition (Aldret's scale)
- After spinal or epidural lying for a few hours (headache)
- After epidural or spinal – urinary retention
- Lidocaine (3 mg / kg) or Lignocainum 1% (2ml) is 20 mg of the substance.
- A person weighing 94 kg can be given $3 \times 94 = 282\text{mg}$ or 28.2ml of 1% solution.
- The formula for the amount of substance in solution: ...% x ...ml x 10 = ... mg

Aldret's scale (postoperative evaluation)

Observation	Outcome
Motoric activity	
2	4 limbs moving independently or on command
1	2 limbs moving independently or on command
0	Do not move on their own or on command
Breath	
2	Deep breathing, coughing
1	Dyspnea or shortness of breath
0	Apnea
Circulation	
2	Pressure +/- 20% of the initial value before anesthesia
1	Pressure +/- 20-50 % of the initial value before anesthesia
0	Pressure +/- 50% of the initial value before anesthesia
Consciousness	
2	Fully conscious.
1	Wake up on command
0	No reaction
Skin colour	
2	Pink
1	Pale, spotted yellow
0	Cyanotic

Thank you for your attention