PAIN AS THE 5TH VITAL SIGN

TRAINING MODULE FOR PRIMARY CARE

- **2008:**
  - Implemented as a policy nationwide

PEKELILING KETUA PENGARAH KESIHATAN BILANGAN 9 TAHUN 2008;

PELAKSANAAN TAHAP KESAKITAN SEBAGAI TANDA VITAL KELIMA *(PAIN AS FIFTH VITAL SIGN)* DI HOSPITAL-HOSPITAL KEMENTERIAN KESIHATAN

- **Currently:**
  - one of the requirements for PAIN FREE HOSPITAL / CLINIC

PAIN FREE HOSPITAL
Transformasi Konsep Rawatan Pelanggan Bebas Kesakitan

OBJECTIVES OF THIS TRAINING MODULE:

- Better awareness of pain
- Better pain management
- Train doctors, nurses and all health care personnel in
  - pain assessment
  - approach to pain management

- ➔ Implement pain as 5th vital signs
- ➔ Working towards pain free clinic

PAIN FREE HOSPITAL
Transformasi Konsep Rawatan Pelanggan Bebas Kesakitan

OUTLINE

- Introduction & rationale for Pain as the 5th Vital Sign
- Definition of pain
- Classification of pain
- Pain physiology: The Pain Pathway
- Pain Assessment
- Management of acute pain
- Summary: Assessment & Management of pain
- Pain in Paediatric patients

INTRODUCTION AND RATIONALE

PRIOR TO 2008- 4 VITAL SIGNS

- Prior to 2008 (Pain as 5th Vital Sign implementation)
- 4 vital signs were routinely monitored:
  - Temperature (T)
  - Pulse rate (PR)
  - Respiratory rate (RR)
  - Blood pressure (BP)

ARE 4 VITAL SIGNS ADEQUATE?

He is quiet and comfortable.
BP, PR, RR are normal
He has no fever

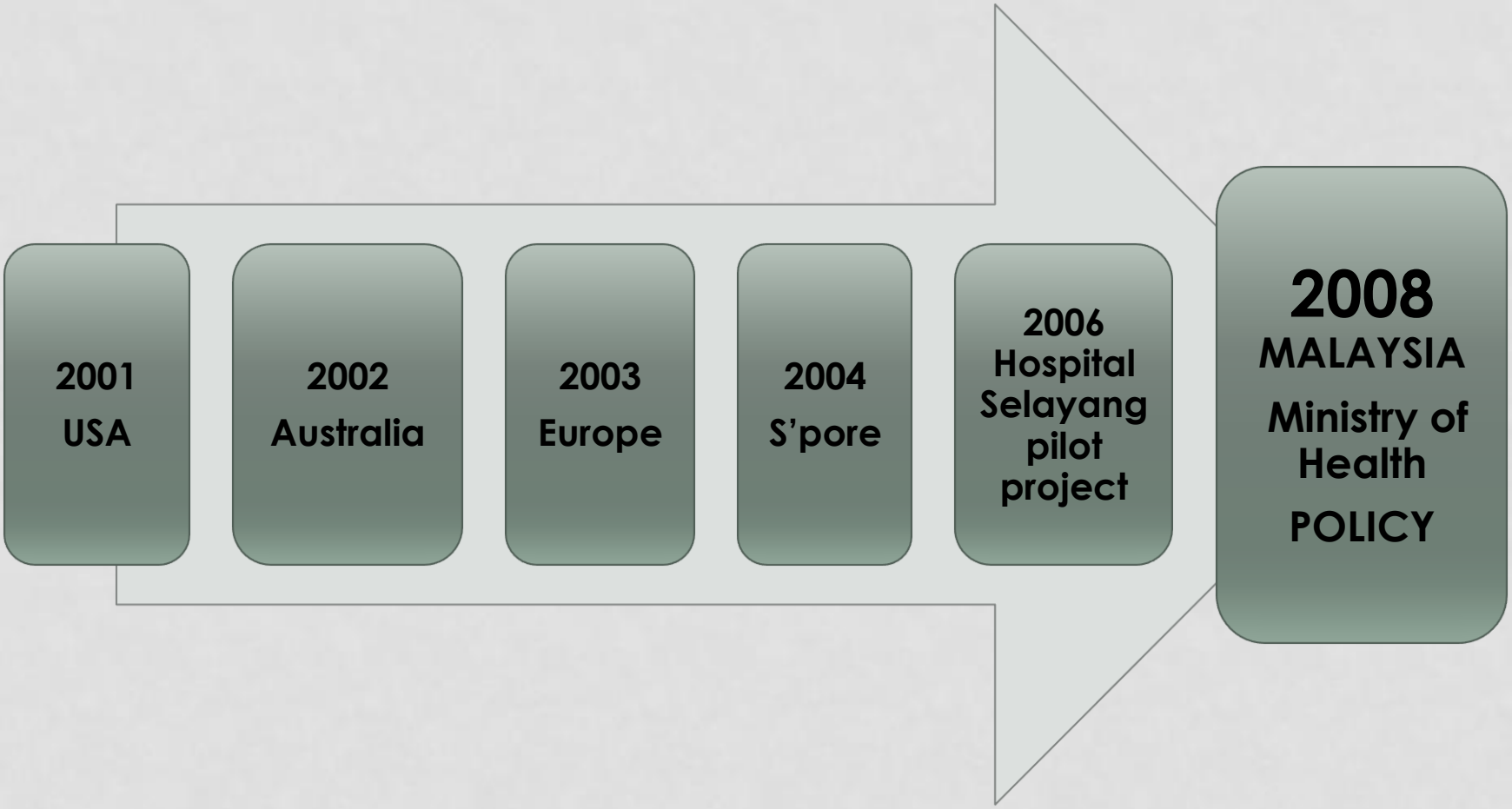
I expect them to know that I am in severe pain

4 VITAL SIGNS = ZERO COMMUNICATION

BARRIERS TO PAIN MANAGEMENT

- **Inadequate pain assessment**
  - identified as the greatest barrier to pain management
    (Von Roenn JH, Cleeland CS, Gonin R, et al. Ann Intern Med, 1993)
- **Lack of awareness**
  - If you don't ask, you won't know

JCAHO / JCI STANDARDS: PAIN AS THE 5TH VITAL SIGN



BENEFITS OF PAIN AS 5TH VITAL SIGN

- **Promote interaction between healthcare providers and patients**
  - Better communication
  - Better patient satisfaction
- **Provide better patient care**
  - Priority to pain assessment
  - Individualized care
- **Better awareness of pain**
  - Better management of pain
  - Faster recovery

INCORPORATING ESSENTIAL PAIN MANAGEMENT (EPM) IN THE P5VS TRAINING MODULE

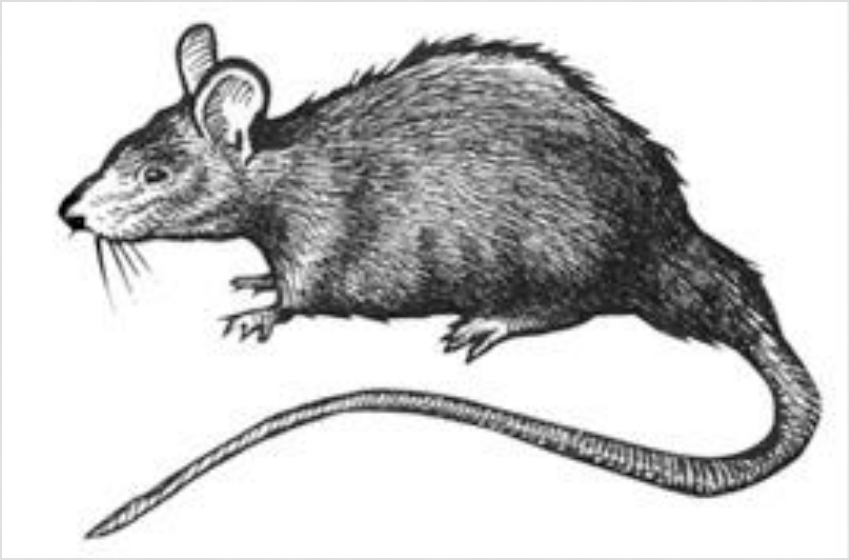
- **EPM program**
  - developed by Dr. Roger Goucke and Dr. Wayne Morris
  - designed to improve pain management worldwide at "grassroots" level.
  - Supported by the Australian and New Zealand College of Anaesthetists (ANZCA)

- **Aims of EPM:**
  - To improve understanding of pain
  - To teach a simple framework for managing pain
  - To reduce pain management barriers

- **Aims of incorporating EPM into KKM P5VS training:**
  - To use a basic, standardised approach for managing pain in KKM – hospitals and clinics

A BASIC APPROACH TO PAIN

- **R-A-T** model (approach)
  - **R**ecognise
  - **A**ssess
  - **T**reat



APPROACH TO PAIN

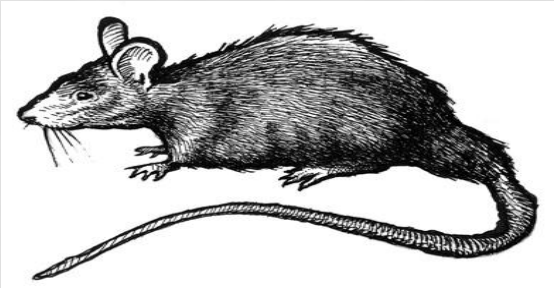
Recognise

- Does the patient have pain?
- Do other people know patient has pain?

APPROACH TO PAIN

Assess:

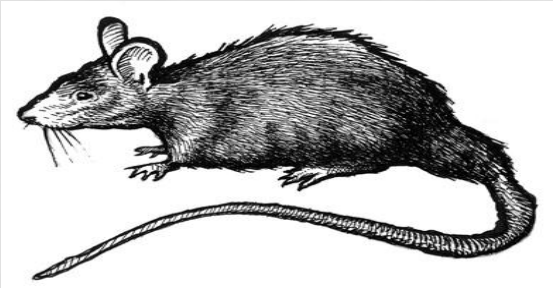
- How severe is the pain
- What type of pain is it?
- Are there other factors?



APPROACH TO PAIN

Treat

- What non drug treatment can I use?
- What drug treatment can I use?



DEFINITION OF PAIN

WHAT IS PAIN?

- **Definition**:
  - Pain is an unpleasant sensory and emotional experience associated with actual or potential tissue damage, or described in terms of such damage
  - International Association for the Study of Pain (IASP)

    (Bogduk & Merskey 1996 IASP)

- **Questions:**
  - WHAT does this mean?
  - Are there any other definitions?

WHAT DOES THAT MEAN?

What we (health care provider) understand ….

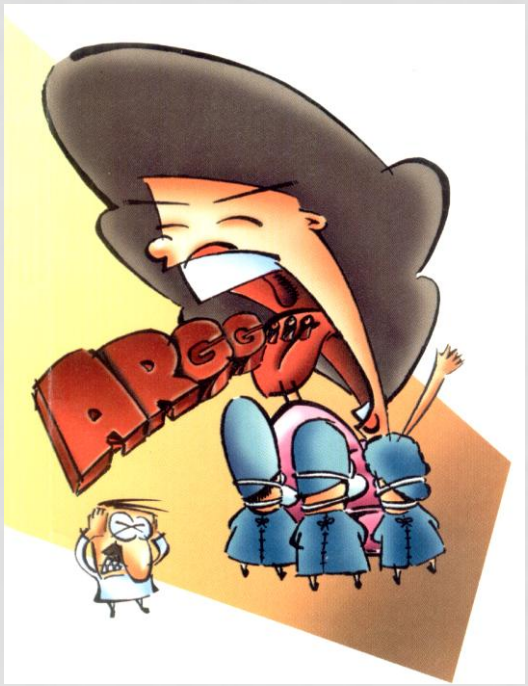
- Unpleasant
- Emotions are important
- The cause is not always visible

Other definitions:

For the patient…..

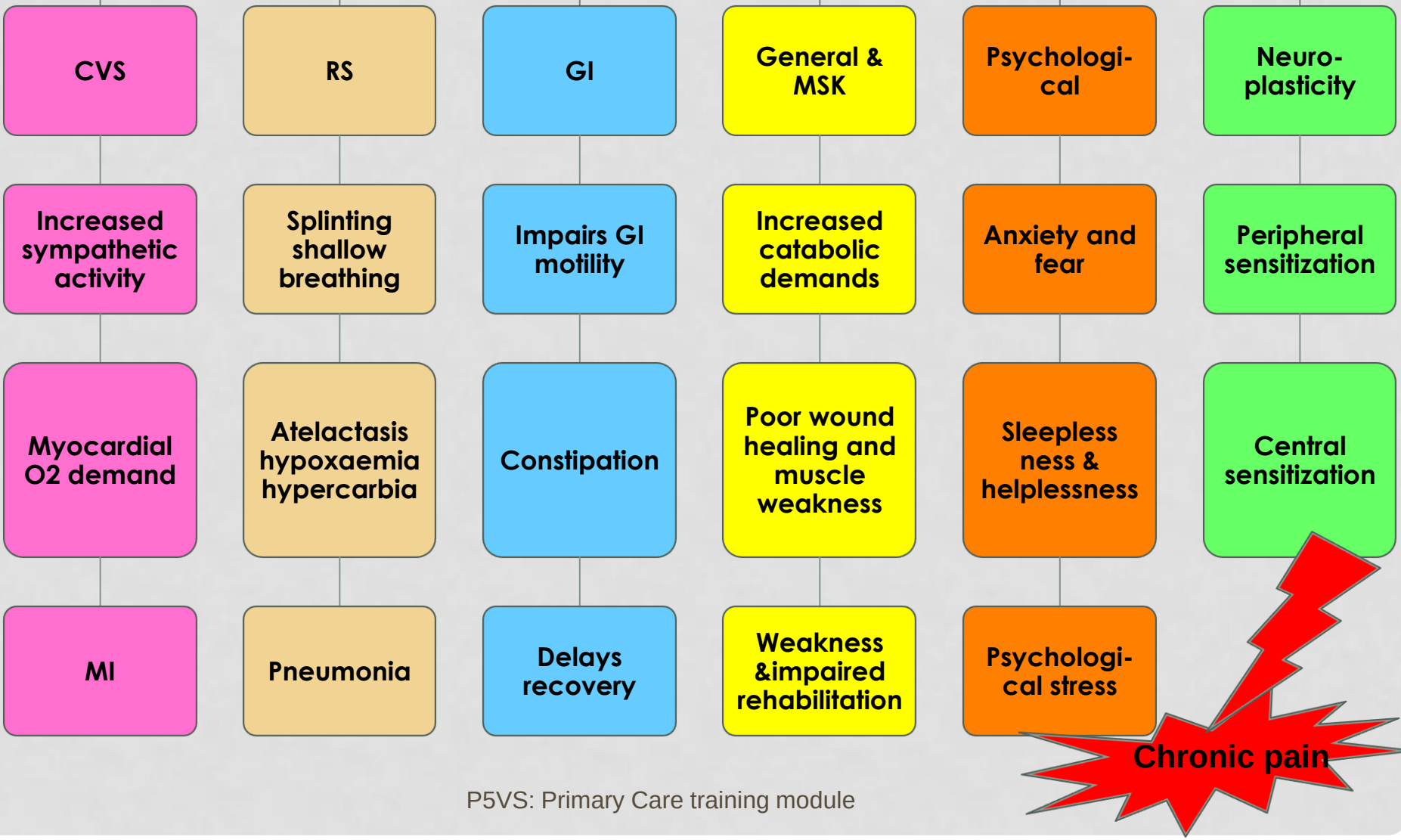
PAIN is what the patient says **HURTS**

"SAKIT!!!"



What are the consequences of not treating acute pain?

Adverse effects of severe acute pain



Pain can affect…

ANYONE

Rich and poor
Young and old
Educated and illiterate
Urban and rural
Doctors, nurses
and other healthcare providers

CLASSIFICATION OF PAIN

DIFFERENT TYPES OF PAIN
DIFFERENT LOCATION

Injection

Neck pain

Cancer

Trauma

Low back pain

Post op pain

Arthritis

Labour

CLASSIFICATION OF PAIN

- **NOT ALL PAIN IS THE SAME**
- 3 main questions:
  - How long has the patient had pain? (duration)
  - What is the cause?
  - What is the pain mechanism?

CLASSIFICATION OF PAIN

Type	Descriptions
Acute	Pain of recent onset/sudden onset
Chronic	Last for more than 3 months, cannot identify cause Pain persist even after wound is healed
Cancer	Progressive; many different cause May be a mixture of acute and chronic pain
Non cancer	Acute or chronic
Nociceptive /physiological pain	Obvious tissue injury or illness Somatic = bones and tissues = well localized, sharp Visceral pain: abdomen, thoracic cavity, diffuse, colicky Nature of pain: sharp or dull
Neuropathic/ pathological pain	Nervous system damage or abnormality; May not see tissue injury Nature of pain: shooting ± numbness, pins and needles, not well localized

Duration

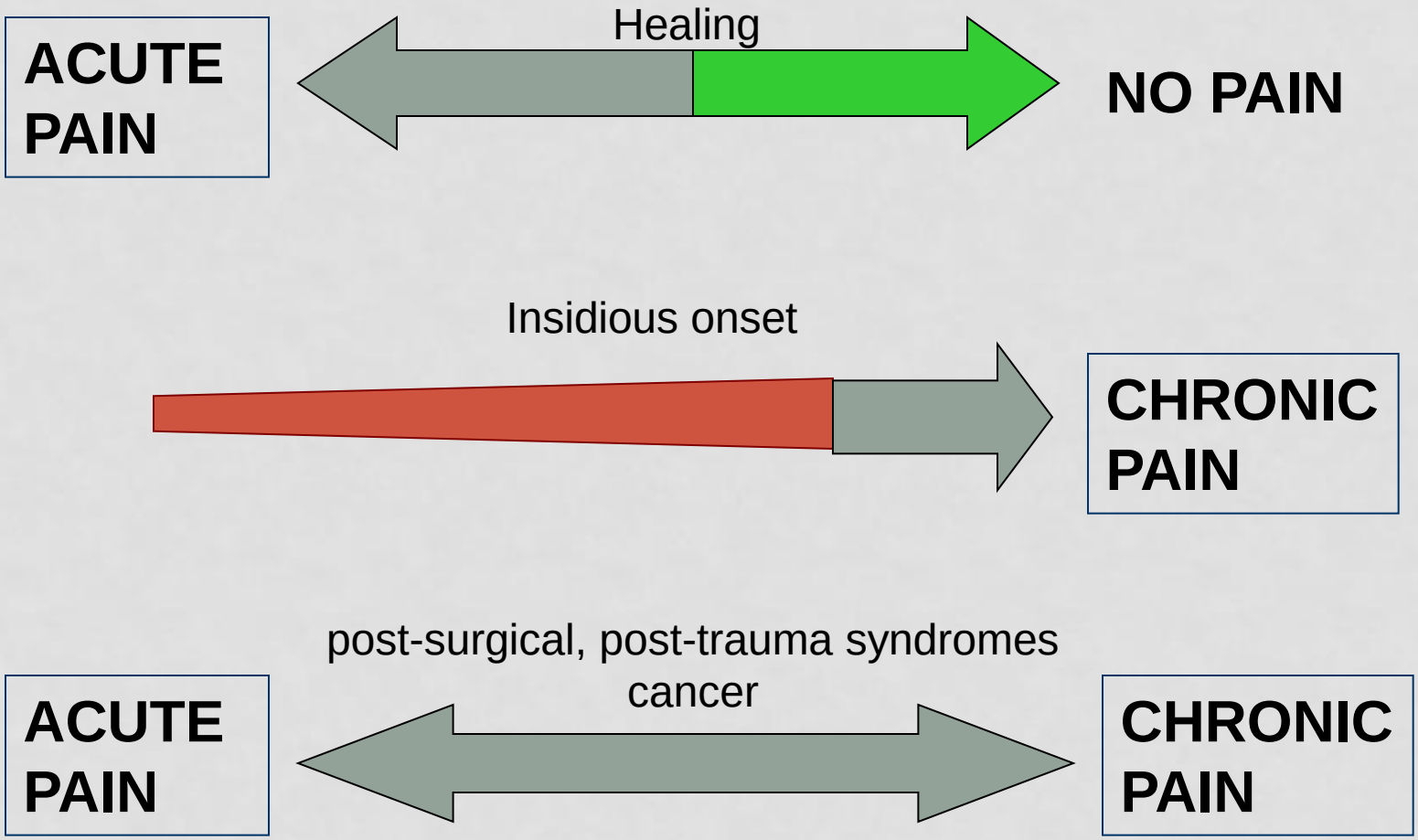
Cause

Mechanism

DIFFERENCES BETWEEN ACUTE AND CHRONIC PAIN

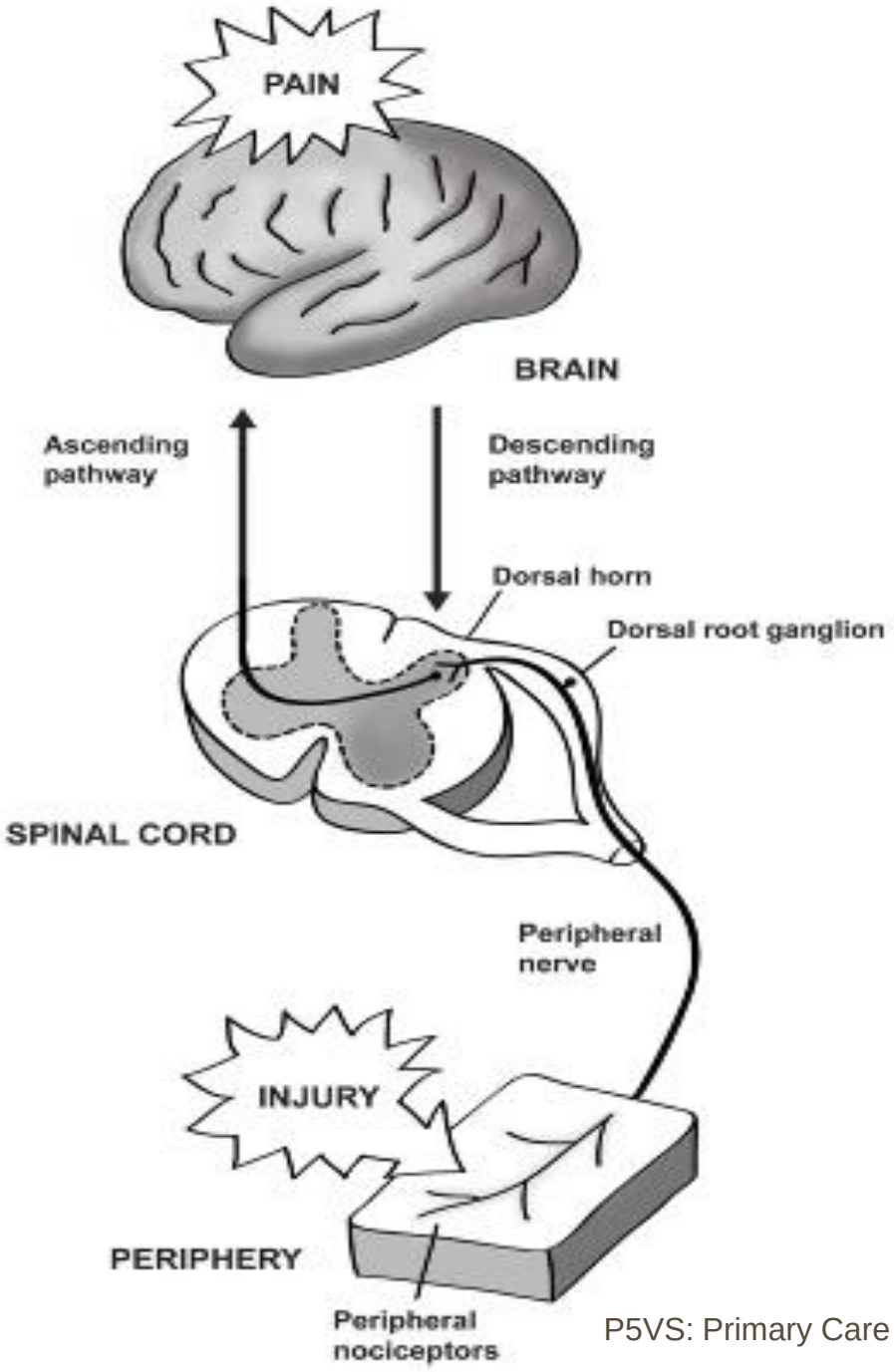
	Acute pain	Chronic pain
Onset & timing	Sudden, short duration Resolves /disappears when tissue heals	Insidious onset Pain persists despite tissue healing
Signal	Warning sign of actual or potential tissue damage	Not a warning signal of damage False alarm
Severity	Correlates with amount of damage	Severity not correlated with damage
CNS involvement	CNS intact- acute pain is a symptoms	CNS may be dysfunctional- chronic pain is a disease
Psychological effects	Less, but unrelieved pain → anxiety and sleeplessness (improves when pain is relieved)	Often associate with depression, anger, fear, social withdrawal etc.

SPECTRUM OF PAIN



COMMON CAUSES

ACUTE PAIN	CHRONIC PAIN
Trauma/fracture/Surgery Burns Arthritis Abscess Myocardial infarction Labour pain & child birth	Chronic headache Chronic low back pain Chronic abdominal pain Chronic pelvic pain Cancer pain
NEUROPATHIC PAIN	
Acute shingles Post spinal cord injury Brachial plexus injury	Post herpetic neuralgia Diabetic peripheral neuropathy Post stroke pain



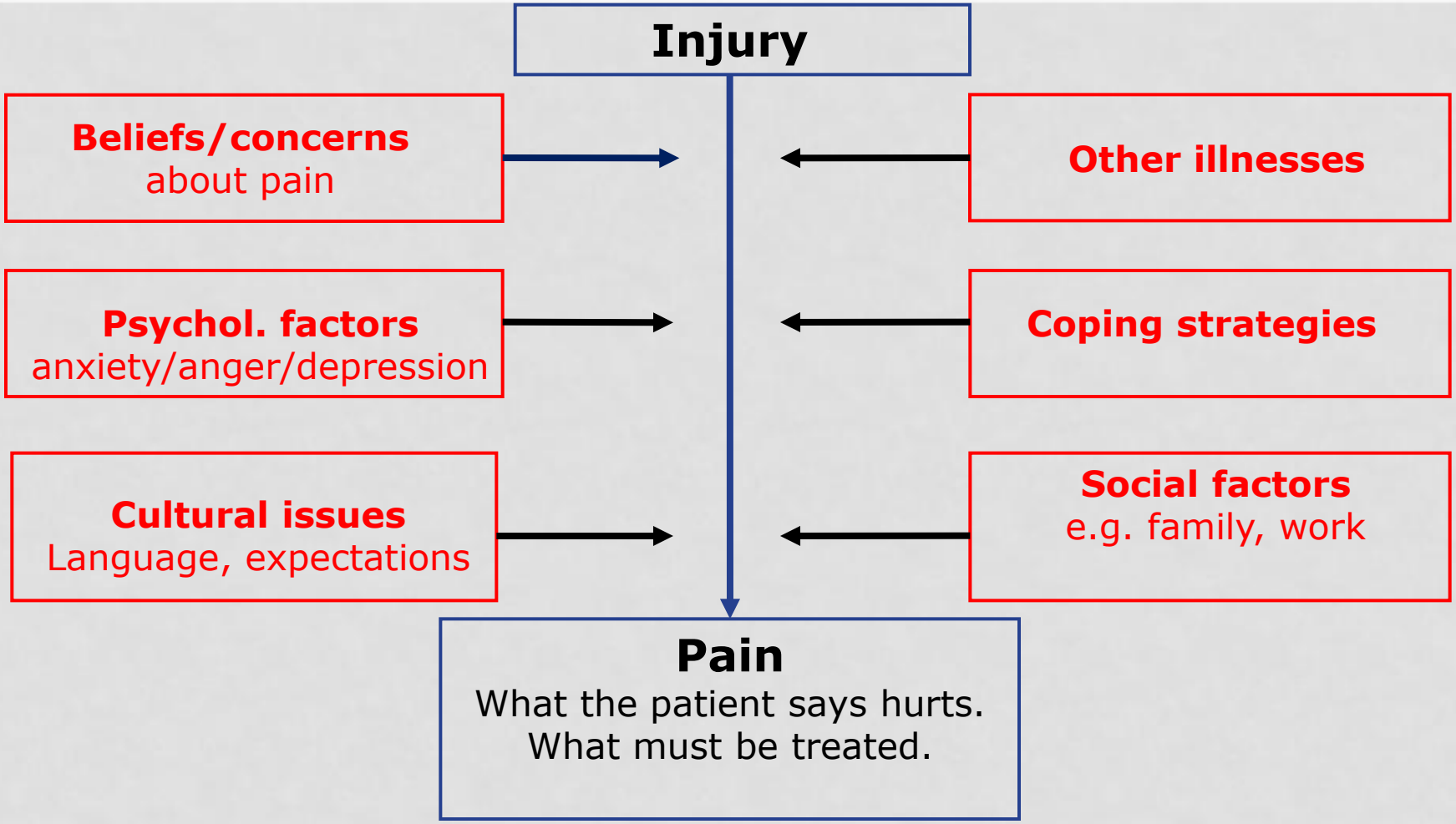
Pain physiology:

the Pain Pathway

WHY IS PAIN PHYSIOLOGY IMPORTANT?

- **Many factors affect how we 'feel' pain**
  - Psychological factors are very important
- **Different pain treatments works on different parts of the pain pathway**
  - More than one treatment may be needed

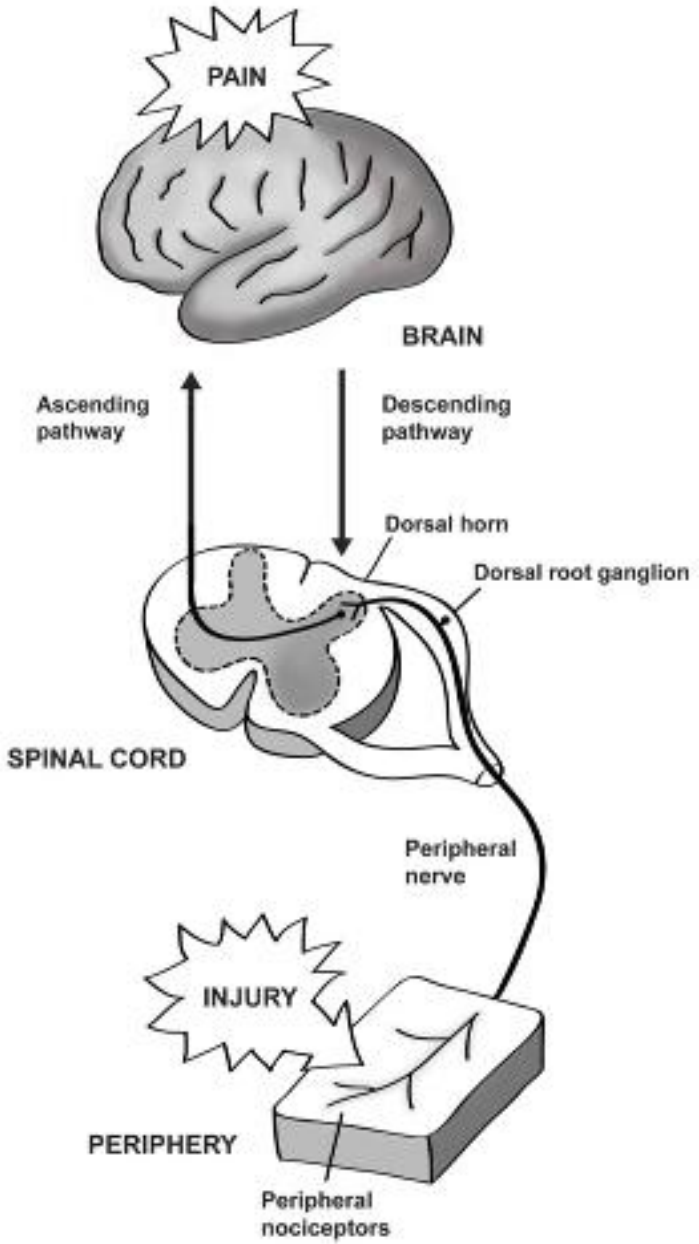
NOCICEPTION IS NOT THE SAME AS PAIN!



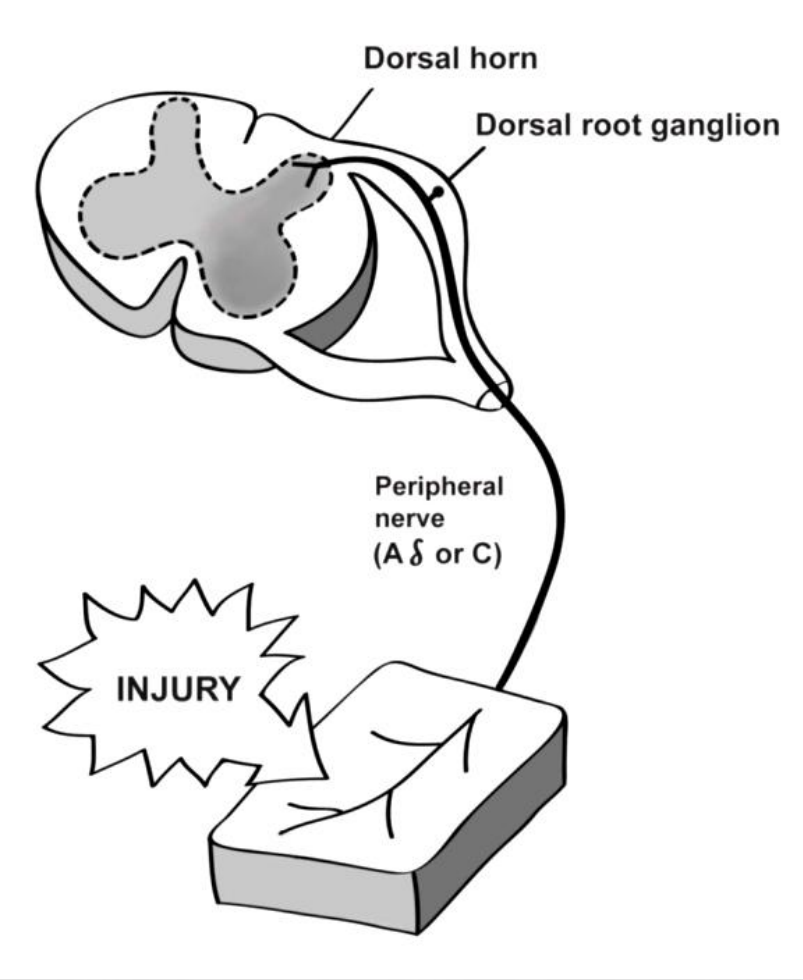
PAIN PATHWAY

- **4 steps:**
  - Periphery
  - Spinal cord
  - Brain
  - Modulation

Let's look at each step



PERIPHERY (1ST STEP)



Tissue injury

↓

Release of chemicals

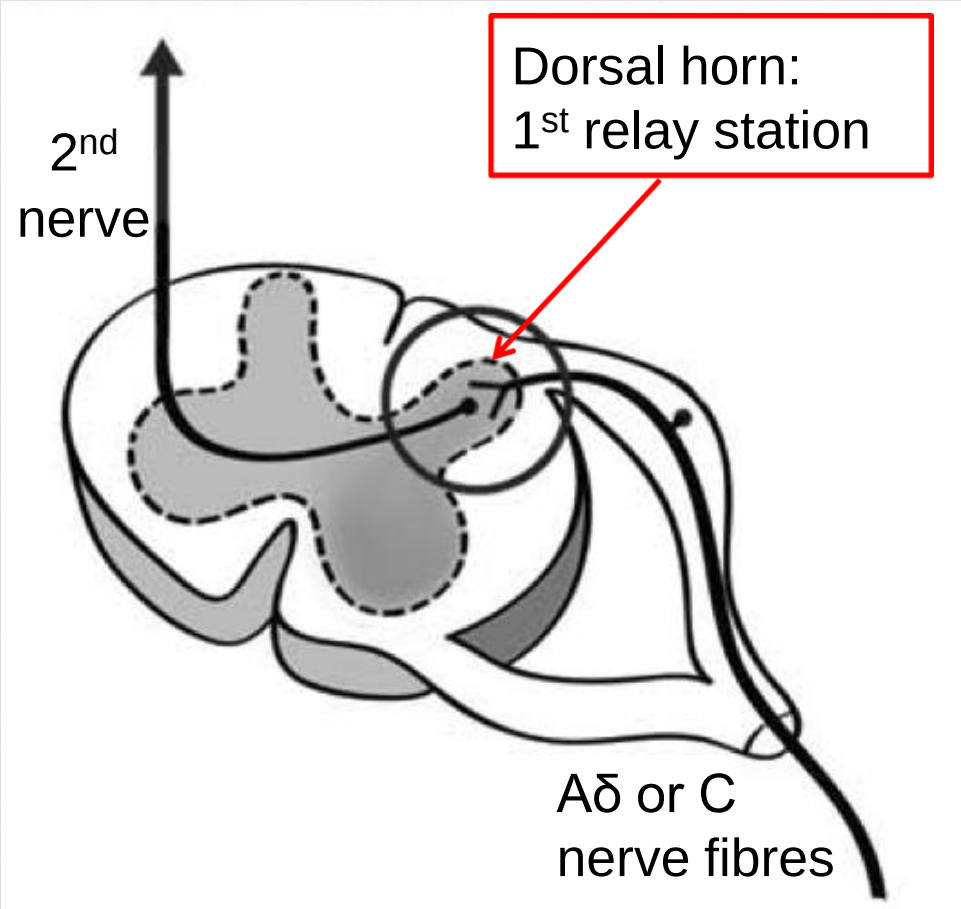
↓

Stimulation of pain receptors (nociceptors)

↓

Signal travels in Aδ or C nerve fibres to spinal cord

SPINAL CORD (2ND STEP)

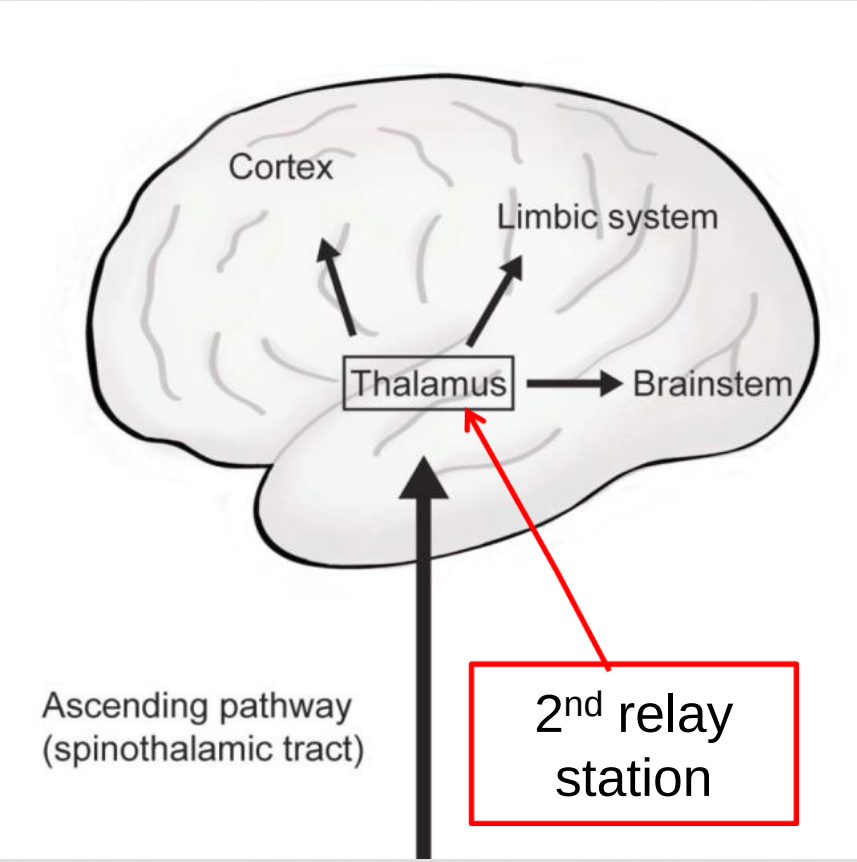


Aδ or C nerve fibres synapse (connect) with second nerve

↓

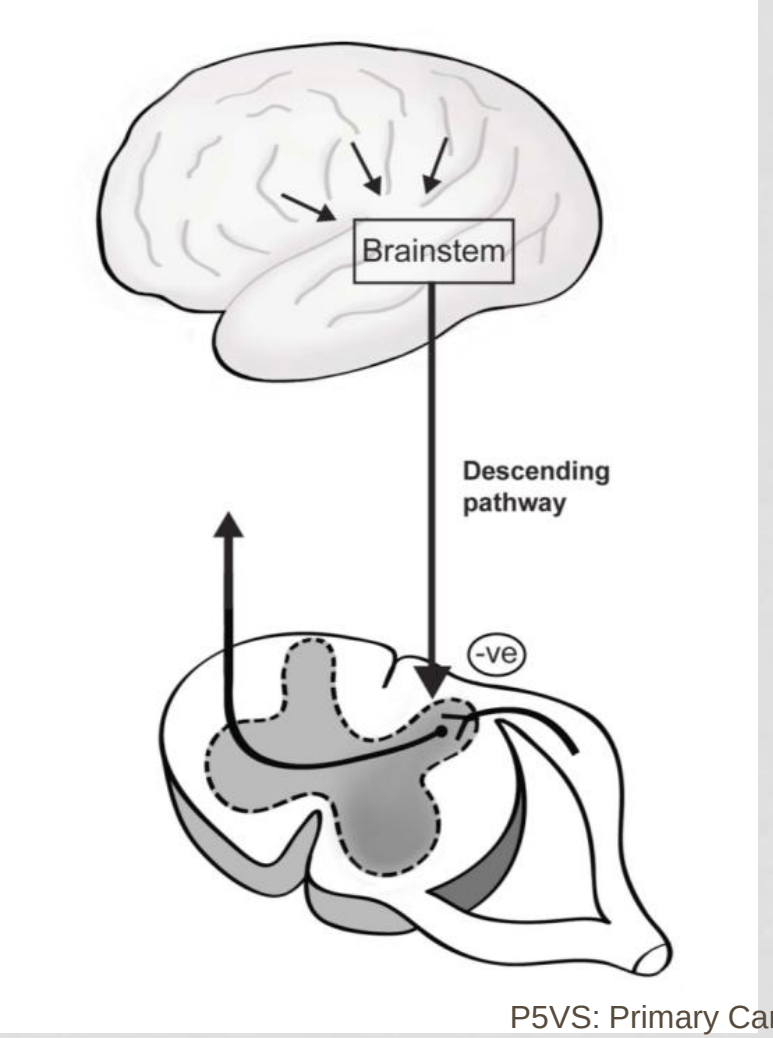
Second nerve travels up opposite side of spinal cord

BRAIN (3RD STEP)



- Thalamus is the 2nd relay station
- Connections to many parts of brain
  - Cortex
  - Limbic system
  - Brainstem
- Pain perception occurs at the cortex

MODULATION (4TH STEP)



- Descending pathway from brain to dorsal horn
- Usually decreases pain signal

SUMMARY

- Nociception is not the same as pain
  - Many factors affects how we feel pain
- Knowing the pain pathway is important because different treatments work on different parts of the pain pathway
- It is important to differentiate between different types of pain
  - **Neuropathic** pain & **nociceptive** pain are different and need different treatments

SUMMARY

- **Acute** pain & **chronic** pain are not the same;
  - **Acute pain is a symptom of tissue damage**
  - **Chronic pain is a disease of the nervous system; there is no ongoing tissue damage**

- Pain has to be managed using a **multidisciplinary, multimodal** approach;
  - Treatment for **acute pain** is **short term** and can stop when the injury heals and the pain resolves
  - Treatment for **chronic pain** is **long term** and aim is improvement of function and quality of life

PAIN ASSESSMENT

WHY ASSESS / MEASURE PAIN?

- Produce a baseline to assess therapeutic interventions e.g. administration of analgesic drugs
- Facilitate communication between staff looking after the patient
- For documentation

HOW TO ASSESS PAIN:

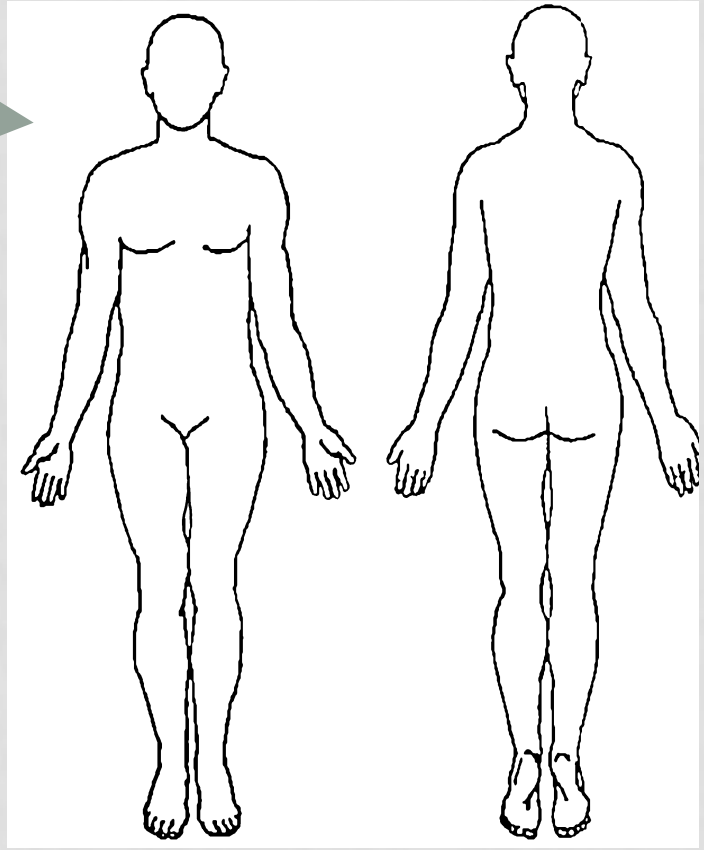
- Important to
  - Listen and believe the patient
- Take a pain history
  - "Tell me about your pain……."

HOW TO ASSESS PAIN

P: Place or site of pain

"where does it hurt?"

Record on a body chart



A: Aggravating factors

"what makes your pain worse?"

I: Intensity

"How bad is the pain?"

"What is the pain score?"

N: Nature and neutralising factors

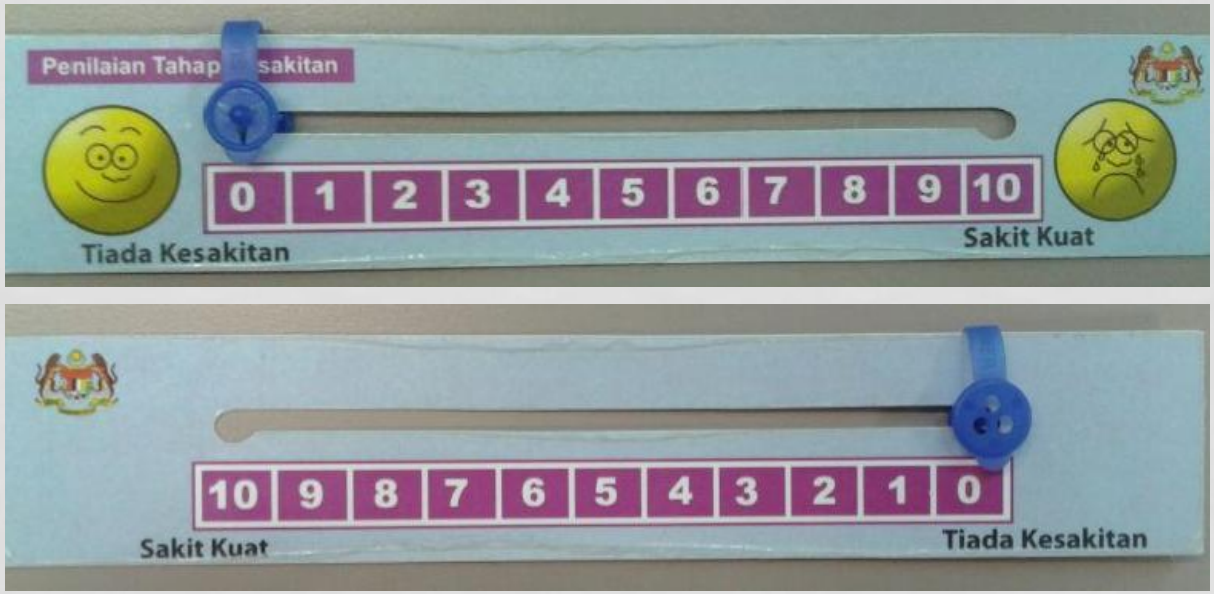
"what does it feel like?"

"What makes the pain better?"

CLINICAL TECHNIQUES FOR MEASUREMENT OF PAIN

- **Self reporting by the patient**
  - Gold standard
  - Best method
- **Observer assessment**
  - Observation of behaviour and vital signs
  - Functional assessment

MOH pain scale
(Combined Visual Analogue / Numerical Rating scale):
used for adults and children >7yrs



On a scale of '0' to '10' (show the pain scale).

If '0' = no pain, and 10 = worst pain you can imagine, what number would you give your pain?

Patient is asked to slide the indicator along the scale to show the pain score, which is recorded as a number (0 to 10)

OTHER PAIN SCALES

- **Wong Baker Faces** scale (self-report pain scale)
- **FLACC** scale (observational pain scale)

- May be used in children/infants and in cognitively impaired adults

WONG BAKER FACES PAIN RATING SCALE

Explain to the child that each face is for a person who has no pain (hurt) or some pain or a lot of pain.
Ask the child to choose the face that best depicts the pain he/she is experiencing.

FLACC SCALE

	Category	Scoring		
		0	1	2
F	**F**ace	No particular expression or smile	Occasional grimace or frown, withdrawn, disinterested	Frequent to constant quivering chin, clenched jaw
L	**L**egs	Normal position or relaxed	Uneasy, restless, tense	Kicking or legs drawn up
A	**A**ctivity	Lying quietly, normal position, moves easily	Squirming, shifting back and forth, tense	Arched, rigid or jerking
C	**C**ry	No cry (awake or asleep)	Moans or whimpers; occasional complaint	Crying steadily, screams or sobs, frequent complaints
C	**C**onsolability	Content, relaxed	Reassured by occasional touching, hugging or being talked to, distractable	Difficult to console

Each of the five categories (F) face, (L) legs, (A) activity, (C) cry and (C) consolability is scored from 0-2, resulting in total range of 0-10

SELECTION OF PAIN ASSESSMENT TOOL

- Recommendation by Ministry of Health, Malaysia

Age	Scale
Adult	MOH pain scale (Combined Visual Analogue / Numerical Rating scale)
Paediatrics	
1 month-3 years	FLACC scale
3 -7 years	Wong Baker faces scale
> 7 years	MOH pain scale

*Always use the same tool for the same patient

WHEN SHOULD PAIN BE ASSESSED?

1. **As the 5th vital signs during routine observation of BP, HR, RR, and temperature**
2. ½ to 1 hour after administration of analgesics and nursing intervention for pain relief
3. During and after any painful procedures in the ward e.g. wound dressing
4. Whenever the patient complains of pain

WHOSE PAIN SHOULD BE ASSESSED?

INPATIENTS

OUTPATIENTS

AMBULATORY PATIENTS

BEDRIDDEN PATIENTS

ALL PATIENTS!

WHERE IS PAIN ASSESSMENT DONE?

HOSPITALS

KLINIK KESIHATAN

PROCEDURE ROOM

HOME (HOME VISIT)

EVERYWHERE!

WHO DOES PAIN ASSESSMENT?

NURSES

DOCTORS

STUDENTS: MEDICAL & NURSING

MEDICAL ASSISTANTS

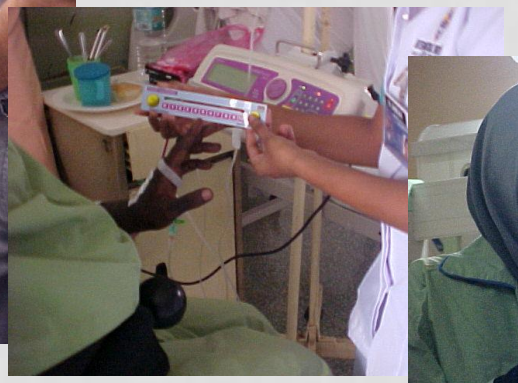
PHYSIOTHERAPISTS

OCCUPATIONAL THERAPISTS

PHARMACISTS

EVERYONE!

Everywhere… everyone…

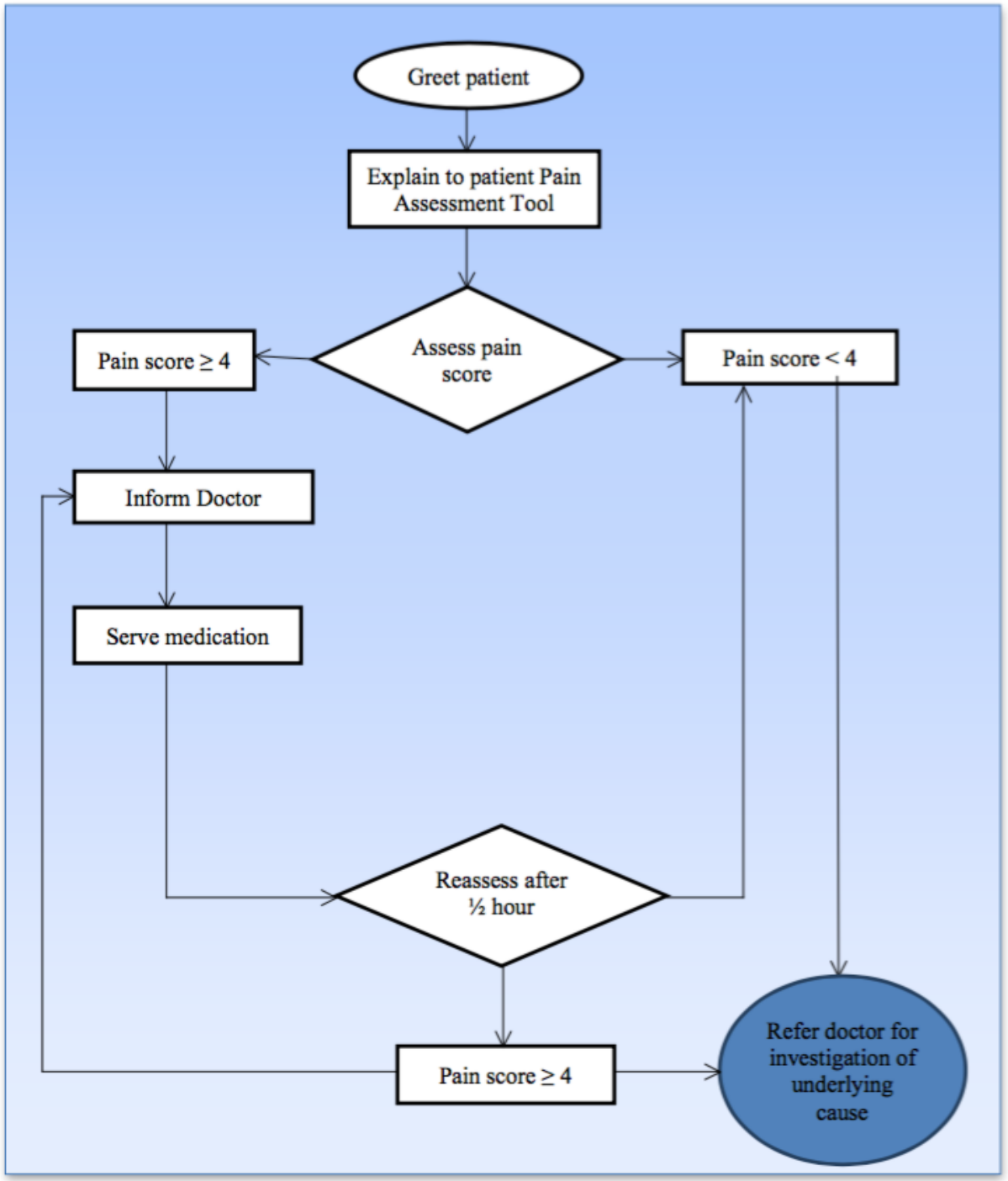







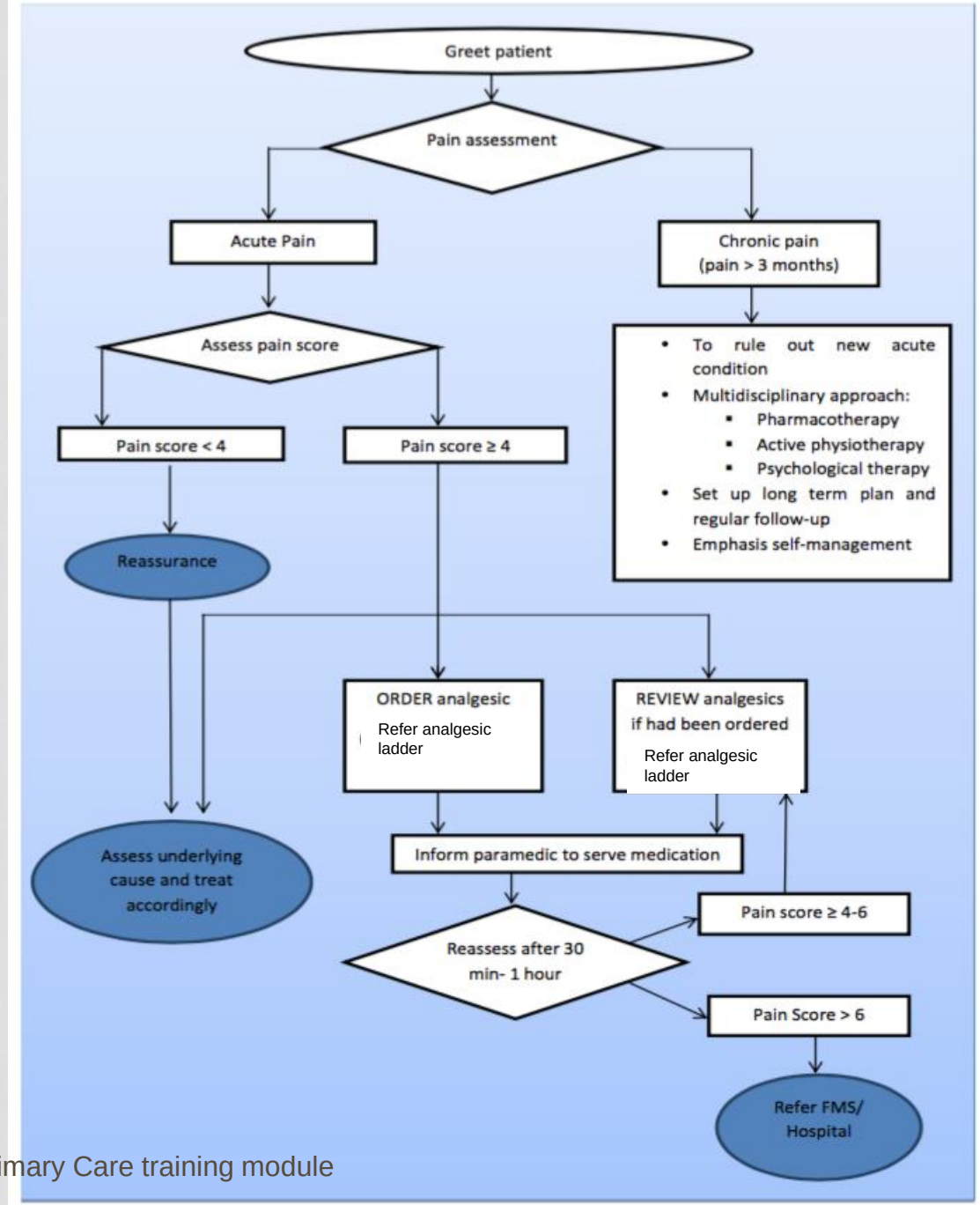
PAIN AS THE 5TH VITAL SIGN:

FLOW CHART FOR PAIN MANAGEMENT IN ADULT PATIENTS (PARAMEDICS)



PAIN AS THE 5TH VITAL SIGN:

FLOW CHART FOR PAIN MANAGEMENT IN ADULT PATIENTS (DOCTORS)



MANAGEMENT OF ACUTE PAIN

OVERVIEW OF PAIN MANAGEMENT

- Types of pain treatments:

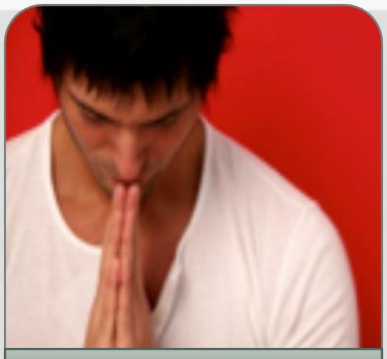
- Non-pharmacological (Non-drug)
- Pharmacological (Drug)

NON- DRUG TREATMENTS

- Physical :
  - Rest, Ice, Compression, Elevation (RICE)
  - Surgery
  - Physiotherapy
  - Acupuncture, massage
- Psychological
  - Explanation; Patient and caregiver education and support
  - Reassurance
  - Counselling
  - Deep breathing / relaxation

SOME EXAMPLES OF NON-DRUG TREATMENTS

Relaxation



Relaxation

Distraction

Distraction

Music

Guided imagery

Guided imagery

PHYSICAL METHODS

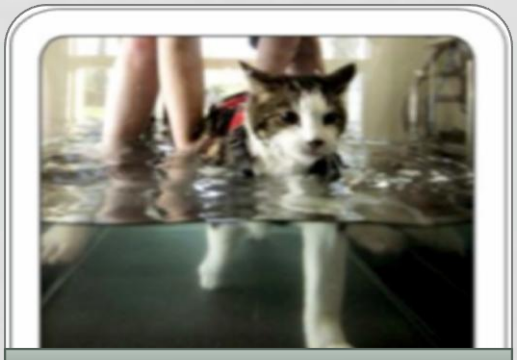
Ice

Massage

Acupuncture

TENS

Elevation



Hydrotherapy

MEDICATIONS: NON-OPIOIDS

- Simple analgesics
  - Paracetamol
- NSAIDs
  - Non specific
    - Diclofenac
    - Ibuprofen
    - Naproxen
    - Mefenamic acid
  - Cox 2 inhibitors
    - Celecoxib
    - Etoricoxib
    - Parecoxib

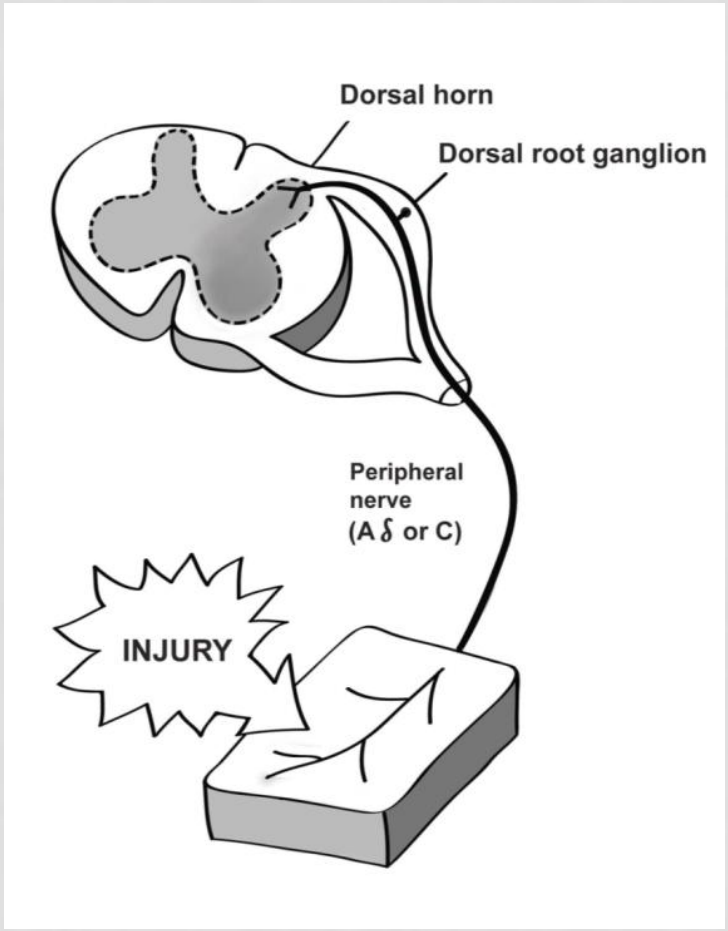
MEDICATIONS: OPIOIDS

- Opioids
  - Weak opioids:
    - DF 118
    - Tramadol
  - Strong Opioids:
    - Morphine
    - Pethidine
    - Oxycodone
    - Fentanyl
- Opioid antagonist:
  - Naloxone

ANTINEUROPATHIC AGENTS

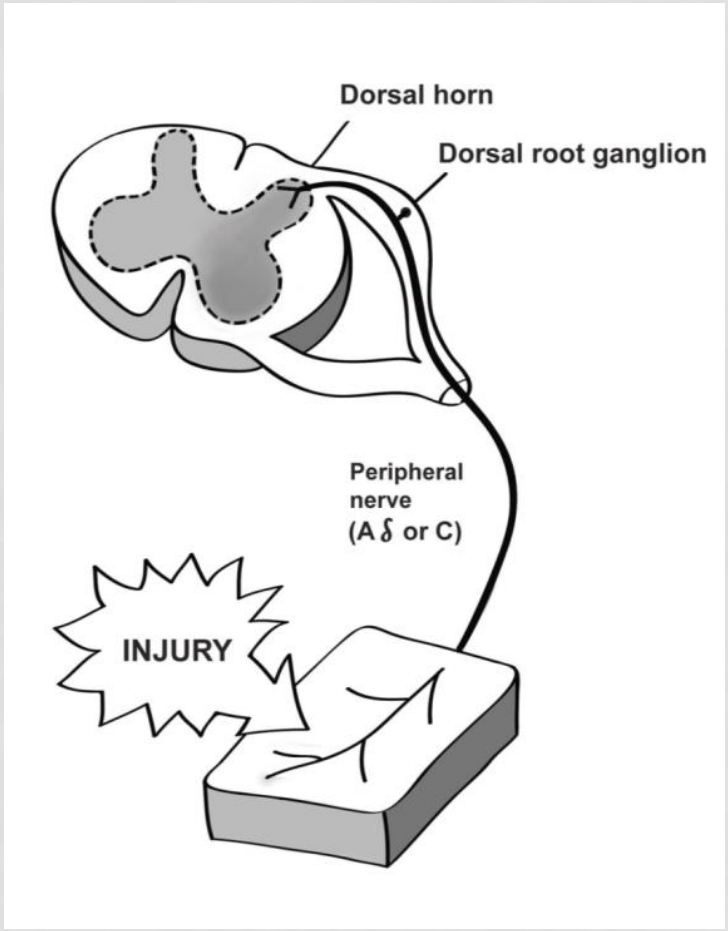
- Antidepressants:
  - Tricyclic antidepressants (TCA)
    - Amitryptyline
    - Nortriptyline
  - SNRI
    - Duloxetine
    - Venlafaxine
- Anticonvulsants
  - Gabapentin
  - Pregabalin
  - Carbamazepine
  - Phenytoin
- Others
  - Ketamine
  - Entonox (O2/N2O)
  - Local anaesthetics

WHERE DO THE TREATMENTS WORK? PERIPHERY



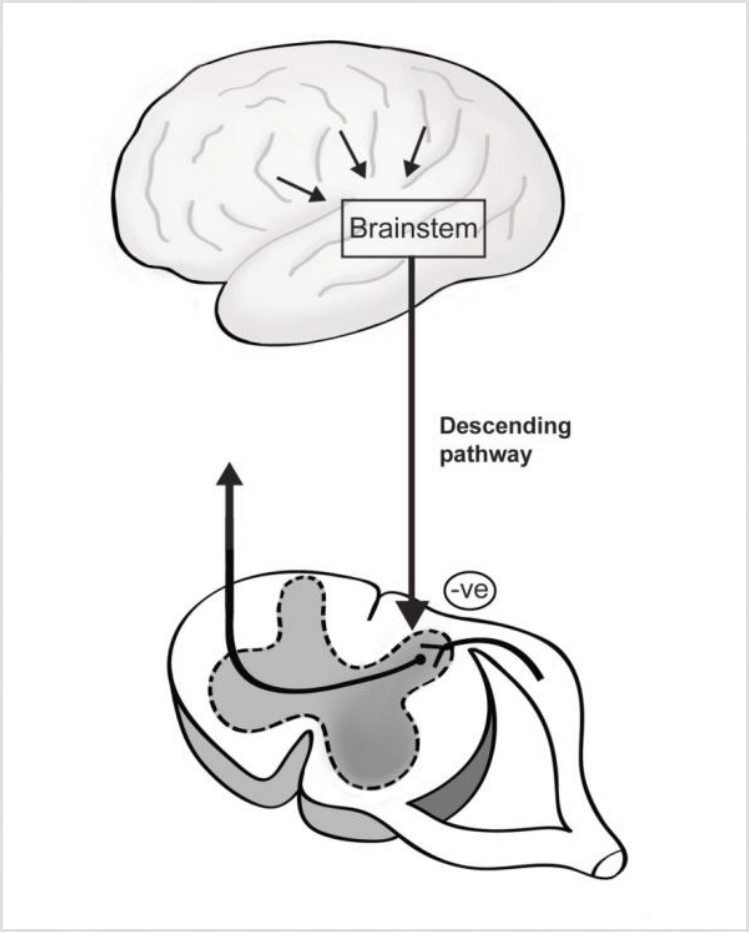
- Non drug treatment (RICE)
  - Rest
  - Immobilisation
  - Cold compression
  - Elevation
- Drug treatment:
  - Anti-inflammatory drugs
    - NSAIDS/ COX 2 inhibitors
  - Local anaesthetic agents

WHERE DO THE TREATMENTS WORK?
Spinal cord



- Non drug treatment:
  - Acupuncture
  - Massage
- Medications:
  - Local anaesthetics
  - Opioids
  - Ketamine

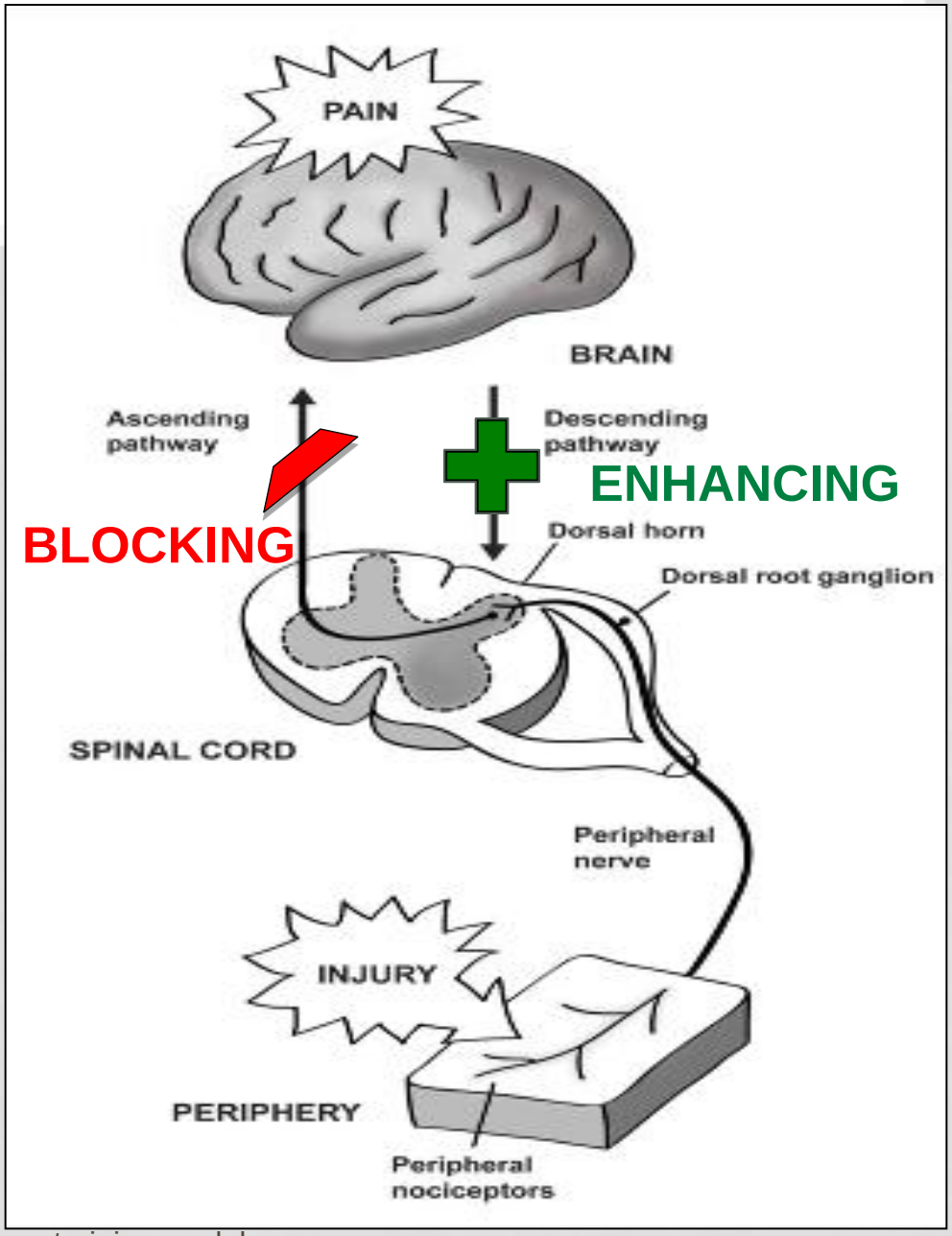
WHERE DO THE TREATMENTS WORK? BRAIN



- Non drug treatment
  - Psychological
- Drug treatment:
  - Paracetamol
  - Opioids
  - Amitriptyline

SUMMARY OF ANALGESIC STRATEGIES:

- Inhibit
  - ascending pain signal
- Enhance
  - descending inhibition



Analgesic Ladder for Acute Pain Management

Prescribe the analgesic according to the pain score

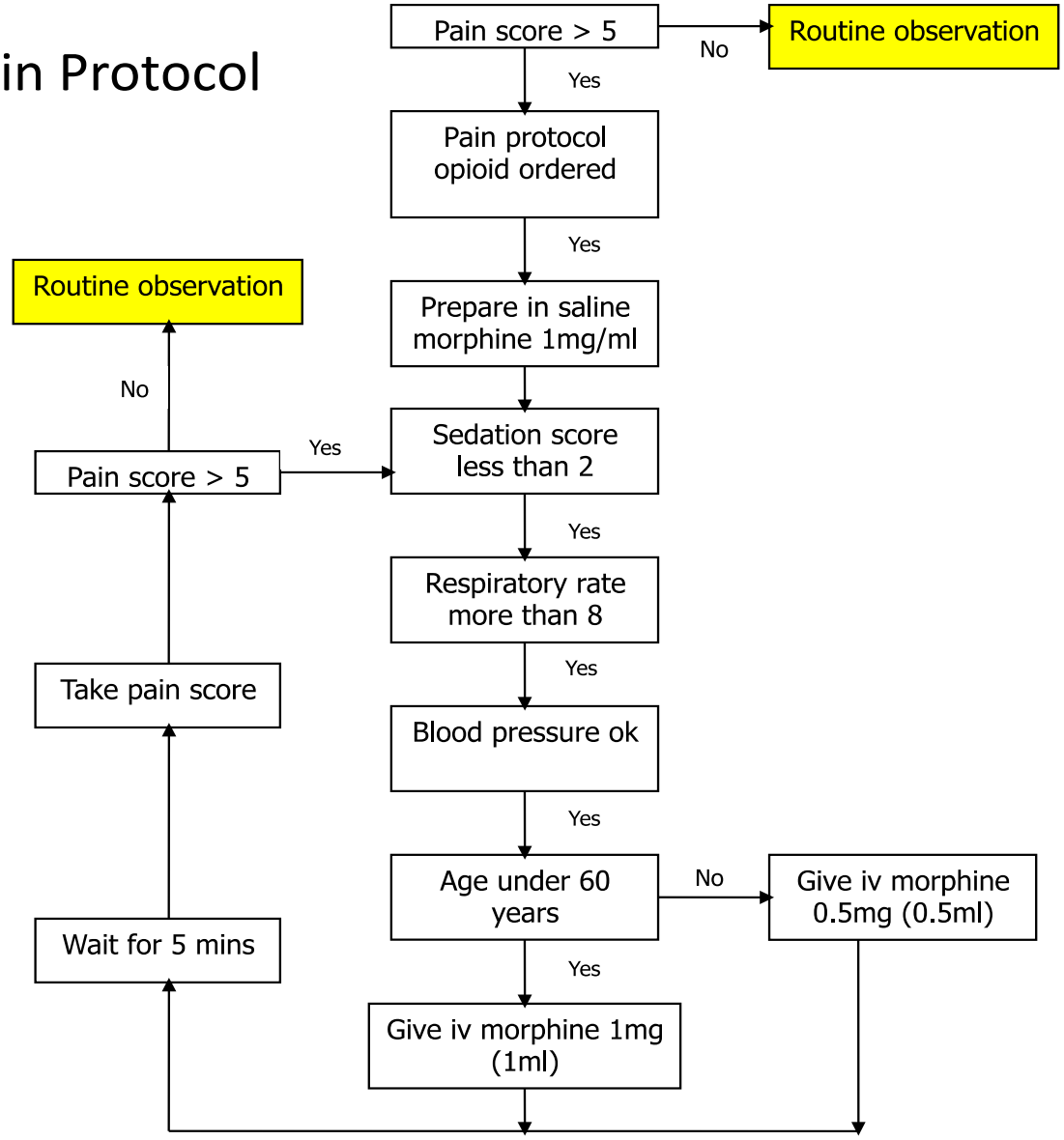
MILD		MODERATE		SEVERE		UNCONTROLLED
1 - 3		4 - 6		7 - 10		
Regular No medication Or PCM 1g QID	PRN PCM &/or NSAID/ COX2 Inhibitor	Regular Opioid Tramadol 50-100mg tds-qid +PCM 1g QID +NSAID/ COX2 Inhibitor	PRN Additional Tramadol 50-100mg (max total dose: 400mg/day)	Regular IV/SC Morphine 5-10mg 4H or Aqueous Morphine 5-10mg 4H or IR Oxycodone 5-10mg 4-6 H + PCM 1g QID +NSAID/ COX2 Inhibitor	PRN IV/SC Morphine 5-10mg or Aqueous Morphine 5-10mg or IR Oxycodone 5-10mg	Refer to hospital for further management

MORPHINE PAIN PROTOCOL

- Use for rapid control of severe acute pain
- Route: IV
- Morphine dilution: 10 mg/10 ml (1mg/ml)
- Monitoring (every 5 minutes)
  - Pain score
  - Sedation score
  - Respiratory rate

Morphine Pain Protocol

Adapted from the Acute Pain Service, Royal Adelaide Hospital , South Australia



SUMMARY

ASSESSMENT AND MANAGEMENT OF PAIN

KEY POINTS

For Pain as the 5th Vital Sign to have an impact in improving pain management in our clinics we need:

- Proper pain assessment, using the appropriate tool
- Proper pain diagnosis
  - Acute or chronic? cancer or non-cancer? nociceptive or neuropathic?
- Use of both non-drug and drug treatments
- Good understanding of analgesic medications
  - What to use (what drug, what dose)
  - When to use (according to Analgesic ladder)

KEY POINTS

- When using analgesic medications, we must monitor **Pain score and side effects**
- Aim: to **achieve reasonable pain relief without unacceptable side effects**

- When managing patients with chronic pain, we also need to focus on **functional improvement** and achievement of **goals**, not just on pain reduction
  - Often functional improvement can occur even without much reduction in pain score

THANK YOU FOR YOUR ATTENTION

PAIN IN PAEDIATRIC PATIENTS

FACTS WE KNOW TODAY

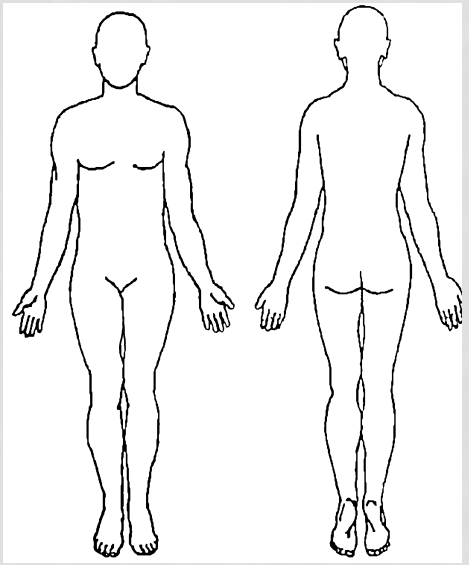
- Neonates and even premature babies can and **DO** feel pain
- Pain experienced by children is **NO** less and may even be more than that experienced by adults
- Children react to and report pain in different ways e.g. becomes quiet or withdrawn instead of crying
- Pain in children is still under-recognised and undertreated
- Lots of unwarranted fears on the use of pain medication in children especially opioids

ASSESSING PAIN IN CHILDREN

Q	**Q**uestion the child
U	**U**se pain rating scales
E	**E**valuate behavioural and physiological changes
S	**S**ecure the parents' involvement
T	**T**ake the cause of pain into account
T	**T**ake action and evaluate results

1. QUESTION THE CHILD

- Important to listen and believe the child
- Taking a pain history:



P: Place or site of pain

"where does it hurt?"

A: Aggravating factors

"what makes your pain worse?"

I: Intensity

"How bad is the pain?"

N: Nature and neutralising factors

"what does it feel like'

(a body chart might help children describe their pain)

"What makes the pain better?"

2. USE PAIN RATING SCALES

- The tool chosen to assess must be individualised
- Children >4 years can reliably self report pain
- In younger children or infants, assess behavioural and physiological changes
- Children >7 years can use a visual analogue scale
- These tools should never be used singly but in conjunction with parent's and physician's assessment.

3. EVALUATE BEHAVIOURAL AND PHYSIOLOGICAL CHANGES

- These can be used as proxy measures for pain in younger children, infants and neonates who are not able to self report
- They should never be used singly

- **Behavioural:**
  - E.g: Facial expression, crying, body posture, activity

- **Physiological:**
  - E.g. heart rate, respiratory rate, blood pressure, Oxygen saturation, palmar sweating

4. SECURE THE PARENTS INVOLVEMENT

- Get parents involvement in management of their child's plan
- Parents are often good judges of their child's pain
- However, if there is a discrepancy between the child and parents' report, do not over rule a child's response

5. TAKE THE CAUSE OF PAIN INTO ACCOUNT

- Search for any possible simple reversible causes of pain
  - e.g. A tissued line
- Anxiety may also be a cause of pain
  - Sometimes a child might cry due to separation anxiety and not pain

6. TAKE ACTION AND EVALUATE THE RESULTS

- Do not ignore any complaints
- If pain is present, check with patient/care giver if intervention required
- Intervention is not necessarily a medication, it can just be touching, gentle massage or hot or cold packs
- Always evaluate response after any intervention

KEY CONCEPTS IN PAIN MANAGEMENT

- **1.'By the ladder'**

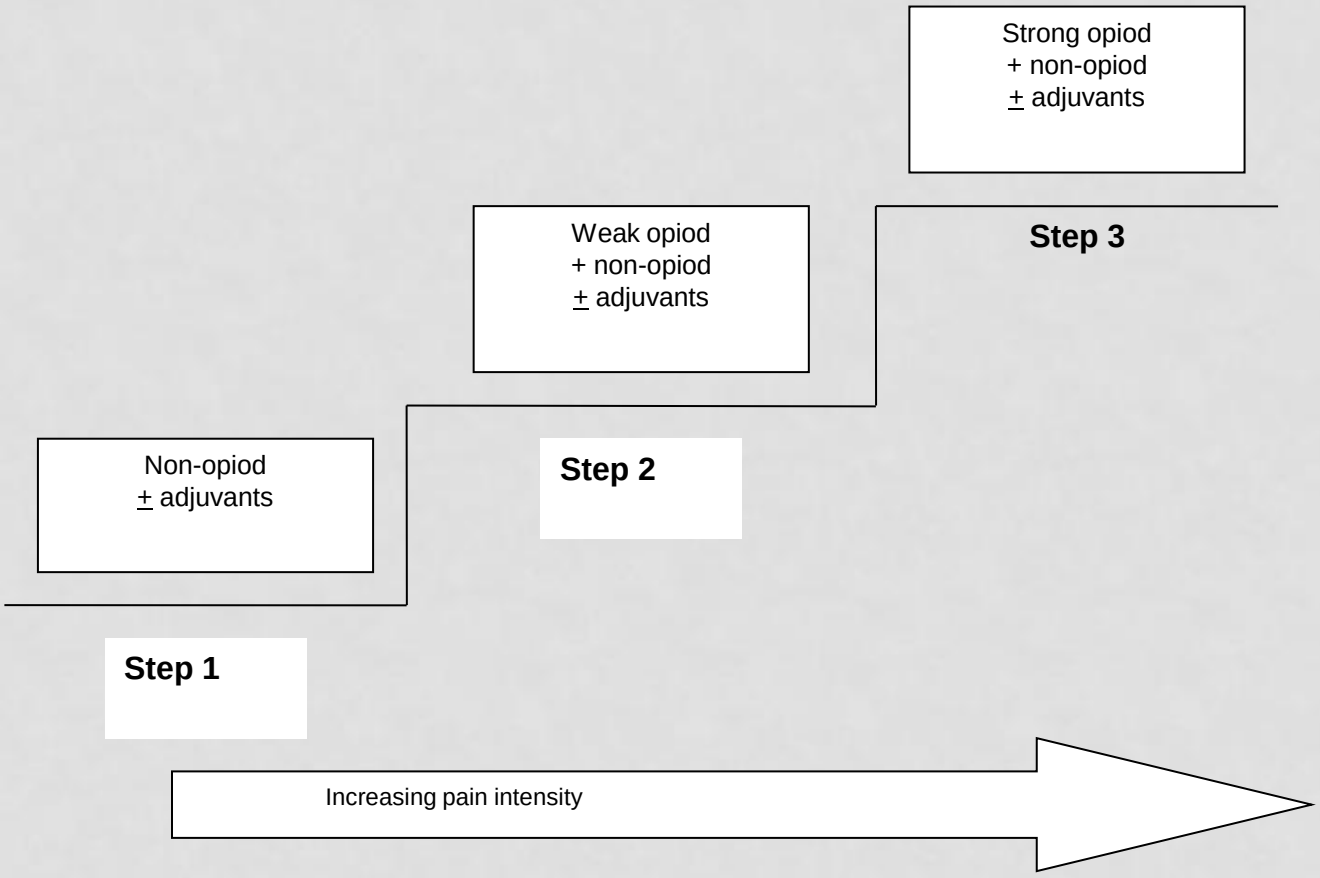
  Enabling stepwise approach to treatment (refer WHO analgesic ladder)
- **2. 'By the clock'**

  Regular scheduling ensures a steady blood concentration, reducing the peaks and trough of *pro re nata* (prn) dosing
- **3. 'By the appropriate route'**

  Use the least invasive route of administration. The oral route is convenient, non invasive and cost effective
- **4. 'By the child'**

  Individualise treatment according to the child's pain and response to a treatment

WHO ANALGESIC LADDER



METHODS OF PAIN RELIEF

- **Pharmacological**

- **Non pharmacological**
  - Suitable environment
  - Distraction
  - Guided imagery
  - Information before a painful procedure
  - Music
  - Heat and cold packs
  - Massage and physical therapy

PHARMACOLOGICAL

Non Opioid analgesics:

- Paracetamol
- NSAIDS
  - Ibuprofen, Naproxen, Diclofenac, Meloxicam

Opioid analgesics:

- Weak opioids: Tramadol
- Strong Opioids: Pethidine, Morphine

PARACETAMOL

- The most commonly used analgesic in children
- Excellent safety profile and lack of significant side effects
- Used for mild to moderate pain
- For more severe pain, can be combined with an opioid analgesic
- Total daily dose not to exceed
  - 90 mg/kg/day in children and
  - 60 mg/kg/day in infants
- Avoid more frequently than 4 hourly dosing
- Oral better than rectal
  - absorption of rectal paracetamol slow
  - somewhat variable
  - comparatively inefficient

NSAIDS

- Ibuprofen
  - Indicated for mild to moderate pain

- Children appear to have a lower incidence of renal and gastrointestinal side effects when compared to adults even with chronic administration

OPIOIDS

- Very useful for treatment of pain in patients of all ages
- Provide excellent analgesia with a side margin of safety for a vast majority of children
- Routes of administration: oral , IV, rectal, transdermal or transmucosal
- Oral and IV route preferable
- Avoid intramuscular injections unless absolutely necessary as children will deny they are in pain to avoid a shot.

CONCLUSION

- Infants and young children can and do feel pain
- Untreated pain can have a negative impact and long term consequences
- Pain in paediatric patient needs to be recognised and managed
- Tools for assessment is dependent not only on age of the child but also other factors
- We need to treat children in a more humane manner and be responsible to eliminate or assuage pain

THANK YOU FOR YOUR ATTENTION