Essential Pain Management
Introduction
Why EPM?

1.2
Why EPM?

• Pain is common.
• Pain is often poorly managed.
• We need a better system.
EPM is a *system*

For managing pain
For teaching others
A System?

<table>
<thead>
<tr>
<th>Trauma</th>
<th>Pain</th>
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<tbody>
<tr>
<td>Multiple causes</td>
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<td>Team management</td>
<td>Team management</td>
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<tr>
<td>ATLS, PTC training</td>
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</table>
Overall EPM Aims

Better recognition
Better assessment
Better treatment
Workshop Objectives

You will be able to:

• Recognize pain
  – Define pain
  – List benefits of treating pain

• Assess pain
  – Measure severity
  – Classify types of pain
  – Assess other factors
Workshop Objectives
You will be able to:

• Treat pain
  – List non-pharmacological treatments
  – List pharmacological treatments

• Devise an action plan to address local barriers.
Workshop Plan

• Short, interactive lectures
• Discussions on barriers and solutions
• Case discussions
Untreated Pain
Untreated Pain

- Often hidden (not recognized)
- Causes a lot of suffering
- But ... can often be treated simply and cheaply
RAT System

• Recognize
• Assess
• Treat
Recognize

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

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

• What non-pharmacological treatments can I use?
• What pharmacological treatments can I use?
Introduction

Summary

• Pain is common.
• Pain is often poorly treated.
• We need a better system.
• RAT provides this system.
Recognize
Assess
Treat
Recognize

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

• The next lectures will cover:
  – The definition of pain
  – The benefits of treating pain
What is Pain?
What is Pain?

Objectives

You will be able to:

• Define pain
• Use this definition to recognize pain
Group Discussion

• Think of a patient who has or had pain.
• How did he or she describe the pain?
Does this person have pain?
What is Pain?

• International Association for the Study of Pain (IASP)
  – Pain is ‘an unpleasant sensory and emotional experience associated with actual or potential tissue damage, or described in terms of such damage’.

• *Are there any other definitions?*
What is Pain?

• Pain is unpleasant.
• Emotions are important.
• The cause is not always visible.

• 'Pain is what the patient says hurts.'
Does this person have pain?
What is Pain?
Summary

- Pain is an unpleasant sensory and emotional experience.
- Remember to ask!
Why Should We Treat Pain?
Why Should We Treat Pain?
Objectives

You will be able to:

• List the benefits of treating pain:
  – For the patient
  – For the family
  – For society
Case Discussion 1

- Mrs T is a 33-year-old woman with uterine cervical cancer. The cancer has spread to her spine and she has disabling pain. The surgeons do not have any other options to treat her cancer. She is married with two children, aged 11 and 8.

- Why should we treat her pain?
Case Discussion 2

• Mr G is a 54-year-old man who has just had a laparotomy for bowel obstruction. You see him on the surgical ward soon after the operation. He complains of severe pain.

• Why should we treat his pain?
Benefits of Treating Pain

• For the patient
  – Physical
    • Better sleep, improved appetite
    • Fewer medical complications
      (e.g. heart attack, pneumonia)
  – Psychological
    • Reduced suffering
    • Less depression, anxiety
Benefits of Treating Pain

• For the family
  – Improved function as part of the family
    (e.g. as a father / mother)
  – Able to keep working

• For society
  – Reduced health costs
    (e.g. shorter hospital stay)
  – Able to contribute to the community
What are the benefits for this child?
Group Discussion

• *Are there any reasons for NOT treating pain?*
Why Should We Treat Pain?

Summary

• Treating pain is the ‘humane’ thing to do!
• Treating pain has many benefits:
  – For the patient
  – For the family
  – For society
Recognize
Assess
Treat
Assess

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

• How severe is the pain?
  – What is the pain score?
  – How is the pain affecting the patient?
Assess

• What is the pain type?
  – Acute or chronic?
  – Cancer or non-cancer?
  – Nociceptive or neuropathic?
Assess

• Are there other factors?
  – Physical?
  – Psychological?
Assess

• The next lectures will cover:
  – Assessment of severity
  – Classification of pain
  – Underlying physiology and pathology
Assessment of Severity
Assessment of Severity
Objectives

You will be able to:

• Understand the reasons for assessing severity
• Use different methods to assess severity
Assessment of Severity

• Guides choice of treatment
• Measures response to treatment

• ‘Pain is the 5th vital sign.’
  – Measure and record severity
Assessment of Severity

• What is the pain score?
  – At rest?
  – With movement?

• How is the pain affecting the patient?
  – Can the patient move, cough?
  – Can the patient work?
Methods

• Verbal Rating Scale
  – Mild, moderate, severe
  – 0 (no pain) to 10 (worst pain imaginable)

• Visual
  – Visual Analogue Scale (VAS)
  – Faces Pain Scale (FPS)

• Other
  – Functional Activity Score (FAS)
  – More specialised methods
Visual Analogue Scale

Ask the patient to show what his/her pain is on a scale of 0 to 10.
Faces Pain Scale

4.7
Functional Activity Score

• Is pain limiting function?
• Steps
  – Pain at rest (0 to 10)
  – Pain during activity (0 to 10), e.g. deep breathing, getting out bed
• Score
  – A: No limitation
  – B: Mild-moderate limitation
  – C: Severe limitation
• Assessment of severity guides treatment and measures response.

• Common methods include:
  – Verbal Rating Scale
  – Visual Analogue Scale
  – Faces Pain Scale
Classification of Pain
Classification of Pain
Objectives

You will be able to:

• Classify types of pain
• Give examples of types of pain
• Understand that treatment depends on the pain type
Classification of Pain

• Not all pain is the same!
• Three main questions:

1. How long has the patient had pain?
2. What is the cause?
3. What is the pain mechanism?
# Classification of Pain

<table>
<thead>
<tr>
<th>Duration</th>
<th>Acute Chronic</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cause</td>
<td>Cancer Non-cancer</td>
</tr>
<tr>
<td>Mechanism</td>
<td>Nociceptive (physiological) Neuropathic (pathological)</td>
</tr>
</tbody>
</table>
Acute versus Chronic

• Acute
  – Pain of recent onset and probable limited duration

• Chronic
  – Pain lasting for more than 3 months
  – Pain lasting after normal healing
  – Sometimes no identifiable cause
Cancer versus Non-Cancer

5.6
Cancer versus Non-Cancer

• Cancer pain
  – Progressive
  – May be mixture of acute and chronic

• Non-cancer pain
  – Many different causes
  – Acute or chronic

Can you give examples of non-cancer pain?
Nociceptive Pain

- Obvious tissue injury or illness
- Sometimes called physiological pain
- Protective function
- Description
  - Sharp and/or dull
  - Well localised

Can you give examples?
Neuropathic Pain

• Caused by a lesion or disease of the sensory nervous system
• Tissue injury may not be obvious
• Does not have a protective function
• Description
  – Burning, shooting, pins and needles, or numbness
  – Not well localised

Can you give examples?
Examples of Pain Types
Acute Non-Cancer Pain

- Examples
  - Fracture, appendicitis
- Symptom of tissue injury or illness
- Usually nociceptive
- Occasionally neuropathic (e.g. sciatica)
How would you classify low back pain?
Chronic Non-Cancer Pain

- Examples
  - Chronic back pain, arthritis
- Cause may not be obvious
- Complex, may be mixed nociceptive and neuropathic
- Different pharmacological treatments may be needed
Cancer Pain

• **Examples**
  – Uterine cervical cancer, breast cancer
  – Metastases in bone

• **Features of acute and chronic pain**
  – May be acute on chronic

• Often mixed nociceptive and neuropathic pain

• Usually gets worse over time if untreated
Classification of Pain
Summary

• Deciding on the type of pain is important.
  – Acute / chronic
  – Cancer / non-cancer
  – Nociceptive / neuropathic

• Treatment depends on the pain type.
Pain Physiology and Pathology
Pain Physiology and Pathology

Objectives

You will be able to:

• Understand normal pain physiology
  – Nociceptive pathway
  – Factors affecting pain perception
• Understand the basis of neuropathic pain (pathology)
Why is pain physiology important?

• Many factors affect how we feel pain.
  – Psychological factors are very important.

• Different treatments work on different parts of the pathway.
  – More than one treatment is usually needed.
Nociception and Pain

• Nociception
  – How pain signals get from the site of injury to the brain.

• Pain
  – How we perceive or feel pain.

• Nociception is not the same as pain!
Is this man feeling pain?
Nociception is not the same as pain!

**Nociception**

- **Beliefs**
  - e.g. religion
- **Psychol. factors**
  - e.g. anger, anxiety
- **Cultural issues**
  - e.g. expectations

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**Other illnesses**
- e.g. cancer

**Personality**
- Social factors
  - e.g. family, work

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**Pain**
- What the patient says hurts.
- What must be treated.

Modified from Analgesic Expert Group. Therapeutic Guidelines 2007
Physiology

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

- We will look at each step.
Periphery

- Tissue injury
- Release of chemicals
- Stimulation of pain receptors (nociceptors)
- Signal travels in Aδ or C nerve to spinal cord.
Spinal Cord

- Dorsal horn is the first relay station.
- $\Delta$ or C nerve synapses (connects) with second order nerve.
- Second order nerve travels up opposite side of spinal cord.
Brain

- Thalamus is the second relay station.
- Connections to many parts of the brain.
  - Cortex
  - Limbic system
  - Brainstem
- Pain perception occurs in the brain.
Modulation

• Descending pathway from brain to dorsal horn.
• Usually inhibits pain signals from the periphery.
Neuropathic Pain

• Pathological pain
• Abnormality of nociceptive pathway
  – Peripheral nerves
  – Spinal cord or brain
• Needs different pharmacological treatments

How do patients describe their pain?
Neuropathic Pain - Mechanisms

• Abnormal nerve tissue, e.g. amputation neuroma
• Abnormal firing of pain nerves
• Changes in chemical signalling in the dorsal horn
• Abnormal nerve connections in the dorsal horn
• Loss of normal inhibitory function
Pain Physiology and Pathology

Summary

• Nociception is not the same as pain.
• Physical and psychological factors affect how we feel pain.
• Different treatments work on different parts of the nociceptive pathway.
• Neuropathic pain needs different pharmacological treatments.
Recognize
Assess
Treat
Treat

• Non-pharmacological treatments?
• Pharmacological treatments?

• The next lectures will cover:
  – Non-pharmacological and pharmacological treatments
  – Pharmacology of common pain medications
Pain Treatment Overview
Pain Treatment Overview
Objectives

You will be able to:

• Describe the non-pharmacological and pharmacological treatments that are available
• Classify pain treatments
• Understand the role of placebo treatment
Group Discussion

• What non-pharmacological treatments are available?

• What pharmacological treatments are available?
Non-Pharmacological Treatments

• Physical
  – Rest, ice, compression, elevation
  – Surgery
  – Acupuncture, massage, physiotherapy

• Psychological
  – Explanation
  – Reassurance
  – Counselling
Pharmacological Treatments

• Simple analgesics
  – Paracetamol (acetaminophen)
  – Anti-inflammatory medicines, e.g. ibuprofen

• Opioids
  – Mild, e.g. codeine, tramadol
  – Strong, e.g. morphine, pethidine, oxycodone
Pharmacological Treatments

- Other analgesics
  - Tricyclic antidepressants, e.g. amitriptyline
  - Anticonvulsants, e.g. carbamazepine, gabapentin
  - Local anaesthetics
  - Others, e.g. ketamine, clonidine
Treatments - Periphery

- Non-pharm treatments
  - Rest, ice, compression, elevation
- Anti-inflammatory medicines
- Local anaesthetics
Treatments - Spinal Cord

- Non-pharm treatments
  - Acupuncture, massage
- Local anaesthetics
- Opioids
- Ketamine
Treatments - Brain

- Non-pharm treatments
  - Psychological
- Pharmacological treatments
  - Paracetamol
  - Opioids
  - Amitriptyline
Group Discussion

- What is a placebo treatment?
- Is it helpful or unhelpful?
Placebo Treatment

• Psychological factors are important.
• If a placebo treatment works, this does not mean that the patient did not have pain or was telling lies!
Pain Treatment Overview

Summary

• Both non-pharmacological and pharmacological treatments are important.
• Different treatments work on different parts of the nociceptive pathway.
• Pain medications can be classified into simple analgesics, opioids and other analgesics.
Pain Medications
Pain Medications
Objectives

You will be able to:

• Outline broad principles of pharmacological treatment
• Summarise the major advantages and disadvantages of important medications
• Address concerns about opioid addiction
Broad Principles

• This lecture:
  – Gives a broad overview of pharmacological treatment in common situations
  – Gives examples of medications

• For more detail, including doses:
  – Case discussions
  – EPM manual and EPM app
Treatment of Cancer Pain
WHO Ladder*

Step 1
Mild pain
Use simple analgesics

Step 2
Moderate pain
Use mild opioid e.g. codeine, tramadol
Continue simple analgesics

Step 3
Severe pain
Use strong opioid e.g. morphine
Continue simple analgesics

Add other medications for neuropathic pain
e.g. amitriptyline, gabapentin

*Modified
WHO Ladder

• Developed for cancer pain
• Emphasises oral treatment
• Treats nociceptive pain
• May need other medications for neuropathic pain

• Don’t forget non-pharmacological treatments!
Treatment of Acute Nociceptive Pain
Reverse WHO Ladder

**Step 1**
Mild pain
- Continue simple analgesics

**Step 2**
Moderate pain
- Use mild opioid e.g. codeine, tramadol
- Continue simple analgesics

**Step 3**
Severe pain
- Use strong opioid e.g. morphine
- Also use simple analgesics
Reverse WHO Ladder

• Mainly useful for severe acute nociceptive pain
  – Trauma pain
  – Post-operative pain
• Start at the top and ‘step down the ladder’ as the pain improves.
Chronic, Non-Cancer Pain

• Non-pharmacological treatments very important

• May need treatment for neuropathic pain
  – Antidepressants, e.g. amitriptyline
  – Anticonvulsants, e.g. gabapentin

• Opioids are usually not helpful and may cause harm.
Examples of Pain Medications
Paracetamol (Acetaminophen)

- **Indications**
  - Mild nociceptive pain
  - Moderate to severe nociceptive pain (with other medications)

- **Advantages**
  - Cheap, safe
  - PO, PR, IV

- **Disadvantages**
  - Liver damage in overdose
Ibuprofen

- **Indications**
  - Mild, moderate or severe nociceptive pain

- **Advantages**
  - Cheap
  - Usually safe if given short-term

- **Disadvantages**
  - Gastric and renal side effects
  - Interferes with blood clotting
Tramadol

• Indications
  – Nociceptive and neuropathic pain

• Advantages
  – Safe
  – Useful for different pain types
  – Can be used with morphine

• Disadvantages
  – Nausea and vomiting
  – Confusion

8.12
Morphine 1

• Indications
  – Moderate to severe, acute, nociceptive pain
  – Cancer pain

• Advantages
  – Very effective
  – Cheap
  – Usually safe
  – PO, IV, IM, SC
Morphine 2

• Disadvantages
  – Nausea and vomiting
  – Respiratory depression in high dose
  – Constipation
  – Misunderstandings about addiction
  – Legal controls
Morphine Dosing

• Oral dose is 2-3 times IV / IM / SC dose.  
  *Why is this?*

• Tolerance
  – Increased dose needed over time
  – Very high doses may be needed in cancer treatment
Amitriptyline

• Indication
  – Neuropathic pain

• Advantages
  – Cheap
  – Safe in low dose
  – Also treats depression, poor sleep

• Disadvantages
  – Harmful in overdose
  – Dry mouth, drowsiness
  – Urinary retention
Gabapentin

• Indication
  – Neuropathic pain

• Advantages
  – Safe and effective

• Disadvantages
  – Drowsiness
  – Dose needs to be increased slowly
Group Discussion

• What is addiction?
• How common is opioid addiction in patients with pain?
• Would this stop you giving opioids to a patient who has pain?
Opioids and Addiction

• Addiction – Three C’s
  – Craving
  – Loss of control
  – Negative consequences (harm)

• Addiction is very rare in acute pain and cancer pain.

• Addiction may occur if strong opioids are used to treat chronic non-cancer pain.
Group Discussion

• Name 3-5 other pain medications used to treat different types of pain.

• What are their:
  – Indications?
  – Advantages?
  – Disadvantages?
## Medication Effectiveness

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<tr>
<th></th>
<th>Acute noci mild</th>
<th>Acute noci severe</th>
<th>Acute neuro</th>
<th>Chronic non-cancer</th>
<th>Chronic cancer</th>
</tr>
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<tbody>
<tr>
<td>Paracetamol</td>
<td>+++</td>
<td>++</td>
<td>+</td>
<td>+</td>
<td>+</td>
</tr>
<tr>
<td>NSAIMs</td>
<td>++</td>
<td>++</td>
<td>+</td>
<td>+/-</td>
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<tr>
<td>Codeine</td>
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<td>-</td>
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<tr>
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<td>Anticonvulsants</td>
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<td>-</td>
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Pain Medications
Summary

• Pain can be treated with relatively cheap and safe drugs.

• Morphine is very effective for cancer pain and acute severe nociceptive pain.

• In general, strong opioids should be avoided in chronic non-cancer pain.
Pain Management Barriers
Pain Management Barriers
Objectives

You will be able to:

• Summarise local pain management barriers
• Develop a plan to address local barriers
Group Discussion

• Pain is often poorly managed. What are some of the reasons for this?
  – Patient factors
  – Medications
  – Health workers
  – System issues

• What are the main barriers where you work?
Pain Management Barriers Summary

• Pain is often poorly managed.
• Barriers include lack of knowledge, health worker attitudes and lack of medications.
• You can help to address these barriers where you work!
Using the RAT System
Using the RAT System
Objectives

You will be able to:

• Summarise the RAT system
• Apply this system to different types of pain
• Understand the importance of reassessment
Using the RAT System
Using the RAT System

- Recognize
- Assess
- Treat
Using the RAT System

• Recognize
• Assess
  – Severity?
  – Type?
  – Other factors?
• Treat
  – Non-pharmacological treatments
  – Pharmacological treatments
Using the RAT System

Recognize

• Does the patient have pain?
  – Ask
  – Look

• Do other people know the patient has pain?
  – Other health workers
  – Patient’s family
Using the RAT System

Assess

• How severe is the pain?
  – Measure at rest
  – Measure with movement
Using the RAT System

Assess

• What type of pain is it?
  – Acute or chronic?
  – Cancer or non-cancer?
  – Nociceptive or neuropathic?
Using the RAT System

Assess

• Are there other factors?
  – Physical factors
    • Underlying illness
    • Other illnesses
  – Psychological and social factors
Using the RAT System

Treat

• Non-Pharmacological Treatments
  – For both nociceptive and neuropathic pain
  – Physical
    (e.g. rest, ice, elevation, physiotherapy, massage)
  – Psychological
    (e.g. reassurance, explanation, counselling)
Using the RAT System

Treat

- Pharmacological Treatments – Nociceptive Pain
  - Consider paracetamol, NSAIMs, tramadol, codeine, morphine
  - Use combinations
    (e.g. paracetamol + NSAIM + opioid)
  - Use IV morphine for acute, severe pain
Using the RAT System

Treat

• Pharmacological Treatments – Neuropathic Pain
  – Consider using tramadol, tricyclic antidepressant (e.g. amitriptyline) or anticonvulsant (e.g. gabapentin)
Using the RAT System

Reassess

• Repeat RAT
• Is your treatment working?
• Are other treatments needed?
Using the RAT System
Example 1

- A 32-year-old man caught his right hand in machinery at work. He presents with a compound fracture of his hand.
- *How would you manage his pain using RAT?*
Using the RAT System

Example 2

• A 55-year-old woman presents with a large breast tumour with spread to her spine. She has severe pain.

• *How would you manage her pain using RAT?*
Using the RAT System
Example 3

• A 51-year-old man has a 2-year history of lower back pain which sometimes radiates down his right leg. He fell recently and is now having problems walking.

• *How would you manage his pain using RAT?*
Using the RAT System
Summary

• Recognize

• Assess
  – Severity?
  – Type?
  – Other factors?

• Treat
  – Non-pharmacological treatments
  – Pharmacological treatments

• Reassess