

Post – Doctoral Fellowship in Pain Medicine

Syllabus

COURSE DURATION : TWO YEARS

“Severe chronic pain is a massive medical, economic and social problem. Cousins has called it a silent epidemic of the 21st century. We must continue to work to alleviate pain for the benefit of mankind.” - (Carol A. Warfield Hilary J. Fausett, Editors, Manual of Pain Management)

Pain Management has been a neglected area in the medical field. There is an impending need to include this subject in the medical syllabus, which will impart knowledge in all aspects of pain.

With this aim, The Tamilnadu MGR Medical University has come out with this ‘Post-Doctoral Fellowship in Pain Medicine’ Course, the **first of its kind in the country**.

Goal of this course is to equip doctors with the knowledge to practice and teach Pain Medicine so as to be able to manage pain due to various causes and diseases which they may encounter during their practice from time to time.

Ultimately this should prevent patients’ and families’ needless physical, psychological and social suffering and therefore should help create a healthier society.

Curriculum

The specialty of pain medicine is concerned with the **study of pain from a biopsychosocial perspective**. Clinically this incorporates the **evaluation, treatment and rehabilitation** of persons with pain by a **multidisciplinary approach**. These are the core aspects dealt with in this course.

Although not every fellow will be fully trained in every area listed below, he or she should at least have had some exposure to patients whose care involves all of these areas.

Section I History and Understanding Pain

1. Evolution of Pain Management
2. Theories (Gate Control Theory etc.), Concepts

Section II Anatomy and Physiology with Clinical Correlations

1. Anatomy of the Pain Processing System

- **Nociceptors:** Definitions, Primary afferent fibers, Dorsal horn synapses and biochemical mediators, Peripheral sensitization.
- **Ascending nociceptive pathway:** Topographical arrangement of the dorsal horn (laminae of Rexed), Dorsal horn projection neurons, Spinothalamic tract, Spinothalamic tract, Cranial nerves, Central sensitization.
- **Supraspinal systems:** Integration and higher processing– Thalamus, Hypothalamus, Limbic system, Cerebral cortex, Cingulate cortex.
- **Pain modulation:** Descending systems, Projections to the dorsal horn.
- **Concept of Neural Matrix and the Biopsychosocial Model of Pain**

2. Applied Physiology, Receptors and Neurotransmitters

- **Fundamental pain mechanisms:** Response to acute painful stimuli, Peripheral sensitization, Central sensitization and modulation, Disinhibition, Structural reorganization of central connections: Mechanisms of nociceptive and neuropathic pain, Mechanisms of transduction, transmission and modulation in nociceptive pathways

Section III Evaluation of the Patient in Pain

Detailed assessment is the key to success in the management of pain. While assessing the patient, with questions based on the clinical features of the different types of pain, on the mechanisms and intensities of pain, one can actually arrive at the treatment plan by the end of the evaluation.

1. Classification, Definitions and Terminologies

- **Acute**
- **Chronic:** Chronic Cancer Pain and Chronic Non Cancer Pain

- Nociceptive pain, Neuropathic pain, CRPS.
- Hyperalgesia, Hypoalgesia, Anaesthesia, Hyperaesthesia, Paraesthesia, Dysaesthesia, Hyperpathia, Allodynia, Anaesthesia dolorosa, Spontaneous pain, Evoked pain, Radiculopathy

2. History focused on Pain

- Triage pain patients with respect to urgency, complexity and facilities required
- Elicit and interpret a detailed biopsychosocial history: Identify and explore the patient's issues, concerns, beliefs, goals and expectations with respect to their pain experience

3. Treatment History

4. Medical Diagnosis

- General Physical examination
- Specific Pain evaluation- Pain Questionnaire and pain scales
- Neurologic examination
- Musculoskeletal system examination

5. Psychological Assessment using Appropriate Communication: Basic skills, Responding to patients' reactions, 'Breaking the Bad News' and dealing with 'Collusion'

- **Perform a focused psychological assessment and mental state examination of the patient:** Developmental history, family, medical and psychological history, Personal psychological history, Personality style, Coping strategies, Cognitive impairment, Identification of lifetime stresses
- Use of diagnostic tests
- Collection of data from interview and standard forms
- Discuss treatment options

6. Assessment of Social and Spiritual Issues

- Housing, Eating habits, Support, Family and life roles, Employment/occupational factors Financial status, Recreational activities, Mobility, including driving capability, Cultural beliefs
- Develop understanding of the person and their family, in relation to their pain-associated limitations, losses and distress
- Nutritional status, Sleep function, Sexual function

- Meaning and purpose

7. Evaluation and Rating of Disability and Psychological Impact, Rehabilitation

- Discuss the application of the World Health Organization (WHO) International Classification of Functioning, Disability and Health (ICF) concepts to people experiencing pain: Functioning and disability, Body functions and body structures, Activities and participations, Contextual factors, Environmental factors, Personal factors

8. Appropriate investigations

- Make judicious and resource-sensitive decisions about obtaining investigations
- **Radiological Evaluation:** Critically review existing investigations and interpretations: bone scans, computed tomography (CT) scans, magnetic resonance imaging (MRI), positron emission tomography (PET) scans, and electro- diagnostic techniques

Goal of assessment is: Assess the person experiencing the pain and not just the pain!

Section IV Management of Pain by a Multidisciplinary ‘Whole person’ Approach

A ‘simple to sophisticated’ strategy should be followed in the plan of pain management

Implementing Management Plans

- **Explain** to the patient the diagnostic formulation and the proposed management plan
- **Negotiate a therapeutic alliance** with the patient towards implementation of the plan
- **Supervise and monitor patient status**, intervene as required to optimise patient care
- **Demonstrate the skills** required to lead a multidisciplinary team in the implementation of a pain management plan.
- **Consult colleagues and other healthcare professionals** to optimise patient wellbeing and enhance patient outcomes

- Patient education
- Arrange appropriate **follow up**

1. Pharmacological

- Analgesics, adjuvants, other drugs **with WHO Guidelines including** Non-opioids, Opioids, Steroids, Antidepressants, Anticonvulsants, drugs for other types of pain
- **The Pharmacokinetic and Pharmacodynamic Principles of Analgesics:** Mechanisms of action, adverse effects, Indications, precautions, contraindications
- **Describe various routes of administration** of opioids and other drugs.
- Oral, Subcutaneous, Intramuscular, Intravenous, Transdermal, Sublingual, Buccal, Intranasal, Rectal, Inhalational
- **Opioid equivalent doses** with reference to Morphine. Conversion factors for switching between routes (oral to parenteral and vice versa)
- Physiology of tolerance, dependence, addiction with respect to pharmacological agents

2. Interventional Therapies

Selection of patient is the key to success of any interventional procedure.

- Diagnostic and Therapeutic Injections
- Neural Blockade and Neurolytic Blocks

Following Interventional procedures will be taught:

- Trigger Point Injection
- Dry Needling
- Facet joint inj.
- SI Joint inj.
- TFESI
- Lumbar Sympathetic block
- Lumbar Discography
- Sacral Nerve root inj.

- Caudal epidural
- Superior hypogastric block
- Coeliac plexus block
- Thoracic facet joint inj.
- Suprascapular nerve block
- Cervical epidural inj.
- Occipital nerve block
- Cervical facet medial branch block
- Gasserian Ganglion block
- Sphenopalatine Ganglion block

3. Advanced Pain Therapies: Intradiscal Procedures, Epiduroscopy, Spinal Cord Stimulators, Intrathecal Implants

4. Management of Psychological Issues

- Individual, group and family psychotherapy
- Cognitive-behavioural therapies, Biofeedback and Relaxation techniques
- Hypnotherapy, Narrative therapy.

5. Complementary Therapies

- Physical Therapy
- Physiotherapy
- Occupational Therapy

Section V Management of Acute pain

- Post-operative pain and post-trauma pain
- Pharmacological, Interventional

Section VI Treatment of Regional Pain Syndromes

- Headache
- Facial Pain Syndrome
- Neck and Upper Back Pain
- Complex Regional Pain Syndrome
- Thoracic and Abdominal Pain
- Low Back Pain

- Pelvic and Perineal Pain

Section VII Common Pain Conditions

- Neuropathic Pain
- Post-Herpetic Neuralgia
- Diabetic Neuropathy
- Peripheral Neuropathies
- Phantom Limb Pain
- Fibromyalgia
- Myofascial Syndrome
- Arthritis
- Pain in Children and Elderly

Neuropathic Pain:

- **Definitions and classification:** Nerve Compression, Nerve Injury: peripheral, central, sympathetic pain
- **Mechanisms** and Neurobiological basis of allodynia, hyperalgesia, hyperpathia:
Chemical excitation of non-nociceptors, Recruitment, Excitotoxicity, Sodium channels, Ectopic discharge, De-afferentation
- **Role of NMDA Receptors**, Glutamate, 'Wind up' phenomenon
- **Common neuropathic pain conditions:** Trigeminal Neuralgia, Post-Herpetic Neuralgia, Phantom Limb Pain, Diabetic Neuropathy, Peripheral Neuropathies, causes in cancer
- **Assessment:** History and Clinical features
- **Management:** Pharmacological using Neuropathic Pain Ladder: Steroids, Antidepressants, anticonvulsants, Channel Blockers, NMDA Antagonists (Ketamine), Non-pharmacological and Interventional techniques. Rationale of treatment, multidisciplinary approach.

Section VIII Cancer Pain

Management of pain in the presence of a progressive illness is different from the management of acute or chronic pain, but uses techniques from both fields.

1. Epidemiology of pain due to cancer

2. Clinical assessment of cancer pain -

- Define and distinguish between incident pain and incompletely relieved persistent pain
- Apply a mechanism-based approach to identifying the origins and contributing factors to pain in cancer
 - **Causes of pain in cancer:**
 - Due to cancer – Arising from solid viscus / hollow viscus / tumour invasion
 - Due to treatment of cancer - chemotherapy, radiotherapy -surgical and procedural (eg.mucositis, neuropathic pain)
 - Due to debility
 - Concurrent causes

3. Management of Cancer Pain - Background:

- **Identify sociocultural influences** on the experience of cancer and of cancer-related pain
- **Compare and contrast** the assessment and management of persons with cancer pain and those with chronic non-cancer pain
- **Recognise the problems** faced by cancer survivors who have persistent pain
- **Discuss the meaning** and significance of the World Health Organization analgesic guidelines for pain in cancer and its applicability in chronic non-cancer pain.
- **Recognise the essential role** of close liaison with other teams, specifically from oncology, radiation oncology and palliative care
- **Management** using Pharmacological, Psychological, Anti-cancer treatment: Radiation and Chemotherapy

Discuss the role of interventional procedures in the management of cancer pain that is unresponsive to non-invasive treatment: Neuraxial and Intracerebroventricular

administration of medications, Neurolytic blocks with particular reference to: Saddle block, Coeliac plexus block, Cordotomy

-Discuss the analgesic benefits and side effects of cancer-modifying treatments

-Chemotherapy, Radiotherapy, Radiopharmaceuticals, Immune therapy, Surgery

-Chemotherapy and Radiotherapy related pain, peripheral neuropathy, Mucositis

4. Discuss the presentation of oncological emergencies and pain in patients with cancer:

Acute spinal cord compression, Life-threatening increased intracranial pressure,

Acute bowel obstruction, Hypercalcaemia, Long bone fracture

5. Outline the changes in pain management when a patient is: No longer able to swallow, Unconscious, likely to die within days

Section IX Application of Ethical Principles in Approach to Pain Management

Four Cardinal Principles: Autonomy, Beneficence, Non-maleficence, Justice

Section X Research Methodology

- Principles of clinical epidemiology
- Principles of assessing scientific evidence

Section XI

Other Topics

- Recent advances in pain management
- Medico legal aspect of pain management
- Radiation safety measure

Section XII Optional Topic Areas (OTA) There is an opportunity for trainees to explore aspects of pain medicine not covered in detail during the core training stage.

OTAs include: Addiction Medicine, Palliative Medicine, Paediatric Palliative Care, Physical Interventions, Rehabilitation Medicine