

FPM Education Committee report: Pain and the undergraduate medical curriculum

A draft document for consideration of the education committee FPM

Author: Dr Jane Trinca July 2007.

1. Background:

A curriculum consists of:

- List of objectives for learning.
- Appropriate assessment of these objectives.
- Educational experiences by which students learn these objectives.

(Definition courtesy of Russell Jones)

Integration of **pain medicine** as a **specific integrated** subject into medical school curricula has long been problematic.

Why is this so?

The positives:

-The **need** for pain education is clear:

- There is widespread agreement that teaching about pain is important because the *symptom of pain* (1) is frequent, (2) often poorly managed and (3) has costly consequences for society and the healthcare system, which are even greater if managed inappropriately:
 - Pain is the presenting symptom in 80 per cent emergency department attendances (direct communication Department of Human Services, Victoria 2007).
 - 22 per cent of the sample Australian population report suffering from chronic pain (Blyth F, 2003).
- There is widespread agreement that knowledge of pain is often poor among doctors and other health professionals.
- There is widespread agreement that most doctors and medical students, when asked, report their teaching about pain is relatively minimal in many undergraduate and postgraduate courses.

-The **list of objectives** is readily available via the International Association for the Study of Pain (IASP) and other documents (IASP website accessed 2007).

-The **teachers** are *potentially* available in FPM specialists, basic scientists and other allied health professional groups.

What are the **obstacles**?

- Pain is currently taught as a symptom of many body systems throughout the medical course, often in an unco-ordinated manner by multiple teachers many of whom do not regard pain as their primary specialty. This leads to

confusion of concepts and treatment approaches and often means that more recent concepts may not be regularly updated.

- “Pain medicine” being a new specialty is often under represented at an academic level (clinical department/university) where curriculum decisions are made.
- The medical course is under great pressure to incorporate many and increasing topics relevant to patient care from multiple specialty groups and stakeholders who represent the vast array of increasing medical knowledge all competing for airspace in the undergraduate course.
- While some principles of pain medicine are straightforward and easy to teach, particularly those relating to acute pain (if given adequate time), other aspects particularly principles of chronic pain require a more sophisticated multidisciplinary approach to allow appropriate diagnosis and treatment to be understood. These aspects require a more complex learning environment and may be better taught after graduation when the student has more medical experience and maturity.
- Currently available pain curricula often provide only an extensive list of objectives unaccompanied by the teaching material, assessment tasks, educational opportunities and strategies for integration into existing course material.
- Current list of objectives do not prioritise learning objectives and do not set out minimum requirements that must be met.
- Current list of pain medicine objectives overlaps with other groups, particularly palliative care objectives, and there is need for integration of these two and any other sets of objectives so as not to double up on some issues and neglect others. Co-ordination between stakeholders wishing to teach pain management is thus a necessity.

2. How can the FPM help promote the field of pain medicine in the undergraduate medical curriculum and provide a resource for universities who are wishing to improve or develop improved pain education?

- Provide information about pain medicine as a specialty and availability of accredited pain medicine units, which could be accessed by medical schools for training of medical students both for core material and elective and research semesters.
- Provide a list of pain medicine specialists who could be approached to teach aspects of pain medicine at university level and help to encourage others of similar primary specialty to integrate pain medicine into curriculum.
- Include a suitable pain medicine specialist on curriculum committees, who has role of integrating pain medicine principles into overall curriculum.
- Develop a set of minimum standards for a graduating medical student re pain knowledge and checklist for curriculum assessment of medical schools (Appendix 8).
- Provide a basic plan of *essential* learning for medical students including a list of suitable texts, taxonomy and references.
- Develop educational material that could be adapted including problem-based learning unit for acute pain, chronic pain and cancer pain.

- Provide educational modules that deal with specific pain issues, for example, the POPE (pain orientated physical examination), neuropathic pain scale, and other pain scales.
- Provide a bank of questions or tasks (patient presentations) that could be used for assessment.
- Provide comprehensive information on trends in pain education curriculum and developments on a national and international level.
- Provide an online resource to medical students, for example, ANZCA acute pain scientific evidence, and links to other educational material, for example, National Prescribing Service (NPS) information regarding acute pain prescribing.
- Provide an integrated program guide for postgraduate pain education, which is regularly updated and co-ordinated with principles of undergraduate teaching.
- Provide a list of suitable acute pain services and suitable community health services, which could be accessed for undergraduate training in acute pain.

3. Why is it timely for FPM to aid the universities and others in the task of undergraduate education about pain?

- Medical courses are currently responding to government and public pressure to change the education of medical students to match the changing needs of health of the population.
- In 2005, John Horvath, the previous chief medical officer, delivered an address “Medical education: towards 2010: Shared vision and common goal”, which was delivered on behalf of the Committee of Deans of Australian Medical Schools at the National Medical Education conference. This important address spoke of the shared role of government and other stakeholders in making medical education relevant to the changing health needs of the Australian population. Government has a major role in directing funding and educational opportunities and one of the targeted areas is chronic illness, which clearly includes pain management. The address set out a new approach to medical education, which develops doctors as generalists who can work in multiple settings and with the ability to locate and update knowledge, be well skilled in basic science, and be able to work in multidisciplinary teams and respond to the needs of the population. Many of the opportunities for learning would be found outside the traditional teaching hospital environment.
- In 2006, the Deans of Australian Medical Schools produced a document, which outlined the issues involved in providing medical undergraduate training and postgraduate education and how to better link these two learning periods by developing educational opportunities in postgraduate years one and two, which may also integrate some specialty training opportunities. This document sets out the changing emphasis of medical education and the difficulties in funding a co-ordinated curriculum through the teaching hospitals and the need to look for opportunities and linkages with medical colleges in this environment.

4. Are medical courses in Australia accredited and can this be used to determine how and what is taught about pain?

- The Australian Medical Council (AMC) in 2002 produced its latest standards document entitled Assessment and Accreditation of Australian Medical Schools:

Standards and Procedures. This is an extensive document, but there is very little specific material about what topics should be covered, although “amelioration of suffering, disability and rehabilitation” is mentioned. The general principles of this document, and that above, are an excellent overall guide to providing clinically relevant education, which integrates basic science with clinical problems and guides the development of skills, such as working in multidisciplinary teams and using health resources in an equitable and responsible manner.

5. What are other pain faculties/organisations doing about undergraduate medical curriculum?

- There seems to be an increasing move towards consideration of pain medicine into the undergraduate curriculum. There are isolated universities where pain has become prominent such as McMaster University in Toronto.
- The European Federation of IASP Chapters has recently published a draft undergraduate medical curriculum for consideration by members, based on IASP curriculum (attached Appendix B).
- The American Academy of Pain Medicine has published a statement about the undergraduate medical curriculum on its website (attached Appendix C), which states three recommendations for incorporating pain medicine into all US medical school curricula.

6. What can the FPM contribute to the development of undergraduate education?

Currently the FPM can start to build a resource to assist medical education based on pre-existing documents and can plan to develop other material as necessary. The following are a list of resources, draft list of learning objectives, suggested framework to achieve learning objectives, suggested checklist for medical schools to consider regarding their pain curriculum:

- IASP curriculum for medical schools (Appendix A), which is a top down approach after collecting input from a large number of pain medicine specialists. This curriculum was first published by the IASP in 1988 by an Australian and it has been disappointing that most medical schools have not taken this curriculum up. It provides a very comprehensive list and starting point for curriculum design. Some organisations have used this list as a starting point to design their own guide. The University of Toronto used this curriculum to start to find a core set of objectives when designing an undergraduate interdisciplinary curriculum (Watt-Watson, 2004, *Pain*).
- Provide a list of perceived essential learning objectives based on requirements at graduation and known knowledge deficits. (See excerpt masters thesis, Jane Trinca, 1998, attached Appendix 4, Penny Briscoe, Ten Point Plan, Appendix 5.)

LEARNING OBJECTIVES PAIN for undergraduates (medicine)

- Being able to adequately diagnose and describe pain (symptoms and signs) presentations (using pain terminology) including modifying (mood, cognitions, coping) and, if chronic, maintaining features (pathology, behaviours, social) if relevant and proposing possible mechanism of pain (inflammatory, neuropathic, myofascial, referred, visceral, somatic etc).
 - Being able to adequately record and measure pain and its effect on function and also any treatment responses.
 - Being able to recognise differences between acute and chronic pain and differences in approach. Being able to recognise the differences between palliation of pain and management of pain to improve function.
 - To have an understanding of potential drug groups that help block different receptors/pathways, which effect different types of pain specifically, the use of interventional approaches to block pain that are commonly used in acute pain and the potential of non-analgesic approaches to treat some common types of pain, and the potential of cognitive behavioural approaches to help manage responses to ongoing pain.
 - Being able to develop a plan for management of a simple pain condition, for example, postoperative pain, and being aware of any potential contraindications or side effects of treatment and how to monitor for this.
 - Being able to recognise more complex pain, or unrelieved pain that needs timely referral to more experienced practitioner.
 - To have an understanding of the role of chronic pain clinics and pain medicine specialists, and the role of interdisciplinary care for complex pain conditions and the role of invasive intervention in selected cases.
 - To have an understanding of the role of acute pain services and the importance of timely referral if pain is uncontrolled.
 - To have an understanding of the role of palliative care services in treatment of pain at end of life.
 - To understand the potential for harm in management of pain including consequences of uncontrolled pain, drug errors, drug side effects, intervention side effects, including the inappropriate use of opiates, the relevance of various co-morbidities and age to modification of pain treatments.
- Provide a list of suitable pain units and acute pain services to access.
 - Provide knowledge resources and links, for example, ANZCA Acute Pain: Scientific Evidence, POPE, access to other web-based resources, simple learning tools, for example, Five rules for opioid use in acute pain, Five rules for opioid use in chronic non-cancer pain (P Briscoe, Appendix 6,7).
 - Provide a suggested **framework** to achieve the learning objectives:
(1) Early introduction of pain concepts

As pain is a common presenting medical complaint and a symptom most students themselves will have experienced, the topic lends itself to introduction early in the course so some of the fascinating aspects of the pain experience can be appreciated prior to any patient care. Knowledge gained can be frequently reinforced by ongoing clinical exposure, as pain will frequently be part of many conditions studied. If the correct grounding occurs early, then students will have a solid understanding to help counteract confusion that may occur when pain is discussed from multiple perspectives and by multiple teachers with varying levels of knowledge and understanding of pain.

(2) Basic general overview of the concepts of the neurophysiology of pain system must be linked to clinical phenomena. As neurobiology of pain is complex and can be an overwhelming subject, it is important the explanations are very basic at first and linked to clinical examples, MRI findings, animal and human experiments etc. The main emphasis needs to be directed to the principle that the pain system is not a simple hard-wired network, but always changing and can be modulated. It has multiple and parallel interactive inhibitory and excitatory systems affecting the experience, and there are interactions with the immune system and other hormonal and body systems. Changes in nerve cells peripherally and centrally as a consequence of ongoing nociceptive stimulus, which can outlast the stimulus, are important concepts. This topic can be taught by a basic scientist but requires input from a clinician to demonstrate the relevance to medical investigations, management and epidemiology.

Suggested topics:

Attention and pain, placebo.
Recurrent pain after neurosurgical ablative procedures.
Phantom pain (neuromatrix).
Referred pain (lissau tract and WDRs).
Types of pain: nociceptive, neuropathic.
Complex regional pain.
Post stroke pain (inhibitory role of thalamus).
Central sensitisation (role of NMDA receptor leading to changes in pain transmission).
Peripheral sensitisation (role of inflammatory mediators).

Assessment: quiz

(3) Analgesic medications

Overview of pharmacology of analgesic drugs and potential newer drug targets for analgesics:

- i. Paracetamol.
- ii. NSAIDs.
- iii. Opioids and Tramadol.
- iv. Tricyclic anti-depressants and clonidine.
- v. NMDA receptor antagonists: Ketamine.

- vi. Local anaesthetics.
- vii. Anticonvulsants.
- Overview of practical uses of these drugs including side effects, co-prescribing, addiction/dependence/tolerance, interactions, effects of age and patient co-morbidities, methods of delivery.

Assessment task: to write a prescription for simple post-operative pain in a fit patient.

(4) Patient scenario (scripted) for classical neuropathic, inflammatory and simple musculoskeletal pain: demonstrating pain-orientated history taking and examination of pain signs would allow demonstration of an understanding of mechanisms of pain. This could be done **with simulation**, which could be assessable if necessary.

Assessment: A written pain history, measurement and plan could be produced.

EXAMPLE of some core patient scenarios:

- Patient scenario for severe post-operative pain which impacts on vital function, for example, post upper abdominal surgery with severe pain effecting respiratory system, for example, whipples procedure: use of epidural, use of opioids and multimodal analgesia, side effects. This type of case scenario can demonstrate all the principles of acute post-operative pain. The learning could then be reinforced by attending **acute pain rounds** and examined by a case report.
- Patient scenario for uncontrolled cancer pain both palliative and non-palliative. Learning about approach to multimodal analgesia according to mechanism and how to administer opioids around the clock and for breakthrough/incident pain (**palliative care rotation**).
- Patient scenario: Chronic non-cancer pain associated with chronic inflammatory disease, for example, rheumatoid arthritis (**rheumatology rotation**).
- Patient scenario with ongoing back pain, normal investigations and significant disability. How to start approaching this patient with correct educational advice and approach (**GP rotation, emergency department**).
- Patient with high level of distress, catastrophic thinking, high disability and high dose opioid. Learning is to recognise this patient as one needing more complex care (**chronic pain clinic rotation**).
- Patient with evidence of CRPS post arm fracture: Learning of existence of condition and principles of treatment and need for early referral (**orthopaedic rotation**).
- Patient with acute herpes zoster/post herpetic neuralgia: understand approach to neuropathic pain (**neurology rotation**).
- Management of patient with substance abuse issues presenting with pain (**pain clinic, or drug and alcohol clinic**).
- Patient with chronic pain who learns to overcome their disability despite still having pain (**rehab or CBT pain clinic**).

Appendix A

Outline Curriculum on Pain for Medical Schools

IASP Ad hoc Sub-Committee on Medical School Courses and Curriculum

| | |
|------------------------------|----------------------------|
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Although most formal decisions as to the management of pain are made by doctors, it has been obvious for a long time that medical undergraduate teaching on the subject of pain leaves much to be desired. Many medical schools teach very little about pain at either the preclinical or clinical levels and information is poorly integrated.

Changing medical undergraduate curricula is never an easy task. It is one which needs to be catalysed and facilitated in a variety of ways. As part of its aim to increase educational standards in the field of pain IASP® set up an Ad Hoc Sub-committee on Medical School Courses and Curriculum in November 1985. The members of the committee represent the entire range of disciplines with an interest in pain and include the people listed above.

The committee set itself the task of producing an outline model pain course which would indicate in the form of a list of topics, the issues which should be covered in a medical undergraduate curriculum. Each member of the committee was asked to provide a list of subjects. These were combined into a single list which was circulated to all members and after revision an agreed version was submitted to Council at its August 1987 meeting where it was accepted.

The chief purpose of this editorial is to make the Pain Curriculum Outline available to a wide audience in the hope that it might stimulate comments, criticisms and suggestions. The committee hopes that those involved in Medical School Curriculum planning might use the Outline to draw the attention of their colleagues to the areas which ought to be covered if medical graduates are to be adequately prepared for the management of pain. We realize, of course, that there are as many ways of covering the topics in the Outline as there are medical schools. We hope, however, that the Model Curriculum we have proposed will provide useful guidelines and we have purposely avoided offering suggestions on how these might be put into practice in terms of hours or location in the curriculum.

Outline Summary

Introduction and overview

Definition of pain
Ethical issues
Basic sciences
Clinical sciences
The clinical presentation of pain

Management

1. General principles
2. Clinical pharmacology
3. Neurostimulation techniques
4. Nerve blocks
5. Surgical techniques
6. Psychotherapeutic and behavioral approaches
7. Physical therapy

Pain in special contexts
The evaluation of methods for treating pain

Proposed Curriculum on Pain for Medical Undergraduates

1. Introduction and overview

Pain as a public health problem
Epidemiology: societal consequences
Economic impact
Medico-legal and compensation issues

2. Definition of pain

Relationship between acute and chronic pain
Philosophical issues
Historical aspects of the study of pain
Biological significance of pain (survival value) (should also be interwoven into all appropriate topics)

3. Ethical issues

Pain research in humans and animals
Pain disability and litigation
Pain in children
Pain and opiate dependence

4. Basic sciences

Neuroanatomy
Neurophysiology
Biochemistry
Pharmacology
Psychology, sociology, anthropology

Topics

Peripheral receptors, afferent fibers, spinal terminations and spinal processing of nociceptive information, ascending tracts, transmitters (peptides and amino acids), supraspinal sites of termination of ascending tracts, descending control of nociceptive information and pain modulation.

Affective, cognitive, behavioral, and developmental aspects. Pain attribution. Self-esteem, self-efficacy, and perceived self-control.

Interpersonal issues, sick role, illness behavior (normal and abnormal), the influence of political, governmental, and social welfare programs, the role of the family.

Cultural differences in pain meanings and treatment approaches.

5. Clinical sciences

Pathology (somatic and psychosocial)

Trauma and injury (compressed or severed nerve)

Deafferentation pain

Musculoskeletal pain

Visceral and referred pain

Migraine, muscle contraction headache

Temporomandibular pain

Psychiatric disorders

Herpes zoster

Pain in neurological disease

Pain and cancer

6. The clinical presentation of pain

Descriptions of major syndromes (acute and chronic)

Illness behaviors associated with pain (denial and amplification)

Pain as a coded message of psychosocial distress

7. Management

a. General principles

The measurement, quantification and recording of pain

The multiperspective approach (multidisciplinary pain clinics)

The clinician-patient relationship

b. Clinical pharmacology

Nonsteroidal anti-inflammatory drugs

Systemic and spinal opioids, endorphins

Local anesthetics

Other drugs (anticonvulsants, antidepressants, agents influencing 5-HT and endorphins)

c. Neurostimulation techniques

Transcutaneous nerve stimulation

Epidural stimulation

Brain and spinal cord stimulation

Acupuncture

d. Nerve blocks

Local anesthetics
Neurolytic solutions
e. Surgical techniques
Nerve decompression
Neurosurgical techniques
Orthopedic techniques
f. Psychotherapeutic and behavioral approaches
Individual, family, and group psychotherapy
Cognitive-behavioral therapy
Relaxation techniques (biofeedback, etc.)
Hypnotherapy, operant approach, stress management
g. Physical therapy
Exercise, massage, heat, hydrotherapy, etc.

8. Pain in special contexts

Postoperative (including prophylaxis)
Children and infants (signs of pain, evaluation and management, physiology, acute and chronic pain)
Cancer-related pain (death and dying, palliative care)
Aged
Intellectually retarded
Pregnancy and childbirth
Occupational issues (e.g., overuse syndromes, posttraumatic stress disorders)

9. The evaluation of methods for treating pain

The measurement of pain, disability, associated distress and suffering
Choice of outcome measures
The evaluation of analgesic therapy
Assessment of pain relief

Originally published as: Pilowsky, I., Editorial - An outline for medical schools. Pain 33 (1988) 1-2.

Appendix B

Draft proposal for a Core Curriculum for Undergraduate Medical Education

Proposed framework for an undergraduate pre-clinical curriculum to provide medical students in Europe with fundamentals on pain

notes:

- This framework was developed in light of the IASP "Outline curriculum on pain for medical schools" (Pilowsky committee report 1987), the IASP "Core curriculum for professional education in pain" (Fields, HL ed., IASP Press, 1995, and draft update 2002), feedback from

- EFIC Council, and discussions among EFIC and IASP principals.
- It is intended to provide the beginning student with background for later instruction in mechanism-based diagnosis and therapy.
 - The curriculum is built horizontally, cutting across specific pain diagnoses.
 - Users may wish to modify the order in which the main topic categories (Roman numerals) are presented. However, the suggested order has internal logic (e.g. pain definitions considered only after the student has had contact with central issues).
 - Users may wish to distribute the main topic categories as modules in more general courses (e.g. neuroscience, psychology). However, it is intended that each student be exposed to all of the main topic categories.
 - Like any course of studies, it is possible to adjust the number of teaching hours by expanding or contracting the level of detail entered into for each topic. A value in: 1) percent (%) of course time, and 2) course time in hours assuming 20h net total, is provided as a guide. This breakdown is not intended to reflect the relative importance of the various main topics, but rather the relative time typically required to master the key concepts involved.
 - The curriculum should be accompanied by appropriate reading materials. In addition, source references should be provided to permit the student to investigate individual topics in greater depth. In the future EFIC might consider production of such a course in the form of a set of annotated Powerpoint (.ppt) lectures.
 - Under ideal conditions the course should be accompanied by independent work assignments, a laboratory practicum, and some exposure to pain patients and physicians.
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I. Neurobiology of pain (40%, 8h)

a) Normal biology

1. anatomy, physiology, pharmacology of primary afferent neurons
2. anatomy, physiology, pharmacology of spinal cord and trigeminal brainstem neurons including modality convergence (WDR/ multireceptive neurons) and flexor reflex
3. ascending pathways (including to cerebellum, brainstem, limbic forebrain)
4. descending control pathways and state-induced analgesia (incl. placebo)
5. response properties of supraspinal areas including noninvasive imaging in humans
6. acute and late effects of lesions to identified pathways/ areas
7. opioids, NSAIDS, local anesthetics: pharmacology including receptors and endogenous ligands

b) Pathobiology

1. inflammation and peripheral sensitization including effects on phenotype of primary afferent neurons
2. axotomy effects on phenotype of primary afferent neurons (including ectopic hyperexcitability)
3. consequences of demyelination for axonal conduction and ectopic hyperexcitability.

4. central sensitization
5. other effects of peripheral inflammation and of axotomy on spinal/ trigeminal brainstem processing (including sprouting, map reorganization, altered gene expression)
6. effects of peripheral tissue and nerve pathology on supraspinal processing (including map reorganization)
7. experimental models (human and animal) for the study of pain pathobiology
8. the concept of chronic pain as a disease rather than a symptom

II. Impact of pain as a public health problem (20%, 4h)

a) Quality of life (QOL)

1. consequences of *acute* pain (trauma, postoperative, obstetric) including stress, immunosuppression, effects on rate of recovery
2. consequences of *chronic* pain on the individual (QOL, sleep, disability, psychology, stigmatization), including inter-individual variability (incl. sex, ethnicity)
3. consequences of chronic pain on the patient's relation with carers (including family/friends, healthcare professionals) and the larger society
4. under-prescription and under-administration of analgesics
5. risks of substance abuse associated with pain management
6. transition from acute to chronic pain (biology, psychology, social interactions)
7. pain and illness behavior used by patients as a signal of psychosocial distress
8. risk factors (including genetics, environment, is there a pain-prone personality ?)
9. end-of-life problems, palliative care, the issue of assisted suicide
10. ethical considerations: failure to relieve pain (including medical procedures, children, obstetrics)... what is acceptable ?
11. ethical considerations: experimentation on humans, animals

b) Financial burden

1. prevalence/ epidemiology (including variation with age)
2. types and limits of third-party coverage, compensation
3. effects of pain and disability on employment
4. costs to employers and to society (including comparison with other major diseases)
5. physician liability and other medico-legal issues
6. high tech vs. low tech management approaches (cost-effect analysis)

III. Assessment (20%, 4h)

a) Measurement

1. definitions of pain
2. basic pain measurement (VAS, numerical scales, quantitative sensory testing (QST),

- thermography and other autonomic variables) with discussion of specificity and scaling
- 3. problems of assessment in special groups (children, elderly, nonverbal)
- 4. effects of compensation status (financial and psychosocial) on pain/ illness behavior
- 5. critical evaluation of clinical trials, meta-analysis
- 6. pain as a 5th vital sign (with pulse, bp, temp, respiration)

b) Diagnosis

- 1. signs, symptoms, syndromes, and progression (natural history)
- 2. major systems and diagnostic categories (e.g. IASP taxonomy, International Headache Society diagnostic guidelines, psychiatric diagnostic guide DSM-IV)
- 3. clinical diagnostic entities vs. mechanism-based diagnosis

IV. Introduction to Pain Medicine (20%, 4h)

a) Pain management delivery systems (with historical context)

- 1. general practice, relevant specialties, sub-specialization in pain medicine, narrow spectrum and multidisciplinary pain clinics, rational expectations and the concept of "pain management"
- 2. types of management: drug treatments, nerve and spinal blocks, stimulators, surgical, physical, psychological and psychiatric, non-medical

b) Some examples of acute and chronic pain conditions, and their management

- 1. acute medical conditions
- 2. trauma and postoperative pain
- 3. arthritis
- 4. headache
- 5. low back pain
- 6. neuropathic pain
- 7. cancer pain
- 8. visceral pain (e.g. chronic pelvic pain)

This is only a DRAFT

Your comments and suggestions are encouraged. Please contact Profs. D. Niv or M. Devor, or EFIC's secretariat (see [About EFIC](#))

Appendix C

*A position statement from the **American Academy of Pain Medicine**
Undergraduate Education Committee*

Pain is the most common reason patients seek medical care. While pain may be a symptom of an underlying disease or injury, it can also become a persistent symptom of an autonomous neurophysiological process, in which situation it may constitute a unique neurobiological disorder. It has been demonstrated that all forms of pain, including acute, chronic, and that associated with terminal illness, are often poorly managed with consequent needless suffering.

The American Academy of Pain Medicine, in its position statement on Chronic Pain and Quality Care at the End of Life, and the American Pain Society, in a similar statement, affirmed that effective pain and symptom management is an ethical obligation of all healthcare providers and organizations. One of the main impediments to skillful end of life care is the lack of quality undergraduate education on pain management, end of life care, and palliative care. The Liaison Committee on Medical Education (LCME), the national accrediting authority for medical education programs leading to the M.D. degree in U.S. and Canadian medical schools, recently mandated education and clinical experience in end-of-life care in its standards for accreditation. This was an important step; however, of equal importance is education in the broader scope of pain medicine for medical professionals. While pain control is a significant component of end-of-life care, such care represents only a small fraction of the scope of knowledge and skills of pain medicine in which all medical students must be educated in order for the public to obtain skillful care for such problems as acute and chronic pain. Curriculum changes are necessary to ensure that future health care professionals are competent to provide expert pain diagnosis and treatment. The American Academy of Pain Medicine encourages its members to contribute to the education of future healthcare professionals in pain medicine, end-of-life care, and palliative care.

Undergraduate Medical Education on Pain Management, End-of-Life Care, and Palliative Care Recommendations:

AAPM recommends the following:

1. Pain medicine, end-of-life care, and palliative care should be required elements of the core medical school curriculum.
2. Integrated multidisciplinary courses are preferable to isolated lectures or clinical hours to optimize understanding and effectiveness in the provision of basic pain medicine, end-of life care, and palliative care.
3. These courses should be planned and implemented by a designated faculty group with demonstrated training and experience in pain medicine, end-of-life care, and palliative care.

Approved by the AAPM Board of Directors on July 29, 2000.

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Appendix (4)

Results of a pain knowledge test of new interns prior to commencing practice in 1998. J Trinca

The knowledge test and questionnaire was used as part of a Masters thesis and was really designed to

quantify how much medical students were exposed to the newer and basic concepts of pain mechanisms and management. The questions were formed on the basis of perceived common errors of diagnosis and treatment that are seen frequently through acute and chronic pain service and for which improved knowledge would make a difference to patient outcome. The questionnaire was sent to 5 medical pain academics most of who had university appointments and who all agreed that graduating medical students should be able to answer the 23 item questionnaire. The topics included in the test were:

- Recognition that pain report may not correlate with abnormalities found on medical imaging and pathology tests and lack of correlation does not imply psychogenic pain.
- Recognition of the diagnosis of CRPS and the importance of early recognition and treatment
- An understanding that Cognitive Behavioural Treatment has a role in decreasing the impact of pain on the patient's quality of life and function ie to understand that psychological and behavioural factors have a role in the modification of and maintenance of pain
- A recognition of the terms "central sensitization", "allodynia"
- A recognition that the NMDA receptor has a major role in central sensitization
- A recognition that ketamine decreases pain by its effect of blocking the NMDA receptor
- A recognition about evidence base for treating chronic back pain and lack of evidence (in general) for rest, ongoing opioids and NSAIDS
- Differences between somatic referred leg pain and radicular leg pain and the common presentation of former compared to latter
- An understanding of biological basis for referred pain and its relevance to patient presentations eg testicular pain secondary to referral from somatic lumbar injury
- An understanding that phantom pain has a basis beyond the peripherally effected part.
- An understanding of need for different medications to treat neuropathic pain from those used to treat nociceptive pain
- Contra-indication for regular intermittent parenteral opioids for all types of chronic pain
- Reasons why Pethidine use is generally not preferred
- An understanding of existence of opioid tolerance and opioid hyperalgesia and to recognize the problems of continuing to increase opioid dose
- An understanding of the individual variation of opioid requirements (at least tenfold) for acute pain being related to genetic factors, opioid tolerance, co-morbidities and age and generally unrelated to weight in adults.
- An understanding that, in the setting of severe acute pain, there is little chance of opioid addiction and that opioids should be given in amounts large enough to control pain if opioids are appropriate type of medication for type of pain.
- An understanding that low dose tri-cyclic antidepressants have a role in the treatment of neuropathic pain that is unrelated to treatment of depression.
- Role of NSAIDS in reducing opioid requirements in acute and cancer pain
- An appreciation of the enormous cost of chronic pain to the healthcare budget and an appreciation of the problem of "over-medicalization" of chronic pain

The results to the simple true false statements revealed deficits as shown in table 2 below. The adjusted residuals column refers to comparison to the entire group of health professionals studied which included nurses, physio students, chiropractic students, and more advanced doctors and pain

fellows. The far column with asterix shows topics that interns scored significantly less than group mean. This includes new terms of allodynia, central sensitization, the NMDA receptor and pain, CRPS, pain that increases despite increasing opioid dose, pethidine's toxic metabolites. In addition there were many other areas where the scores were low (see table 3 where scores were less than 50% correct). It is important to note that the questions in this test were tested themselves by experts and referenced to published material and underwent extensive reliability testing and were found to be reliable and valid.

Table 2. Mean Percent Concordant answers of interns (and adjusted residuals)

| Synopsis of question tested. NB Questions may have been shortened to fit table | overall % concordant | adj. resid. above | adj. resid. below |
|--|----------------------|-------------------|-------------------|
| 1.Levels of disability in chronic pain related to psychological variables | 61.6 | 0.3 | |
| 2.Complex Regional Pain Syndrome new name for Reflex Sympathetic Dystrophy (RSD) | 35.3 | | -1.8* |
| 3. RSD is caused by prolonged sympathetic stimulation secondary to anxiety | 47.1 | 3.1* | |
| 4.RSD is best managed with early intervention/ sympathetic blockade /avoid weight bearing exercise | 35.5 | 0.9 | |
| 5.Cognitive Behavioural treatment has little place in chronic pain | 78.2 | | -0.4 |
| 6.Central sensitisation is a term.....alterations in the dorsal horn of the spinal cord..... | 55.1 | | -0.8 |
| 7.Central sensitisation explains the mechanism of allodynia | 29.4 | | -1.9* |
| 8.Central sensitisation may be blocked by pre-emptive use of NMDA receptor antagonists | 29.7 | | -2.3* |
| 9.The most effective treatment for chr. back pain is panadeine forte, avoid activities, nsoids. | 71.7 | | -0.7 |
| 10.There is no place for regular daily/weekly parenteral pethidine | 36.5 | 1.5 | |
| 11.Chronic severe pain can sometimes increase with escalating doses of opiates | 40.7 | | -2.8 * |

| | | | |
|--|------|-------|--------|
| 12 Pethidine can cause twitches and fitting due to high level of a pethidine metabolite. | 42.5 | | -2.6 * |
| 13.Opiates should be given freely in appropriate doses to treat acute pain | 57.3 | 4.1 * | |
| 14.There is an 8-10 fold individual response difference to opiates in people of same age/wgt | 56.1 | 0.9 | |
| 15 The term sciatica is a now regarded as a misnomer for pain radiating down leg | 61.8 | 1.4 | |
| 16. Pain that radiates down a leg is commonly due to a disc prolapse | 51.4 | 1.1 | |
| 17.Phantom limb pain will be completely eliminated if a complete spinal anaesthetic to T10 | 49.2 | | -0.8 |
| 18. Patients describing pain due to sheets touching skin are describing symptom of anxiety | 69.7 | 0.4 | |
| 19. Tricyclic anti-depressants help pain because they specifically treat depression | 31.8 | 2.5* | |
| 20.Chronic severe testicular pain should always be cured by orchidectomy | 58.7 | 2.5* | |
| 21. Noxious stimulation in 1 site can result in sensation up to 3 spinal segments below/ above | 62.8 | 0.9 | |
| 22.Non-steroidal anti-inflammatory agents help pain because they alter opiate receptor | 49.0 | 2.1* | |
| 30. The financial cost of pain is one of three highest of health budget | 76.8 | | -1.4 |

* Indicates significant difference from mean.

To differentiate whether a non-concordant response is due to "not knowing" or a different perception of what the true knowledge is, the percent "don't know" and the percent non-concordant answers are shown in Table 3. In five questions, at least fifty percent of the interns answered the question non-

concordantly, because they did not know the answer, rather than scoring the incorrect answer (questions 2,7,8,11,12). These questions related to topics of CRPS, allodynia, central sensitization, ketamine, opioid hyperalgesia, pethidine toxicity, somatic referred leg pain, phantom limb pain and role of tricyclic antidepressants in pain management

Table 3. Responses (Interns) to questions with fifty or less percent concordant responses * = adjusted residual

| Question no. | concordant * | | Incorrect * | | "Don't know" * | |
|------------------------|--------------|------|-------------|-----|----------------|------|
| (refer to table above) | | | | | | |
| 2 | 7 (21.2%) | -1.8 | 9 (27.3%) | 2.6 | 17 (51.5%) | 0.0 |
| 4 | 14(42.4%) | 0.9 | 5 (15.2%) | - | 14 (42.4%) | -0.6 |
| | | | 0.4 | | | |
| 6 | 16 (48.5%) | -0.8 | 1 (3.0%) | 1.1 | 16 (48.5%) | 0.9 |
| 7 | 5 (16.1%) | -1.9 | 2 (6.1%) | 0.0 | 26 (78.8%) | 1.8 |
| 8 | 4 (12.1%) | - | 1 (3.0%) | - | 28 (84.4%) | |
| | 2.3 | | 0.1 | | 2.3 | |
| 11 | 6 (18.2%) | -2.8 | 8 (24.2%) | 1.1 | 19 (57.6%) | 1.9 |

| | | | | | | |
|----|------------|------|------------|------|------------|------|
| 12 | 7 (21.2%) | -2.6 | 6 (18.2%) | 1.1 | 20 (60.6%) | 1.8 |
| 16 | 11 (33.3%) | -0.4 | 20 (60%) | 1.1 | 2 (6.1%) | -1.1 |
| 17 | 14 (42.4%) | - | 11 (33.3%) | 2.4 | 8 (24.2%) | -1.1 |
| | 0.8 | | | | | |
| 19 | 17 (51.5%) | | 16 (48.5%) | -0.3 | 0 | -2.8 |
| | 2.5 | | | | | |

As part of this study the participants were also asked about their education about pain and their perceived adequacy of their knowledge for clinical needs. Below in an excerpt:

Table 4 summarises the perceived adequacy by the groups of their pain education for their clinical needs. Forty-eight percent of interns reported some formal pain education. Chiropractic students reported the highest level of formal pain education followed by special interest group practitioners, final year nursing students, and anaesthetic registrars (all of whom reported more, or the same level of pain education as the interns). Fourth year medical students and postgraduate nurses reported the lowest levels of pain education (fifty-three and fifty-eight percent respectively reporting no formal education). Significantly, eighty-two percent of RMO's report they have had received minimal or no formal education in pain management.

Table 4 Perceived Pain Education of each group

| Group | Count | Some (%) | Minimal (%) | None (%) |
|---------------------------------|-------|----------|-------------|----------|
| Pain special interest group (1) | 43 | 60.5 | 30.2 | 9.3 |
| Interns (3) | 31 | 48.4 | 48.4 | 3.2 |

| | | | | |
|--|-----|------|------|------|
| RMO (4) | 22 | 27.3 | 45.5 | 27.5 |
| Anaesthetic Reg (12) | 13 | 46.2 | 38.5 | 15.4 |
| Postgraduate Nurse(6) | 55 | 16.4 | 25.5 | 58.2 |
| Final Yr Nurse(9) | 37 | 48.6 | 32 | 18.9 |
| Final Yr Medical student(10) | 16 | 62.5 | 31.2 | 6.3 |
| Final Year Physio.Students(11) | 32 | 37.5 | 46.9 | 15.6 |
| Final Year Chiro students(2) | 43 | 74.4 | 23.3 | 2.3 |
| 4 th Year Medical students(8) | 30 | 6.7 | 40 | 53.3 |
| 3 rd Year Physio. Students(5) | 31 | 29 | 67.7 | 3.3 |
| Total | 353 | 41.1 | 37.4 | 21.5 |

10 missing

Table 5 summarises the perceived adequacy of 'pain knowledge for clinical needs'. Only fifteen percent of interns believed their knowledge was adequate for their clinical needs. In most groups, including special interest pain practitioners, a majority of respondents believed their knowledge of pain management inadequate. The majority of chiropractic students were satisfied that their knowledge of pain management was satisfactory for their clinical needs. This was the only group in which the majority of students were satisfied with their knowledge.

Table 5 Perceived adequacy of Knowledge of each group

| Group | Yes (%) | No (%) | Don't know (%) |
|---------------------------------|---------|--------|----------------|
| Pain special interest group (1) | 27.9 | 64.4 | 4.7 |
| Interns (3) | 15.2 | 75.8 | 9.1 |
| RMO (4) | 33.3 | 61.9 | 4.8 |

| | | | |
|---|------|------|------|
| Anaesthetic Reg (12) | 23 | 61.5 | 3.7 |
| Postgraduate Nurses(6) | 23.6 | 72.7 | 3.6 |
| Final Yr Nurses(9) | 30.6 | 30.6 | 38.9 |
| Final Yr Medical student(10) | 20 | 73 | 4.3 |
| Final Year Physio. students(11) | 31.3 | 43.8 | 9.1 |
| Final Year Chiro. students(2) | 58.6 | 32.6 | 9.3 |
| 4 th Year Medical students (8) | 0 | 90 | 10 |
| 3 rd Year Physio. Students (5) | 29 | 67.7 | 3.2 |
| Total 352 | 25.9 | 61.1 | 13.1 |

17 missing

Finally the participants were asked whether they thought graduating doctors should be able to successfully answer these questions, The results were:-

Table thirteen summarises the opinion by the groups as to whether graduating medical students should be able to correctly answer the knowledge questions. Most of the non-medical final year students, fourth year medical students and post-graduate nurses believed that graduating doctors should be able to correctly answer this questionnaire. Indeed, Pain Special Interest group practitioners agreed with this proposition. However, final year medical students and interns were less sure that they should be able to answer the questions (forty-three percent and fifty-seven percent respectively). Those with more experience, excluding pain specialists, were less likely to believe that new medical graduates should correctly answer the questions. Overall eighty-two percent believed that newly qualified doctors should have sufficient knowledge to correctly answer the questionnaire.

Table 13. Respondents believing that Medical Graduates should be able to answer the Questionnaire (percent)

| Group (code number) | Count | Yes (%) | No (%) |
|---------------------|-------|---------|--------|
|---------------------|-------|---------|--------|

| | | | |
|---|-----|------|------|
| Pain special interest group (1) | 43 | 93.0 | 7.0 |
| Interns (3) | 33 | 57.6 | 42.4 |
| RMO (4) | 22 | 54.5 | 45.5 |
| Anaesthetic Reg (12) | 13 | 61.5 | 38.5 |
| Postgraduate Nurse(6) | 54 | 87.0 | 13.0 |
| Final Yr Nurse(9) | 34 | 100 | 0 |
| Final Yr Medical student(10) | 16 | 43.8 | 56.3 |
| Final Yr Physio Students(11) | 31 | 93.5 | 9.0 |
| Final Year Chiro students(2) | 42 | 88.1 | 11.9 |
| 4 th Year Medical students (8) | 25 | 88.0 | 12.0 |
| 3 rd Year Physio. Students (5) | 31 | 96.8 | 3.2 |
| Total | 285 | 82.8 | 17.2 |
| Missing 25 | | | |

Appendix (5) Dr Penny Briscoe

10 POINTS THAT MEDICAL STUDENTS SHOULD KNOW.

1. Pain pathways and “plasticity” of CNS in pain
 - 1.1. Transition of acute to chronic pain, risk factors, possible prevention.
2. Pain is always a BIOPSYCHOSOCIAL experience
 - 2.1. Treat pain using multi-modal therapies (physical and psychological)
3. Differences between acute, chronic and cancer pain
 - 3.1. Why does this even matter?
4. Chronic pain as a disease in its own right – chemical imbalance in the pain chemicals
5. Assessment of pain.
 - 5.1. Pain history
 - 5.2. Response to treatment

- 5.3. Ability to diagnose nociceptive and neuropathic pain
 - 5.3.1. History / Descriptors / response to treatment.
- 5.4. Difficulties in assessment at extremes of age and in cognitively impaired patients
6. Appropriate drugs / treatments for the different types of pain
 - 6.1. Acute pain use short duration, quick acting drugs, or temporary blocks
 - 6.2. Chronic pain - long acting oral drugs or long term intervention.
 - 6.3. Cancer pain may use both
7. Knowledge of pharmacology and *appropriate use* of medication recognizing there are differences with acute and chronic pain:
 - 7.1. Simple analgesics (NSAIDS, coxibs).
 - 7.2. Opioids.
 - 7.3. Local anaesthetics.
 - 7.4. Adjuvant medication including TCA's / AED's etc, ketamine and clonidine.
8. Interventions
 - 8.1. Acute pain – nerve blocks, epidural and other temporary local anaesthetic catheters, inhalational analgesia
 - 8.2. Chronic pain – diagnostic and therapeutic blocks and prolonged implanted catheters, stimulators.
 - 8.3. Cancer pain – both
9. Management of the more “difficult” patients including the opioid-tolerant patient, the patient with substance abuse issues (including opioids) and pain, patients with other comorbidities which may impact on appropriate pain therapies (e.g. renal/ hepatic impairment, sleep apnoea)
10. Awareness of possible drug interactions
 - 10.1. Serotonin syndrome

Appendix 6.

5 RULES FOR OPIOID USE IN ACUTE PAIN.

1. Not all opioids are the same. Be aware of differences in opioid pharmacology. Recognise variations in opioid pharmacology using different routes.
2. Initial opioid dose should be based on patient **age** and not weight in opioid naïve patients
3. Need to monitor **sedation** rather than respiratory rate as an indicator of respiratory depression
4. Forget equianalgesic dose tables – with repeated dosing conversion oral morphine :methadone can vary **2:1 to 20:1**

5. When to use controlled release opioids (not for acute pain, at least in the initial stages)

Appendix 7

5 RULES FOR OPIOID USE IN CHRONIC non cancer PAIN.

1. Select the appropriate patient.
2. Slow release preparations only.
3. No breakthrough. Patients requiring breakthrough need re-education in managing their pain.
4. Educate the patient about their responsibilities and your expectations.
5. Full discussion of long term effects (neuroendocrine / hyperalgesia).

Appendix 8

Suggested Absolute minimum requirements for medical graduate (final year)

1. Explain difference between acute and chronic pain and its management
2. Explain difference between neuropathic and nociceptive pain and drugs used to treat
3. Write a prescription for post operative pain day 1
4. Write a prescription for severe cancer pain
5. Explain how to refer a patient to a local pain clinic

Appendix 9

Suggested 10 point checklist for medical schools assessing pain in undergraduate curriculum

- Do you have a FPM fellow on curriculum committee
- Do you have co-ordination of pain management throughout the training especially between palliative care and pain medicine/ anaesthesia
- Do students attend 1 or more hours devoted to neurobiology of pain system
- Do students attend 1 or more hours devoted to teaching about analgesic medications
- How many hours of teaching are given by faculty of pain medicine fellows?
- Do students have opportunity to attend acute pain rounds. If so how many?
- Do students have opportunity to attend a pain clinic?
- Do students have opportunity to attend palliative care training. If so how much?
- What resources/ guidelines or web-based information regarding pain is prescribed or recommended?
- What assessment of pain related topics occurs?

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