AUSTRALIAN AND NEW ZEALAND COLLEGE OF ANAESTHETISTS
ABN 82 055 042 852

APPLICATION

FOR

SPECIALTY RECOGNITION

BY THE

FACULTY OF PAIN MEDICINE

TO THE

AUSTRALIAN MEDICAL COUNCIL

June 2003

CONTENTS

1. APPLICANT DETAILS

1.1 Name of organisation sponsoring the application

Australian and New Zealand College of Anaesthetists

1.2 Person to contact concerning this application

Mrs Joan Sheales, Chief Executive Officer

1.3 Postal and physical address

630 St Kilda Road, Melbourne, Vic 3004

1.4 Australian Business Number

82 055 042 852

1.5 Contact numbers

Business hours: 03 9510 6299
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Other: painmed@anzca.edu.au
E-mail address: ceoanzca@anzca.edu.au

1.6 Preferred mode of contact:

Any of the above.

1.7 What is the specialty name, organisation name, and qualification for which recognition is sought?

Pain Medicine. Faculty of Pain Medicine, Australian and New Zealand College of Anaesthetists, Fellow of the Faculty of Pain Medicine, Australian and New Zealand College of Anaesthetists (FFPMANZCA).

- Is recognition being sought for the purposes of the Health Insurance Act? Yes
- Is recognition of a medical specialty being sought? Yes

1.8 What is the earliest date (month and year) the organisation would wish to lodge a full submission for recognition?

June 2003

1.9 Name and signature of person responsible for application

Mrs Joan Sheales

2. RATIONALE AND CORE CRITERIA

2.1 The rationale for seeking recognition of the specialty of Pain Medicine in Australia and the public interest arguments

This section provides the rationale for seeking recognition of the specialty of Pain Medicine in Australia, and the reasons why the public interest is served by the development of the specialty.

(a) **Recognition would enhance the development of effective and safe clinical patient care** through teaching and research into the assessment and management of acute and chronic pain (see Section 3.4 and 3.6). The burden in terms of both suffering and economic loss attributed to unrelieved acute pain and to chronic pain is high (see Section 5.2). Adverse physical and psychological effects of chronic pain include anxiety, depression (Magni et al 1990), insomnia, interference with work, fear avoidance behaviour, risk of suicide, loss of employment, family and relationship disruption and adverse drug effects (see Section 5.2). Adverse effects of acute pain are now well documented and include a range of metabolic and endocrine responses, adverse cardiovascular and respiratory effects and psychological effects. In some types of cancer, relief of severe pain may increase survival (see Section 3.6, pages 25 and 30). Fellows of the Faculty of Pain Medicine have already contributed to improved safety of care, as illustrated, for example, in the National Health & Medical Research Council document on Acute Pain Management: Scientific Evidence (NHMRC 1999). The Faculty is currently revising this document. The prevention of needless disability through better education of health professionals would enhance health care (NHMRC 1999).

(b) **Recognition would enhance the standards of care** to which the discipline of Pain Medicine has already contributed. The Faculty of Pain Medicine is recognised in Australia and New Zealand as the standards-setting body in Pain Medicine and has a high standing internationally. Fellows of the Faculty have set the standards of patient assessment and management and the Faculty is consulted by hospitals, health authorities and other standards setting bodies, including the Australian Council of Healthcare Standards and the health care authorities in each State.

(c) **Recognition would enhance the wise use of health care resources**.

Health care resources, and other resources, are currently consumed at a very high level as a result of the disease burden of chronic pain in Australia of 1 in 5 of the population (see Section 5.2). The worldwide recognition of chronic pain as a complex biopsychosocial problem has focussed attention on the current unco-ordinated unidimensional approach to assessment and treatment; this has proven to be ineffective and enormously costly to the Australian community (see Section 5.2, pages 41-43). Pain Medicine is a relatively new multidisciplinary specialty which recognises the multidimensional nature of chronic pain. It has emerged in response to the complexity of assessment and treatment of patients with chronic pain.

The key issues in wise use of health care resources for patients with chronic pain (see also Section 5) are

- The **disease burden** of chronic pain
- The associated **current health care costs** and other costs such as lost work days, reduced effectiveness workdays, litigation costs and workers compensation costs
- The **comparative costs of Multidisciplinary Pain Centres** (MPCs) and Pain Medicine Specialist care
- **Cost savings** that may be made by development of the Pain Medicine specialty.

From the patient's perspective the key issue is access to treatments that are less invasive, less likely to cause complications or side effects and which have evidence of effectiveness. A detailed description of this material is provided in Section 3.6.

In summary, of the 1 in 5 Australians who suffer chronic pain, 25% or close to 1 million people suffer pain-related disability (Blyth et al 2001, 2003a, 2003b, 2003c) with estimated total costs of current ineffective treatment in excess of $10 billion per annum. Australian data indicate that chronic pain is associated with over 17.8 million lost workdays per annum, with lost productivity costs of over $2.6 billion per annum. These costs are in addition to the costs of: health care; workers compensation due to pain; under-employment or unemployment due to pain; lost productivity outside the workplace (eg at home) or lost productivity of carers of patients with chronic pain. In some areas costs are rising markedly, e.g. disability associated with low back pain, and associated costs, are rising exponentially (see Section 5.2 and Appendices 9 and 10).

There is substantial evidence that specialists in Pain Medicine and MPCs, using a biopsychosocial approach, can significantly reduce the financial costs and return individuals to work who would otherwise remain unemployed. Thus there are implications for improving the Nation's productivity and reducing social welfare costs (see also Section 5.1 and 5.2 and Appendices 9 and 10).

Humanitarian aspects of unrelieved severe pain surely must be considered in any civilised society as a key issue in the wise use of health care resources (see also Section 5.2, page 42).

Overall, the medical, financial, community and humanitarian aspects of severe persistent pain have received too little attention in Australia. The leadership role of the Faculty of Pain Medicine (see Appendices 1-10) as an unique body worldwide provides a major opportunity to attack what has hitherto been a 'hidden epidemic'. Granting specialist status to Pain Medicine would give major impetus to addressing this neglected area of health care.

2.2 History of the Development of Pain Medicine in Australia

- Establishment of multidisciplinary pain centres in Australia in the 1960s.
- Formation of the Australian Pain Society in 1979, as a Chapter of the International Association for the Study of Pain (IASP), itself formed in 1973.
- Establishment by ANZCA of a Certificate in Pain Management in 1995.
- Formation of a Joint Advisory Committee on Pain Medicine by the Australian and New Zealand College of Anaesthetists (ANZCA), Royal Australasian College of Surgeons (RACS), Royal Australasian College of Physicians (RACP), Royal Australian and New Zealand College of Psychiatrists (RANZCP) and Australasian Faculty of Rehabilitation Medicine (RACP) (AFRM RACP) in 1995.
- Formation of the multidisciplinary Faculty of Pain Medicine within ANZCA in 1999, with the Board and Committees including representatives from RACS, RACP, RANZCP, AFRM (RACP).
- Development of Regulations (now referred to as Administrative Instructions), a Prospectus for Prospective Trainees, Training Manual, Log Books, Quarterly In-Training Assessment Reports, Case Reports, Objectives of Training, Trainee Exit Questionnaire, Hospital Accreditation, Annual Examinations, Annual Scientific Meetings and Professional Documents between 1999 and 2003.
- Recognition by the Specialist Education Accreditation Committee of the Australian Medical Council that the Faculty met the standards for accreditation of its training program in November 2002.
- 42 graduates by examination since 1999.

3. DEFINITION OF THE MEDICAL SPECIALTY

3.1 Definition of the specialty area

Pain Medicine is a multidisciplinary field of specialist medical practice which has matured relatively recently. The field recognises that the management of severe pain problems requires the skills of more than one medical craft group. These problems include:

(i) *acute pain* (post operative, post-trauma, acute episodes of pain in "medical conditions"); (see also Appendix 15)

(ii) *cancer pain* (pain directly due to tumour invasion or compression, pain related to diagnostic or therapeutic procedures, pain due to cancer treatment); (see AHRQ 2001 and Swarm et al 2003)

(iii) *chronic pain* (including over 200 conditions described in the IASP Taxonomy of Chronic Pain 2nd Ed, such as phantom limb pain, post-herpetic neuralgia, mechanical low back pain) (IASP 1994). (see Appendix 16)

Chronic pain is seen in every age group from paediatric to geriatric, and across all medical and surgical disciplines. Because of the complexity of chronic pain problems, "Multidisciplinary Pain Management Centres" (MPCs) have been developed throughout Australia and New Zealand. Such centres harness the inputs of a range of medical and allied health professionals to assess the multi-dimensional aspects of pain and to formulate appropriate programs of treatment aimed at control of pain, including rehabilitation of the individual and improvements in functional outcomes (see Loeser & Turk 2001).

Intellectual Content

The basic and clinical science content of Pain Medicine is extraordinarily broad and currently represents one of the most rapidly expanding areas of the neurosciences (see Wall & Melzack 1999, Loeser & Melzack 1999, Loeser & Turk 2001). The linkage between the science and practice of Pain Medicine is strengthening rapidly, adding to the satisfaction of medical practice. Since knowledge in this specialty is advancing at a fair pace (see Devor 1999, Dostrovsky 2002), many specialists spend significant amounts of their time in clinical and/or basic research. Involvement in undergraduate and postgraduate teaching is also a high priority, in order to bridge the knowledge gap that currently exists. This field is one of the most diverse in all of medicine, with specialists required to be knowledgeable about the management of challenging pain problems in paediatric, adult and geriatric patients across essentially every specialty field (see Loeser & Turk 2001). There is now an internationally recognised "core curriculum" which is accepted as a core of knowledge for all participating specialties (IASP 1995). Thus collaborative discussion about the diagnosis and management of patients tends to be very rewarding and intellectually stimulating. An international body, the International Association for the Study of Pain (IASP), has published a series of major documents which delineate key aspects of this field, eg Desirable Characteristics of Multidisciplinary Pain Centres (Loeser 1991), Acute Pain Management, Back Pain in the Work Place, Pain in the Elderly (see Section 3.4).

As discussed in Section 3.4, a large specialist knowledge base has evolved in Pain Medicine as a result of: development of high quality specialist journals in Pain Medicine since 1974; formation of a strong international scientific body (IASP) with 107 countries and more than 6,700 members over the past 40 years; a major growth in scientific papers presented as IASP World Pain Congresses from 300 papers in the first World Congress in 1975, increasing to over 900 at the 6th World Congress in Adelaide, Australia in 1990 and over 1800 papers at the 10th World Congress in 2002; the publication of major texts and monographs on pain; the request for specialist articles on pain management in leading general journals such as the Lancet and the New England Journal of Medicine; and worldwide initiatives to develop multidisciplinary pain centres with integrated clinical, research and educational activities.

Autonomy and Responsibility

Pain Medicine Specialists work with a large degree of autonomy, but in the context of a multidisciplinary group with a strong team approach to the diagnosis and management of challenging pain problems. Those involved in the management of chronic and cancer pain accept major responsibilities for continuity of care, in collaboration with the referring medical practitioners and with other specialist medical and allied health care professionals.

Pain Medicine Specialists usually have a substantial commitment to outpatient consulting, inpatient consulting, multidisciplinary team meetings and, in some cases, considerable procedural work.

3.2 Existing specialties or sub-specialties whose scope of practice and/or training are similar to those of the applicant specialty

The establishment of the Faculty of Pain Medicine in ANZCA is a unique development in the evolution of this discipline and is not matched elsewhere in the world. The Fellows of this Faculty must first have a Fellowship of one of the following Colleges: ANZCA, RACS, RACP, RANZCP, AFRM (RACP).

Although each of these Colleges may include an element of Pain Medicine in its training program, none addresses the area to the detail required of a specialist practitioner in Pain Medicine. The enthusiastic support for the Faculty of Pain Medicine from its component four Colleges and Faculty attests to the wide recognition of the importance of Pain Medicine as a new discipline.

Pain Medicine overlaps in some areas with **Palliative Medicine**, as it does with other areas of medical practice. Palliative Medicine deals with the management of pain at the end of life, as part of comprehensive care. Pain Medicine assists Palliative Medicine in the management of extremely difficult pain problems. However, Pain Medicine's main focus is on the assessment and management of pain in patients who are not terminally ill, and who have the potential for a better quality of life if their pain is well managed.

Furthermore, Pain Medicine aims to restore function and normal activities in patients whose main disability is pain. The curricula of training of Pain Medicine and Palliative Medicine make this distinction very clear.

Although many patients with routine pain problems may be managed in the daily practice of specialists in medicine, surgery, anaesthesia or psychiatry, it is the challenge and the burden of severe persistent pain problems which have stimulated specialists in those disciplines to join together in the assessment and treatment of patients.

Patients with routine pain problems are also managed in the daily practice of **Rehabilitation Medicine,** however, those Rehabilitation specialists who have further specialised in Pain Medicine join their colleagues from other specialties in MPCs to contribute to assessment and treatment of severe persistent pain and disability. Disability management, as practised by Rehabilitation specialists, extends well beyond pain related disability.

Occupational Medicine may also overlap with Pain Medicine in the area of pain management problems generated in the workplace. However the scope of Occupational Medicine extends beyond Pain Management and many difficult pain problems are beyond the resources of Occupational Medicine.

Addiction Medicine has an obvious overlap in that some patients with pain problems become addicted to opioids or other psychotropic drugs. However studies of large numbers of patients report that this is a rare problem except in those individuals with a prior history of drug addiction (Porter & Jick 1980). Some patients with addiction problems present with the complaint of chronic pain. Specialist Pain Centres refer such patients to specialists in Addiction Medicine when the basis for the presentation of chronic pain has been investigated. Pain Centres do not treat addicts for addiction. On the other hand, patients with chronic pain who have been referred to Addiction Medicine Centres are commonly referred on to Pain Centres for assessment of the pain problem in parallel with treatment of addiction. Collaboration between the specialties for those patients who overlap their boundaries is important for improved quality of life.

3.3 Nature of present and past links and alliances with other specialties

(a) Within Australia and New Zealand

As noted in other sections, the Faculty of Pain Medicine comprises the specialties of Anaesthesia, Medicine, Surgery, Psychiatry and Rehabilitation Medicine. Thus close links are maintained with the component specialty bodies via the Board Members derived from those five specialties. There are also close links with Palliative Medicine via a small number of Fellows who have dual Pain Medicine-Palliative Medicine qualifications. Such individuals include the immediate Past Dean of the Faculty of Pain Medicine and the President of the Palliative Care Society. Pain Medicine trainees have on occasion rotated into Palliative Medicine training positions and the Boards of the two specialties have agreed to recognise periods of training in the other specialty, with plans in the future to make such rotations routine.

(b) In other countries with similar health systems

In the United States of America (USA) there is an Academy of Pain Medicine which includes all the specialty bodies represented in the FPM. The Academy conducts specialist examinations in Pain Medicine but does not supervise a training program. The American Board of Anesthesiologists (ABA) has conducted an examination in Pain Medicine for some years. Recently, agreement has been reached to develop an examination for Anesthesiologists and Neurologists**.** Other specialties may soon join this process. The FPM has close links with the Academy of Pain Medicine and has currently negotiated a trial period for FPM Fellows to receive an on-line version of the Academy's scientific journal "Pain Medicine".

The FPM also maintains contact with the ABA via two ABA Board Members who are Fellows of FPM.

Close communication has been maintained with the United Kingdom (UK) where Pain Centres are staffed by Anaesthetists and other Specialists in many hospitals. The need for a multidisciplinary approach is strongly recognised in the UK and is gradually developing. The degree of cooperation between Medical Specialist Colleges that has been achieved in Australia has not yet occurred in the UK. The Council of the Royal College of Anaesthetists is in close contact with ANZCA Council regarding development of Pain Medicine in the UK. The Pain Society of Great Britain and Ireland communicates regularly with the FPM on matters of common interest.

3.4 Scientific enquiry, research, acquisition of evidence and publication of journals in the specialty area in Australia and overseas

Scientific enquiry in Pain medicine received a major impetus in 1973 with the formation of an international multidisciplinary group of basic and clinical scientists, the "International Association for the Study of Pain" (IASP). The IASP began triennial World Congresses on Pain in 1975. The 10th Congress in San Diego USA in 2002 attracted over 8,000 registrants worldwide across a wide range of basic and clinical sciences. Over 1,800 scientific presentations were made at the meeting (Dostrovsky 2002). A World Congress Proceedings is published by IASP Press after each meeting. The international community having recognised Australia's lead in the field, held the 6th World Congress in Adelaide in 1990 and has selected Sydney as the venue for the 11th World Congress in 2005. It is widely agreed that pain research is one of the most exciting and rapidly expanding areas in the neurosciences. US Congress has recognised this situation by passing a special bill to proclaim "The Decade of Pain Research 2000-2010" (HR 1863, The National Pain Care Policy Act of 2003).

In 1974 IASP initiated the Journal "Pain" which has become the leading journal in this field, publishing high quality multidisciplinary basic and clinical science (Impact Factor 4.541); Australian Associate Editors are FPM Fellows Prof L E Mather and Prof R D Helme (current) and Prof M J Cousins (past).

Other scientific journals in this field are:

- Journal of Pain & Symptom Management (Impact Factor 2.119)
- Anesthesia & Analgesia – section on Pain Medicine began in 2001 (Impact Factor 2.279)
- Regional Anaesthesia & Pain Medicine (Impact Factor 1.105)
- Pain Medicine - journal of American Academy of Pain Medicine (Impact Factor 0.759)
- Clinical Journal of Pain (Impact Factor 1.613)
- Journal of Pain - journal of the American Pain Society (Impact Factor 2)
- European Journal of Pain - mainly clinical articles

A number of more general journals publish some papers of significance to Pain medicine

- Spine
- Cephalalgia
- Anesthesiology – basic and clinical pain research
- Journal of Neuroscience
- Brain Research
- European Journal of Neuroscience
- Journal of Clinical Pharmacology
- Journal of Pharmacology & Experimental Therapeutics
- In November 2003 the Journal of the American Medical Association will devote a full issue of the journal to original papers and reviews relevant to Pain Medicine
- The New England Journal of Medicine has commissioned a number of major reviews eg cancer pain (Foley KM NEJM 1985;313:84-95)
- The Lancet commissioned a series of key papers on pain in 1999 (e.g. Loeser JD & Melzack R. Pain: an overview. Lancet 1999;353:1607-9) (Carr DB & Goudas LC. Acute pain. Lancet 1999;353:2051-8)
- Arthritis & Rheumatism
- The Journal of Rheumatology

The IASP has facilitated the assembly of scientific evidence on key areas by publication of monographs edited by world leaders via IASP Press, Seattle, USA. Such monographs include: **Management of Acute Pain** (Ready & Edwards 1992); **Touch, Temperature and Pain** (Hannson & Lindblom 1994); **Pharmacological Approaches to Treatment of Chronic Pain** (Fields & Liebeskind 1994); **Visceral Pain** (Gebhart 1995); **Temporomandibular Disorders and Related Pain Conditions** (Sessle et al 1995); **Back Pain in the Workplace** (Fordyce 1995); **Reflex Sympathetic Dystrophy** (Janig & Stanton-Hicks 1996); **Pain in the Elderly** (Ferrell & Ferrell 1996); **Molecular Neurobiology of Pain** (Borsook 1997); **Measurement of Pain in Infants and Children** (Finley & McGrath 1998); **Sickle Cell Pain** (Ballas 1998); **Pain and Suffering** (Livingston & Fields 1998); **Assessment and Treatment of Cancer Pain** (Payne et al 1998); **Opioid Sensitivity of Chronic Non-Cancer Pain** (Wiesenfeld-Hallin et al 1999); **Psychological Mechanisms of Pain and Analgesia** (Price 1999); **Chronic and Recurrent Pain in Children and Adolescents** (McGrath & Finley 1999); **Epidemiology of Pain** (Crombie et al 1999); **Sex, Gender and Pain** (Fillingim 2000); **Pain Imaging** (Casey & Bushnell 2000); **Neuropathic Pain** (Hansson et al 2001); **Acute and Procedural Pain in Infants and Children** (Finley & McGrath 2001); **The Child with Headache: Diagnosis and Treatment** (McGrath & Hellier 2001); **Complex Regional Pain Syndrome** (Harden & Baron 2001); **Spinal Cord Injury Pain** (Burchiel & Yezierski 2002).

IASP also publishes a Refresher Course Syllabus at the time of each World Congress (eg Giamberardino 2002).

These monographs are a distillation of major recent acquisition of evidence that provides a new knowledge base and underpins current practice of pain medicine. A Fellow of the FPM, Professor Dan Carr, was a key investigator and editor in a major systematic review of the evidence for different methods of Management of Cancer Pain, Agency for Healthcare Research & Quality (AHRQ 2001). The Founding Dean of the FPM chaired an NHMRC Working Party that produced a comprehensive analysis of the scientific literature underpinning the treatment of acute pain with a focus on decreasing the risk of progression from acute to chronic pain (NHMRC 1999). FPM Fellows are in the process of revising the NHMRC document on Acute Pain. Pain Medicine specialists in Australia, New Zealand and overseas have contributed to a number of other practice guidelines - Clinical Standards Advisory Group (CSAG 1994), Agency for Healthcare Policy & Research (AHCPR 1994a, b), Campbell 1999, McCrory 2000, Ramadan 2000, American Pain Society 1999; Stanton-Hicks 1998; American Geriatrics Society 1998; Sanders 1999; Sanders 1995; NHMRC Guidelines for Acute Musculoskeletal Pain (2003); Therapeutic Guidelines-Analgesia (2002).

Scientific enquiry reached a sufficient level for the IASP to publish a scientifically based "Core Curriculum for Professional Education in Pain" in 1991. This synthesis of scientific evidence underpinning the practice of Pain Medicine was commissioned by the President of IASP at the time, Prof. M. Cousins, who subsequently became Founding Dean of FPM. The second edition of the "Core Curriculum" was published by IASP Press in 1995 (IASP 1995), with a 3rd edition due in 2004. The IASP Core Curriculum has been used as one of the source materials to develop the FPM Objectives of Training (Appendix 5).

Australian and New Zealand FPM Fellows have made many major contributions to the scientific basis of Pain Medicine. This has resulted in the publication of monographs and texts which have become internationally recognised.

- Hon Fellow J Lance AO, CBE, FRACP
  Mechanisms and Management of Headache. James W Lance and Peter J Goadsby, London. Butterworths. 1969. 6th Ed 1998

- Hon Fellow I Pilowsky AM, FRACP, FRANZCP
  Abnormal Illness Behaviour. Issy Pilowsky, Chichester. John Wiley & Sons. 1997

- Founding Dean M J Cousins AM, FANZCA, FAChPM
  Neural Blockade : In Clinical Anesthesia and Management of Pain. Ed by Michael J Cousins & Phillip O Bridenbaugh, Philadelphia. J B Lippincott. 1st Ed 1980; 2nd Ed 1988; 3rd Ed 1998.

  Acute Pain Management. Eds Michael J Cousins and Garry D Phillips, New York. Churchill Livingstone. 1986.

- Former Board Member, P E Macintyre FANZCA
  Acute Pain Management: a practical guide. Pamela E Macintyre and Brian L Ready, London. W B Saunders. 1996. 2nd Ed 2001

  Clinical Pain: Management of Acute Pain. Edited by Donald J Rowbottom and Pamela E Macintyre, London. Arnold. 2003

Cochrane evidence based medicine groups on Pain Medicine have developed at Oxford University, Tufts University of Boston and University of Toronto, Canada. The Oxford group has published an evidence based analysis of numerous pain management strategies (McQuay & Moore 1998).

FPM Fellow Prof Dan Carr heads the Tufts University group and has produced many evidence based treatment reviews (AHCPR 1994b, AHRQ 2001). In collaboration with the FPM Founding Dean, he published a citation analysis of the Pain Literature in an endeavour to identify the major areas of scientific activity in Pain Medicine (Strassels et al 1999). This paper found that a major review of the spinal route of analgesia by the Founding FPM Dean was the fifth most frequently cited scientific paper in the pain literature (Cousins & Mather 1984).

A number of FPM Fellows were investigators in the multi-centre study of the effect of epidural analgesia on post-operative outcome. (The Master Trial – Rigg et al 2002). ANZCA's new initiative in developing a multi-centre trials secretariat has commenced in 2003. This resource will help develop and manage multi-centre trials conducted by FPM Fellows.

The FPM Board began developing Professional Documents, based on available evidence, in 2000. The first of these documents PM3 *Lumbar Epidural Administration of Corticosteroids* was promulgated in 2002 (Appendix 7.3). Further documents relating to the following areas are in advanced stages of development:

Long Term Opioid Treatment in Non-Malignant Pain
Spinal Cord Stimulation
Intra-Facet Blocks and Medial Branch Blocks for Mechanical Back Pain
Guidelines on Intrathecal Medication
Guidelines for Implantable Pumps for Intrathecal Therapies
Cognitive Behavioural Therapy
Orofacial Pain Management

Major texts on Pain Medicine appeared as early as 1957 with the publication of the encyclopaedic text "The Management of Pain" by Prof J. J. Bonica of the University of Washington Seattle. The two volume second edition was published in 1990 (Bonica 1990) and the third edition in 2001 (Loeser & Turk 2001). This text comprehensively covers the basic science and clinical practice of Pain Medicine. A more research focussed text was published by the authors of the "Gate Control Theory of Pain" (Melzack & Wall 1965) Patrick Wall & Ronald Melzack, now in its 4th edition, (Wall & Melzack 1999). The Founding FPM Dean contributed a chapter to all editions of the Wall & Melzack text and to all editions of the Oxford Textbook of Palliative Medicine (Swarm, Karanikolas & Cousins 2003).

An evolving area has been the role of the Neurosurgeon. A classic text by Harvard University Neurosurgeon, Prof. William Sweet "Pain and the Neurosurgeon" (White & Sweet 1969) has now been superseded by a more contemporary account of this aspect of Pain Medicine by Neurosurgeon Kim Burchiel "Surgical Management of Pain" (Burchiel 2002). Fellows have contributed chapters to this text.

All of the foregoing research papers, reviews, monographs, texts, chapters, practice guidelines, systematic reviews of evidence and core curricula have been drawn upon by the FPM Education Committee to develop the Objectives of Training and Reading List for FPM Trainees and Fellows. All training programs receive a two volume compendium of the key reference material that underpins the Objectives of Training. All Trainees have access to this material (see Appendix 5).

3.5 Effects of the Development of the New Specialty on Existing Specialties or Subspecialties. Any possible deskilling of generalists, or doctors in remote and rural Australia

Effects on existing specialties or subspecialties have been partly addressed in 3.2 above with respect to potential overlaps. Such effects will be only beneficial to the participating specialties of Medicine, Surgery, Anaesthesia, Psychiatry and Rehabilitation Medicine. These specialties will continue to deal with routine pain management problems even though those may currently well be managed suboptimally. To help the participating specialties develop improved pain management, the FPM has recently completed a module on Pain Management (Revised FANZCA Module 10) (Appendix 17). This will be used for anaesthetists in the revised anaesthesia training program commencing in 2004 and will be made available to other FPM participating specialties. It will also be made available to the Chapter of Palliative Medicine. The contents of this module are suitable for modification for general practitioners, and the FPM Board has recommended that discussions be initiated with GP training organisations to achieve this aim.

General Practitioners (GPs), particularly in rural and remote Australia, are in the front line in assessing and treating many of the 1 in 5 Australians who suffer from persistent pain. Such patients represent an enormous burden for GPs who will benefit greatly from access to specialist assistance from Pain Medicine Specialists and MPCs. Such interaction with Pain Specialists will help to upskill GPs. Many Pain Centres already run continuing education programs for GPs, and it is a requirement of approved MPCs that there be close communication with each patient's GP. A GP version of the NHMRC document on "Acute Pain" has been produced (NHMRC 1999). It is planned to revise this GP document when the FPM working party completes its current revision of the Acute Pain Management: Scientific Evidence document (Appendix 15).

FPM Fellows are contributing to the development of other guidelines on persistent pain management which will be of considerable assistance to GPs. This will allow GPs to "triage" those patients who require the more specialised assessment and treatment resources of a Pain Specialist in an MPC. Such referral will be of assistance to GPs, since the detailed assessment of physical, psychological and environmental factors in patients with severe persistent pain cannot be carried out with the resources and time usually available to a GP. On the other hand, as MPCs do not have the capacity to see more than a modest percentage of the large number of

patients with persistent pain, such guidelines and interactions will enhance GPs own capacity to assess them, and the FPM Board has resolved to keep this key interaction between GPs and Pain Medicine Specialists under ongoing review. An Intercollegiate Forum on Pain Medicine will be hosted by FPM and ANZCA on 1st August, 2003 and will include all stakeholder specialties and subspecialties, including General Practitioner organisations.

Another important interaction is between major metropolitan MPCs and regional/remote pain specialists. The Board of FPM has resolved to foster this relationship, including the rotation of trainees to regional centres. An example is the Northern Rivers Pain Program based at Lismore Base Hospital. The Nursing, Physiotherapy and Clinical Psychology staff for this program were trained at the Pain Management and Research Centre, Royal North Shore Hospital (RNSH). The Acting Medical Director trained as a Fellow at RNSH and is undergoing further training on-site and via telemedicine with RNSH. The Lismore site is developing a close working relationship with a local Palliative Care service and local GPs. Ongoing educational, research and clinical links will be maintained with the RNSH Centre. At least initially, more complex patients and advanced pain relief procedures will be managed at RNSH. The FPM Board has supported a proposal for a trainee to be rotated to Lismore, provided FPM training requirements are met. The FPM Board supports development of similarly linked programs.

Within the hospital environment MPCs are not attempting, nor do they have resources, to take over the management of all pain problems routinely managed by appropriate specialties. Specialised pain services have been available in Australia since the mid 1960s, with an increased tempo in the late 1970s. During this time multidisciplinary resources for severe persistent non-cancer and cancer pain have been developed. In addition, Acute Pain Programs have been developed since the early 1980s. The past 23 years have seen the evolution of a sensible balance between the management of routine problems by the appropriate specialty and referral of more challenging problems to specialist Pain Services. This balance appears to have been achieved well in most of the tertiary referral hospitals and numerous other hospitals in Australia.

In marked contrast to deskilling other doctors, this evolution has resulted in a much needed focus on an overall improvement in pain management:

- Programs have been developed for junior doctors
- Protocols and procedures have been developed to enhance efficacy and safety and to facilitate management by general medical and nursing staff
- Frequent interaction of MPC staff and referring specialists has resulted in a mutually beneficial educational process.

3.6 Enhancement of standard of health care and improved outcomes. Equity of access to services

Enhanced Standards of Healthcare

As described in Sections 2.1 (c) and 5.2, the current standard of health care in the field of chronic pain is a major problem, with poor outcomes and escalating costs. Improved standards of health care in patients with chronic pain requires an application of the major advances in basic pain neuroscience knowledge, with associated advances in pain neuropharmacology, and developments in behavioural and other strategies of pain management. An important example is the rapid increase in knowledge and treatment options for the many different presentations of neuropathic pain. Also, major conceptual change from an unidimensional 'strict medical model' approach to a biopsychosocial approach is needed. The Faculty of Pain Medicine provides a major impetus to address the large gap that currently exists in … 'training, knowledge, attitudes and practices of medical, nursing and allied professionals, along with greater public awareness and expectations in the treatment of pain' (NHMRC 1989). The FPM now oversees a strong multidisciplinary training program, involving five specialty bodies, and leading to a stringent examination process which demands a high level of the appropriate knowledge, attitudes and practices. This has been confirmed by the Australian Medical Council (AMC) recognition of the training program in 2002 (Appendix 1). The participation of the five specialty bodies is serving as a strong channel to disseminate the new knowledge, attitudes and practices required for effective management of chronic pain to the broader specialty membership of the participating specialties and beyond (see Section 3.5).

The interdisciplinary nature of MPCs ensures that nursing and allied professionals such as clinical psychologists, physiotherapists, social workers and occupational therapists are also included in developing their knowledge, training, attitudes and practices.

Important examples are: the major roles of Clinical Nurse Specialists, Clinical Nurse Consultants and Nurse Unit Managers in MPCs and their wider role in educating and training hospital based and community nurses; the substantial paradigm shift of physiotherapists working in MPCs away from 'passive treatments' to active patient controlled programs of reactivation – such physiotherapists have had a major influence on their profession's approach to chronic pain. Clinical psychologists in MPCs have helped to pioneer a move away from long term counselling and psychotherapy, which is often not effective for patients with chronic pain. MPC psychologists have a key role in educating their colleagues.

The production of Professional Documents by the FPM will set the standards for attitudes and practices in a wide range of areas in Pain Medicine (Appendices 7 and 8).

The important aspect of public awareness is being addressed by key publications from MPCs on disease burden, costs and workplace, litigation and other factors associated with chronic pain (see Sections 5.1 and 5.2). Unrealistic and uninformed expectations of patients, family and regrettably many doctors, has played an important role in perpetuating the use of inappropriate, ineffective and sometimes harmful treatments. Major MPCs have generated important publications for patients, the community and health professionals. An example is the widely used book "Manage Your Pain" (Nicholas et al 2001) from the MPC at RNSH, Sydney. Exemplifying the multidisciplinary nature of Pain Medicine, this book was written by a Pain Medicine Specialist, Clinical Psychologist, Physiotherapist and Nurse Unit Manager.

Improved Outcomes

Improved outcomes will require appropriately trained health professionals to assess and treat the broad range of problems in patients with chronic pain. This requires the resources of an MPC staffed by Pain Medicine Specialists and other appropriate team members (see Loeser & Turk 2001). Appropriate biopsychosocial rather than more narrow biomedical assessment is crucial in selecting the appropriate treatment or treatments from the range of options that are available to a Pain Medicine Specialist in an MPC. This contrasts with the current situation where many patients are sent from one biomedically oriented health practitioner to another and are subjected to repeated treatments that aim solely at a purported underlying physical problem as the sole cause of their pain.

Improved outcomes can be obtained by applying a biopsychosocial approach: to early evaluation of persisting post-surgical and post-trauma pain and early intervention; chronic non-cancer pain; and to cancer pain, with the additional possibility of improved survival (see also Appendices 9 and 10).

Persistent Acute Pain

Studies in Australia (eg Blyth 2001, 2003a,b) have documented the high prevalence and substantial disability associated with persistent pain. Much evidence points to the origins of many persistent pain problems as being due to a progression from post-injury or post-surgery acute pain (Bay-Nielson 2001, Perkins & Kehlet 2000, Blyth et al 2003a). Although it has been held that severity of pain in the acute phase may predispose to the development of persistent pain, clear evidence for this has only recently been obtained in a substantial number of studies (NHMRC 1999, Nikolajsen 1997, Katz et al 1996, Perkins & Kehlet 2000). Other evidence documents the efficacy of early intervention programs in patients with acute low-back pain (Linton et al 1989). Thus the availability of MPCs with an acute pain component provides an important resource for identifying persisting pain problems in patients with acute pain, and for providing effective early intervention. A requirement for ANZCA approved MPCs is the integration of acute, chronic and cancer pain services

Improvements in management of acute pain have resulted from the widespread introduction of "Acute Pain Services", usually as part of, or in association with, MPCs. It would be expected that reduced severity of acute pain could reduce progression from acute to persistent pain, and early studies support this concept (Bach et al 1988, Schug et al 1995), although one study failed to demonstrate such an effect (Nikolajsen et al 1997). This discrepancy may partly reflect the current imperfections in managing severe neuropathic pain, whether it be acute or chronic. Quite simple but effective methods applied to acute low back pain have resulted in a more rapid return to normal activities (Malmivivaara et al 1995).

There have been other benefits of the major improvements in acute pain management as part of a strategy of "fast tracking" after surgery (Cousins 1989, Kehlet & Wilmore 2002). Respiratory, gut and metabolic sequelae of surgery have been reduced: improved outcomes including gut function, endocrine/metabolic response, hospital stay and need for assistance after discharge home have also resulted (Kehlet 1997, Kehlet & Wilmore 2002, Wilmore & Kehlet 2001, Brodner et al 2001, Basse et al 2001, Basse et al 2002).

The impact of this approach is being seen in the in-hospital phase, but also out-of-hospital. FPM Fellows played a key role in developing approaches to other acute pain conditions in the NHMRC document on Acute Pain (NHRMC 1999), and have made major contributions to the development of guidelines on the early management of acute musculoskeletal pain (NHMRC 2003), acute cancer pain, and other acute conditions (see AHRQ 2001, NHMRC 1999). Further development of this approach will have a large impact on the substantial percentage of patients who develop persistent pain following surgery, injury and in other acute pain settings (Cousins et al 2000).

Progression from Acute to Chronic Pain

Much evidence indicates that multiple factors contribute to progression from acute to chronic pain. Although physical factors play a part - particularly nerve injury (Perkins & Kehlet 2000, Bay-Nielsen et al 2001), psychological and environmental factors are of major importance. This has been clearly demonstrated in the very prevalent problem of low back pain (AHCPR 1994a). Here, so called "yellow flags" (Kendall et al 1997, Linton & Hallden 1998) play the key role in determining progression to a chronic phase. In some cases identification of "yellow flags" can be straightforward, if health professionals are aware of such guidelines. However in a significant percentage of patients, expert resources of an MPC are required to make independent skilled assessment of the relative roles of physical, psychological and environmental factors, and to then pool this information in a face to face multidisciplinary case conference. Significant research now demonstrates the efficacy and cost-effectiveness of this approach (see Section 5.2).

Clearly without assessment of factors in addition to purely physical factors there is a major risk of a potentially inappropriate focus on treatments targeted only on treatment of physical aspects. The end result is repeated unsuccessful surgical procedures or pain relief procedures, inappropriate use of opioids and other drugs, drug toxicity, drug dependence, prolonged use of passive treatments which perpetuate inactivity, loss of work and further deterioration of pain-related maladaptive behaviours.

Persistent (Chronic) Pain: Improved Outcomes

With respect to *established Persistent Pain (Chronic Pain),* it has been accepted in most developed countries that patients with severe persisting pain suffer from multifaceted problems requiring a multidisciplinary approach – as is provided by MPCs and as represented by the Board and training program of the Faculty of Pain Medicine. Assessment of physical, psychological and environmental factors by the team of health professional in Pain Centres is essential, to avoid inappropriate treatments and outcomes as described above.

The efficacy of Multidisciplinary Pain Medicine for management of chronic pain can be considered in terms of this approach, the efficacy of multidisciplinary pain programs (cognitive behavioural programs) and the efficacy of specialised treatment approaches that may be used in MPCs. The potential downside to using invasive pain management methods outside of the framework of an MPC also needs to be considered. Multidisciplinary pain management evolved and expanded because it has proven to be more effective and less costly than unimodal methods of managing chronic pain (see Loeser & Turk 2001, Turk 2002). The goals of such programs (Table 1) make it clear that a team of health professionals is required to assess the range of problems in each patient and then to address such problems.

Table 1 Goals of Multidisciplinary Pain Management

- Identify and treat unresolved medical issues
- Eliminate inappropriate medications
- Institute desirable medications
- Improve aerobic conditioning, endurance, strength and flexibility
- Eliminate excessive guarding behaviours that interfere with normal activities
- Improve coping skills and psychological well being
- Alleviate depression
- Assess patient's resources and identify vocational and recreational opportunities
- Educate the patient about pain anatomy, physiology, psychology with emphasis on
  - discriminating hurt from harm
  - acute vs chronic pain
- Educate the patient about prudent health care consumption
- Assist the patient in establishing realistic goals and maintaining treatment gains
- Overall goal: Symptomatic improvement; restoration of physical, psychological and occupational functioning; reduced use of health care; independence; return to work.

The International Association for the Study of Pain (IASP) has published guidelines for the effective operation of MPCs (Loeser 1991) and the FPM has modified these guidelines for use in Australia (Faculty of Pain Medicine Professional Document PM2 *Requirements for Multidisciplinary Pain Centres Offering Training in Pain Medicine)* (under revision) Appendix 7.2.

The characteristics of patients with chronic pain who are treated in MPCs are different from those who are not. Patients treated at MPCs had reports of constant pain, high levels of emotional distress, work-related injuries, lower levels of education, high levels of health care utilisation, high levels of opioid care, high levels of functional impairment. The average duration of pain was 7 years (Crook et al 1989).

Thus it is clear that patients attending MPCs have the most recalcitrant problems that are resistant to all prior treatments. It is important to view the studies of efficacy of various management options in the light of the severity of problems that are managed.

Multidisciplinary Pain Programs

Such programs are offered by all MPCs in Australia – usually on an out-patient basis, with an intensive phase of daily attendance for 3 weeks followed by review sessions at intervals after the acute phase (see Loeser & Turk 2001).

Two systematic reviews and meta-analyses have confirmed the efficacy of such programs (Flor et al 1992, Morley et al 1999). Reduction in pain was comparable even to some invasive treatments, but other outcomes were superior to other treatments in terms of medication use, health care utilisation after treatment, functional activities, return to work, closure of disability claims and substantially fewer iatrogenic consequences and adverse events (see also Turk 2002). Cost effectiveness of multidisciplinary pain management programs is markedly superior to other treatment options (see Section 5.2).

Use of Medications

Pain medications are in the top ten of drug groups by prescription counts, and a wide range of agents are prescribed for patients with chronic pain. In 1999 paracetamol was number one and codeine 30mg with paracetamol number three by prescription counts; in the year 2000 paracetamol remained number one (PBS website). In the case of cancer pain, the WHO and other bodies have provided usage guidelines, and there is substantial agreement about the benefits of opioid and non-opioid drugs. However it is now clear that even in cancer patients effective and safe medication treatment of cancer pain requires a broad framework, enabling the consideration of all the possibilities of management (Bruera et al 1989, Meuser et al 2001). An appropriate framework is provided in Palliative Medicine and/or Pain Medicine Centres, however many patients are managed outside such centes, with only the more challenging patients referred.

In the case of chronic non-cancer pain there is substantial difficulty in determining which patients, and under which circumstances, obtain benefit from the use of opioid and non-opioid drugs on a long-term basis (Haddox et al 1997).

In Australia, Fellows of the FPM have played a key role in developing consensus statements (Graziotti & Goucke 1997) and providing editorials to clarify the responsible use of opioids in chronic non-cancer pain (Cousins et al 1998, Molloy et al 1997). These statements emphasise the need for assessment in an MPC prior to committing a patient to long term opioid use. In many patients, short term benefits are gained but subsequent treatment in a cognitive behavioural program permits over 70% of patients to be managed without opioid use (see Flor et al 1992; Turk 2002).

This emphasises the valuable role of an MPC in avoiding unnecessary opioid use and helping a significant percentage of those patients commenced on opioids to manage without them. As outlined in the Editorial by Molloy et al (1997) there are patients with severe incurable degenerative conditions who benefit from opioids, preferably on a time-contingent basis, with controlled-release preparations (see also Allan et al 2001). However such treatments can be expensive, and the expertise of an MPC or a Pain Medicine Specialist are invaluable in considering other options prior to embarking on such treatment long term.

The Oxford Cochrane group has used the Numbers Needed to Treat (NNT) and Numbers Needed to Harm (NNH) evaluation method to report on efficacy for chronic pain treatment of a broad range of analgesics (McQuay & Moore 1998). For anti-convulsant and antidepressant drugs used for treatment of neuropathic pain NNT for effectiveness is of the order of 2.5, with NNH for adverse effects of approx 3.0. Thus very careful patient selection and close titration and management of side effects is essential. Although such drugs appear to have a narrow therapeutic index, patients with severe neuropathic pain often have few options, and the skilled evaluation of a Pain Medicine specialist may be needed to assist General Practitioners in some patients with severe neuropathic pain.

Evidence of efficacy for newer anticonvulsants with fewer side effects is becoming available (Mao & Chen 2000, Laird & Gidal 2000). Such drugs are very expensive and evaluation in an MPC to consider other options may often be appropriate.

"Third line" agents such as systemic lignocaine (Wallace et al 1996) and ketamine (Rabben et al 1999) have become a highly valuable option for neuropathic pain in Pain Medicine and Palliative Medicine.

Efficacy of Invasive Methods

There are a number of invasive methods of management of chronic non-cancer pain and cancer pain. Such methods are used in less than 10% of patients who are assess in MPCs, and where the full range of options is considered. However in some patients, maximal efforts to optimise non-invasive treatment fails and in such patients invasive methods can be invaluable. This is particularly so in the treatment of neuropathic pain in patients with chronic non-cancer pain and in a substantial range of severe mixed nociceptive/neuropathic pain problems in cancer patients. Unfortunately there has been an overuse or misuse of such procedures in some settings overseas and in Australia, where the multidisciplinary assessment of factors associated with the patient's pain is not carried out, and only limited treatment options are considered and/or available.

Because of the importance of invasive methods to patients with the most severe chronic pain problems, the highly specialised nature of the procedures, and the key role of Pain Medicine specialists in developing and assessing such treatments, some major examples are considered in the following sections. More detailed material is provided in Appendices 9 and 10.

Spinal Cord Stimulation (SCS)

This section is elaborated on because it is an example of how Pain Medicine experts have enhanced standards of health care and improved outcomes in a cost-effective way.

Spinal cord stimulation (SCS), first called Dorsal Column Stimulation (DCS) is a treatment that has been used for more than 30 years, but only in the last 5 to 10 years have key data become available regarding underlying mechanisms, clinical efficacy and cost-effectiveness.

An Honorary Fellow of FPM, Professor Arthur Duggan, provided convincing evidence of a major component of the analgesic effects of SCS. Duggan reported that SCS-induced inhibition of spinothalomic tract neurons could be antagonised by the gamma-aminobutyric acid ($GABA_A$) antagonist bicucculine (Duggan & Foong 1985).

Subsequently, the group under the direction of Korolinska Institute Neurosurgeon Bjorn Meyerson confirmed Duggan's work by reporting that SCS produces an increase in GABA release, and that GABA release inhibits the increase of excitatory amino acids associated with nerve injury (Linderoth et al 1994b, Stiller et al 1996, Cui et al 1997).

Furthermore, intrathecal GABA in nerve-injury induced rats markedly enhances the effect of SCS on tactile allodynia (Cui et al 1997). Since the GABA system plays a key role in 'descending inhibition' and local inhibition in the spinal cord, these studies provide a more tangible and credible explanation for the analgesic aspects of SCS than the original proposal that its mechanism lay in the 'Gate Control Theory of Pain' (Melzack & Wall 1965). Other new evidence indicates that local adenosine release also plays a part in SCS-induced analgesia (Cui et al 1997, Cui et al 1996, Meyerson et al 1997). In animal models of nerve injury, allodynia and hyperalgesia is partly due to a loss of tonic GABA-mediated inhibition, as well as an increase in excitatory amino acids in spinal dorsal horn cells (Woolf & Dowbell 1994).

Following early reports of SCS by Neurosurgeon Norman Shealy in 1967, there was an uncontrolled proliferation of use of this method in the 1970s and 1980s for a wide variety of chronic pain problems, with very inconsistent and often disappointing results. Patient selection was extremely weak, trial stimulation was often not used or criteria for success were unclear, and the electrodes and pulse generator equipment were rudimentary with frequent equipment failures. Since early in the 1990s this situation has changed markedly; electrode design has improved, with increased reliability; percutaneous techniques now predominate so that carefully controlled trials can be carried out prior to implanting permanently; criteria for patient selection are much better defined (see Meyerson & Linderoth 2001).

Improvements in SCS systems have permitted reliable stimulation into, for example, low back and both lower limbs for patients with "failed back surgery syndrome" (FBSS). Equally important has been the larger number of electrodes (quadrodes and octrodes) which have made it less likely that electrode arrays will require repositioning (North et al 1991, North & Wetzel 2002). Thus the commonest technical problem of early SCS treatment, "electrode migration" has been largely overcome (Meyerson & Linderoth 2001). Two consensus documents have now been published which discuss indications for SCS and guidelines for its implementation (North et al 1994, Gybels et al 1998), and the FPM is developing a Professional Document on this subject. The trial of efficacy of SCS is a major advantage over invasive surgical procedures such as spinal fusion, laminectomy, foraminotomy, where a trial of treatment is impossible.

Studies of efficacy have been hampered by the lack of a true placebo since it is necessary, for effective SCS, to obtain paraesthesia into the affected area and patients are aware of this. Ethical issues also arise in the "ideal" study design where patients who "respond" to a trial of SCS are then randomised to implantation or no implantation; the latter group having been subjected to an invasive procedure with risks and then been denied potential benefit. No such study has been performed and it is unlikely that it will be. Thus until recently evidence of efficacy has been confined to case series with long-term follow-up, some of which employed an unbiased observer (see below).

Despite the limitations of longitudinal case series, there is a remarkable concordance in many published series over the past 30 years, particularly with respect to well defined neuropathic pain problems. In general most studies report over 50% pain relief which is sustained at follow-up times varying from 1 year to 10 years (Turner et al 1995).

In 1995 the University of Washington Multidisciplinary Pain Center carried out a systematic literature synthesis of 39 case series (Turner et al 1995). At one-year follow up: 59% of patients with SCS implants had greater than 50% pain relief; 29% were working and 58% reported improved functioning. Most of these case series were generated in an era when there were major deficiencies in patient selection, trial procedures and equipment reliability. Not surprisingly, 42% of patients had 'any complication' – mostly the need to reposition or replace an electrode (Turner et al 1995). Much lower complication rates have followed improvements in SCS equipment and development of operator expertise (North et al 1993; North & Wetzel 2002).

Efficacy of SCS in Particular Conditions

A summary of the evidence for efficacy is provided in Appendix 9. In brief, neuropathic pain syndromes in carefully evaluated patients with pain that is refractory to other treatments respond to SCS in more than 50% of patients, with pain reductions of the order of 50% in: peripheral nerve injuries (Lazorthes et al 1995, Spiegelmann et al 1991, Barolat et al 1989, Meyerson et al 1991, Krajnick et al 1980, Tesfaye et al 1996, Kumar et al 1991); spinal root injury, including "failed back surgery syndrome" (Lazorthes et al 1995, Turner et al 1995, North et al 1993, North et al 1994, North & Wetzel 2002); spinal cord injury "transitional zone pain" (Siddall et al 1997, 1999, 2002, 2003, North et al 1993, Meyerson & Linderoth 2001). Pain of inoperable peripheral vascular disease responds to SCS in more than 70% of patients (Linderoth et al 1991a, 1991b, Linderoth et al 1994: Augustinsson et al 1985, Groth 1985, Jacobs et al 1988, 1990, Sciacca et al 1986, Cook et al 1973, Jivegard et al 1987, Broggi et al 1987, Broseta et al 1986, Barolat 1995): Intractable angina pectoris responds to SCS in more than 80% of patients (Hautvast et al 1996, 1998; Jessurun et al 1996, 1997; Eliasson et al 1993, 1996; Mannheimer et al 1993, 1998; Chandler et al 1993; Meyerson & Linderoth 2001; Sanderson et al 1992; Merry et al 2001; Andersen C et al 1994, Gonzalez-Darder 1991, Jautvart et al 1998).

Despite ethical difficulties in study design, there are two randomised prospective controlled studies of SCS. In failed back surgery syndrome, North reported a significant advantage in outcome for SCS over repeat spinal surgery (North et al 1991, North et al 1994).

In patients with severe angina pectoris, a controlled study compared SCS with coronary artery bypass grafting. Symptomatic relief was similar in both groups but cardiovascular morbidity and mortality rates were lower in the SCS group (Mannheimer et al 1998). An FPM Fellow, Prof Alan Merry has reported on the cost-effectiveness of SCS in intractable angina (Merry et al 2001).

Spinal Intrathecal and Epidural Drug Therapy

Implantable Drug Delivery Systems (IDDS) are used in a small percentage of patients with severe intractable chronic non-cancer pain and cancer pain for spinal drug delivery (Carr & Cousins 1998, Walker et al 2002). (see also Appendix 9). IDDS options are: simple percutaneous epidural or intrathecal catheters or totally implanted ports or pumps.

A vast basic and clinical science literature now underpins the clinical application of spinally administered opioids and non-opioid drugs (Cousins & Mather 1984, Carr & Cousins 1998, Dougherty & Staats 1999, Walker et al 2002). FPM Honorary Fellow, Professor Laurence Mather and FPM Fellows Professor Michael Cousins, Dr Philip Siddall, Assoc Professor David Cherry and Dr Suellen Walker have made significant contributions to the development and evaluation of this form of treatment (Cousins & Mather 1984, Walker et al 2002) (see also Appendix 9).

Initial clinical application of opioids used as a sole agent (monotherapy) was reported to be an effective option for cancer pain, but of similar efficacy to subcutaneous infusion (Kalso et al 1996). Subsequently, it became apparent that patients who failed to obtain relief with all systemic routes of administration could obtain relief via the spinal route (Carr & Cousins 1998), albeit often with significant side effects. Over the last decade drug combinations have proved to be more efficacious when given spinally (Walker et al 2002). Most commonly used combinations are opioids, clonidine and local anaesthetics. The level of evidence has usually been only moderate, however some randomised controlled studies have now been reported (Siddall et al 2000, Smith et al 2002). Also, carefully conducted trials of treatment are now usually performed percutaneously prior to IDDS (Siddall et al 2000). In cancer patients with short life expectancy, percutaneous epidural or intrathecal catheters may be continued as a cheap and effective method.

Cancer Pain

Pain occurs in 67% of patients with metastatic cancer. Despite the wide application of the WHO ladder and other strategies to optimise systemic medication, it is now recognised that 5-15% of cancer patients have refractory pain or have unacceptable side effects with systemic medication and poor quality of life. Such patients become candidates for IDDS, which is predominantly managed by MPC staff. An advantage of involvement of an MPC for this group of cancer patients is that comprehensive evaluation often reveals other options for treatment, and management of IDDS is rigorously controlled.

A randomised prospective multi-centre trial of 202 patients with refractory cancer pain compared comprehensive medical management (CMM) with IDDS. Clinical success was defined as >20% reduction in pain visual analogue scale (VAS) score or equal pain scores with >20% reduction in toxicity scores. Sixty of 71 IDDS patients (84.5%) achieved clinical success compared with 51 of 72 CMM patients (70.8%) (Smith et al 2002). IDDS patients more frequently achieved >20% reduction in both pain VAS and toxicity (57% vs 37.5%). Toxicity scores decreased 50% in IDDS patients compared to 17% in CMM ($p = 0.004$). IDDS patients also had improved quality of life and a tendency to improved survival with 53.9% IDDS patients alive at 6 months compared to 37.2% of the CMM group (Smith et al 2002). A further report on this study indicates improved qualify of life of care givers of IDDS patients (Smith et al in press) (see also Appendix 9).

Chronic Non-Cancer Pain

This is the most controversial use of IDDS. In view of the cost of IDDS it is generally reserved for the most intractable patients, when all other measures (often including SCS) have failed. Thus it has been difficult to obtain controlled data on efficacy. It is generally agreed that potential candidates for IDDS should have a comprehensive assessment in an MPC and an adequate percutaneous trial of spinal drug therapy prior to proceeding to IDDS. The evidence for various drugs and drug combinations for IDDS has been systematically reviewed by Walker et al 2002. The most clear-cut study of efficacy is in patients with post-spinal cord injury neuropathic pain (Siddall et al 2000). In this study all patients received intrathecal saline, morphine, clonidine and morphine/clonidine. In the first phase the doses of morphine

and clonidine were titrated to determine effective doses or doses causing side effects. In the second phase, each patient received a combination of 50% of the final dose of morphine and clonidine. The results indicated that the morphine/clonidine combination was effective but morphine and clonidine alone were no different to placebo (Siddall et al 2000).

IDDS has now become an important treatment option for patients with severe post spinal cord injury pain. Studies of similar design and follow-up studies of other types of chronic non-cancer pain are required in the setting of prior rigorous patient evaluation in an MPC (Walker et al 2002). (see Appendix 9). The FPM is developing Professional Documents on: "Guidelines on Intrathecal Medication" and "Guidelines for Implantable Pumps for Intrathecal Therapies".

The currently available results of IDDS should be viewed in the light of spinal surgery outcome. Lehmann et al (1987), reported that 75% of patients who had spinal fusion continued to report pain after surgery. In a study of 575 patients with back pain who had surgery for herniated discs, Dvorak et al (1988) reported that 70% continued to report pain up to 17 years after surgery. North et al (1991) and Dvorak J et al (1988) noted that 66% of patients who underwent repeat surgery for back pain continued to experience pain five years after surgery. These are many of the patients with back pain who present to MPCs for assessment and treatment, having endured severe pain, and all of its consequences for many years. It is thus remarkable that good to excellent pain relief is reported in most published studies of IDDS in such patients. For example, pain reduction of the order of 60% is reported (Hassenbusch et al 1991, Paice et al 1996, Kumar et al 2001). It is likely that more precise diagnosis prior to IDDS could improve outcome. For example, in patients with predominately neuropathic pain, Hassenbusch et al (1995) found that pain reduction was only 39%. In this series, patients received mainly opioids and, from the study of Siddall et al (2000), it seems likely that other drugs such as clonidine would have been required for more adequate pain relief. This again points to the need for assessment of pain type and factors associated with pain in an MPC and careful percutaneous trial of appropriate drugs.

Radiofrequency Lesioning

Although radiofrequency lesioning (RF) has a long history for treatment of Trigeminal Neuralgia, its use for management of neck and back pain is more recent and still undergoing rigorous evaluation.

In the case of trigeminal neuralgia, percutaneous RF lesions of the trigeminal ganglion have produced consistently reliable relief of pain and it is now the most frequently used procedure for this condition. Initial relief is reported in 83% of patients in one series (Burchiel et al 1981) and 99% in another series (Tew et al 1982). Long term studies report recurrence rates as low as 14% at 4 years (Burchiel et al 1981).

In the case of neck and back pain, such patients represent the most complex and difficult in the field of Pain Medicine. Invariably a combination of physical, psychological and environmental factors contribute to the patient's report of pain. Thus, prior to contemplating the use of an invasive RF procedure, comprehensive assessment by a Pain Medicine Specialist, preferably in an MPC setting, is essential. Rarely, if ever, is RF lesioning an effective sole treatment for neck and back pain, despite reports of positive results. Rather, the period of pain relief following successful RF provides an opportunity to move ahead with other measures that are usually needed. The most logical indication for RF lesioning for back pain is pain related to the zygapophyseal joints (facet joints) which are inervated by the medial branch of the posterior primary ramus; lesioning of this small nerve does not result in superficial sensory loss and is not associated with development of neuropathic pain. However many patients with back pain have a mixture of physical factors due to disease in intervertebral discs, spinal nerve roots, facet joints and other structures. Thus controlled diagnostic blocks of the medial branches are needed to determine the relative contribution of the facet joint to the patients' pain.

Recently, a systematic review of Randomised Controlled Trials (RCT) was carried out by Niemisto et al (2003) as part of the Cochrane Database of Systematic Reviews. The best evidence is from an RCT of 24 patients with cervical facet-related pain, determined by controlled local anaesthetic blocks of medial branches (Lord et al 1996). By 27 weeks after the procedure one patient in the control group and seven in the RF treatment group remained free of pain. The median time to return of preoperative pain was 263 days in the intervention group and 8 days in the control group. This study has yet to be replicated but the results are encouraging and were interpreted in the review as 'limited evidence of short term relief' (Kalso et al, 2003).

With respect to lumbar facet-related pain, there are three RCTs of RF (van Kleef, 1999, Gallagher, 1994, Leclaire, 2001. The study population in van Kleef's study (n=31) included patients with chronic low-back pain of more than 12 months duration who had obtained at least 50% pain relief from diagnostic dorsal ramus nerve blocks with local anaesthetic. At two months follow-up, the RF group had greater reductions in pain VAS compared with the control group, and also greater reductions in the Oswestry disability scale. The study population in Gallagher's study (n=41) included patients with low back pain of more than three months duration who fulfilled criteria for facet-related pain, and who showed either good or equivocal response to injection into or around facet joints. This study exemplifies problems in the literature, since injections into or around facet joints can leak into the epidural space, making the results non-specific for the intended facet joint target.

The study population in Leclaire's study (n=70) were patients with chronic low-back pain of longer that three months duration, who had experienced significant pain relief for at least 24 hours during the week after intra-articular facet injections with small volumes of local anaesthetic – again the problems of Gallagher's study arise, but less so. At four weeks follow-up, the RF group showed greater improvement in Roland-Morris disability score (-8.4) compared to the control group (-2.2). At 12 weeks neither functional disability nor pain level showed any treatment effect.

The Cochrane group reviewers' conclusion was that RF lesions for low-back pain had a positive short-term effect in van Kleef's study but a neutral effect in Leclaire's study. Clearly future studies are needed with preliminary double-blind placebo controlled diagnostic medial branch blocks with local anaesthetic prior to RF lesions. More recent studies have claimed higher success rates with controlled diagnostic medial branch blocks, more careful attention to identifying the pain-related facet joints, and adequate RF denervation of these joints (Dreyfuss 2000).

In summary, RF lesions of medial branches for 'mechanical' neck and low back pain have emerged as useful short-term measures to enable patients to engage in increased activities and to participate in appropriate programs to help regain normal activities. It seems unlikely that RF lesions alone will provide a 'cure' and such procedures obviously cannot be repeated every 3 months, pointing to the need for a well co-ordinated multidisciplinary approach to back pain in an MPC rather than repeated monotherapy.

Intradiscal Electrothermal Anuloplasty (IDET)

This is an invasive percutaneous procedure that developed in response to the disappointing results and potential long-term complications of spinal fusion. The procedure is claimed to target 'internal disc disruption' (IDD) or contained tears in the annulus of the disc. Such lesions appear to be associated with severe ongoing central back pain, most commonly in the low-back region. Injection of contrast material into the fissure in the disc at discography (provocative discography) is claimed to reproduce the low-back pain. However some patients with normal discs experience such pain and thus the 'diagnostic' discography includes an injection into an adjacent normal disc, if available. The IDET procedure involves the insertion of a flexible catheter into the annulus of the disc adjacent to the disruption. The top of the catheter contains a moveable tip with a heating element. Once in position a programmable heat generator is connected to the catheter tip and temperature-monitored heating of the catheter top is commenced with the aim of (a) coagulating the collagen of the disrupted annulus (b) destroying the associated nociceptive fibres (Saal & Saal 2000).

It is estimated that the incidence of intervertebral disc disorders is 9.2 per 1000 population in Australia. Based upon the number of hospitalisations for disc disorders per year there are about 143,489 episodes attributable to disc problems; however such diagnoses include a wide range of patients with low back pain. It is universally accepted that low back pain has a multifactorial basis and proper diagnosis requires assessment of physical, psychological and environmental factors – often in an MPC if the problem is severe. In this context some patients emerge in whom IDD appears to be playing a key role in their pain. At present such patients may be offered a spinal fusion, conservative treatment or more recently IDET.

Unfortunately in the USA the procedure has proliferated rapidly as a 'monotherapy' for low back pain. Some proceduralists performing this invasive procedure do not assess the patient comprehensively beforehand and may be unaware that the major factors in progression from acute to chronic pain are in the psychological domain rather than related to physical factors. Thus this invasive and expensive procedure should be evaluated in the context of an MPC.

The Medical Services Advisory Committee (MSAC) evaluated the evidence for this procedure in November 2002. The Supporting Committee to MSAC included three FPM Fellows (N. Bogduk, P. Finch, R. Goucke). The assessment concluded that at present there is level III-2 and IV evidence to describe the efficacy and safety of IDET. The primary evidence is a quasi-controlled, open-label prospective study (Karasek & Bogduk 2000; Bogduk & Karasek 2002). All other reports are uncontrolled case series, either retrospective or prospective (eg. Saal & Saal 2000). In the level III-2 study the control group were patients whose insurance company would not reimburse IDET, and they underwent conservative rehabilitation but not a comprehensive program in an MPC. However the study adhered to strict criteria for IDD, and IDET was carried out in a standardised way. There were many differences in diagnostic criteria and procedural aspects in other reports.

At 24 month follow-up in the study of Karasek and Bogduk (2000) 57% of the evaluable patients treated at a single disc level had approximately 50% reduction in their VAS pain score; of these 20% were pain-free. In contrast only 12% of control patients had approximately 50% reduction in VAS pain score. MSAC recommended that public funding should not be supported at this time for this procedure.

This new IDET technology is a classic example of an expensive invasive new method that should be evaluated in an MPC where the resources are available for comprehensive initial assessment and follow-up of patients, together with application of rigorous scientific methodology.

Epiduroscopy and Lysis of Epidural Adhesions

Epiduroscopy involves the insertion, via the caudal canal of a flexible fiberoptic device that permits direct visualisation of the epidural space and its contents, including the spinal nerve roots. In theory this should provide an opportunity to directly view inflammation, oedema, adhesions and other problems affecting nerve roots. Where adhesions are identified it has been claimed that injecting hypertonic saline may 'lyse' such structures and corticosteroids can be injected close to inflamed nerve roots. Although appealing in principle, no controlled data have been presented, and this is another example of a procedure in need of rigorous evaluation in an MPC with academic resources.

Neural Blockade Techniques

A very large number of temporary (local anaesthetic) and semi-permanent (neurolytic agent) neural blockade techniques are used in diagnosis, prognosis and treatment of chronic non-cancer and cancer ain. This is the subject of a large textbook (Cousins & Bridenbaugh 1998). The text evaluates the rationale, clinical indications and evidence for efficacy/safety of these techniques, covering 34 chapters on the subject. Important evolutions in the 3rd edition of this text include: new insights into actions of long-duration local anaesthetics; recognition of the complex factors in interpretation of results of diagnostic nerve blocks; use of sympathetic and other blocks as an 'adjunct' to restoration of function rather than as a sole treatment; restriction of use of neurolytic blocks to the sympathetic nervous system in chronic non-cancer pain; major reductions in use of neurolytic blocks in cancer pain in favour of more flexible and long lasting methods such as spinal opioid and non-opioid drug delivery, with the

exception of neurolytic coeliac plexus blockade. A review of this evidence for efficacy of neural blockade techniques was provided by Cousins and Walker at the 9th World Congress on Pain (Cousins & Walker, 1999) (see also Appendix 9).

The evidence for efficacy and safety of neurolytic coeliac plexus blockade deserves special mention. The prime indication for this technique is pancreatic or other upper abdominal cancer pain. A meta-analysis of 23 studies reviewed data on 1126 patients. Good to excellent pain relief was achieved in 90% of patients during the first 2 weeks after the block and only 6% required a repeat block for inadequate analgesia. Partial or complete pain relief was observed in 95% of patients alive at the last time of follow-up, and 87% of patients at the time of death. (Eisenberg et al 1995) (Appendix 9).

Two randomised prospective controlled studies in patients with inoperable pancreatic cancer compared alcohol coeliac plexus block with saline block. Patients treated with alcohol celiac plexus block had a highly significant increased survival compared to a control group (Lillemoe et al 1993, Staats 2001). When taken together with increased survival data associated with IDDS (see above Smith et al 2002), it appears that improved pain control, and minimising the use of systemic opioids may improve survival. Further studies are underway, with a major Australian MPC involved.

Epidural Administration of Corticosteroids also merits special mention. This technique continues to be used in a rather indiscriminate way in many countries, including in some settings in Australia. An NHMRC report published in 1994 recommended that this technique be used only for radicular pain and that evidence for efficacy at that time remained equivocal (NHMRC 1994). Subsequently, the Oxford Cochrane group carried out a systematic review and concluded that efficacy had been established for the treatment of nerve root irritation (McQuay & Moore 1998). An additional review is that of Abram (1999). The FPM has promulgated a Professional Document setting out the rationale, indications and conduct of the correct procedures for use of epidural corticosteroids (PM3 2002 *Lumbar Epidural Administration of Corticosteroids*) (Appendix 7.3). This document serves as a template for other professional documents on a wide range of treatment options, which will refer to evidence of efficacy/safety, indications and correct procedures (see Section 3.4, page 13). The transforaminal approach to epidural injection has also been reported to have promising results in an RCT of patients with lumbrosacral radiculopathy (Vad et al 2002).

Neural Blockade Procedures in the Older Age Group

A special case for procedural technique is in the older age group. Such patients suffer from a multitude of degenerative diseases, many of which cause chronic pain. Fortunately some of these problems are amenable to direct treatment such as replacement of a severely osteoarthritic hip, decompression of a severe spinal stenosis or vascular reconstruction to address lower limb ischaemia. However a substantial number of patients have received appropriate treatment and still have pain, have a disease that is not suitable for direct treatment or are too ill for the proposed procedure. In this situation analgesic and co-analgesic medications are often tried. However in the older age group not infrequently virtually every analgesic is poorly tolerated or proves inadequate. Examples of problems causing severe pain in the older age group are: diffuse inoperable osteoarthritis of the spine, inoperable peripheral vascular ischaemia, multiple osteoporotic crush fractures, severe post-herpetic

neuralgia, intractable angina, and severe peripheral neuropathic pain (diabetic, alcoholic etc). Percutaneous neural blockade procedures available in an MPC can make an enormous difference to quality of life in such patients, can be carried out on a 'day only' basis and are highly cost effective. A good example is percutaneous neurolytic lumbar sympathetic blockade for inoperable lower limb ischaemia.

In a large series conducted by two multidisciplinary Pain Centres in collaboration with two academic departments of surgery, it was reported that 80% of patients achieved relief of rest pain and in 55% of cases, previously recalcitrant ischaemic ulcers healed. In this series of 386 patients followed for at least 6 months, there were no deaths associated with the procedure which was carried out on an outpatient basis (Cousins et al 1979). A subsequent randomised prospective study by the same group reported a similar efficacy and duration for surgical compared to neurolytic sympathectomy. However the surgical procedure required hospitalisation and general anaesthesia, with significant risks of morbidity and mortality in the age group (Walsh et al 1984). Many other percutaneous neural blockade techniques are suitable for palliation of pain in this age group: percutaneous epidural infusions for severe pain associated with osteoporotic crush fractures or intractable post-herpetic neuralgia pain; single-shot epidural corticosteroids for multiple level foraminal stenosis at cervical or lumbar level; radiofrequency lesions of medial branches for severe mechanical back pain. In a small percentage of cases percutaneous intrathecal catheters, implanted 'port' systems or automated pumps for intrathecal drug administration may be needed (Cousins & Bridenbaugh 1998, Cousins & Walker 1999).

Discontinued Treatments

There are numerous other treatments that have been largely discontinued for patients with chronic non-cancer pain because of clear evidence that such treatments have no effect on long-term outcome. Such treatments include: repeated 'trigger point' injections; repetitive 'passive' physical therapy; repeated sessions of manipulation of the spine; repeated use of intravenous regional sympathetic blocks for complex regional pain syndromes.

Equity of Access

Equity of access for patients of all categories is provided in all MPCs approved for the FPM training program, since all are located in major public hospitals. All of these MPCs treat insured and uninsured patients. Some MPCs have liaisons with nearby private pain medicine services. This has been encouraged by the FPM to enhance training for FPM trainees and to encourage joint appointments of FPM specialists.

There has been a good output from the FPM training and examination process since the inception of the FPM. There are now 170 Pain Medicine Fellows. Details of their distribution are given in 4.5. Nevertheless, there is a substantial discrepancy between demand and the resources available to meet such demand. Waiting time for appointments in the major MPCs is of the order of 3 to 6 months. In some states (eg Victoria) a major boost to hospital based resources is required.

Another dimension of the current resources is the potential threat of biological or nuclear weapons of mass destruction. Sophisticated methods and manpower for treatment of challenging and severe pain problems will be required, with an emphasis on hospital based resources. A lesson can be learned from the lack of preparedness for severe pain problems following World War II which led to J.J. Bonica to found Pain Medicine as a discipline (Bonica 1988). Neurological toxins and cruelly destructive explosive devices have a high potential to produce various types of nerve injury, with associated severe neuropathic pain. Plexus avulsions and amputations are part of this problem area and are associated with severe difficulty in managing neuropathic pain. MPCs are essential to respond to such challenges.

3.7 Status of the specialty in other jurisdictions including New Zealand

Explicit training in Pain Medicine is unique in Australia and New Zealand, under the auspices of FPM.

The American Board of Anesthesiology (ABA) oversees a hospital based subspecialty training program in pain medicine which is of one year duration following specialty qualification in anesthesiology. Recently the ABA has agreed to accept candidates from other specialties to the ABA examination, provided they have undertaken a training year in an ABA approved post. The American Academy of Pain Medicine is developing a parallel training program and examination.

In the United Kingdom there is no formal qualification in Pain Medicine.

Pain medicine is a component of training in anaesthesia in a number of other countries, including UK, Germany and Sweden. In Germany an additional two years of training in Pain Medicine are required after qualification in anaesthesia, leading to an examination in Pain Medicine.

In New Zealand there is no specialty category or vocation and no immediate change is likely for at least two years. Pain Medicine comes under either “anaesthesia general” or “anaesthesia/pain”. Those Pain Medicine Fellows who are not anaesthetists, do not have a vocational registration category in Pain Medicine and are currently registered under their parent College (Fellows are R Large RANZCP, M Butler RACP and B Tait FAFRM (RACP). It is not possible currently to pursue any new specialty recognition in NZ because of government review of processes for specialist recognition.

4. NATURE OF THE MEDICAL PRACTICE IN AUSTRALIA

4.1 Practice in Australia

The management of patients with pain occurs in diverse settings in Australia, including metropolitan, urban, suburban and rural hospitals, public and private. Multidisciplinary Pain Medicine, as practised by Fellows of the Faculty, tends to occur in larger institutions in both public and private settings.

Pain Centres accredited for training are mostly in teaching hospitals which meet the criteria laid down by the Faculty. Some private facilities have been approved for training.

The importance of community outreach from pain clinics is being addressed.

4.2 Definition of the specialist practitioner

The knowledge, skills, behaviours and attitudes required by the specialist in Pain Medicine are laid down in the Objectives of Training of the Faculty (Appendix 5) and are in accord with CanMEDS principles (see FPM volume of Accreditation Submission of ANZCA to AMC, April 2002) (Appendix 1).

The goals of education and training in Pain Medicine are to equip Fellows with a specialised knowledge of the neuroscience and neuropharmacology of pain, and with a broad biopsychosocial perspective and thorough clinical skills in all aspects of Pain Medicine.

The Objectives of Training of the Faculty were developed by the Education Committee in consultation with the broad Fellowship, and have been recently revised (Appendix 5). These Objectives organise the content into four main sections:

- Sociobiology of Pain
- Neurobiology of Pain
- Principles of Pain Medicine
- Practice of Pain Medicine

Each section defines specific aims and capabilities for the practitioner and trainee. The content of the objectives is based on the different roles of Medical Expert, Communicator, Collaborator, Manager, Health Advocate, Scholar and Teacher, and Professional as detailed in CanMEDS 2000. Each part of the objectives is referenced to major texts, journals and web sites. This document is a unique articulation of the discipline of Pain Medicine.

The knowledge and skills of a Specialist in Pain Medicine are more highly developed than those generic pain management skills possessed by graduates of the participating specialty bodies. This is clearly the case since training in Pain Medicine is in addition to specialty qualifications in the participating specialties. These additional skills and knowledge are set out in the Objectives of Training and Reading List for FPM. Patients with severe persistent cancer pain or non-cancer pain represent one of the most challenging areas of medical practice, and all specialties represented in the FPM acknowledge the need for a higher level of knowledge, training and skills. The knowledge and skills required of a Pain Medicine Specialist differ from those of related existing medical specialties in breadth and depth. Comparison of the details in the ANZCA and Pain Medicine submissions to the AMC in April 2002 (Appendix 1) illustrates the differences well. This whole submission and those above, provide the reasons why Pain Medicine Specialists need to complete a separate comprehensive and complete training program to acquire the knowledge and skills required for the specialty.

Pain Medicine is not a subspecialty in that it does not have a 'single pathway' (like cardiology via internal medicine). By contrast, Faculty of Pain Medicine training must start in medicine, surgery, psychiatry, anaesthesia or rehabilitation medicine. Medical specialist consultations in Pain Medicine are always complex, and of comparable duration with consultations in medicine or psychiatry.

4.3 Practice base

Pain Medicine practice is based on referral from a general practitioner or other specialist.

Limiting access to Pain Medicine specialists has the potential to exacerbate major medical, financial, societal and humanitarian issues in pain management in all industrialised countries. Pain related disability is a key cost driver in the exponential rise of costs associated with workers compensation for injury. The associated human suffering and social disruption raise serious humanitarian issues. This is elaborated in the FPM document *Statement on Patients' Rights to Pain Management* (PS45 2001) (Appendix 7.7).

Inevitably there will be some continued delay in patients' access to Pain Medicine Specialists given the early stage of development of the specialty. However, gradually more and more patients are receiving appropriate assessment and selection of effective treatment strategies. Recognition of Pain Medicine as a specialty will boost trainee intake, improve MPC resources and enhance the ability of Pain Medicine Specialists to meet the demand for services.

This can have only a significant beneficial impact on the current, financial, societal and humanitarian issues related to unrelieved pain.

4.4 Types of services provided

The types of services provided include consultations, investigations, diagnostic and therapeutic procedures, health promotion, teaching and research. Fellows of the Faculty are prominent in university, professional and community activities.

4.5 The number and geographic spread of medical practitioners engaged full time or substantially in the practice of the specialty or sub-specialty

As of May 2003 the Faculty has 170 Fellows, the majority of whom work in both public and private sectors. The geographical distribution of Fellows is as follows:

Victoria	21
NSW	59
ACT	5
Qld	21
SA	14
WA	15
Tas	3
NZ	13
Hong Kong	5
Malaysia	1
UK	6
Canada	2
USA	2
Other	3

Confidential information held by the Faculty of Pain Medicine indicates that there is a mix of Fellows' practice between public (average 50% with some 100%) and private practice. Multidisciplinary units tend to have Fellows working 100% in Pain Medicine. There are others who practice Pain Medicine (at least 50%) combined with their parent specialty.

Among the criteria for election to Fellowship of FPM is a minimum quantum of three sessions per week in Pain Medicine practice, however most successful applicants indicate at least five sessions per week.

4.6 Are there sufficient practitioners to provide a sustainable base?

In the four years since establishment of the Faculty, Fellowship has grown to 170 Fellows, with a well-established training program. Breakdown of the figures has been provided in 4.5, and the academic base is indicated in 3.4. Support of the Faculty by all constituent Colleges, and the increasing number of trainees indicate that the specialty is sustainable both clinically and academically.

In various Universities in Australia and New Zealand, Chairs have been developed with a focus on Pain Medicine

- 1975 Anaesthesia and Intensive Care – with focus on Pain Medicine (Flinders University, SA, Professor M J Cousins)
- 1986 Anaesthesia and Analgesia Research (Flinders University, SA, Professor L E Mather)
- 1990 Anaesthesia and Pain Medicine (University of Sydney, Professor M J Cousins)
- 1991 Emeritus Professor of Anaesthetics and Pain Medicine (University of Queensland, Professor T R Cramond)
- 1991 Anaesthesia and Analgesia Research (University of Sydney, Professor L E Mather)
- 1996 Anatomy and Pain Research (University of Sydney, Professor R Bandler)
- 1997 Basic Pain Research (University of Sydney, Professor A Duggan)
- 2001 Anaesthesia and Pain Medicine (University of Otago, NZ, Professor E A Shipton)
- 2002 Anaesthesia and Pain Medicine (University of Western Australia, Professor S A Schug)
- 2002 Pain Medicine (University of Newcastle, Professor N Bogduk)
- 2003 Basic Pain Research (University of Sydney, Professor M. Christie)

These professorial appointments have given a major impetus to basic and clinical research as well as education in Pain Medicine. The Pain Management and Research Centre of the University of Sydney headed by the Founding Dean of FPM, received an NHMRC "Centre of Clinical Excellence in Hospital Based Research" 1998-2001 research program award.

Numerous academic titles at Professor or Associate Professor level are held by FPM Fellows

- Professor M A Ashby FRACP – Monash University, Vic
- Assoc. Professor R L Atkinson FRACS (FPM Dean) – University of Queensland
- Assoc. Professor G D Champion FRACP – University of NSW
- Assoc. Professor D A Cherry FANZCA – Flinders University, SA
- Assoc. Professor M L Cohen FRACP (FPM Vice-Dean) – University of NSW
- Professor J Gerschman BDSc – University of Melbourne, Vic
- Professor C S Goodchild FANZCA – Monash University, Vic
- Professor R D Helme FRACP – University of Melbourne, Vic.
- Professor R G Large FRANZCP – University of Auckland, NZ
- Professor G Mendelson FRANZCP – Monash University, Vic
- Assoc. Professor A F Merry FANZCA – University of Otago, NZ
- Assoc. Professor M J Paech FANZCA - University of Western Australia
- Assoc. Professor P L Reilly FRACS – University of Adelaide, SA

5. PUBLIC HEALTH SIGNIFICANCE

5.1 In the USA, in response to mounting evidence of inadequate management of pain, the Joint Commission of Accreditation of HealthCare Organizations (JCAHO) published its Pain Assessment and Management Standards in August, 1999.

The complete Pain Management Standards can be downloaded at
http://www.jcrinc.com/subscribers/perspectives.asp?durki=3243&site=10&return=2897
or http://www.medsch.wisc.edu/painpolicy/eguide2000/text_version/summary.html

These standards require health care facilities to:

Recognise the right of patients to receive appropriate assessment and management of pain

- Identify pain in patients during their initial assessment
- Document the efficacy of pain management treatment plans
- Educate patients and their families about pain management

All hospitals and other health care facilities in the USA now have to comply with the standards or risk losing their accreditation.

Pain, Injury and Access to Multidisciplinary Pain Clinics

World wide, there is a realisation that the massive escalation of costs of compensation for injured workers cannot continue. Such problems are under strong scrutiny in Australia and New Zealand, the latest being the overhaul of the New South Wales Workers' Compensation system. A crucial component of any potential advances in this area lies in the rational assessment of pain and injury. Countless worldwide studies indicate levels of chronic recurring pain associated with injury in our communities that calls for better management (Blyth et al 2003a, Crombie et al, 1999). Despite this volume of facts (see also 5.2), in Australia insurance companies, work cover suppliers and health departments in many instances have been slow to recognise the need for research into and improved management of persistent pain. Many public hospitals lack properly funded pain clinics, thus depriving over 60% of patients in the Australian community who are uninsured of access to new practices, treatments and technology. Specialty status for Pain Medicine will give an impetus to recruitment of trainees, to provision of specialist positions, and to establishment of facilities to address this major public health care issue.

5.2 Data to support health care significance

Chronic Pain as a Disease Entity

The concept of chronic non-cancer pain as a 'disease entity' serves to emphasize that, in the large majority of patients with long term chronic pain, all avenues of treatment of underlying causes have been exhausted, or have proven ineffective. In such patients the pain itself, and associated neuroplasticity changes in the nervous system, psychological sequelae and environmental alterations become self sustaining. In the year 2000 evidence for such sequelae of chronic pain became sufficient for the Founding FPM Dean to choose the title: 'Persistent Pain: a disease entity?' in his

Eccles Lecture at the Annual Scientific Meeting of the Australian Neuroscience Society, Melbourne (Cousins 2000). This is an important concept because it focuses attention appropriately on a wide range of problems that need to be addressed in patients with chronic pain (Siddall & Cousins 2003).

Disease Burden

The **disease burden** of chronic pain in Australia has been documented in a rigorous epidemiological study of 17,500 respondents. The prevalence of chronic pain in this study was 17% of males and 20% of females and was strongly associated with being unemployed for health reasons. Features included poor self rated health and high levels of psychological distress. Respondents in the working-age group were most likely to report interference with daily activities due to persistent pain, which affected 76% of males and 84% of females in the 20-24 years age group with persistent pain (Blyth et al 2001) (see also Appendix 10).

The Australian study was broadly in keeping with the results of prior overseas studies referenced in the article (see also Harstall & Ospina 2003, Von Korff 1988, Verhaak et al 1998). Significantly, Blyth et al found that the prevalence of chronic pain was greater than that of diabetes, hypertension or asthma (Blyth et al 2001).

In one of the few prior Australian studies (Helme & Gibson 1999), chronic pain prevalence was 51% in the 65-74 year age group, rising to 55% in those aged 85 years and over. The older age group currently receives inadequate, or non-existent, treatment for their chronic pain, despite major limitations on their independence. As the population demographics shift to the older age group, improved pain relief is essential to help maintain independence, avoid hospitalisation, and home care costs. Better pain relief is very cost-effective in this age group.

At the other end of the age spectrum, there is disturbing evidence in children of unrelieved cancer pain (Wolfe et al 2000) and there are a wide range of chronic non-cancer pain problems leading to the setting up of Paediatric MPCs. The FPM has a Paediatric Pain Working Party and several Fellows of FPM focus their clinical and research activities on Paediatric Pain. An International Congress on Paediatric Pain was held in Sydney in June 2003, organised by FPM Fellows.

Pain related disability, including use of health services and analgesic medications was the subject of another major recent Australian study. Prevalence of chronic pain was 23% of the population sample and more than a quarter of those had pain-related disability. In 44%, chronic pain resulted from injury, with 14% attributing their pain to workplace factors. Visits to GPs were frequent (55% of sample) and use of oral analgesics (often over the counter) was high (70% of sample). Greater levels of pain-related disability were associated with high levels of medication and health care use, including multiple doctor and allied health professional visits, x-rays and hospital admissions (Blyth et al 2003a) (see Appendix 10).

The effects of chronic pain on work performance appear to have been substantially underestimated, partly because only lost work days have been evaluated. The first comprehensive study in Australia found that chronic pain was associated with an average of 16.4 lost work day equivalents (lost work days + reduced effectiveness work days) in a six month period. This was three times the average lost work days in

the population sample (Blyth et al 2003b). If extrapolated to the Australian working population suffering with chronic pain, the nation would be burdened with more than 17.8 million lost work-day-equivalents per annum (Blyth – personal communication). The economic costs of this situation could be high and distributed across all socio-economic groups (see below).

An important finding in the study on work performance was that 68.3% of respondents reported working, for an average of 30 days in the previous 6 months, despite their pain, however there was some reduction in work effectiveness due to pain (Blyth et al 2003b). This suggests that complete removal of pain is not always required for effective functioning, which is consistent with current guidelines for management of acute low back pain. Further insights into this subgroup are important in order to provide appropriate health care support. Swedish studies report good results with early intervention using timely multidisciplinary assessment of the pain followed by a cognitive-behavioural program (Linton et al 1989; Linton & Ryberg 2001). This approach is under investigation in at least one MPC in Australia.

The **impact of litigation** on patients with chronic pain has received little attention. Blyth et al reported that litigation (principally work-related) for chronic pain was strongly associated with higher levels of pain-related disability, even after taking into account other factors associated with poor functional outcomes (Blyth et al 2003b). Almost twice as many patients undergoing litigation (compared to those not in litigation) were in the highest disability category; and were almost twice as likely to be using oral opioid drugs and multiple other medications for pain; making multiple visits to doctors and other health professionals (twice as many as non-litigants); and requiring hospital admissions for pain (three times as likely as non-litigants).

The hypothesis that chronic pain would be associated with **more frequent use of health care** was examined in three settings: primary care visits, emergency department visits, and hospital admissions. Compared to respondents with no pain, those with pain-related disability reported more than twice as many primary care visits, three times as many hospital admissions and emergency department visits. Higher levels of pain-related disability predicted health-care use more than any other pain status variable (Blyth et al 2003c).

An Australian study of prevalence and characteristics of pain in the first 5 years following spinal cord injury provided data previously not available, and highlighted the disease burden of neuropathic pain. Overall 81% of subjects reported ongoing pain. Muscoskeletal pain was present in 59%, at-level neuropathic pain in 41%, below-level neuropathic pain in 34% and visceral pain in 5%. Overall 58% reported pain as severe or excruciating. There was a strong correlation between neuropathic pain at 5 years and at earlier time points; indicating that patients experiencing such pain early following injury are likely to continue to have pain, which will probably be severe (Siddall et al 2003). Other studies report a high prevalence of severe neuropathic pain after amputation (75%) (Nikolajsen, 1997), proximal brachial plexus avulsion (over 90%) (Parry 1980), thoracotomy (over 50%) (Perkins & Kehlet, 2000) and radical breast surgery for cancer (over 50%) (Perkins & Kehlet, 2000) (see also Appendix 10).

The disease burden of chronic pain arises partly from patients who have had spinal surgery, of whom 66-75% continue to have pain (Lehmann 1987, Dvorak 1988); and re-operation rates of 15-33% are reported in various studies depending on whether this procedure is the first or later (Malter et al 1998, Long 1988, Bell 1997). Thus, the decision as to whether spinal surgery is performed or not, is very important. This is particularly so if a prior spinal operation or operations have failed to provide pain relief. It is in this situation that a comprehensive evaluation should be made in an MPC and all options for treatment should be considered. Unfortunately many patients currently are not offered such evaluation, as is borne out by a small area analysis of lumbar spine surgery in a collaborative study between a major MPC in Seattle USA and an Australian MPC (Loeser et al 1993). This study examined all spinal operations for back and leg pain in South Australia over a one year period in 16 health care regions within the State. The rate of surgery varied almost 4-fold among the 16 regions. The effect of 24 health care and socio-economic supply characteristic variables were examined with respect to the observed difference in rates of surgery, and no explanation was found, apart from a small effect related to unemployment rate. The study concluded that '…the decision-making processes of surgeons and their patients remain poorly defined.' In the context of decisions regarding repeat spinal surgery, many spinal surgeons in the year of this study (1987) would have found it difficult to tap the resources of an MPC. Yet this study and persistence of pain after repeat surgery, indicates that the input of an MPC may be valuable in patients where repeat spinal surgery is under consideration and where broad evaluation is essential, with careful weighing of various options.

Thus chronic pain poses a financial burden in many ways:

- Social welfare costs are substantial in most patients with chronic pain.
- Litigation involving chronic pain sufferers has a strong association with lost work productivity and poor health status (Blyth et al 2003b). Litigation is often costly and prolonged, frequently due to poor understanding of chronic pain and its treatment.
- The Grellman Report of the NSW Compensation Commission (1997) found that chronic pain was a key cost driver in the exponential rise of costs, causing a deficit in the NSW system of over $2bn in 1997 (Grellman 1997). Such costs have continued to rise nationally.
- The cost of on-going, often inappropriate health care, including repeated surgery, multiple analgesic medications, hospitalisations and multiple visits to GPs, specialists and allied health professionals needs to be taken into account.
- The cost of lost work days (17.8 million per annum) (see below).

Ineffective acute pain management could pose a disease burden that is higher than previously recognised. Prolonged hospitalisation due to effects of acute pain - respiratory complications (Rigg et al 2002), recovery of gut function (Scheinin, 1987), and perioperative surgical metabolism (Barratt et al 2002) - represents another burden on health care resources. Emerging evidence links severity of acute pain with the likelihood of development of chronic pain. Acute pain progressed to a chronic phase in 11% of patients undergoing open hernia repair and 47% of patients undergoing open thoracotomy (Perkins & Kehlet 2000).

Pain Medicine and the Disease Burden of Chronic Pain

Not only would the recognition of Pain Medicine as a specialty have major implications for reducing this burden of suffering and economic loss (see below) but also the humanitarian aspects of effective treatment of all forms of severe pain (acute, chronic and cancer) would be addressed and emphasised. It has been suggested that relief of severe pain should be a 'human right' (Cousins 2000; FPM *Statement on Patient's Rights to Pain Management*, PS45 2001 Appendix 7.7. Effective pain management through the clinical work of Fellows, as well as research and teaching of all health workers would make significant advances in relieving this economic and humanitarian burden.

Recognition of the specialty of Pain Medicine will result in better use of available resources, with better community care (see Sections 3.4, 3.5 and 3.6). There is also good evidence that the demand for pain relief by the community far exceeds the effective pain management available to them, because of the current mismatch of demand and availability of specialist services, since the average waiting time for patients seeking referral to a multidisciplinary pain centre in Australia is six months.

Because the Fellowship of the Faculty of Pain Medicine (FPM) comprises Fellows of the Australian and New Zealand College of Anaesthetists, Royal Australasian College of Surgeons, Royal Australasian College of Physicians, Royal Australian and New Zealand College of Psychiatrists and the Australasian Faculty of Rehabilitation Medicine (RACP) who already manage patients with pain and who teach other health workers improved methods of pain management, recognition of the specialty will provide community benefits through enhancing the abilities of existing pain management providers. The discipline of Pain Medicine is strongly supported by each of its component Colleges.

Current costs and cost-effectiveness of Pain Medicine

The most thorough evaluation of current costs and potential cost savings of Pain Medicine have been carried out in the USA (Turk 2002) and UK (CSAG 1994). However using data from recent epidemiologic studies in Australia (Blyth et al 2001, Blyth et al 2003a, 2003b, 2003c) current costs can be calculated and potential savings can be estimated (see also Appendix 10).

The study by Turk (2002) used source material from published studies worldwide, including the Australian epidemiologic study of Blyth et al (2001). All costs in Turk's study were presented in US dollars. Turk summarised the epidemiologic studies worldwide as indicating a median point prevalence of chronic pain in Western countries of 15% of the adult population, with back pain one of the most common causes of chronic pain and disability – averaging close to 34% of the population in developed countries.

The costs of this huge disease burden have been estimated in a number of different settings. In the UK back pain is estimated to cost society US$11-21 billion each year (Maniadakis & Gray 2000). In the USA, the cost of treatment for pain in the first year after failed back surgery is estimated at $18,883 (1997 US$) per patient. The foregoing costs of health care are only a relatively small proportion of the total costs which include disability compensation, lost productivity and lost tax revenue. In the USA it is estimated that the costs for back pain alone are: US$34 billion for health care, US$11-43 billion for disability compensation, US$5 billion for lost productivity and US$5 billion in legal services, a total of close to US$85 billion per annum (Turk 2002). However a more recent study, using American Productivity Audit data, estimated the work-related cost of pain in the USA to be $80 billion per year (Stewart et al, 2002). The annual health care costs, excluding surgery, average $12,900-$18,833 per patient with chronic pain (1988-1997 US dollars) with a significant part of this cost relating to medication. In the USA each year 317,000 lumbar spinal surgeries are performed (approx 1,000 per million of population), primarily for pain, at a conservative estimated cost of $15,000 per operation, for a total annual cost of $5 billion. There are many other surgical procedures performed for pain. In an Australian study of lumbar spinal surgery 1267 spinal operations were carried out in one year in the state of South Australia, with 795 performed for back and leg pain in a population of 1,447,881, yielding an average rate of surgery for low back pain of 55/100,000 with a variation of 25/100,000 to 92/100,000 in different regions (Loeser et al 1993). Thus the rate of spinal surgery in Australia based on the study of Loeser et al is on average 585 per million population, i.e., about half the USA level, but the rate is similar in that region with the highest rate of 920 per million population.

In the USA an organisation called Marketdata® carried out a survey of patients with chronic pain. It was estimated that about 177,000 of chronic pain patients are treated in MPCs in a multidisciplinary pain rehabilitation program (PRP). The before PRP treatment costs for these patients of $13,000 non-surgical and $15,000 surgical (mean 1.7 operations) provided a total before PRP cost of more than $20 billion, during the seven years mean duration of pain. Based on the average cost of $8,100 for PRP treatment (twice the Australian cost) the one-off cost of treatment in a PRP would be approximately $1.4 billion (1995 US$). It should be noted that there is clear evidence that patients with chronic pain who are treated in a PRP markedly reduce health care consumption after treatment in a PRP (Caudill et al 1991, Turk 2002) (see Cost-effectiveness below).

Implantable devices for pain relief are widely used in the USA, mostly outside the framework of an MPC, and thus without comprehensive assessment. For spinal cord stimulation (SCS) devices it was estimated that by 1996 in the US 7000 of these devices had been implanted, and that US$0.5 billion had been committed to implantation and related services and treatment of adverse effects (see Turk, 2002). For Intraspinal Drug Delivery Systems (IDDS) estimated costs over five years per patient are $83,000 to $125,000, with the major proportion of such costs incurred at implantation and shortly thereafter. The annual cost of 'medical' management was $13,000 to $19,000 per patient. Thus IDDS costs 'break even' in from 4-10 years and SCS costs break even in 4-6 years. Clearly the ideal outcome is to optimise the use of IDDS and SCS and to minimise reliance on ongoing health care intervention (see Costs/Benefit section).

In the United Kingdom, an expert Working Party investigated the current management difficulties, and made new recommendations for low back pain (CSAG, 1994). Included in this document was a section on economic modelling of current costs and the effects of the management guidelines and service recommendations. The CSAG report estimated that current costs of back pain in the UK are: £480 million for health care, £3.8 billion for lost productivity and £1.4 billion for social welfare support for a total of £5.7 billion (or US$9.5 billion).

Using data from Blyth et al (2001, 2003b), on the age and sex-specific prevalence for chronic pain, sex-specific estimates of days lost from work due to chronic pain and sex-specific estimates for days of reduced productivity due to chronic pain, it is estimated that a total of 17.8 billion work days are lost due to chronic pain in Australia annually. The estimated annual indirect cost to Australian employers resulting from lost productivity is A$2.6 billion. This estimate does not include costs of lost work days due to recurrent pain conditions, workers compensation costs related to pain, costs of unemployment or underemployment due to pain, lost productivity outside the workplace (eg at home), or costs of lost productivity attributable to carers (Blyth 2003c).

Cost-effectiveness of Pain Medicine

In Section 3.6, evidence has been presented that treatment in an MPC can result in improved pain management, decreased iatrogenic complications, reduced use of opioid and other medication, reduced utilisation of the health care system, increased activity and return to work, and increased closure of disability claims (see also Loeser & Turk 2001). It should be re-emphasised that many patients attending an MPC have already received spinal surgery, yet MPCs return 50-150% more patients to work than surgery (see Flor et al, 1992) (see also Appendix 10).

With respect to savings in health care utilisation, financial savings can be readily calculated. The meta-analysis of MPCs by Flor et al (1992) indicate that after treatment in an MPC, patients require one third the number of surgical interventions and hospitalisation compared with non-MPC treatment. Simmons et al (1988) reported a 62% reduction in medical costs after MPC treatment in a pain rehabilitation program. Extrapolated to the 2,318 patients reported in the meta-analysis of Flor et al (1992) and factoring in the cost of MPC treatment, a saving of $18 million in medical expenses would accrue *in the first year after treatment*. These savings do not include savings in reduced disability payments, gains in productivity, and gains in tax revenue. Turk (2002) calculated for the USA the savings for the estimated 176,000 patients treated at MPCs in a pain-rehabilitation program to be $1.87 billion, during the *first year after treatment* at the MPC. Using a non-MPC, annual health care cost of US$12,900 for failed back surgery patients, and the figure of 68% reduction of costs in an MPC, Turk estimated cost savings of $8,772 per treated patient per year. The average age of patients treated in an MPC is 44, and assuming a mean life expectancy of 75 years, this results in a saving of $45 billion in health care costs alone – without calculating other savings noted above.

In the UK, the CSAG report estimated only modest savings in health care of £10-25 million for MPC treatment of back pain. However this report over-estimated the need to increase the use of spinal manipulation, later shown to be ineffective for chronic back pain. On the other hand, large savings in disability and productivity were predicted (see below).

With respect to Savings in Disability Compensation, Loeser & Turk (2001) made an estimate, based on the data for the 3,089 patients in the meta-analysis by Flor et al (1992), of net savings of $2 billion. When applied to the 176,850 patents treated each year in the USA in MPC pain-rehabilitation programs, the savings were estimated to be $13 trillion for a one year cohort of treated patients. In the UK it is estimated that back pain costs £1.4 billion for disability benefits (CSAG, 1994) and much of this could be saved by effective treatment in an MPC.

Based upon Australian data, MPC treatment should be able to return at least 50% of patients to work thus saving half of the $2.6 billion costs of lost work days. Such savings will depend on adequate numbers of MPCs.

With respect to Savings in Lost Work Days and Reduced Effectiveness Work Days, no formal calculations have been reported. However the CSAG report estimated costs of £3.8 billion for lost productivity due to back pain. Since most reports of MPC pain-rehabilitation programs indicate a return to work of at least 50% of treated patients, an increasing percentage of this could be saved as more and more of such patients attended an MPC. In the UK, it was estimated that every one per cent improvement in work productivity would save £38 million in lost production and £14 million in health care services (CSAG, 1994).

5.3 Resource implications

MPCs with training programs are already established in major public hospitals in Western Australia (2), South Australia (2), Victoria (1), New South Wales (4), Queensland (1) and Tasmania (1). Currently there is only one approved training program in Victoria, however plans are well advanced to develop further programs with only a few residual resources required.

Direct health care costs are those of medical specialists, clinical psychologists, nurses and physiotherapists as the major core group in an MPC. Patients are already seeing this group of health care providers outside MPCs and incurring costs for ineffective treatments. These include: multiple ineffective surgical operations for back pain; inappropriate neurodestructive procedures; "trigger point injections" shown to be ineffective; inappropriate use of opioids and other drugs; "passive" physiotherapy and other strategies exacerbating an over-reliance on health care practitioners, and loss of self efficacy; prolonged and ineffective psychotherapy, shown to be ineffective for the majority of chronic pain patients; repetitive counselling; use of TENS, acupuncture, repeated manipulations and other measures – all of which have only short term benefits but do not change outcome in patients with chronic pain. The costs of these ineffective unimodality approaches have been estimated by the 1999 NHMRC report to be in excess of $10bn per annum. This is probably a low estimate in view of a 17.8 million lost work day equivalents per annum, with associated costs of $2.6 billion per annum (Blyth et al 2003b). These costs are in addition to health care costs, social welfare costs and litigation costs (see Section 5.2).

The cost of providing effective, evidence based multidisciplinary Pain Medicine treatment is not inconsiderable, but is a small fraction of the massive financial, societal and humanitarian costs of the current ineffective treatment and unsustainable costs (see Section 5.2).

Effective multidisciplinary pain management has been documented to be currently effective in returning patients with chronic pain to part-time or full-time work in 50 to 75% of cases (see Section 5.2). These same patients have no possibility of achieving this outcome with "more of the same" conventional approach. Since much of the massive cost of the 'long tail' of injured workers is the 10% that remain in pain and inactive, a very large amount of the more than $10bn per annum could be saved. FPM training positions have already been initiated in Queensland, New South Wales, South Australia, Western Australia, Tasmania and New Zealand. Registrar posts that could become training positions if extra resources were provided are available in Victoria. In Victoria, funding of a few key specialist posts and a few additional registrar posts would be needed to make a rotational training scheme viable.

In order to meet the demand of services a boost to trainee numbers would be desirable at an early stage. This could be evaluated by an Australian Medical Workforce Advisory Committee (AMWAC) study of manpower.

The costs of equipment within MPCs have largely been addressed at each State level. Monitoring equipment and other specialised equipment for advanced pain relief techniques is available within MPCs and related departments. There has been a concerted drive to make pain-related equipment available. For example, a recent report on Acute Pain Management to the Victorian Government has resulted in provision of a substantial number of infusion devices and "Patient Controlled Analgesia (PCA)" devices. Other specialist equipment such as radiofrequency lesioning devices and image intensifiers are available in most major hospitals where MPCs are currently located.

Evidence of efficacy of techniques utilising such equipment is available (see Section 3.6).

Costs of Implant Equipment for Individual Patients

Health funds, workers' compensation and other insurance bodies have accepted the costs of major implantable pain relief devices (spinal cord stimulators and spinal drug delivery devices) for insured patients. Most MPCs in major hospitals have budgets for implantable pain relief devices. However some do not have such budgets and thus public patients in their region are at a disadvantage compared to insured and private patients. This issue is being addressed with regional health services and state health departments.

The responsible selection of patients for implantable devices is greatly facilitated by MPCs (see Section 5.2) evaluation of physical, psychological and environmental factors in each patient. The availability of a range of treatment options results currently in less than 10% of patients referred to MPCs receiving an implantable

device for relief of chronic non-cancer pain. In the case of cancer pain less than 10% of such patients are referred to MPCs; frequently percutaneous spinal drug infusion techniques are used and implantable devices are used only in a very small percentage of cancer patients.

One of the advantages of pain relief implantable devices is the availability of trial regimens that permit the evaluation of improvement in pain and function during a percutaneous trial, prior to deciding on a definitive implant. This is in contrast to, for example, repeat laminectomy, foramenotomy, spinal fusion etc where no trial of treatment is possible. Also, the complications of repeated surgery can be significantly greater than for pain relief implants, particularly if the surgical procedure under consideration is in excess of the third procedure for the same problem.

Patients who experience adverse outcomes following spinal surgery (no pain relief and/or further deterioration in condition) represent a major cost to the health care system due to costs of surgery, fixation devices, hospitalisation and other costs. Trial spinal cord stimulation is now carried out on a 'day patient' basis. Definitive implant requires only a 1-3 day hospital admission and recovery is rapid. In a major comparative study of repeated back surgery and spinal cord stimulation (SCS), Neurosurgeon R. North of John Hopkins Medical Center, USA reported a superior outcome for SCS (North et al 1993).

New Technology

FPM Fellows in major MPCs are in a strong position to evaluate new technology and to participate in expert committees such as the Medical Services Advisory Committee (MSAC) which provides advice to the Federal Minister for Health and Ageing. FPM Fellows in MPCs have access to an appropriate range of invasive and non-invasive options for treatment and thus are likely to view new technology in an objective manner. Rigorous clinical trial evaluation can also be performed in MPCs and, where necessary, ANZCA's Multi-centre Trial Secretariat can be utilised by FPM to activate such studies to provide definitive information about the efficacy and safety of new technology, prior to such technology disseminating into inappropriate wide usage. A recent example of this is the participation of FPM Fellows in an assessment of "Intradiscal electrothermal anuloplasty" considered by MSAC in November 2002 resulting in a decision that public funding should not be supported at that time.

FPM Professional Documents on interventional methods of management will also be of assistance in keeping interventional methods in appropriate perspective with limitation of inappropriate use.

5.4 Estimated anticipated growth in the specialty and its impact on the health care system

As indicated in Section 2.2, Pain Medicine is a relatively young specialty that has responded to an obvious need for improved management of acute, chronic and cancer pain (see Sections 3.1 and 3.4). Growth in knowledge at a basic science and clinical level has been rapid (Sections 3.4 and 3.6). However development of training programs is very recent, dating only to 1996 for the ANZCA Certificate in Pain Management and 1999 for the Faculty of Pain Medicine training program leading to an examination for Fellowship.

These recent developments have run in parallel with acquisition of the first clear epidemiologic data of the disease burden of chronic pain in Australia (see Section 5.2); information about current costs and potential savings is also now available (Sections 5.2 and 5.3; see also Loeser & Turk 2001).

The foregoing data make it clear that large savings can be achieved in costs of: health care, lost productivity, workers compensation, social welfare support and lost productivity due to carers.

The cost of providing effective MPCs is not inconsiderable but still permits very large savings (see Section 5.2).

The current situation with resources in Pain Medicine is that MPCs are now established in all States. However waiting lists are of the order of six months. Thus more MPCs are needed and resources in each centre need to be improved. In the USA currently 177,000 patients are treated in Cognitive Behavioural Programs (CBT) in MPCs, representing about half of the patients seen in MPCs (approx 350,000 per annum). The Australian equivalent should be approximately 12,000 in CBT programs and 24,000 evaluated in MPCs. The 13 accredited MPCs in Australia see, on average, 1,000 new patients per annum (FPM data) for a total of 13,000 new patients. Currently CBT programs in each centre provide for approximately 500 patients per annum for a total of 6,500 (maximum) per annum. Thus current services are approximately half the US equivalent and this accounts for the long waiting times.

Most MPCs could easily accommodate three trainees but at present have funding for only one trainee. Extra training positions would make it easier to rotate trainees to Palliative Medicine and would also facilitate accommodation of trainees from the participating Colleges. As a minimum, the number of training posts should be increased from 12 to 24.

In the final analysis, the growth of the specialty will be influenced by the response of Federal and State Governments, Workers' Compensation Authorities, Self Insurers and others who currently bear the financial costs of the $10 billion annually for ineffective treatment of chronic pain. As indicated in Section 5.2, the savings resulting from providing effective management provided by Pain Medicine specialists would by far outweigh additional costs of increased training positions and adequate resources in MPCs.

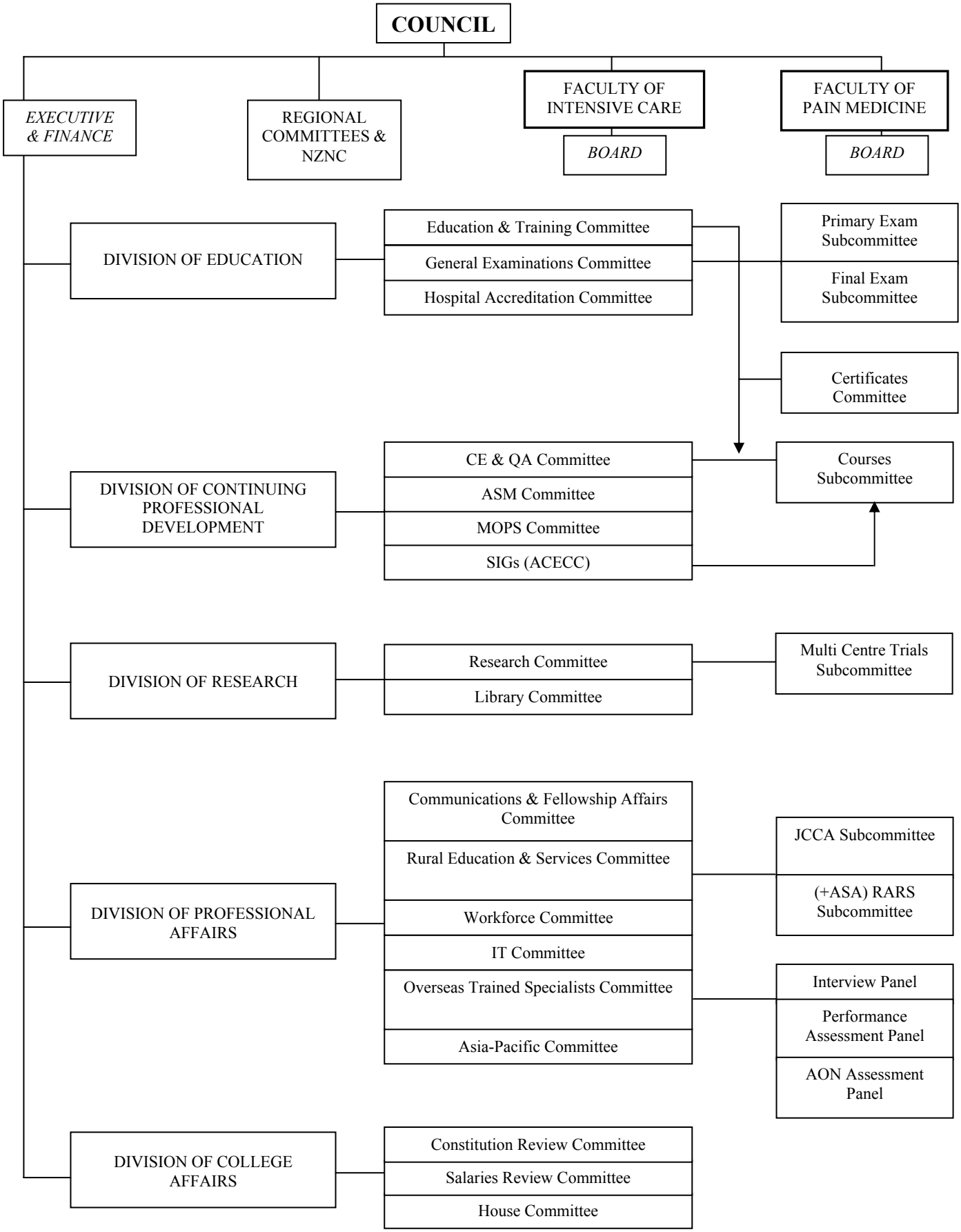
6. THE ORGANISATION SEEKING RECOGNITION

6.1 The **Faculty of Pain Medicine** is a Faculty of ANZCA. Details of the organisation of FPM and of ANZCA, responsible for setting the requirements and standards for training, assessment and certification in Pain Medicine are detailed in the Submission of ANZCA to the AMC for Accreditation of Specialist Education and Training (April 2002), pages 8-21 of Volume 1 and pages 5–7 of Volume 2.

6.2 The **ANZCA Organisational Chart**, ANZCA structure and structure of the Faculty are inserted below.

President of ANZCA is Dr Richard Willis FANZCA, South Australia
Vice-President is Professor Michael Cousins AM, FANZCA, FFPMANZCA, FAChPM (RACP) (also former Dean of the Faculty), New South Wales
Dean of the Faculty is Assoc. Professor Leigh Atkinson FRACS, FAFRM (RACP), FFPMANZCA, Queensland
Vice-Dean is Assoc. Professor Milton Cohen FRACP, FAFRM (RACP), FFPMANZCA, New South Wales.

ANZCA Organisational Chart and College Structure



The Board Members and Office Bearers of the Faculty are:

Dean	Assoc. Professor R L Atkinson FRACS, FAFRM (RACP), FFPMANZCA
Vice-Dean	Assoc. Professor M L Cohen FRACP, FAFRM (RACP), FFPMANZCA
Censor	Dr D Jones FANZCA, FFPMANZCA
Assistant Censor	Dr G I Rice FANZCA, FRANZCP, FFPMANZCA
Education Officer	Assoc. Professor M L Cohen FRACP, FAFRM (RACP), FFPMANZCA
Chairman, Examination Committee	Dr P A Briscoe FANZCA, FFPMANZCA
Chairman, Hospital Accreditation Committee	Dr C R Goucke FANZCA, FFPMANZCA, FAChPM (RACP)
Chairman, Research Committee	Dr J A Fleming FANZCA, FFPMANZCA
Treasurer	Dr B M Kinloch FAFRM (RACP), FFPMANZCA
ASM Officer	Dr G I Rice FANZCA, FRANZCP, FFPMANZCA
MOPS Officer	Professor R D Helme FRACP, FFPMANZCA Professor M J Cousins AM, FANZCA, FAChPM (RACP)
Council Representative	Dr R S Henderson FANZCA

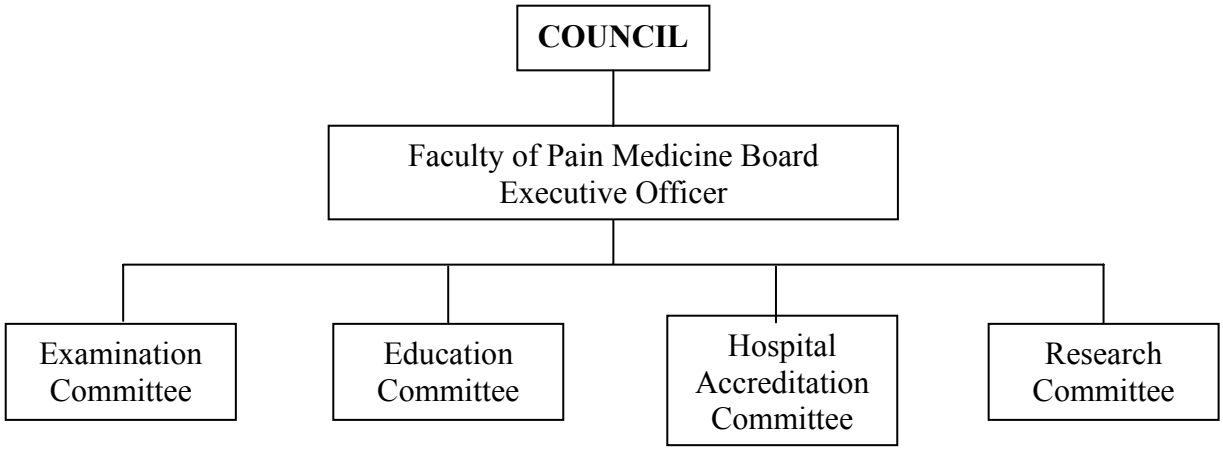
The Founding Board Members were:

Dean	Professor M J Cousins AM, FANZCA
Vice-Dean	Dr C R Goucke FANZCA
Censor	Dr D Jones FANZCA
Education Officer	Assoc. Professor M L Cohen FRACP, FAFRM (RACP)
Chairman, Examination Committee	Professor M J Cousins AM, FANZCA
Chairman, Hospital Accreditation Committee	Dr T F Little FANZCA
Treasurer	Assoc. Professor R L Atkinson FRACS, FAFRM (RACP) Dr P E Macintyre FANZCA Dr J E Marosszeky FAFRM (RACP) Dr G I Rice FANZCA, FRANZCP Dr S M Walker FANZCA
Council Representative	Dr J M Gibbs FANZCA

The Foundation Fellows of the Faculty were:

C. Arnold FAFRM (RACP)
T. Berrigan FANZCA
G. Booth FAFRM (RACP)
J. Bradley FANZCA
P Briscoe FANZCA
C. Brooker FANZCA
M. Butler FRACP
R. Campbell FANZCA
M. Cardosa FANZCA
G. Champion FRACP
D. Cherry FANZCA
T. Cramond FANZCA
M. Crawford FANZCA
J. Ditton FANZCA
P. Graziotti FANZCA
D. Gronow FANZCA
N. Harris FRANZCP
C. Hayes FANZCA
R. Helme FRACP
E. Hughes FANZCA
K. Khor FANZCA
B. Kinloch FAFRM (RACP)
G. Mendelson FRANZCP
A. Molloy FANZCA
A. Muir FANZCA
F. New FRANZCP
J. O'Callaghan FANZCA
P. Ravenscroft FRACP
E.G. Richards FANZCA
L. Roberts FANZCA
B. Rounsefell FANZCA
D. Salmon FANZCA
S. Schug FANZCA
T. Semple FANZCA
G.B. Tait FAFRM (RACP)
R. Vaughan FRACS
P. Wilson FANZCA

Faculty Organisation Chart



6.3 Mission Statement of ANZCA

"To serve the Community by Fostering Safety and Quality Patient Care in Anaesthesia, Intensive Care and Pain Medicine".

The objectives of the Mission Statement are:

1. To promote professional standards and patient safety in anaesthesia, intensive care and pain management by:

   - Conducting professional training programmes in these disciplines.
   - Conferring professional qualifications in these disciplines to individuals who have attained the appropriate knowledge, skills and attitudes to assume the responsibilities of specialists.
   - Upholding and advancing professional standards in these disciplines.
   - Conducting on-going Maintenance of Standards Programmes to foster clinical competency in these disciplines.
   - Reinforcing quality assurance programmes in these disciplines to improve patient care.
   - Establishing communications with Fellows and trainees of the College and Faculty.

2. To promote education in anaesthesia, intensive care and pain management by:

   - Advancing teaching in these disciplines.
   - Promoting continuing education to Fellows and practitioners in these disciplines.
   - Advising governments, organizations and public bodies on matters relating to these disciplines.
   - Educating the public in principles and practice of these disciplines.

3. To advance the science and practice of anaesthesia, intensive care and pain management by:

   - Promoting basic and clinical research in these disciplines.
   - Disseminating new knowledge in these disciplines.
   - Supporting new developments in these disciplines.
   - Interacting with other professional bodies and the international community, especially the Asia-Pacific region, to share knowledge, skills and development in these disciplines.

   The College's function is thus to cultivate and maintain the highest principles and standards in the training, practice and ethics of anaesthesia, intensive care and pain medicine.

6.4 **The structures and the membership** to support the provision of an appropriate professional environment including vocational training and assessment, continuing medical education and maintenance of professional standards are detailed in the submission to the AMC for Accreditation of Specialist Education and Training (April 2002).

6.5 A copy of the **Constitution of By-Laws of ANZCA** is appended (Appendix 11), in addition to the Faculty Administrative Instructions (Appendix 2).

6.6 Foundation Membership

At the ANZCA Council in October 1998, draft regulations for the Faculty of Pain Medicine were approved. These had been recommended to Council by the Joint Advisory Committee on Pain Medicine, formed by representatives of ANZCA, RACP, RACS, RANZCP and AFRM (RACP).

The regulations were subsequently approved by the participating specialty Councils and Faculty. ANZCA Council then appointed six ANZCA Fellows involved in the practice of Pain Medicine to the initial Board of the Faculty, and invited participating specialties to nominate representatives for appointment to the Board. In November 1998, a public call for applications as **Foundation Diplomates** in Pain Medicine was made by ANZCA.

The advertisement invited applications from experienced individuals from ANZCA, RACP, RACS, RANZCP and AFRM (RACP) in the field of Pain Medicine in Australia, New Zealand and other areas in which ANZCA examines, who practised multidisciplinary Pain Medicine in keeping with ANZCA Policy Document TE16 *Requirements for Multidisciplinary Centres offering Training in Pain Medicine* (subsequently revised to PM2, Appendix 7.2).

"Those eligible for appointment must meet the following criteria:

1. The candidate must hold Fellowship of the Australian and New Zealand College of Anaesthetists or an appropriate medical specialist qualification of relevance to Pain Medicine.
2. The candidate must have had substantial involvement in a Multidisciplinary Pain Centre, in accordance with ANZCA Policy Document TE16.
3. Confirmation is required by the relevant hospital that the candidate has been involved in specialist Pain Medicine practice.
4. The candidate participates in Continuing Medical Education and Quality Assurance in the field of Pain Medicine.
5. The candidate contributes to the field of Pain Medicine by:
    1. development of professional activity in this field;
    2. regular contributions to undergraduate/postgraduate education in this field and/or by;
    3. publications in scientific journals and/or contributions to scientific meetings.

Obligations of Foundation Diplomates will include: participation in *ongoing* professional activity in this field, including a Maintenance of Professional Standards (MOPS) Program in Pain Medicine; potential involvement as Pain Medicine examiners, payment to ANZCA of appropriate annual dues which will supplement those of their primary specialty.

Applications will be reviewed by the Joint Advisory Committee on Pain Medicine and appointments will be made by College Council. Applicants for appointments as Foundation Diplomates should submit a curriculum vitae, together with accompanying documentation to support requirements 1-5 above".

All applicants were considered by the Faculty Board, utilising the advertised criteria and recommendations made to ANZCA Council for endorsement.

Subsequent to the closure of applications for Foundation Fellowship, Regulation 4.3 allowed admission to Fellowship by Election, which gave an opportunity for those who did not apply for Foundation Fellowship, and who met the criteria for election to Fellowship without examination to do so.

Foundation Fellows and those elected to Fellowship prior to May 1999 were awarded their Fellowship during the ANZCA College Ceremony at the Annual Scientific Meeting on 8th May, 1999.

6.7 A copy of the **2002 ANZCA Annual Report** is appended (Appendix 12).

7. EDUCATION AND TRAINING AND CONTINUING PROFESSIONAL DEVELOPMENT

7.1 The education and training and continuing professional development programs of the Faculty are detailed in the ANZCA submission to the AMC for Accreditation of Specialist Education and Training Volume 2 (April 2002). This submission detailed the specific body of knowledge and skills of Pain Medicine, the program of education, training and assessment and the program for maintenance of professional standards. It also covered issues such as standards for training, assessment and certification in the specialty, election of Foundation Fellows and process for determining the equivalence of the standard of overseas trained medical practitioners (Appendix 1).

Appendices to the ANZCA submission to the AMC of April 2002 included:

- Administrative Instructions (Appendix 2)
- Objectives of Training (Appendix 5)
- Training Manual (Appendix 4)
- PM2 *Requirements for Multidisciplinary Pain Centres Offering Training in Pain Medicine* (Appendix 7.2)
- Trainee Prospectus (Appendix 3)

The FPM accredited Multidisciplinary Pain Management Units accredited are in:

New South Wales	Royal North Shore Hospital St Leonards NSW 2061
	Westmead Hospital/Children's Hospital at Westmead Westmead NSW 2145
	Nepean Hospital Penrith NSW 2751
	Prince of Wales Hospital /Sydney Children's Hospital Randwick NSW 2031
Queensland	Royal Brisbane Hospital Herston Qld 4029
Victoria	The Geelong Hospital Geelong Vic 3220
Tasmania	Royal Hobart Hospital Hobart Tas 7000
South Australia	Royal Adelaide Hospital Adelaide SA 5000
	Flinders Medical Centre Bedford Park SA 5042
Western Australia	Sir Charles Gairdner Hospital Nedlands WA 6009
	Royal Perth Hospital Perth WA 6000
New Zealand	Auckland Hospital Auckland

There are currently 11 trainees undertaking the training program.

One of the issues referred to in 5.3 is that additional units which meet the criteria for accreditation need to be identified, or to have significant resource deficiencies corrected. Approaches have been made to relevant hospitals and health authorities to improve the situation (e.g. Hunter Region Health Service, NSW and the Victorian Health Service).

The training program of the Faculty was approved by the AMC in November 2002. Key points from the submission are:

- The goals of education and training of the Faculty are to graduate Fellows with a wide knowledge of the clinical, biopsychosocial and humanitarian perspectives of all aspects of Pain Medicine, within the CanMEDS framework.

- Trainees must have obtained a specialty qualification acceptable to the Board (anaesthesia, medicine, surgery, psychiatry or rehabilitation medicine prior to being eligible for the award of Fellowship of the Faculty of Pain Medicine.

- Details of training and assessments are included in the Administrative Instructions, Objectives of Training, Prospectus and Training Manual of the Faculty.

- Research training is regarded as highly appropriate. Part time and interrupted training are possible.

- Trainees may include one of the two years of advanced training towards their College Fellowship in any hospital or organisation approved by that College. An additional year of training is then required. One year must be spent in a Faculty approved Pain Management Centre (see above for currently approved Centres).

- The Faculty has published two key Professional Documents relevant to training. These are *Guidelines for Trainees and Departments Seeking Faculty Approval of Posts for Training in Pain Medicine* (PM1) (Appendix 7.1) and *Requirements for Multidisciplinary Pain Centres Offering Training in Pain Medicine* (PM2) (Appendix 7.2).

7.2 Continuing Professional Development

The requirements of the ANZCA Maintenance of Professional Standards Program were detailed in the AMC submission of April 2002. Fellows may either participate in this program or that of their parent specialty.

The ANZCA MOPS program has been detailed in the ANZCA submission of April 2002.

In summary, the program is designed to foster continuing scholarships in order to maintain a high standard of clinical practice.

Activities are varied and the program offers flexibility and diversity in crediting educational activities to individual participants, especially those in rural and private practice. There is a requirement to undertake a minimum amount of CME & QA activities. The emphasis is on self-analysis by peer comparison, so as to assess and enhance the educational value of the individual's activities. Deficient areas can thus be self-targeted for improvement. An annual return is required. Random audit of 5% of participants is carried out each year.

There is a Professional Practice Review (PPR) component of MOPS which involves an on-site review of practice, looking at a range of practice activities, both professional and clinical.

The Faculty of Pain Medicine has special features incorporated in the ANZCA MOPS Program. FPM has mandated MOPS for Fellows from 2004.

Details of MOPS and PPR are provided in Appendix 13.

7.3 Requirements for local recognition of medical practitioners trained overseas

Assessment of overseas trained specialists is according to ANZCA OTS Policy (Appendix 14). However, there is no equivalent training in multidisciplinary pain medicine elsewhere in the world, since no other country has a governing body in Pain Medicine representing the five specialties in the FPMANZCA.

Overseas trained specialists would need to complete the training and assessment requirements of their parent specialty in addition to completing the FPM requirements. The ANZCA Overseas Trained Specialist policy is described in Appendix 14.

7.4 Educational resources available to support training and professional development programs

The education resources available to FPM to support the training and professional development program are those described in this document, and in the 7 Volume ANZCA submission to the AMC for the ANZCA and Faculty programs on which approval was received in November 2002.

GLOSSARY

ABA	American Board of Anesthesiology
ACHS	Australian Council of Healthcare Standards
AHCPR	Agency for Healthcare Policy & Research
AHRQ	Agency for Healthcare Research & Quality
AFRM	Australasian Faculty of Rehabilitation Medicine
AMC	Australian Medical Council
AMWAC	Australian Medical Workforce Advisory Committee
ANZCA	Australian and New Zealand College of Anaesthetists
APS	Acute Pain Service
CABG	Coronary Artery Bypass Graft
CanMEDS 2000	Royal College of Physicians and Surgeons of Canada Canadian Medical Education Directions for Specialists 2000 Project
CBT	Cognitive Behavioural Therapy
CMM	Comprehensive Medical Management
CRPS	Complex Regional Pain Syndrome
CSAG	Clinical Standards Advisory Group
DCS	Dorsal Column Stimulation
FBSS	Failed Back Surgery Syndrome
FFPMANZCA	Fellow of the Faculty of Pain Medicine ANZCA
FPM	Faculty of Pain Medicine
GABA	Gamma Amino Butyric Acid
GP	General Practitioner
IASP	International Association for the Study Pain
IDD	Internal Disc Disruption
IDDS	Implantable Drug Delivery Systems
IDET	Intradiscal Electrothermal Anuloplasty
IDT	Intrathecal Drug Treatment
JCAHO	Joint Commission of Accreditation of Healthcare Organizations

MMT	Maximal Medical Treatment
MOPS	Maintenance of Professional Standards
MPC	Multidisciplinary Pain Management Centres
MSAC	Medical Services Advisory Committee
NHMRC	National Health and Medical Research Council
NNH	Numbers Needed to Harm
NNT	Numbers Needed to Treat
NYHA	New York Heart Academy
NSAID	Non-Steroidal Anti-inflammatory Drug
PCA	Patient Controlled Analgesia
PPR	Professional Practice Review
PVD	Peripheral Vascular Disease
RACP	Royal Australasian College of Physicians
RACS	Royal Australasian College of Surgeons
RANZCP	Royal Australian and New Zealand College of Psychiatrists
RCT	Randomised Controlled Trial
RF	Radio Frequency
RNSH	Royal North Shore Hospital (Sydney)
RSD	Reflex Sympathetic Dystrophy
SCI	Spinal Cord Injury
SCS	Spinal Cord Stimulation
TENS	Transcutaneous Electrical Nerve Stimulation
UK	United Kingdom
USA	United States of America
VAS	Visual Analogue Scale
WHO	World Health Organisation

REFERENCES

Abram SE. (1999) Treatment of lumbosacral radiculopathy with epidural steroids. Anesthesiology 91:1937-41

AHCPR (1994a) Clinical Practice Guideline: Acute Low Back Problems in Adults. AHCPR Pub No. 95-0642 Rockville

AHCPR (1994b) Clinical Practice Guideline: Management of Cancer Pain. AHCPR Pub No. 94-0592 Rockville

AHRQ (2001) Management of Cancer Pain. Evidence Report/Technology Assessment No. 35 Vol. 1 and Vol 2. AHRQ Publication No. 02-E002 Rockville, Maryland, USA

Allan L, Hays H, Jensen NH, Waroux BL et al (2001) Randomised crossover trial of transdermal fentanyl and sustained release oral morphine for treating chronic non-cancer pain. BMJ 322: 1154-8

American Geriatrics Society (1998) The management of chronic pain in older persons: AGS chronic pain in older persons. J Amer Geriatr Soc 46:128-50.

American Pain Society (1999) Guideline for the management of acute and chronic pain in sickle-cell disease. (Clinical practice guideline; no. 1) Glenview, IL: American Pain Society.

Analgesic Writing Group (2002) Therapeutic guidelines: analgesic. Version 4. Melbourne: Therapeutic Guidelines Limited.

Andersen C, Hole P, Oxhoj H. (1994) Does pain relief with spinal cord stimulation for angina conceal myocardial infarction? Br Heart J 71:419-21

Augustinsson LE, Carlsson CA, Holm J et al. (1985) Epidural electrical stimulation in severe limb ischemia. Pain relief, increased blood flow, and a possible limb-saving effect. Ann Surg. 202:104-10

Bach S, Noreng MF, Tjellden NU. (1988) Phantom limb pain in amputees during the first 12 months following limb amputation, after pre-operative lumbar epidural blockade. Pain 33:297-301

Ballas SK. (1998) Sickle cell pain. IASP Press, Seattle, USA

Barolat G. (1995) Current status of epidural spinal cord stimulation. Neurosurg Q 5:98-124

Barolat G, Schwartzman R, Woo R. (1989) Epidural spinal cord stimulation in the management of reflex sympathetic dystrophy. Stereotact Funct Neurosurg 53:29-39

Barratt SM, Smith RC, Kee, Cousins MJ (2002) Multimodal analgesia and intravenous nutrition preserves total body protein following major upper gastrointestinal surgery. Reg Anesth Pain Med 27:15-22

Basse L, Madsen JL & Kehlet H. (2001) Normal gastro-intestinal transit after colonic resection with epidural analgesia, feeding and laxation. Br J Surg 88: 1498-500

Basse L, Raskov HH, Jakobsen D et al. (2002) Accelerated post-operative recovery programme after colonic resection improves physical performance, pulmonary function and body composition. Br J Surg 89: 446-53

Bay-Nielsen M, Perkins FM, Kehlet H. (2001) Pain and functional impairment 1 year after inguinal herniorrhaphy - a nationwide questionnaire study. Ann Surg 233: 1-7

Bell GK, Kidd D, North RB. (1997) Cost-effectiveness analysis of spinal cord stimulation in treatment of failed back surgery syndrome. J Pain Symptom Manage 13:286-95

Blyth FM, March LM, Brnabic AJ, Jorm LR, Williamson M, Cousins MJ. (2001) Chronic pain in Australia: a prevalence study. Pain 89:127-34

Blyth FM, March LM, Cousins MJ (2003a). Chronic pain related disability and use of analgesic and health services in a Sydney community. MJA 179:1-4

Blyth FM, March LM, Nicholas MK, Cousins MJ (2003b). Chronic pain, work performance and litigation. Pain 103: 41-7

Blyth FM, March LM, Brnabic AJ, Cousins MJ (2003c). Chronic pain and frequent use of health care. JAMA (submitted)

Bogduk N, Karasek M. (2002) Two year follow up of a controlled trial of intrasdiscal electrothermal anuloplasty for chronic back pain due to internal disc disruption. Spine Supp 2

Boivie J, Hannson P and Lindblom U (eds). (1994) Touch, temperature and pain in health and disease: mechanisms and assessments: Proceedings of an international symposium held at the Wenner-Gren Centre (Oct 6-9, 1993: Stockholm, Sweden). IASP Press, Seattle, USA

Bonica JJ. (1957) The Management of Pain. Lea & Febiger, Philadelphia. 2nd ed. 1990.

Bonica JJ. (1988) Neural blockade in the multidisciplinary pain clinic: evolution of pain clinics/centers. In: Cousins MJ & Bridenbaugh PO. Neural blockade: Pain Management. JB Lippincott, Philadelphia. 2nd ed. pp 1122-23

Borsook D (ed) (1997). Molecular neurobiology of pain. IASP Press, Seattle, USA

Brodner G, Van Aken H, Hertle L et al (2001) Multimodal perioperative management – combining thoracic epidural analgesia, forced mobilization, and oral nutrition – reduces hormonal and metabolic stress and improves convalescence after major urologic surgery. Anesth Analg 92: 1594-600

Broggi G, Servello D, Franzini A et al (1987) Spinal cord stimulation for treatment of peripheral vascular disease. Appl Neurophysiol 50:439-41

Broseta J, Barbera J, de Vera JA et al (1986) Spinal cord stimulation in peripheral arterial disease. A cooperative study. J Neurosurg 64:71-80

Bruera E, Macmillan K, Hanson J et al (1989) The cognitive effects of the administration of narcotic analgesics in patients with cancer pain. Pain 39:13-6

Burchiel KH, Yezierski RP (eds) (2002). Spinal cord injury pain: assessment, mechanisms, management. IASP Press, Seattle, USA

Burchiel K. (ed) Surgical management of pain. Thieme, New York. 2002

Burchiel KJ, Steege TD, Howe JF et al. (1981) Comparison of percutaneous radiofrequency gangliolysis and microvascular decompression for the surgical management of tic douloureux Neurosurg 9:111-19

Campbell JK, Penzine DB, Wall EM. (1999) Evidence based guidelines for migraine headache: Behavioural and physical treatments. The US Headache Consortium, American Academy of Neurology [www.aan.com]

Carr DB, Cousins MJ. (1998) Spinal route of analgesia: opioids and future options. In: Cousins MJ, Bridenbaugh PO. Neural Blockade: Pain Management. JB Lippincott Philadelphia. 3rd ed. pp 915-84

Carr DB, Goudas LC. Acute Pain. Lancet 1999; 353:2051-8

Casey KL, Bushnell MC (eds). (2000) Pain imaging. IASP Press, Seattle, USA

Caudill M, Schnable R, Zuttermeister P, Benson H, Friedman R. (1991) Decreased clinic use by chronic pain patients: Response to behavioural medicine intervention. Clin J Pain 7:305-10

Chandler MJ, Brennan TJ, Garrison DW et al. (1993) A mechanism of cardiac pain suppression by spinal cord stimulation: implications for patients with angina pectoris. Eur Heart J 14:96-105

Cook AW, Weinstein SP. (1973) Chronic dorsal column stimulation in multiple sclerosis: preliminary report. N Y State J Med 73:2868-72

Cousins MJ. (1989) John J Bonica Distinguished Lecture. Acute pain and the injury response: immediate and prolonged effects. Reg Anesth. 14:162-79.

Cousins MJ. (2000) Relief of acute pain: a basic human right? MJA 172:3-4

Cousins MJ, Bridenbaugh PO. (1980) Neural Blockade; Pain Management. Philadelphia. JB Lippincott 2nd ed. 1988, 3rd ed. 1998.

Cousins MJ, Harris N, Molloy AR et al (1998) Role of opioids in non-cancer pain. Palliative Care Today 15:6-9

Cousins MJ, Mather LE. (1984) Intrathecal & epidural administration of opioids. Anaesthesiol 61:276-310

Cousins MJ, Phillips GD. (1986) Acute Pain Management. Churchill Livingstone. New York.

Cousins MJ, Power I, Smith G. (2000) 1996 Labat Lecture: Pain – A persistent problem. Reg Anaesth & Pain Medicine 25: 6-21

Cousins MJ, Walker SM. Neural blockade and pain management. In: Pain 1999, an updated review : refresher course syllabus / Scientific Program Committee; ed by Marshall Devor, 1999. (IASP Refresher Course on Pain Management held in conjunction with the 9th World Congress on Pain, August 22-27, 1999, Vienna, Austria

Cousins MJ, Reeve TS, Glynn LJ et al. (1979) Neurolytic lumbar sympathetic block: duration of denervation and relief of rest pain. Anaesth. Intensive Care 7:121-35

Cousins MJ. Eccles Lecture. Persistent Pain: A Disease Entity. Proceedings of Australian Neuroscience Society, Melbourne, 2000

Crombie IK, Croft PR, Linton SJ et al (eds). (1999) Epidemiology of pain: a report of the Task Force on Epidemiology of the International Association for the Study of Pain. IASP Press, Seattle, USA.

Crook J, Rideout E, Browne G. (1984) The prevalence of pain complaints in a general population. Pain 18-299-314

Crook J, Weir R, Tunks E. (1989) An epidemiological follow-up survey of persistent pain sufferers in a group family practice and specialty pain clinic. Pain 36:49-61

CSAG Back Pain. (1994) Report by a Clinical Standards Advisory Group Committee on Back Pain. HMSO, London. 79-86 (Economic modelling of the effects of the management guidelines and service recommendations on NHS resource use).

Cui JG, O'Connor WT, Ungerstedt U et al. (1997) Spinal cord stimulation attenuates augmented dorsal horn release of excitatory amino acids in mononeuropathy via a GABAergic mechanism. Pain 73:87-95

Cui JG, Linderoth B, Meyerson BA. (1996) Effects of spinal cord stimulation on touch-evoked allodynia involve GABAergic mechanisms. An experimental study in the mononeuropathic rat. Pain 66:287-95

Devor M (ed) (1999). Abstracts of the 9th World Congress on Pain, Vienna, Austria. IASP Press, Seattle, USA.

Dostrovsky JO (ed) (2002). Abstracts of the 10th World Congress on Pain, San Diego, California, USA. IASP Press, Seattle, USA.

Dougherty PM, Staats PS. (1999) Intrathecal drug therapy for chronic pain; From basic science to clinical practice. Anesthesiol 91:1891-918

Dreyfuss P, Halbrook B, Pauza K et al. (2000) Efficacy and validity of radiofrequency neurotomy for chronic lumbar zygapophysial joint pain. Spine 25:1270-7

Duggan AW, Foong FW. (1985) Bicuculline and spinal inhibition produced by dorsal column stimulation in the cat. Pain 22:249-59

Dvorak J, Gauchat MH, Valach L. (1988) The outcome of surgery for lumbar disc herniation: I.A 4-17 years' follow up with emphasis on somatic aspects. Spine 13:1418-22

Eisenberg E, Carr DB, Chalmers TC. (1995) Neurolytic celiac plexus block for the treatment of cancer pain: A meta-analysis. Anesth Analg 80:290-5

Eliasson T, Albertsson P, Hardhammar P et al. (1993) Spinal cord stimulation in angina pectoris with normal coronary arteriograms. Coron Artery Dis 4:819-27

Eliasson T, Augustinsson LE, Mannheimer C. (1996) Spinal cord stimulation in severe angina pectoris – presentation of current studies, indications and clinical experience. Pain 65:169-79

Ferrell BR, Ferrell BA. (eds) (1996) Pain in the elderly: a report of the Task Force on Pain in the Elderly of the International Association for the Study of Pain. 2nd ed. IASP Press, Seattle, USA

Fields HL (ed) (1995) Core curriculum for professional education in pain: a report of the Task Force on Professional Education of the International Association for the Study of Pain. IASP Press, Seattle, USA

Fields HL, Liebeskind JC (eds). (1994) Pharmacologixal approaches to the treatment of chronic pain: new concepts and critical issues. IASP Press, Seattle, USA

Fillingim RG (ed) (2000) Sex, gender and pain. IASP Press, Seattle, USA

Finley GA, McGrath PJ (eds). (2001) Acute and procedure pain in infants and children. IASP Press, Seattle, USA

Finley GA, McGrath PJ (eds). (1998) Measurement of pain in infants and children. IASP Press, Seattle, USA

Flor H, Fydrick T, Turk DC. (1992) Efficacy of multidisciplinary pain treatment centers: a meta-analytic review. Pain 49:221-30

Foley KM. (1985) The treatment of cancer pain. NEJM 313 84-95

Fordyce WE. (1995) Back pain in the workplace: management of disability in non-specific conditions. IASP Press, Seattle, USA.

Gallagher J, Petriccione di Vadi PL, Wedley JR et al. (1994) Radiofrequency facet joint denervation in the treatment of low back pain: a prospective controlled double-blind study to assess its efficacy. Pain Clinic 7(3):193-8

Gebhart GF (ed). (1995) Visceral pain: Bristol-Myers Squibb Symposium on Pain Research (5th Iowa City). IASP Press, Seattle, USA

Giamberardino MA. (ed) (2002) Pain 2002, an updated review : refresher course syllabus / IASP Refresher Course on Pain Management held in conjunction with the 10th World Congress on Pain, August 17-22, 2002, San Diego, Calif, USA

Gonzalez-Darder JM, Canela P, Gonzalez-Martinez V. (1991) High cervical spinal cord stimulation for unstable angina pectoris. Stereotact Funct Neurosurg 56:20-7

Graziotti PJ, Goucke CR. (1997) The use of oral opioids in patients with chronic non-cancer pain: management strategies. MJA 167:30-4

Grellman RJ. (1997) Inquiry into workers' compensation system in NSW: final report. Sydney : KPMG.

Groth K. (1985) Spinal cord stimulation for the treatment of peripheral vascular disease. In: World Congress on Pain (4th:, 1984 : Seattle, Washington) Proceedings Fourth World Congress on Pain. Fields H, Dubner R, Cervero F, eds. New York: Raven Press. 9:861-70

Gybels J, Erdine S, Maeyaert J. et al (1998) Neuromodulation of pain. A consensus statement. Eur J Pain 2:203-9

Haddox JD et al. (1997) The use of opioids for the treatment of chronic pain. A consensus statement from the American Academy of Pain Medicine and the American Pain Society. Clin J Pain 13:6-8

Hansson PT, Fields HL, Hill RG et al (eds) (2001). Neuropathic pain: pathophysiology and treatment. IASP Press, Seattle, USA

Harden RN, Baron R (eds) (2001). Complex regional pain syndrome. IASP Press, Seattle, USA.

Harstall C, Ospina M. (2003) Pain: Clinical Updates. IASP Press. Seattle 9:1-4

Hassenbusch SJ, Stanton-Hicks MD, Soukup J. et al. (1991) Sufentanil citrate and morphine/bupivacaine as alternative agents in chronic epidural infusions for intractable noncancer pain. Neurosurg 29:76-82

Hassenbusch SJ, Stanton-Hicks M, Covington EC et al. (1995) Long-term intraspinal infusions of opioids in the treatment of neuropathic pain. J Pain Symptom Manage 10:527-43

Hautvast RW, Brouwer J, DeJongste MJ et al. (1998) Effect of spinal cord stimulation on heart rate variability and myocardial ischemia in patients with chronic intractable angina pectoris: a prospective ambulatory electrocardiographic study. Clin Cardiol 21:33-8

Hautvast RW, Blanksma PK, DeJongste MJ et al. (1996) Effect of spinal cord stimulation on myocardial blood flow assessed by positron emission tomography in patients with refractory angina pectoris. Am J Cardiol 77:462-7

Hautvast RW, DeJongste MJ, Staal MJ et al. (1998) Spinal cord stimulation in chronic intractable angina pectoris: a randomized, controlled efficacy study. Am Heart J 1998; 136:1114-20

Helme RD, Gibson SJ. (1999) Pain in Older People In: Crombie IK, Croft PR, Linton SJ, LeResche L, Von Korff M. (eds). Epidemiology of pain. Seattle: IASP Press. pp 103-112

HR 1863. The National Pain Care Policy Act of 2003

IASP Classification of Chronic Pain : Descriptions of chronic pain syndromes and definitions of pain terms / prepared by the Task Force on Taxonomy of the Intl Ass^{n} for the Study of Pain. 2nd ed. 1994, Merskey H, Bogduk N (eds). IASP Press, Seattle

IASP Core Curriculum for Professional Education in Pain. A report of the task force on professional education of the Intl Ass^{n} for the Study of Pain. 2nd ed. 1995 Fields HL (ed). IASP Publications, Seattle pp 269-80.

Jacobs MJ, Jörning PJ, Beckers RC et al. (1990) Foot salvage and improvement of microvascular blood flow as a result of epidural spinal cord electrical stimulation. J Vasc Surg 12:354-60

Jacobs MJ, Jörning PJG Joshi SR et al. (1988) Epidural spinal cord electrical stimulation improves microvascular blood flow in severe limb ischemia. Ann Surg 207:179-83

Janig W, Stanton-Hicks M (eds). (1996) Reflex sympathetic dystrophy: a reappraisal. IASP Press, Seattle, USA

JCAHO Pain Assessment and Management Standards - Hospitals, August 1999. http://www.jcrinc.com/subscribers/perspectives.asp?durki=3243&site=10&return=2897

Jessurun GA, DeJongste MJ, Blanksma PK. (1996) Current views on neurostimulation in the treatment of cardiac ischemic syndromes. Pain 66:109-16

Jessurun GA, Meeder JG, DeJongste MJ. (1997) Defining the problem of intractable angina. Pain Rev 4:89-99

Jivegard L, Augustinsson LE, Carlsson CA et al. (1987) Long term results by spinal electrical stimulation (ESES) in patients with inoperable severe lower limb ischaemia. Eur J Vasc Surg 1:345-9

Kalso E, Heiskanen T, Rantio M et al. (1996) Epidural and subcutaneous morphine in the management of cancer pain: a double-blind cross-over study. Pain 67: 443-9

Kalso E, McQuay HJ and Wiesenfeld-Hallin Z (eds). (1999). Opioid sensitivity of chronic noncancer pain. IASP Press, Seattle, USA

Karasek M, Bogduk N. (2000) Twelve month follow up of a controlled trial of intradiscal thermal anuloplasty for back pain due to internal disc disruption. Spine 25: 2601-7

Katz J, Jackson M, Kavanagh BP et al. (1996) Acute pain after thoracic surgery predicts long-term post-thoracotomy pain. Clin J Pain 12: 50-5

Kehlet H. (1997) A multimodal approach to control postoperative pathophysiology and rehabilitation. Br J Anaesth 78: 606-17

Kehlet H, Wilmore DW. (2002) Multimodal strategies to improve surgical outcome. Am J Surg 183:630-41

Kendall NAS, Linton SJ, Main CJ. (1997) Guide to assessing psychosocial yellow flags in acute low back pain: risk factors for long-term disability and work loss. [prepared for National Advisory Committee on Health and Disability.. and Accident Rehabilitation and Compensation Insurance Corporation] Wellington, NZ

Krainick JU, Thoden U, Riechert T. (1980) Pain reduction in amputees by long-term spinal cord stimulation. Long-term follow-up study over 5 years. J Neurosurg 52:346-50

Kumar K, Kelly M, Pirlot T. (2001) Continuous intrathecal morphine treatment for chronic pain of non malignant etiology: long-term benefits and efficacy. Surg Neurol 55:79-88

Kumar K, Nath R, Wyant GM. (1991) Treatment of chronic pain by epidural spinal cord stimulation: a 10 year experience. J Neurosurg 75:402-7

Laird MA, Gidal BE. (2000) Use of Gabapentin in the treatment of neuropathic pain. Ann Pharmacother 34:802-7

Lance JW, Goadsby PJ. Mechanisms and management of headache. London. Butterworth Heinemann. 6th ed. 2000

Lazorthes Y, Siegfried J, Verdie JC et al. (1995) Chronic spinal cord stimulation in the treatment of neurogenic pain. Cooperative and retrospective study on 20 years of follow-up. Neuro-Chirurgie 41:73-88

Leclaire R, Fortin L, Lambert R et al. (2001) Radiofrequency facet joint denervation in the treatment of low back pain: a placebo-controlled clinical trial to assess efficacy. Spine 26 13:1411-6

Lehmann TR, Spratt KF, Tozzi JE et al. (1987) Long-term follow up of lower lumbar fusion patients. Spine 12:97-104

Lillemoe KD, Cameron JL, Koufman HS et al. (1993) Chemical splanchnicectomy in patients with unresectable pancreatic cancer. A prospective randomised trial. Ann Surg 217:447-57

Linderoth B, Fedorcsaki I, Meyerson BA. (1991a) Peripheral vasodilatation after spinal cord stimulation: animal studies of putative effector mechanisms. Neurosurg 28:187-95

Linderoth B, Gunasekera L, Meyerson BA. (1991b) Effects of sympathectomy on skin and muscle microcirculation during dorsal column stimulation: animal studies. Neurosurg 29:874-9

Linderoth B, Herregodts P, Meyerson BA. (1994a) Sympathetic mediation of peripheral vasodilation induced by spinal cord stimulation: animal studies of the role of cholinergic and adrenergic receptor subtypes. Neurosurg 35:711-9

Linderoth B, Stiller CO, Gunasekera L et al. (1994b) Gamma-aminobutyric acid is released in the dorsal horn by electrical spinal cord stimulation: an in vivo microdialysis study in the rat. Neurosurg 34:484-9

Linton SJ, Bradley LA, Jensen I et al. (1989) The secondary prevention of low back pain: a controlled study with follow-up. Pain 36: 197-207

Linton SJ, Hallden K. (1998) Can we screen for problematic back pain? A screening questionnaire for predicting outcome in acute and sub-acute back pain. Clin J Pain 14:209-15

Linton SJ, Ryberg M. (2001) A cognitive-behavioural group intervention as prevention for persistent neck and back pain in a non-patient population: a randomized trial. Pain 90:83-90

Livingston WK, Fields HL. (eds) (1998) Pain and suffering. IASP Press, Seattle, USA

Loeser JD. (1991) Desirable characteristics of pain management facilities in Bond MJ, Charlton JE, Woolf CJ (eds). Pain research and clinical management. Proceedings of the 5th World Congress on Pain, Adelaide, April 1990. Amsterdam Elsevier 441-16

Loeser JD, Melzack R. (1999) Pain: an overview. Lancet 353:1607-9

Loeser JD, Turk D. (2001) Multidisciplinary pain management. In: Loeser JD (Ed). Bonica's Management of Pain (3rd ed.). Philadelphia. JB Lippincott, Williams & Wilkins: 2069-79

Loeser JD (ed) (2001) Bonica's Management of Pain, 3rd ed. Philadelphia JP Lippincott, Williams & Wilkins

Loeser JD, Van Konkelenberg R, Volinn E, Cousins MJ. (1993) Small area analysis of lumbar spine surgery in South Australia. ANZ J Surg 63:14-19

Long DM, Filtzer DL, BenDebba M, et al. (1988) Clinical features of the failed back syndrome. J Neurosurg 69:61-71

Lord SM, Barnsley L, Wallis BJ et al (1996) Percutaneous radiofrequency neurotomy for chronic cervical zygapophyseal-joint pain. NEJM 335:1721-6

Macintyre PE, Ready LB. Acute Pain Management: A practical guide. 2nd ed. 2001. London. W B Saunders

Magni G, Caldieron C, Rigatti-Luchini S et al (1990) Chronic musculoskeletal pain and depressive symptoms in the general population. An analysis of the 1st National Health and Nutrition Examination Survey data. Pain 43:299-307

Malmivaara A, Hakkinen U, Aro T et al. (1995) The treatment of acute low back pain – bed rest, exercises or ordinary activity? NEJM 332:351-5

Malter AD, McNeney B, Loeser JD et al. (1998) 5-year re-operation rates after different types of lumbar spine surgery. Spine 23:814-20

Maniadakis N, Gray A. (2000) The economic burden of back pain in the UK. Pain 84:95-103

Mannheimer C, Eliasson T, Andersson B et al. (1993) Effects of spinal cord stimulation in angina pectoris induced by pacing and possible mechanisms of action. BMJ 307:477-80

Mannheimer C, Eliasson T, Augustinsson LE et al. (1998) Electrical stimulation versus coronary artery bypass surgery in severe angina pectoris. The ESBY study. Circulation 97:1157-63

Mao J, Chen LL. (2000) Gabapentin in pain management. Anesth Analg 91: 680-87

McCrory DC, Matchar DB, Gray et al (2000). Evidence based guidelines for migraine headache: Overview of program description and methodology. The US Headache Consortium, American Academy of Neurology [www.aan.com]

McGrath PJ, Hillier LM (eds). (2001) The child with headache: diagnosis and treatment. IASP Press, Seattle, USA.

McQuay HJ, Moore RA. (1998) An evidence-based resource for pain relief. Oxford University Press. 251-7

Melzack R, Wall PD. (1965) Pain mechanisms: a new theory. Science 150:971-99

Merry AF, Smith WM, Anderson DJ, et al. (2001) Cost effectiveness of spinal cord stimulation in patients with intractable angina. NZ Med J 114:179-81

Meuser T, Pietruck C, Radbruch L et al. (2001) Symptoms during cancer pain treatment following WHO - guidelines: a longitudinal follow-up study of symptom prevalence, severity and etiology. Pain 93:247-57

Meyerson BA, Linderoth B. (2001) Spinal Cord Stimulation. In: Loeser JD, Bonica's Management of Pain 3rd ed. Philadelphia. JB Lippincott, Williams & Wilkins: 1857-76

Meyerson BA, Linderoth B, Lind G. (1991) Spinal cord stimulation in chronic neuropathic pain [Swedish abstract in English] Läkartidningen 88:727-32

Meyerson BA,Cui JG, HakhnitsaV et al (1997) Modulation of spinal pain mechanisms by spinal cord stimulation and the potential role of adjuvant pharmacotherapy. Stereotact Funct Neurosurg 68:129-40

Molloy AR, Nicholas MK, Cousins MJ. (1997) Role of opioids in chronic non-cancer pain. (Editorial) MJA 167:9-10

Morley S, Eccleston C, Williams AC. (1999) Systematic review and meta-analysis of randomised controlled trials of cognitive behaviour therapy and behaviour therapy for chronic pain in adults, excluding headache. Pain 80:1-13

MSAC (2002). Intradiscal electrothermal anuloplasty. A treatment for patients with chronic low back pain due to anular disruption of contained herniated discs. Assessment Report November 2002. Canberra. MSAC

NHMRC (1999) Acute Pain Management: scientific evidence. NHMRC Publications, ACT, Canberra

NHMRC (1994) Epidural use of steroids: in the management of back pain and sciatica of spinal origin. NHMRC Publications, ACT, Canberra

NHMRC (2003) Guidelines for acute musculoskeletal pain, NHMRC Publications, ACT, Canberra (In Press)

NHMRC (1989) Management of severe pain. Report of the working party on management of severe pain. Aust Govt Publishing Service, ACT, Canberra

Nicholas M, Molloy A, Tonkin L et al (2000) Manage your pain: practical and positive ways of adapting to chronic pain. ABC Books. NSW.

Niemisto L, Kalso E, Malmivaara A, et al. (2003) Radiofrequency denervation for neck and back pain. A systematic review of randomized controlled trials. (Cochrane Review). In: The Cochrane Library Issue, 2. Oxford: Update Software

Nikolajsen L, Ilkjaer S, Kroner K et al. (1997) The influence of pre-amputation pain on post-amputation stump pain. Pain 72: 393-405

North RG, Ewend MG, Lawton MT et al (1991) Failed back surgery syndrome: 5-year follow-up after spinal cord stimulator implantation. Neurosurg 28:692-9

North RB, Kidd DH, Lees MS et al (1994) A prospective, randomized study of spinal cord stimulation versus reoperation for failed back surgery syndrome: initial results. Stereotact Funct Neurosurg 62:267-72

North RB, Kidd DH, Zahurak M, et al. (1993) Spinal cord stimulation for chronic, intractable pain: experience over two decades. Neurosurg 32: 384-95

North RB, Levy RM. (1994) Consensus conference on the neurosurgical management of pain. Neurosurg 34:756-61

North RB, Ewend MG, Lawton MT, et al. (1991) Spinal cord stimulation for chronic, intractable pain: superiority of "multi-channel" devices. Pain 44:119-30

North RB, Wetzel FT (2002) Spinal cord stimulation for chronic pain of spinal origin: a valuable long term solution. Spine 27:2584-91

Paice JA, Penn RD, Shott S. (1996) Intraspinal morphine for chronic pain: a retrospective, multicenter study. J Pain Symptom Manage 11:71-80

Payne R, Patt RB, Stratton Hicks C (1998) (eds). Assessment and Treatment of Cancer Pain. IASP Press, Seattle, USA.

Perkins FM, Kehlet H. (2000) Chronic pain as an outcome of surgery. A review of predictive factors. Anesthesiol 93:1123-33

Pilowsky I. (1997) Abnormal illness behaviour. Chichester. John Wiley & Sons

Porter J, Jick H. (1980) Addiction rates in patients treated with narcotics. NEJM 302:123

Price DD (1999). Psychological mechanisms of pain and analgesia. IASP Press, Seattle, USA

Rabben T, Skjelbred P, Oye I. (1999) Prolonged analgesic effect of ketamine, an N-methyl-D-aspartate receptor inhibitor, in patients with chronic pain. J Pharmacol Exp Ther 289: 1060-6

Ramadan NM, Silberstein SD, Freitag FG et al (2000). Evidence based guidelines for migraine headache in the primary care setting: Pharmacological management for acute attacks and prevention of migraine. The US Headache Consortium, American Academy of Neurology [www.aan.com]

Ready LB, Edwards WT (eds). (1992) Management of acute pain: a practical guide. International Association for the Study of Pain, Task Force on Acute Pain. IASP Press, Seattle, USA

Rigg JR, Jamrozik K, Myles PS et al. (2002) Epidural anaesthesia and analgesia and outcome of major surgery: a randomised trial. Lancet 359:1276-82.

Saal JA, Saal JS. (2000) Intradiscal electrothermal treatment for chronic discogenic low back pain: a prospective outcome study with minimum 1 year follow up. Spine 25:2622-7

Sanchez-Ledesnia MJ, Garcia-March G, Diaz-Cascajo P et al. (1989) Spinal cord stimulation in deafferentation pain. Stereotact Funct Neurosurg 53:40-5

Sanders SH, Harden RN, Benson SE et al (1999) Clinical practice guidelines for chronic non-malignant pain syndrome patients II: an evidence-based approach. J Back Musculoskeletal Rehabil 13:47-58.

Sanders SH, Rucker KS, Anderson KO et al (1995) Clinical practice guidelines for chronic non-malignant pain syndrome patients. J Back Musculoskeletal Rehabil 5:115-120

Sanderson JE, Brooksby P, Waterhouse D et al. (1992) Epidural spinal electrical stimulation for severe angina: a study of its effects on symptoms, exercise tolerance and degree of ischaemia. Eur Heart J 13:628-33

Schug SA, Burrell R, Payne J, Tester P. (1995) Pre-emptive epidural analgesia may prevent phantom limb pain. Reg Anesth 20:256

Sciacca V, Tamorri M, Rocco M et al. (1986) Modifications of transcutaneous oxygen tension in lower limb peripheral arterial occlusive disease patients treated with spinal cord stimulation. Ital J Surg Sci 16:279-82

Sessle BJ, Bryant PS, Dionne RA (eds). (1995) Temporomandibular disorders and related pain conditions. IASP Press, Seattle, USA

Scheinin B. Asantila R, Orko R. (1987) The effect of bupivacaine and morphine on pain and bowel function after colonic surgery. Acta Anaesthesiol Scand 31:161-4

Siddall PJ, Cousins MJ. (2003) Persistent pain: a disease entity. JAMA (submitted)

Siddall PJ, Molloy AR, Wielher S et al. (2000) The efficacy of intrathecal morphine and clonidine in the treatment of pain after spinal cord injury. Anesth Analg 91:1493-8

Siddall PJ, Taylor DA, Cousins MJ. (1997) Classification of pain following spinal cord injury. Spinal Cord 35:69-75

Siddall PJ, Taylor DA, McClelland JM et al. (1999) Pain report and the relationship of pain to physical factors in the first six months following spinal cord injury. Pain 81:187-97

Siddall PJ, Yezierski RP, Loeser JD. (2002) Taxonomy and epidemiology of spinal cord injury pain. In: Burchiel KJ, Yezierski RP (eds). Spinal cord injury pain: assessment, mechanisms, management. Progress in pain research and management vol 23 IASP Press. Seattle, USA

Siddall PJ, McClelland JM, Rutkowski SB, Cousins MJ. (2003) A longitudinal study of the prevalence and characteristics of pain in the first 5 years following spinal cord injury. Pain 103:249-57

Simmons JW, Avant WS, Demski J et al. (1988) Determining successful pain clinic treatment through validation of cost-effectiveness. Spine 13:342-4

Simpson BA. (1994) Spinal cord stimulation. Pain Rev 1:199-230

Smith TJ, Staats PS, Deer T et al (2002) Randomised clinical trial of an implantable drug delivery system compared with comprehensive medical management for refractory cancer pain: Impact on pain, drug related toxicity and survival. J Clin Oncol 20: 4040-9

Smith TJ. (2003). An implantable drug delivery system (IDDS) for refractory cancer pain provides sustained pain control, less drug related toxicity and better survival compared to comprehensive medical management (CMM). JAMA (submitted)

Spiegelmann R, Friedman WB. (1991) Spinal cord stimulation: a contemporary series. Neurosurg 28:65-71

Staats PS, Hekmat H, Sauter P et al. (2001) The effects of alcohol celiac plexus block, pain and mood on longevity in patients with unresectable pancreatic cancer. A double-blind, randomized, placebo-controlled study. Pain Med 2:28-34

Stanton-Hicks M, Baron R, Boas R et al. (1998) Complex regional pain syndromes: Guidelines for therapy. Clin J Pain 14: 155-66

Stewart W et al. Work-related cost of pain in the USA: results from the American productive audit. Abstracts of the 10th World Congress on Pain. IASP Press 2002. Seattle. p224

Stiller CO, Cui JG, O'Connor WT et al. (1996) Release of gamma-aminobutyric acid in the dorsal horn and suppression of tactile allodynia by spinal cord stimulation in mononeuropathic rats. Neurosurg 39:367-75

Strassels S, Carr D, Meldrum M, Cousins MJ. (1999) Toward a canon of the pain and analgesia literature: a citation analysis. Anesth Analg 89:1528-33

Swarm RA, Kararikolas M, Cousins MJ. (2003) Anaesthetic techniques for pain management. In: Doyle D, Hanks GWC & MacDonald N (eds). Oxford Textbook of Palliative Medicine 3rd ed., Oxford University Press.

Tesfaye S, Watt J, Benbow SJ et al. (1996) Electrical spinal cord stimulation for painful diabetic peripheral neuropathy. Lancet 348:1698-701

Tew JM, Tobler WD, von Loveren H. (1982) Percutaneous rhizotomy in the treatment of intractable facial pain. In: Schmidek HH, Sweet WH (eds). Operative neurosurgical techniques: New York. Grune & Stratton pp1083-106

Turk DC. (2002) Clinical effectiveness and cost-effectiveness of treatments for patients with chronic pain. Clin J Pain 18: 355-65.

Turner JA, Loeser JD, Bell KG. (1995) Spinal cord stimulation for chronic low back pain: a systematic literature synthesis. Neurosurg 37:1088-1096

Vad VB, Bhat AL, Lutz GE et al. (2002) Transforaminal epidural steroid injections in lumbosacral radiculopathy: a prospective randomized study. Spine 27:11-16

van Kleef M, Barendse GA, Kessels A et al. (1999) Randomized trial of radiofrequency lumbar facet denervation for chronic low back pain. Spine 24:1937-42

Verhaak PF, Kerssens JJ, Dekker J et al (1998) Prevalence of chronic benign pain disorder among adults: a review of the literature. Pain 77:231-9

Von Korff M, Dworkin SF, Le Resche L et al (1988) An epidemiologic comparison of pain complaints. Pain 32:173-83

Walker SM, Goudas LC, Cousins MJ, Carr DB. (2002) Combination spinal analgesic chemotherapy: A systematic review. Anesth Analg 95:674-715

Wall P, Melzack R. Textbook of Pain. 1st ed. 1984, 2nd ed. 1989, 3rd ed. 1994, 4th ed. 1999

Wallace MS, Dyck JB, Rossi SS et al. (1996) Computer-controlled lidocaine infusion for the evaluation of neuropathic pain after peripheral nerve injury. Pain 66: 69-77

Walsh JA, Glynn CJ, Cousins MJ et al. (1984) Blood flow, sympathetic activity and pain relief following lumbar sympathetic blockade or surgical sympathectomy. Anaesth. Intensive Care 13:18-24

White JC, Sweet WH. (1969) Pain and the neurosurgeon. A forty-year experience. Springfield, Ill.: C.C. Thomas

Wilmore DW, Kehlet H. (2001) Management of patients in fast-track surgery. BMJ 322: 473-6

Wolfe J, Grier HE, Klar N et al (2002) Symptoms and suffering at the end of life in children with cancer. NEJM 342: 326-33

Woolf CJ, Doubell TP. (1994) The pathophysiology of chronic pain-increased sensitivity to low threshold A-beta-fibre inputs. Curr. Opin Neurobiol 4:525-34

Parry CB. (1980) Pain in avulsion lesions of the brachial plexus. Pain 9:41-53