

**IN THE HIGH COURT OF NEW ZEALAND  
WELLINGTON REGISTRY**

**CIV-2015-485-235**

<b>UNDER</b>	<b>The Declaratory Judgments Act 1908 and the New Zealand Bill of Rights Act 1990</b>
<b>BETWEEN</b>	<b>LECRETIA SEALES</b>  <b>Plaintiff</b>
<b>AND</b>	<b>ATTORNEY-GENERAL</b>  <b>Defendant</b>

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**AFFIDAVIT OF RAJESH MUNGLANI**  
**SWORN 22 APRIL 2015**

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**I, RAJESH MUNGLANI, consultant, of Cambridge, United Kingdom, swear:**

**Introduction**

1. I am a Consultant in Pain Medicine practising in the United Kingdom.
2. I have been asked to give evidence concerning:
  - (a) the role of Consultants of Pain Medicine in end of life care;
  - (b) whether pain can be adequately controlled in all circumstances;
  - (c) the methods available for controlling pain for a person in Lecretia's circumstances; and
  - (d) whether the medically available options are likely to be able to alleviate all of Lecretia's end of life suffering.

3. For the purpose of preparing this affidavit, I have been provided and have reviewed copies of the affidavits of Lecretia Seales, [REDACTED] and [REDACTED]

**Personal profile**

4. I currently hold the position of Hon Consultant in Pain Medicine, West Suffolk Hospital, Cambridge University Hospital Trust.
5. I have held the following positions:
  - (a) Honorary Consultant and Lecturer in Anaesthesia and Pain Medicine, Cambridge University, Addenbrookes Hospital; and
  - (b) Honorary Consultant, Arthur Rank Hospice.
6. I am a Fellow of the Faculty of Pain Medicine, Royal College of Anaesthesia.
7. I obtained my Bachelor of Medicine, and Surgery from the University of London in 1985, and my Fellowship in Anaesthesia in 1995. In 1996 I was elected John Farnham Professor of the Royal College of Anaesthetists.
8. A copy of my curriculum vitae is annexed as exhibit "RM1".
9. To the extent that I express opinions in this affidavit, I confirm that these matters are within my areas of expertise and experience. I confirm that I have read the High Court Code of Conduct for Expert Witnesses as set out in schedule 4 of the High Court Rules. I agree to comply with that Code.

**Prior involvement in the debate around aid in dying**

10. I am the author of one article on aid in dying, entitled "Reflections on euthanasia, pain and suffering", published in the Journal of Observational Pain Medicine in 2012. I have also taken part in two theologically based meetings on the subject. The first meeting was at Bishop's House

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Coventry, at the invitation of the Bishop. The second meeting was called Dying Well: Faith and Compassion in Dialogue, held at Ridley Hall, a theological training college in the University of Cambridge, England.

#### **The role of Consultants in Pain Medicine in end of life care**

11. Consultants in Pain Medicine are only asked to intervene in end of life care when other specialties are not managing to control the symptoms of pain. As a result, we tend to see pain at the challenging end of the spectrum, ie pain uncontrolled by "conventional" means. In this context, "conventional" includes those types of analgesics, hypnotics and other medications and infusions used in palliative care settings, including oral and transcutaneous opioids, benzodiazepines, ketamine and topical local anaesthetics. The availability of these means has dramatically improved palliative care in the last 20 years.
12. Despite these major advances in palliative care, I still see patients in severe distress; they are often over-medicated and confused following quite natural attempts to control their symptoms, and they continue to suffer with little or no quality of life.
13. Fortunately Consultants in Pain Medicine are able to help some of these patients with optimisation of medication and, on many occasions, using spinal delivery of the same drugs mentioned above, or the use of neuroablative techniques (nerve destruction procedures). In such situations we never work alone, but in conjunction with our oncology, palliative care and primary care colleagues as well as other specialties as necessary, including surgeons and rehabilitation professionals, and not forgetting volunteers and priests for spiritual support etc.

#### **Whether pain can be controlled in all circumstances**

14. Unfortunately, at least twice a year, I see cases where, despite the use of all of the appropriate interventions and therapies available in all the disciplines described, patients experience pain and distress. These patients are undoubtedly suffering, along with those around them, including family and loved ones and the attending medical and nursing staff.
15. These patients are often over-sedated to the point of confusion. I frequently see patients coming from hospitals, hospices and the community whose pain and distress is not relieved adequately. Although we can help many of them, there are a number who cannot be helped without heavy sedation. Particularly where dying does not appear imminent, the prospect of long term sedation to the point of unconsciousness is distressing and undesirable for the patient and family.
16. Cancer, particularly in the advanced stages, can present a particular issue with regard to pain management. I have recently co-authored an article on this subject: Rajesh Munglani and Dr Arun Bhaskar "Pain and Suffering in Cancer Patients" (2015) 56.2 *Modern Believing* 145. A copy of that article is annexed as exhibit "RM2". Opioids do not provide the desired pain relief for many cancer sufferers. For example, opioid treatment of pain may be ineffective where patients:
  - (a) develop an increasing tolerance for the medication; or

- (b) experience opioid-induced hyperalgesia (where the medication paradoxically induces an increase in pain perception); or
- (c) suffer from breakthrough pain (transitory increases in pain above the "normal" level).


17. Unfortunately, many pains are just not opiate sensitive.
18. In my opinion, the symptoms (including pain) and distress experienced by some end of life patients are beyond the realms of medicine. Throughout my career I have regularly (but fortunately, not frequently) come across such patients whose pain cannot be managed despite significant medical input including the intervention of specialists in Pain Medicine. However small the number of cases, in my opinion, watching someone endure unbearable suffering diminishes all humanity.

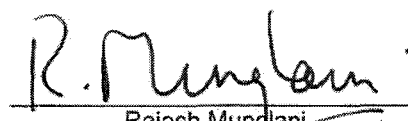
**The methods available for controlling pain for a person in Lecretia's circumstances**

19. As I mention above, I have read Lecretia's affidavit and the affidavits of her oncologist and her GP.
20. I am familiar with oligoastrocytoma and with brain tumours generally. I have treated many patients with brain tumours. In my opinion Lecretia is at risk of suffering from severe pain and particularly headaches and neurological type pains as the tumour spreads and presses and invades nerves and other sensory pathways within the brain. This will get worse as the growth of her tumour progresses, in addition to the various other symptoms that may present.
21. The methods that can be utilised to address such pain are:
- (a) treatment with opioid pain medication;
  - (b) steroids;
  - (c) radiotherapy; and
  - (d) treatment with powerful drugs that work on nerves such as lignocaine and ketamine infusion.
22. It is likely that those methods will be able to adequately address Lecretia's pain. However:
- (a) Pain relief medications may have unpleasant side effects, for instance frequent use of strong opioids may cause:
    - (i) somnolence, drowsiness and sedation;
    - (ii) cognitive dysfunction;
    - (iii) memory problems;
    - (iv) personality changes;
    - (v) profound and intractable nausea and vomiting; and

- (vi) severe constipation.
  - (b) Steroids may also have unpleasant side effects:
    - (i) depression and anxiety;
    - (ii) agitation;
    - (iii) insomnia;
    - (iv) muscle deterioration, which can adversely affect movement and mobility;
    - (v) uncontrollable appetite;
    - (vi) increased blood pressure; and
    - (vii) distorted appearance.
  - (c) The problems with drugs such as ketamine and lignocaine is that the safety profile of these medications is not good. They can very easily anaesthetise someone and cause profound problems with the vital centres of breathing, heart rate, blood pressure, and consciousness. It is difficult to get the dose right without effectively sending somebody into delirium and causing them to suffer hallucinations. This is very distressing for the patient, and their relatives, and indeed the medical staff.
23. Where other pain management methods fail, the only guaranteed way to relieve pain is to sedate someone to the point of unconsciousness.
  24. Patients who have brain tumours may already suffer with distressing effects of the tumour. The introduction of powerful analgesic agents as indicated above can exacerbate this problem.
  25. In my opinion, there is a good chance that the medically available options will adequately address any physical pain that Lecretia suffers from.
  26. However, it is possible that her pain will not be adequately addressed by those treatments, and that the side effects of those treatments will cause other kinds of suffering.
  27. Ultimately, if she is not able to access assisted dying services, Lecretia may be forced to choose between unbearable pain, sedation or death by committing suicide.

**SWORN** at Cambridge, England this  
 22 day of April 2015 before me:

  
 A person duly authorised to administer  
 oaths by the law of England & Wales

  
 Rajesh Munglani

**"RM1"**

This is the annexure marked "RM1" referred to in the affidavit of  
**Rajesh Munglani** sworn at Cambridge, England this **22<sup>nd</sup>**  
day of April 2015 before me

Signature .....  
A person duly authorised to administer oaths by the law of England &  
Wales

**RICHARD DESMOND TRUGES GARNICHY**  
**Solicitor**

## **CURRICULUM VITAE**

**DR. RAJESH MUNGLANI**  
Consultant in Pain Management

Honorary Consultant at West Suffolk NHS Foundation Trust,  
Bury St Edmunds

Formerly Lecturer in Pain Management and Anaesthesia at the  
University of Cambridge;  
Director of Pain Relief Service Addenbrooke's Hospital Cambridge;  
Elected 1996 John Farman Professor at the  
Royal College of Anaesthetists;  
Member of the interventional Pain Group of the British Pain Society and  
an Officer of the Committee;  
Elected on to the Council of the British Pain Society in 2011.  
The founding member and secretary of the medicolegal special interest  
group of the British Pain Society, 2011.  
Advisor to the Parliamentary and Health Service Ombudsman.  
Member of the London Pain Forum Council.  
Elected in 2014 on to the Royal Society of Medicine Council - Pain  
Section

### **Private Consulting Rooms:-**

Spire Cambridge Lea Hospital  
30 New Road, Impington  
Cambridge  
CB24 9EL

BMI St Edmund's Hospital  
St Mary's Square  
Bury St Edmund's Suffolk  
IP33 2AA

Nuffield Health Cambridge Hospital  
4 Trumpington Road  
Cambridge  
CB2 8AF

**For enquiries contact my Secretary on: Telephone/Fax 01223 479024**

All correspondence to  
Sue Sanalidro, PA/Secretary (Medicolegal)  
64 Cambridge Road  
Impington, Cambridge CB24 9NU

Email [rajesh@munglani.com](mailto:rajesh@munglani.com)

**PERSONAL DETAILS**

<b>Name:</b>	Rajesh MUNGLANI	
<b>Date of Birth:</b>	31 August 1962	
<b>Nationality:</b>	British	
<b>Marital Status:</b>	Married with 4 children	
<b>Address:</b>	'Manesty' 10a Church Street Great Shelford Cambridge CB22 5EL	
<b>Education:</b>	1973 - 1980 Esher County Grammar School Thames Ditton Surrey  10 O levels  4 A Levels:  Chemistry                      Grade A Physics                        Grade A Zoology                        Grade A Mathematics                  Grade B	
<b>Medical Education:</b>	1981 - 1985 St. George's Hospital Medical School University of London.	
<b>Qualifications:</b>	MB BS	1985
	DA	1987
	DCH	1989
	FRCA	1990
<b>GMC No:</b>	3056255	
<b>MPS No:</b>	144733	

## PRESENT POST

01.05.2000 – to present date

**Consultant in Pain Management, West Suffolk Hospital, Bury St Edmunds.**

In this post I deal with a wide range of pain conditions including cancer related pains, spinal pain and complex regional pain syndromes. I am familiar with the pharmacology and pathophysiology of chronic pain states. I am familiar with and competent to perform a wide range of interventional pain procedures and have a special interest in radio-frequency procedures of facets joints, intervertebral discs, nerve roots, sympathetic nerves and the saphenopalatine ganglion as well as the use of Botulinum toxin for pain states

Specifically at the West Suffolk I have encouraged the development of an evidenced based pain service. I have encouraged closer links with the palliative care services and developed joint monthly education and audit meetings. I have initiated a patient centred approach with information and letters being copied to patients and treatment dates being given to patients on their out patient visits. I have raised the money to buy a radio-frequency machine (£12,000) to enable such procedures to be performed at the West Suffolk Hospital. I have appointed a clinical nurse specialist initiate nurse led clinic, and we have also appointed a Counsellor, a Clinical Assistant and an Acupuncturist and also developed a specific TENS clinic.

**In addition:**

- I am the lead Clinician in Pain Services
- I lecture regularly at the University of Cambridge pre-clinical undergraduates on pain at Peterhouse and Downing Colleges and also to clinical students on their attachments to the Pain Clinic and I also will lecture on the new graduate programme at the West Suffolk Hospital.
- I have lectured on the University of Cambridge clinical ethics course.
- I lecture regularly at local, national and international meetings on Pain Medicine.
- I continue to write and research.

I am currently on the following British Pain Society committees:

- Communications committee
- Good practice guidelines for percutaneous spinal intervention procedures (excluding epidural)
- Special interest group (SIG) Council Liaison Officer for medicolegal, interventional pain medicine, philosophy and ethics

I am currently a British Pain Society College Representative for the following:

- Managing Pain in Practice (newsletter)
- Royal College of Physicians (RCP)
- NICE Rep on Council

I am also the editor in Chief of the Journal of Observational Pain Medicine ([www.joopm.com](http://www.joopm.com))

I am founder and organiser of the Peterhouse Medico legal Conference and Cambridge Medico legal Forum



**PREVIOUS POST:****01.01.1996 – 31.01.2000:**

**Lecturer in Anaesthesia and Pain Management, University of Cambridge and Honorary Consultant in Anaesthesia and Pain Management Addenbrooke's Hospital and Arthur Rank Hospice**

**01.02.2000 – 31.03.2001**

**Consultant in Pain Management (2.5-5 sessions per week) Addenbrooke's Hospital Cambridge**

My time was divided between clinical work, basic research and teaching. I was also elected the John Farman Professor at the Royal College of Anaesthetists in 1996.

**CLINICAL:**

I spent one day per week giving anaesthetics and one day a week in the Pain Relief Clinic. My special interests included in the long term efficacy of treatments for chronic spinal pain. In particular the use of cervical facet denervation for the treatment of chronic neck pain including whiplash syndrome and the application of pulsed radiofrequency to cervical DRG (pulsed radiofrequency does not injure the nerves and is associated with virtually no morbidity hence its attraction.)

**BASIC SCIENCE RESEARCH:**

Three days per week were spent undertaking research into the molecular neurobiology of chronic pain states. Four research staff (a PhD student and three post doctoral scientists) working in my laboratory along side myself. Using animal models that I were set up, with techniques such as immunohistochemistry, *in-situ* hybridisation, neural tracing, and neuronal cell and explants culture we investigated the following:-

- a) The role of sprouting by the central axons of injured peripheral nerves in the spinal cord and their contribution to the generation of pain states.
- b) The relationship between immediate early gene expression and neuropeptide expression in the spinal cord and the mediation of the adaptive responses of the spinal cord to peripheral nerve injury.
- c) The occurrence of apoptosis in the spinal cord after peripheral nerve injury in the adult and neonatal nervous system.

## TEACHING:

I gave lectures on the physiology and pharmacology of pain and analgesic agents to students on the pre-clinical part of their course, on the molecular neurobiology of medicine course as well as on more clinical subjects to students in their clinical attachments.

I also lectured to anaesthetists sitting their Fellowship exams here and in London and basic science students, pre-clinical and clinical medical students, as well as doctors sitting Fellowship exams. I lectured frequently to scientific meetings on the subject of the molecular basis of pain states and its implications for present day pain and anaesthetic management.

## SUMMARY OF PAST MEDICAL TRAINING

**Clinical Lecturer and Senior Registrar** 10.01.1993 – 31.12.1996

In Anaesthesia, Cambridge University & Addenbrooke's Hospital Cambridge  
As well as developing my research interests I also organised the medical student teaching for Anaesthesia

**Locum Senior Registrar** 01.04.1993 – 31.09.1993

Department of Anaesthesia, Addenbrooke's Hospital Cambridge

**Research Fellow to Professor J.G. Jones** 01.10.1991 – 31.03.1993

Cambridge University Department of Anaesthesia.

## PAST ANAESTHETIC APPOINTMENTS

**Cambridge Regional SHO/Registrar Post in Anaesthesia** 01.02.1989 – 31.08.1991

Addenbrooke's Hospital Cambridge.  
Papworth Hospital, Papworth Everard.  
Newmarket DGH, Newmarket.  
Hinchingbrooke Hospital, Huntingdon.

This rotation covered all the major specialities. During this time I passed my part III FRCA and the DCH. I also obtained a research fellowship allowing me to work in the Cambridge University Department of Anaesthesia.

**SHO in Anaesthesia** 01.08.1986 – 31.07.1987

St. Richard's Hospital, Chichester

## PAST MEDICAL APPOINTMENTS

### SHO Rotation in Paediatrics and Neonatology

01.02.1988 – 31.01.1989

Royal Alexandra Hospital for sick children, Brighton.  
Trevor Mann Baby Unit, Royal Sussex County Hospital, Brighton.

I spent six months at each hospital. During this year I passed my Part II FRCA

### SHO in Accident & Emergency Medicine

01.08.1987 – 31.01.1988

St. Richard's Hospital, Chichester.

## PRE-REGISTRATION POSTS

### House Physician

01.08.1985 – 31.01.1986

St. George's Hospital, London

### House Surgeon

01.02.1986 – 31.07.1986

St. Richard's Hospital, Chichester

## DETAILS OF PAST MEDICAL TRAINING

### i. Anaesthetic training

#### Cambridge Regional SHO/Registrar Rotation in Anaesthesia

01.02.1989 – 31.08.1991

The rotation incorporated all the major specialities, these are listed below. On call rota was 1 in 3.5 at Addenbrooke's Hospital and the Rosie. On call rotas were spent covering Main Theatres, Obstetrics, or Intensive Care. Whilst attached to Intensive Care I was on call for the Emergency Team. During the latter part of the rotation I did occasional SR on calls. The regional hospitals had their own on call arrangements. During this appointment I took part in the locally organised postgraduate activities, taught medical students, nurses and ODAs.

#### Rosie Maternity Hospital Cambridge:

##### Obstetrics and Gynaecology -

Two months. This is a regional referral unit. I am proficient in the insertion of epidurals including their use for Caesarean Section. I also managed many pre-eclamptic patients.

#### Addenbrooke's Hospital Cambridge:

##### Neurosurgery -

Two months. This is a regional centre which receives major trauma. There were daily Neuro-Intensive Care Ward Rounds. I used the EEG as a monitor and also induced hypotension techniques.

##### Pain Relief -

Four months. This included Outpatient Clinics and 'Nerve block' sessions.

##### Intensive Care Medicine -

Four months. A large part of the work included the care of post liver transplant patients. As well as central venous and arterial lines. I have inserted approximately 35 Swan Ganz catheters. Management of patients included the use of oxygen delivery and consumption calculations.

#### **ENT & Ophthalmology -**

Two months. This included using induced hypotension for major ENT procedures and dealing with eye trauma cases.

#### **Plastic Surgery -**

One month. This included craniofacial reconstruction, cleft lip and palate surgery.

#### **Paediatrics -**

I gained experience in anaesthetising both children and neonates, particularly during my ENT, General and Plastic Surgery attachments. I occasionally attended Ward Rounds on the Paediatric ITU.

Experience in General, Vascular, Orthopaedic and Day Case Surgery was also gained.

### **Papworth Hospital, Cambridge:**

#### **Cardiothoracic Surgery –**

Two months. Under the supervision of the consultants I managed patients who required heart-lung bypass for cardiac procedures including transplantation. I also dealt with major thoracic cases. One in three on call.

### **Newmarket District General Hospital, Newmarket:**

I spent six months here. I did a variety of general lists. When on call I covered main theatres, obstetrics, ITU, the assisted ventilation unit and I was also on the cardiac arrest team. I was taught rigid and fibre optic bronchoscopy. I routinely used various brachial plexus blocks and other regional techniques for orthopaedic surgery. One in three on call.

### **SHO in Anaesthesia St. Richard's Hospital, Chichester 01.08.1986 - 31.07.1987**

I was responsible for ITU and on the arrest team when on call. I gained experience of both routine and emergency anaesthesia in ENT, ophthalmic, cardiothoracic, paediatric and general surgery. I also dealt with some obstetric cases and became familiar with epidurals. I became proficient in central venous and radial artery cannulation.

## **ii. Other Medical Training**

### **ONE-YEAR ROTATION IN PAEDIATRICS & NEONATOLOGY:**

**Royal Alexandra Hospital for Sick Children, Brighton**  
**SHO in Medical Paediatrics**

**01.02.1988 – 31.07.1988**

Dr N. Evans. MRCP DCH. Consultant Paediatrician.

Dr Evans special interests were diabetes and endocrinology. I was on call for acute medical admissions, paediatric casualty department and ITU. I was particularly involved in the investigation of children with failure to thrive and those with short stature. I also looked after the paediatric oncology patients in a shared care system with Great Ormond Street Hospital, London.

**Trevor Mann Baby Unit, Royal Sussex County Hospital, Brighton.**

**SHO in Neonatology**

**01.08.1988 – 31.01.1989**

Dr W Lenny. MRCPaed. Consultant Paediatrician

This was a regional unit. I was responsible for the day-to-day care of the neonates including the setting up of umbilical artery and other arterial catheters, antecubital fossa feeding lines and working out feeding regimes. I was also responsible for paediatric resuscitation on the labour wards and the post natal baby checks.

**SHO in Accident & Emergency**  
**St. Richard's Hospital, Chichester.**

**01.08.1987 – 31.01.1988**

Dr R.F. Weeks. Consultant in Charge of A&E.

I dealt with acute medical and surgical admissions as well as orthopaedic and trauma cases. I performed minor operations under a variety of local anaesthetic blocks.

### iii. Pre-Registration Posts

**House Surgeon**  
**St. Richard's Hospital, Chichester.**

**01.02.1986 – 31.07.1986**

Mr. E. Ashby FRCS & Mr. W. Gammie. FRCS. Consultant Surgeons  
I gained a wide range of surgical experience including orthopaedics and urology

**House Physician**  
**St. George's Hospital, London.**

**01.08.1985 – 31.01.1986**

Prof. B. F. Robinson FRCP, & Dr. C. Pumpfrey MRCP, Consultant Cardiologists.  
I spent three months on a general medical firm with an interest in hypertension and three months learning cardiology and caring for post cardiac bypass patients.

## MEDICAL ACTIVITIES

### Membership of Societies:

- Fellow of the Royal College of Anaesthetists
- International Association for the Study of Pain
- Pain Society
- Executive Officer Interventional Pain Medicine Special Interest Group
- Founder Pain Consultant online discussion group (175 members)
- Organiser and speaker Euthanasia conference Ridley Hall (September 2011)
- Mentor on Ministry of Ethics website  
<http://www.ministryofethics.co.uk/www.ministryofethics.co.uk>

## MEDICAL ACTIVITIES

## **Publications:**

### **Papers/Reviewed Journal Articles**

Munglani R, Gray P, & Park G: Increases in oxygen consumption during administration of dopexamine in liver failure.  
Clinical Intensive Care 1990, Vol/Iss/pg 1/3 (134-135) ISSN: 0956-3075

Munglani R & Kenney I: Paediatric Parapneumonic effusions: a review of 16 cases.  
Respiratory Medicine 1991 March Vol 85: 117-119

Munglani R & Jones J G: Sleep and General Anaesthesia as altered states of consciousness.  
Journal of Psychopharmacology 1992 Vol/Iss/Pg 6/3 (399-409)  
(Altered consciousness: Pharmacology and phenomenology BAP summer meeting, York July 1991)

Munglani R: Conscious Awareness  
British Journal of Anaesthesia 1992 Mar;68(3):325-6

Munglani R, Andrade J, Sapsford D J, Baddeley A, Jones J G: Coherent Frequency of the EEG: Validation of a measure of consciousness during isoflurane administration.  
British Journal of Anaesthesia 1993 Nov 71:633-41

Heap M J, Munglani R, Klinck J R, Males A G: Elderly Patients' Preferences concerning life-support treatment  
Anaesthesia 1993 Dec;48 (12):1027-1033

Munglani R, Jones J G & Hunt S: Pre-emptive analgesia – use of immediate early genes expression as margin of neuronal stimulation  
British Journal of Anaesthesia 1993 Sept;71(3):458

Munglani R, Andrade J, Sapsford D, Baddeley A, Jones J: A measure of consciousness and memory during isoflurane administration: the coherent frequency  
British Journal of Anaesthesia 1993 Nov Vol:71 (5), P:633-41, ISSN: 0007-0912

Munglani R: Depth of Anaesthesia  
Anaesthesia 1994 Jan, Vol:49 (1) P:78-9 ISSN: 0003-2409

Tooley M, Greenslade G, Sapsford D, Jones J & Munglani R: A measure of consciousness and memory during isoflurane administration: The Coherent frequency  
British Journal of Anaesthesia 1994 Vol/Iss/Pg. 73/1 (119), ISSN: 0007-0912

Andrade J, Munglani R, Millar K: Therapeutic suggestions during general anaesthesia (6)  
British Journal of Anaesthesia 1994 Vol/Iss/pg 72/6 (730-731) ISSN: 0007-0912

Andrade J, Munglani R, Jones J G, Baddeley A: Cognitive Performance during Anaesthesia.  
Consciousness and Cognition 1994 3:148-165

Munglani R: Depth of anaesthesia  
Anaesthesia 1994 Jan;49(1):78-79

Munglani R, Bond A, Smith G, Harrison S, Elliot P J, Birch P J, Hunt S P: Changes in neuronal markers in a mononeuropathic rat model: relationship between neuropeptide Y, pre-emptive drug treatment and long term mechanical hyperalgesia  
PAIN 1995 Oct;(1)63:21-31

Hill D J, Munglani R & Sapsford D: Haemodynamic responses to surgery in brain-dead organ donors  
Anaesthesia 1994 Sept;49(9):835-6

Andrade J & Munglani R: Therapeutic suggestions during general anaesthesia  
British Journal of Anaesthesia 1994 Jun;72(6):730-1

Munglani R, Fleming B & Hunt S: Remembrance of times past: the significance of C-fos in pain  
British Journal of Anaesthesia 1996 Jan Vol 76 (1), P:1-4 ISSN 0007-0912

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British Journal of Anaesthesia 1996 Vol/Iss/pg 77/2 (299-301) ISSN: 0007-0912
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Brain Research 1996 Dec 16;743(1-2):102-8
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Anaesthesia 1996 Dec;51(12):1190
- Munglani R & Hunt S P: Proto-oncogenes: Basic concepts and stimulation induced changes in the spinal cord  
Programme Brain Research 1995;104:283-98
- Hudspeth M J & Munglani R: Pre-emptive Analgesia with NSAID – What does it achieve?  
British Journal of Anaesthesia 1996 Jul;77(1): 128-9
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Expert Opinion on Investigational Drugs 1997 Vol 6:759-769
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Brain Research Protocols 1998 Jan;2(2):160-164
- Whiteside G & Munglani R: TUNEL, Hoechst and immunohistochemistry triple-labelling: an improved method for detection of apoptosis in tissue sections - an update.  
Brain Research Protocols 1998 Sept;Vol.3(1):52-53
- Whiteside G, Doyle C A, Hunt S P, Munglani R: Differential time course of neuronal and glial apoptosis in neonatal rat dorsal root ganglia after sciatic nerve axotomy  
European Journal of Neuroscience 1998 Nov;10(11):3400-3408
- Hudspeth N & Munglani R: A role for presynaptic NMDA receptors in central sensitization in the spinal cord dorsal horn?  
British Journal of Anaesthesia 1998 Aug;81(2):L294-5
- Whiteside G, Doyle C, Hunt S P & Munglani R: Differential time course of neuronal and glial apoptosis in neonatal rat dorsal root ganglia after sciatic nerve axotomy  
The European Journal of Neuroscience 1998 Nov Vol 10 (11) p3400-8
- Hudspeth M & Munglani R: A role for presynaptic NMDA receptors in central sensitization in the spinal cord horn?  
British Journal of Anaesthesia 1998 Aug Vol 81 (2) p 294-5 ISSN: 0007-0912
- Hudspeth M, Munglani R & Beurkle H: A role for presynaptic NMDA receptors in central sensitization in the spinal cord horn? Multiple letters  
British Journal of Anaesthesia 1998 Vol/Iss/pg 81/2 (294-205), ISSN: 0007-0912
- Munglani R, Hudspeth M J, Fleming B, Harrison S, Smith G D, Bountra C, Birch P J, Hunt S P, Elliott P J: The effect of pre-emptive NMDA antagonist treatment on long term Fos expression and hyperalgesia in a model of chronic neuropathic pain  
Brain Research 1999 Mar 20;822(1-2):210-219
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Effect of MK801 and a novel sodium channel blocker on the time course of neuronal and glial apoptosis in neonatal rat dorsal root ganglia after sciatic nerve axotomy

Munglani R: The long term effect of pulsed radiofrequency for neuropathic pain  
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Munglani R: New thoughts on Whiplash. (Problems associated with diagnosing persistent whiplash injury disorders and recommendations for treatment).  
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Munglani R: Neurobiological mechanisms underlying chronic whiplash associated pain: the peripheral maintenance of central sensitisation  
World Congress on Whiplash-Associated Disorders in Vancouver, British Columbia, Canada Feb 1999  
Journal of Musculoskeletal Medicine 2000;Vol 8:169-178

Atherton J, Stauffer K, Petty-Saphon S, Munglani R: Randomised double blind placebo controlled trial of a back pain relieving device

Munglani R: Management of Acute and Chronic Pain  
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Munglani R: Neurobiological mechanisms underlying chronic whiplash associated pain: The peripheral maintenance of central sensitization  
Journal of Musculoskeletal Pain 2000, Vol/Iss p 8/1-2 (169-178) ISSN: 1058-2452

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Gabapentin in post herpetic neuralgia – A randomised, double blind, placebo controlled study.  
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Munglani R: The use of Botulinum Toxin in the treatment of Chronic spinal Pain, Headaches and Migraines  
Talkback 2001 spring p24-5, ISSN: 0144-3798

Atherton J, Stauffer K, Petty-Saphon S, Munglani R: Randomised double blind placebo controlled trial of a back pain relieving device  
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Munglani R: New ways to beat pain (advances in drug therapy)  
Talkback 2002 Winter, p15 ISSN 0144-3798

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What factors are associated with improved patient outcomes? Result of a discharge audit from the West Suffolk Hospital Pain Clinic by Jeynes L, Waters C, Morris A, Schofield M, Munglani R, - West Suffolk Hospital 2007

A randomised double-blinded placebo controlled trial of pulsed radiofrequency to the dorsal root ganglion for resistant whiplash pain and brachialgia by Schofield M, Sardy M\*, Munglani R, West Suffolk Hospital/\*Brooklyn College 2006



Non-opioid pain relief by Schofield M, Munglani R, West Suffolk Hospital – British Journal of Cancer Management, Volume 3 Issue 2, 2007

Munglani, R. NICE guidelines on low back pain are flawed. Response to journal letter. 31/05/2009.

Munglani, R. Judging the NICE early low back pain guidance. Response to journal letter. 31/07/2009.

Munglani, R. Failure to appreciate pain is a symptom not a diagnosis is what leads to bad medicine. Response to journal letter. 08/03/2010.

Munglani, R et al. Critiquing the Critiques: The American Pain Society Guideline and The American Society of Interventional Pain Physicians' Response to it. Letter to the Editor. December 2010.

Munglani, R et al. Cuts that hurt; letter to the Editor. Times online. 27/04/2011.

Munglani, R. Internet group for pain consultants, The British Pain Society Pain News, Autumn 2011.

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Munglani R. How do we progress knowledge? Pain News Winter 2011.

Munglani R, Riggs H, Waters C, Schofield M, Jeynes L. An opioid pathway in chronic non-malignant pain; a clinical audit of patients' experiences: preliminary results.

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Munglani R. "The threat to pain services and the continuing NHS reforms", Pain News June 2012, Vol 10, No 2, pages 86 – 90.

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Munglani R, "Numbers needed to heal, numbers needed to harm, numbers needed to kill: reflections on opioid therapy and the primary duty of medicine". Pain News 11(1) 2013 pages 34-38.

Munglani R, "Does a diagnosis or understanding of the mechanism of pain mean that we can predict disability?". Pain News 11(1) 2013 pages 59-60.

Munglani R, "A new website and discussion groups for the British Pain Society and the use of Monkeys? Results of the consultation of the BPS Council and Membership". Pain News 11(1) 2013 pages 30-33.

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Schofield M, Shetty A, Spencer M, Munglani R. Pain Management Q&As, British Journal of Family Medicine, May/June 2014, July/August 2014 and September/October 2014.

Julian Benson, Michael Spencer, Andreas Goebel, Rajesh Munglani; Compensation Claims Relating to Chronic Pain - Part One: The Context of Litigation. Journal of Observational Pain Medicine Vol 1, No 4.

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Rajesh Munglani, Michael Spencer, Andreas Goebel, Julian Benson; Compensation Claims Relating to Chronic Pain Part Three: Pain Syndromes and Disorders in the Medico-legal Setting. Journal of Observational Pain Medicine Vol 1, No 4.

Julian Benson, Andreas Goebel, Michael Spencer, Rajesh Munglani; Compensation Claims Relating to Chronic Pain Part Four: Particular Difficulties in Litigation Involving Chronic Pain. Journal of Observational Pain Medicine Vol 1, No 4.

## Chapters

Munglani R & Jones J G: Information Processing in Sleep and Anaesthesia.  
Anaesthesia Review 10 1993 Editor Kaufmann L Chapter 7, pages 107- 130 Churchill Livingstone

Jones J G & Munglani R: Monitoring Depth of Anaesthesia  
Monitoring the Central Nervous System, Editor Sebal P & Fitch W 1994; Blackwell: 181-221

Hunt S P, Smith G D, Bond A, Munglani R, Thomas K, Elliot P J: Changes in Immediate Early Gene expression, Neuropeptide Immunoreactivity and other Neuronal Markers in the Spinal cord and Dorsal Root Ganglion in a rat model of Mononeuropathy  
Neuropeptides, Nociception and Pain, Editors Hokfelt T, Scaible H G, Schmidt R)  
Chapman Hall 1994: 329-349.

Munglani R & Hunt S P: Proto-oncogenes: Basic concept and stimulation induced changes in the spinal cord  
Progress in brain research volume 104 Neuropeptides in the Spinal Cord: Fundamental and Clinical Aspects. Edited by Nyberg F, Sharma H S, Wisenfeld-Hallin Z - 1995 pages 283-298

Munglani R, Hunt S P, Jones J G: Spinal Cord and Chronic Pain.  
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Munglani R & Hunt S P: Molecular Biology of Pain  
British Journal of Anaesthesia 1995 Aug;75(2):186-192

Munglani R, Fleming B G, Hunt S P: Remembrance of times past: the role of c-fos in pain.  
British Journal of Anaesthesia 1996 Jan;76(1):1-4

Munglani R, Hudspith M, Hunt S P: Therapeutic potential of Neuropeptide Y. Analgesic, anxiolytic and antihypertensive  
Drugs 1996 Sep;52(3):371-389

Jones J G & Munglani R: Cognition and Memory during Anaesthesia  
International Practice of Anaesthesia, edited by Prys-Roberts C, Brown B, Butterworth Heinemann. Oxford 1996 chapter 5

Hudspeth M J & Munglani R: The therapeutic potential of NPY in cardiovascular disease  
Expert Opinion on Investigational Drugs 1997 6: 437-445

Hunt S P & Munglani R: Molecular Markers of Pain.  
Experimental Headache Models Ed. Olsen J & Moskowitz M A p49-62

Munglani, R. Recent advances in chronic pain with special reference to back pain. Anaesthesia  
Review 14 ed Ginsburg and Kaufman Churchill Livingstone 1998 p

Siddall P & Munglani R: Mechanisms of Pain: A basis for management. Surgery 1998 16;9-12

Doyle C A, Palmer J A, Munglani R, Hunt S P: Molecular consequences of noxious stimulation  
Molecular Biology of Pain Ed. Borsook D IASP press Seattle p145-170.

Munglani R & Hill R: New drugs including sympathetic blockers.  
Textbook of Pain, Ed Melzack R & Wall P: 4<sup>th</sup> Edition; Churchill Livingstone

Doyle P & Munglani R: The Management of Acute Pain  
Principles of Surgical Management Ed. Quick C & Thomas P: OUP p167-180

Abrahams M & Munglani R: Emerging therapeutic strategies for chronic pain  
Emerging Drugs 2000 Vol 4/5:385-413

Munglani R: Roots of Chronicity - Recovery 2000

Hudspeth M & Munglani R: The Management of Chronic Pain - Update 2000:

Pain: Current Understanding, emerging therapies and novel approaches to drug discovery  
Edited by Bountra C, Munglani R, & Schmidt W K: Marcel Dekker Inc. NY. USA to be published 2001

**Siddall P J, Hudspeth M J, Munglani R: Sensory Systems and Pain in Foundations of  
Anaesthesia Edited by Hemmings H, Hopkins P. - Mosby 2000 P213-232**

*I have written a number of chapters in this book, which are listed below: ~*

Hudspeth M, Munglani R - Sites of Analgesic action in Pain: Current Understanding, Emerging  
Therapies and Novel Approaches to Drug Discovery, Edited by Bountra C, Munglani R, and Schmidt  
W K; Marcel Dekker Inc NY USA 2003 p9-28

Colburn R & Munglani R - Peripheral and Central Components of Neuropathic Pain in Pain: Current  
Understanding, Emerging Therapies and Novel Approaches to Drug Discovery, Edited by Bountra C,  
Munglani R & Schmidt W K; Marcel Dekker Inc. NY. USA in press

Siddall P & Munglani R - Animals Models of Pain in Pain: Current Understanding, Emerging Therapies  
and Novel Approaches to Drug Discovery, Edited by Bountra, C, Munglani R & Schmidt W K; Marcel  
Dekker Inc. NY. USA in press

Erdmann A, Gunn C, Munglani R - Effectiveness of needling techniques with special reference to  
myofascial pain syndromes in Pain: Current Understanding, Emerging Therapies and Novel  
Approaches to Drug Discovery, Edited by Bountra C, Munglani R & Schmidt W K; Marcel Dekker Inc.  
NY. USA 2003 p179-188

Erdmann A G & Munglani R - Spinal Pain and Radiofrequency Techniques in Pain: Current  
Understanding, Emerging Therapies and Novel Approaches to Drug Discovery, Edited by Bountra C,  
Munglani R & Schmidt W K; Marcel Dekker Inc. NY. USA 2003 p189-223

Munglani R & Stauffer K - The Use of Pulsed Radiofrequency in the Treatment of Chronic Neck,  
Back, Sympathetic and Peripheral Neuroma Derived Pain, an open study Pain: Current  
Understanding, Emerging Therapies and Novel Approaches to Drug Discovery, Edited by Bountra C,  
Munglani R & Schmidt W K; Marcel Dekker Inc. NY. USA 2003 p213-223

Chong C A, Munglani R, Hill R G - Atypical Analgesic Drugs and Sympathetic Blockers in Handbook  
of Pain Management, Ed. Melzack R & Wall P D: Churchill Livingstone 2003 p413-426

**I have written a number of chapters in a new Textbook called The Oxford Textbook of Soft Tissue Rheumatology edited by Hazleman B R, Riley G & Speed C, published March 2004 as listed below: ~**

Yull D & Munglani R - The Science of Chronic Pain from Theory to Clinic Practice - The Oxford Textbook of Soft Tissue Rheumatology edited by Hazleman B, Riley G. Speed C, pages 99-109 published 2004

Abrahams M & Munglani R -The Principles of Management, 5.1: The management of pain in soft tissue disorders: pharmacological agents – The Oxford Textbook of Soft Tissue Rheumatology edited by Hazleman B, Riley G, Speed C, 5.1 pages 245-258 published 2004

Chong C & Munglani R - The Principles of Management, 5.5: Neural blockade – The Oxford Textbook of Soft Tissue Rheumatology edited by Hazleman B, Riley G, Speed, C, pages 283-289.

Marshall T, Chong C, Munglani R, Crisp A - Specific Soft Tissue Disorders, 6.15: Complex Regional Pain Syndromes: definitions and pathogenesis – The Oxford Textbook of Soft Tissue Rheumatology edited by Hazleman B, Riley G, Speed C, pages 539-544.

Chong C & Munglani R - Specific Soft Tissue Disorders, 6.17: Complex Regional Pain Syndrome (type I): the pain clinic perspective – The Oxford Textbook of Soft Tissue Rheumatology edited by Hazleman B, Riley G, Speed C, pages 552-556.

I am writing a single author textbook called the Scientific Foundations of Chronic Pain Therapy, GMM provisional publication date 2006.

Munglani R, Filler, R et al. "Tri-partite complex for axonal transport drug delivery achieves pharmacological effect". BMC Neuroscience 2010, 11:8doi: 10. 1186/1471 – 2202 – 11-8.

Munglani R, Datta S et al. "A critical review of the American Pain Society Clinical Practice Guidelines for interventional techniques: part 2 therapeutic interventions". American Society of Interventional Pain Physicians "The Voice of International Pain Management". June 2010

Munglani R, Riggs H, Waters C, Schofield M, Jaynes L (West Suffolk Hospital Pain Service). "Opioid initiation in chronic non-cancer pain – a retrospective clinical audit of patients' experiences". April 2011.

Munglani R, Vasu T, Shoukrey K. "Thoracic spine interventions". Spinal Interventions in Pain Management pages 100 – 108, August 2011.

Munglani R, Collighan N, Shoukrey K, Tordoff S, Lynch L, Bush D, Das S, Baranidharan G. "Autonomic blocks". Spinal Interventions in Pain Management pages 200 – 238, August 2011.

Munglani R, Shoukrey K, Sharma M. "Head and neck interventions". Spinal Interventions in Pain Management pages 254 – 258, August 2011.

Tharakan L, Gupta S, Munglani R. "Survey of current UK practice in use of fluoroscopy, contrast material and steroids in neuraxial injections". Pain News, March 2012 Vol 10 No 1, pages 24-26.

Munglani R. "Does a diagnosis in pain medicine promote disability?". Pain News, March 2012 Vol 10 No 1, pages 16-18.

Munglani R, Schofield M, Shetty A, Spencer M, "Pain Management: Part 1" British Journal of Family Medicine, Vol 2 Issue 3 (May/June 2014)

Munglani R, Spencer M, McKechie "Psychological factors in complex regional pain syndrome", BMJ 2014; 348:g2631 (4 June 2014)

Gabor Racz, Carl Noe and Rajesh Munglani, "Medico-legal Aspects of Pain Medicine", Pain and Treatment, ISBN 978-953-51-1629-5 (10 July 2014).

Racz G, Noe C, Munglani R, "Medico-legal Aspects of Pain Medicine", 2014,  
<http://dx.doi.org/10.5772/58754>

## LECTURES GIVEN AND COURSES ATTENDED

- 1) Anaesthetic Research Society, St Mary's Hospital, London - November 1992 "Validation of Coherent Frequency of the EEG as a measure of Consciousness during Anaesthesia."
- 2) Royal Society of Medicine, London - April 1993 "Avoiding Awareness During Anaesthesia"
- 3) Anaesthetic Research Society, John Radcliffe, Oxford - July 1993 "The effect of Morphine and Clonidine on neuropeptide and immediate early gene expression in the spinal cord in a mononeuropathic rat model."
- 4) First Cambridge Pain Meeting, Jesus College, Cambridge- July 1994 "Changes in neuronal markers in a mononeuropathic rat model"
- 5) Anaesthetic Research Society, Chelsea and Westminster Hospital, London - November 1994 "The effects of different pre-emptive treatments on long term NPY expression in the dorsal root ganglia (DRG) in a model of neuropathic pain."
- 6) Inaugural meeting of the comparative anaesthesia society - Girton College, Cambridge - December 1994 "Are men and animals different? Immediate early gene and neuropeptide expression in chronic pain"
- 7) Association of Anaesthetist Annual GAT meeting Churchill College Cambridge - April 1996 "Pain mechanisms"
- 8) Cambridge British Neuroscience Association meeting "Molecular insights into adaptive mechanisms into the spinal cord in chronic pain states" Kings College - May 1996
- 9) European Association of Cardiothoracic Anaesthetists. St Johns Cambridge - June 1996 "Anaesthesia and the spinal cord."
- 10) International Association for the study of Pain. Vancouver August 1996. "The effect of pre and post injury MK-801 on immediate early gene expression."
- 11) Pain Research Institute, Liverpool - November 1996 "Molecular mechanisms underlying chronic pain states."
- 12) Association of Anaesthetists Winter Scientific Meeting, London - January 1997 "Where in the spinal cord do anaesthetics work?"
- 13) Inaugural Lecture for the John Farman Chair of Anaesthesia at the Royal College of Anaesthetists - London June 1996.
- 14) Faculty of Anaesthetists RCSI Annual Scientific Meeting, Dublin - 1997. "Pre-emptive analgesia, lets be realistic." 16 -17 May 1997.
- 15) Society for Medicines Research - London May 1997 "Does expression of immediate early genes in the spinal cord tell us anything?"
- 16) Annual Cambridge Medical Society Lecture - Feb 1998 "From neuropeptides to disability benefits, factors determining the persistence of chronic pain."
- 17) The transition between acute and chronic pain PANG - London 1998.
- 18) The role of the cervical spine in the generation of head and facial pain - Leicester 1998 "Pain Society Annual Meeting".
- 19) The second annual conference on therapeutic developments in chronic pain Baltimore - April 1998 "The role of radiofrequency lesioning and pulsed radiofrequency in the treatment of chronic pain."
- 20) Whiplash 99 Vancouver - February 1999 The role of pulsed radiofrequency in the treatment of whiplash related disorders.
- 21) Whiplash 99 Vancouver - February 1999 "The neurobiology of whiplash related disorders".
- 22) Annual Meeting of the Pain Intervention Group - London 5 March 1999 "The role of pulsed radiofrequency in the treatment of neuropathic pain."
- 23) The Anglian Pain Society Meeting - 3 March 2000. Spinal Cord Stimulator and Intrathecal Pump course. (I also organised this event).
- 24) Lecture on advances in Pain Medicine on Advances in Medicine Course (BMA) in Cambridge - April 2000.
- 25) Harpenden Spinal rehab programme - March 2000.
- 26) Attendance at a Rheumatology update meeting Churchill College May 2000. Lecture on co-analgesic drugs for pain therapy.
- 27) 18.05.2000 Lecture. Bristol - Treatment of Whiplash Related Pain in Whiplash Medico-Legal Aspects.

- 28) 26 to 29 May 2000 Lecture. Nice - Neurobiology of chronic pain states for the above EFIC Pain Meeting
- 29) 13.10.2000 Lecture. Medico-Legal Aspects of Pain, Anglian Pain Society – Peterborough.
- 30) November 2000 Lecture. GPs on Pain Medicine Cambridge.
- 31) 16.12.2000 Lecture. Pain Medicine Joint Education Day/Afternoon workshop, West Suffolk Hospital.
- 32) January 2001 Lecture. GPs on Spinal Pain and Cambridge.
- 33) March 2001 Lecture. GPs on Pain Medicine Bury St Edmunds.
- 34) April 2001 Lecture. Literature, update and case reports for Meeting on Botulinum toxin therapy, Oxford.
- 35) May 2001 Lecture. Treatment of Fibromyalgia for Fibromyalgia 2001 Bristol.
- 36) 14.01.2002 Lecture. What's new in acute pain management, lecture to GPs - Bury St Edmunds.
- 37) 22.01.2002 Lecture. Scientific basis of pain states.
- 38) 06.02.2002 Lecture. Evidence based protocols for the treatment of pain, to GPs – Cambridge.
- 39) 08.02.2002 Lecture. Persistent neurological pain in Advances in the Management of Chronic Pain Hinxton Hall - Cambridge.
- 40) 27.02.2002 Lecture. Botulinum toxin update meeting Royal College of Physicians.
- 41) 08.03.2002 Lecture. Pain management for the GP lecture to GPs – Mildenhall.
- 42) 11.03.2002 Two Lectures. Pharmacology of pain, Intervention in Pain Pre-clinical students Dept of Pharmacology University of Cambridge.
- 43) 14.03.2002 Lecture. Radiography Department West Suffolk Hospital.
- 44) 09-12.04.2002. Attended Annual Pain Society meeting, Bournemouth.
- 45) 23.04.2002 Lecture & Demonstration. World Institute of Pain RCS – London.
- 46) 10.05.2002 Lecture. Interventional pain procedures FRCA teaching day - Cambridge.
- 47) 15.05.2002 Lecture. Head and Neck Pain evening lecture to GPs – Cambridge.
- 48) 16-17.05.2002. Attended Anglian Pain Society, Norwich.
- 49) 22.05.2002 Lecture. Pathogenesis of Back Pain -Bury St Edmunds VTS programme.
- 50) 10.6.2002 Two Lectures. Clinicians Guide to the Neurophysiology of CRPS and Treatment of Complex Regional Pain Syndrome, Dudley Scientific Meeting on Complex Regional Pain Syndrome.
- 51) 11.06.2002 Lecture. The Causes of Spinal pain and Litigation. APIL, Bury St Edmunds.
- 52) 02.07.2002 Organiser & Lecturer. Botulinum toxin training day Cambridge.
- 53) 04.07.2002 Lecture. Back Pain in the Community, evening lecture to GPs – Cambridge.
- 54) 17-22.08.2002. 10<sup>th</sup> World Congress on Pain San Diego, California, USA.
- 55) 11.10.2002. Anglian Pain Society Organised One Day Conference at Bury St Edmunds.
- 56) 12.10.2002 Lecture. National Chartered Physiotherapist Conference on "Affecting Change".
- 57) November 2002 Lecture. GPs on approaches to pain East Barnwell Health Centre.
- 58) 04.12.2002 Meeting and lecture. To Amedis on new approaches to Pain Therapy.
- 59) 05.12.2002 Lecture. Lecture to West Suffolk GPs on Spinal Pain – The Angel Hotel, Bury St Edmunds.
- 60) 06.02.2003 Lecture. Attended Joint Pain and Palliative Care Group Meeting West Suffolk Hospital.
- 61) 10.03.2003 Two lectures. Lectures to 2<sup>nd</sup> Year Medical Students University Cambridge on Pharmacology of Pain and Interventional Pain Medicine – Department of Pharmacology and Biochemistry, Cambridge.
- 62) 27.03.2003 Lecture. East Anglian Association of Anaesthetists Chronic Pain update.
- 63) April 2003 Lecture. GPs at Mount Farm Surgery on Pain Management in the Community.
- 64) 02.04.2003 Lecture. GPs on "Optimising Pain Management in the Community" – Cambridge.
- 65) 05.06.2003 Lecture. Attended Joint Pain and Palliative Care Group Meeting West Suffolk Hospital.
- 66) 12.06.2003 Lecture. Sudbury Medical Society on Pain Management.
- 67) 30.06.2003 Lecture. GPs on "Optimising Pain Management in the Community" Woolpit, Suffolk.
- 68) 02-07.09.2003. Attended EFIC Meeting in Prague.
- 69) 09-10.10.2003. Attended the Training The Trainers Course, Madingley Cambridge.
- 70) 14.11.2003. Attended Anglian Pain Society, Madingley Cambridge.
- 71) 14.01.2004 Lecture. West Suffolk VTS on Head and Neck Pain, Thurston, Suffolk.
- 72) 14.01.2002 Lecture. GPs on Head and Neck Pain, Cambridge.
- 73) 08.03.2004 Lecture. Lecture to second year medical undergraduates on pain, Pharmacology of Pain and Interventional Pain Medicine – Department of Pharmacology University of Cambridge.

- 74) 30.03.2004. Attended The Pain Society Annual Scientific Meeting, Manchester.
- 75) 02.04.2004. Accredited with 13 CME points.
- 76) 06.05.2004 Lecture. Lecture to new doctors training in Pain Management at NAPP Pharmaceuticals on Interventional Pain Management.
- 77) July 2004 Lecture. West Suffolk Hospital Physiotherapy Department.
- 78) 12.05.2004 Course. Attended Bond Solon Training on Excellence and Report Writing.
- 79) 14.05.2004 Course. Attended Bond Solon Training on Reporting skills.
- 80) 01.09.2004 Talk to GP's on Pain Management at RAF Lakenheath.
- 81) 13.09.2004 Talk at Churchill College at the National Anaesthesia Society on ischaemic pain.
- 82) 23.09.2004 Teaching Graduate Programme to Medical Students on Pain at Bury St Edmunds.
- 83) 24.09.2004 Speaking on Regional Pain Syndromes at a combined meeting of Solicitors and GP's – Medico-Legal Symposium – Peterborough Marriott.
- 84) 30.09.2004 Lecture. Cambridge Graduate Course In Medicine – Integrated Clinical Attachment One, Clinical Skills Unit Addenbrooke's Hospital Cambridge.
- 85) 19.10.2004 Lecture. Newmarket GP's and Sudbury Medical Society on Opioids.
- 86) 06.11.2004 Speaking at Wyboston National Physiotherapy Meeting on Interventional Techniques in Pain.
- 87) 25.11.2004 Talk to Sudbury Medical Society on Pain Management.
- 88) 03.03.2005 Talk to GP's at Ickworth, Suffolk.
- 89) 03.03.2005 Lecture. West Suffolk Hospitals NHS Trust/St Nicholas' Hospice Joint pain/palliative Care Meeting on Clinical update Head & Neck Pain.
- 90) 08.03.2005 – 11.03.2005 Meeting. Attended The British Pain Society Annual Scientific Meeting in Edinburgh.
- 91) 22.08.2005 – 26.08.2005. Attended 11<sup>th</sup> World Pain Congress in Sydney, Australia.
- 92) 01.09.2005 Lecture. West Suffolk Hospitals NHS Trust Joint Pain & Palliative care group.
- 93) 14.09.2005 Lecture. Talk on Chronic Pain Management: Coxib update & Neuropathic pain.
- 94) 01.02.2006 Lecture. Talk to Huntingdon GP's "Neuropathic Pain".
- 95) 24.02.2006 Lecture. Talk at 2<sup>nd</sup> St Thomas' Pain Symposium, London.
- 96) February 2006 Lecture. Talk on Clinical Trials & Pulsed radiofrequency.
- 97) 15.03.2006 Lecture. Talk to GP's on "Updates on Pain Medicine" Puckeridge, Herts.
- 98) 29.03.2006 Lecture. Talk to GP's Ware, Herts on "Anti-Inflammatory Drugs".
- 99) 24.04.2006 – 27.04.2006 Attendance at British Pain Society in Harrogate (3 days) and lecture on pulsed radiofrequency.
- 100) 17.05.2006 Lecture. Chronic Back Pain Conference in London to solicitors via Central Law Training.
- 101) 18.05.2006. SW PCT Functional Rehab Service/Joint Community Back Pain Development Group.
- 102) 19.05.2006 Lecture. Anglian Pain Society, Lynford Hall Thetford.
- 103) 30.06.2006 Lecture. Oxford Headache Group, Worcester College Worcester.
- 104) 07.09.2006 Lecture. Joint Pain Meeting, West Suffolk Hospital.
- 105) 13.09.2006 – 16.09.2006 Conference. European Federation of IASP Chapters (EFIC) Istanbul.
- 106) 05.10.2006. PCT Functional Rehab Service/Joint Community Back Pain Development Group.
- 107) 06.10.2006 Lecture. Anglia Pain Society Autumn Meeting.
- 108) 11.10.2006 Lecture. Attended meeting Pfizer – Talk on Update Pain Management.
- 109) 02.11.2006. PCT Functional Rehab Service/Joint Community Back Pain Development Group.
- 110) 01.02.2007 Lecture. Talk to GP's at Ixworth Surgery.
- 111) 24.04.2007 – 27.04.2007. Annual Scientific Meeting Glasgow,
- 112) 08.05.2007 Lecture. NAPP Pain Study Day.
- 113) 07.06.2007 Lecture. Pain & Palliative Care Meeting, West Suffolk Hospital.
- 114) 21.11.2007 Talk on Bizarre Treatments in Neuropathic Pain, The Angel Hotel, Bury St Edmunds.
- 115) 15.04.2008 – 18.04.2008 Annual Scientific Meeting, Liverpool.
- 116) 23.06.2008 Lecture. FRCA Trainees – Pain Study Day, NAPP, Cambridge Science Park. "Interventional approaches towards pain management and sympathetic blocks"
- 117) 19.09.2008 Medico-Legal Issues in Chronic Pain Management, London. "Chronic Pain Management: the pain clinic approach".
- 118) 02.10.2008 Nucleoplasty Awareness Evening, Hyatt Regency Hotel, Birmingham.
- 119) 06.11.2008. Talk at Ickworth.
- 120) 13.03.2009 – 16.03.2009. World Institute of Pain 2009 – 5<sup>th</sup> World Congress, New York, USA.
- 121) 31.03.2009 – 03.04.2009. British Pain Society Annual Scientific Meeting, London. Medicolegal Aspect of Pain.

- 122) 09.10.2009 - IPN SIG Annual Meeting, Manchester.
- 123) 20.11.2009 - Anglian Pain Society Meeting, Orwell Park School.
- 124) 14.01.2010 – Mastering Your Risk Workshop, Cambridge
- 125) 08.02.2010 – 10.02.2010 - Lightning Process, London.
- 126) 17.06.2010 – Talk at St Nicholas Hospice Care, Bury St Edmunds.
- 127) 13.04.2010 – 16.04.2010 - Annual Scientific Meeting, British Pain Society, Manchester.
- 128) 22.04.2010 - Evening Meeting with GP's (sponsored by NAPP Pharmaceuticals), March Cambs).
- 129) 06.05.2010 - Pain & Palliative Care Meeting, West Suffolk Hospital.
- 130) 07.05.2010 – 08.05.2010 - Bishop of Coventry's Symposium on Assisted Suicide.
- 131) 17.06.2010 - Talk "Are we creating addicts by opiate prescribing in chronic non-malignant pain? Are their alternatives?" St Nicholas Hospice
- 132) 24.06.2010 - GP Learning Event "Advances in Interventional Pain Therapy", The Muller Centre, Cambridge.
- 133) 29.08.2010 – 02.09.2010 - IASP World Congress of Pain, Montreal Canada.
- 134) 06.10.2010 – Society of Expert Witnesses Conference, Northampton.
- 135) 21.10.2010 - Optimising Pain Control in General Practice, What is the latest evidence? Evening Meeting at West Suffolk Hospital.
- 136) 04.11.2010 – Safer Clinical Practice Workshop, Cambridge.
- 137) 27.01.2011 – "Euthanasia" lecture at Robinson College for the Annual Cambridge Medical Society and District Law Society.
- 138) 16.02.2011 - "Pain Management" Medicolegal Issues in Anaesthesia, Woburn House, London.
- 139) 02.03.2011 - Lecture on "Translation between basic science and clinical pain", Peterhouse Cambridge.
- 140) 02.03.2011 - Lecture at St Catherine's on Euthanasia.
- 141) 04.03.2011 - Update on Pain consultant discussion group and JoOPM, IPM SIG Annual Scientific Meeting. Venue: The Law Society, 113 Chancery Lane, London, WC2A 1PL.
- 142) 17.03.2011 - Pain in Practice evening meeting with GP's in Newmarket (organised by Pfizer), Bedford Lodge Hotel, Newmarket.
- 143) 25.05.2011 - "A Good Death" presentation, The Spiritual Healthcare Network in the East of England, Stevenage.
- 144) 02.06.2011 - The Lightning Process Phil Parker - Language as medicine; can words harm or heal? West Suffolk Hospital.
- 145) 22.06.2011 – 24.06.2011 - Official satellite symposium of the British Pain Society (BPS) & Canadian Pain Society (CPS) meeting – Edinburgh.
- 146) 03/09/2011 - 1<sup>st</sup> International Conference on Interventional Pain Medicine & Neuromodulation, Wroclaw Poland.
- 147) 15/09/2011 – 17/09/2011 - Ridley Conference, Euthanasia.
- 148) 20/09/2011 – 1<sup>st</sup> Medicolegal Conference, Peterhouse, Cambridge.
- 149) 06/10/2011 – 07/10/2011 - Boston Scientific's Budapest Cadaver Workshop, organised by Algotec Research and Development Limited.
- 150) 04/11/2011 - Interviewing prospective medical students, The Perse School Cambridge.
- 151) 09/11/2011 - Interviewing prospective medical students, The Perse School Cambridge.
- 152) 11/11/2011 - 5<sup>th</sup> Guys & St Thomas' Symposium on Pain.
- 153) 16/01/2012 - Talk to the British Dental Association "Head & Neck Pain – a view from the Pain Clinic", Addenbrooke's Hospital, Cambridge.
- 154) 16/03/2012 – 17/03/2012 - RA-UK Ultrasound in Pain Medicine, London.
- 155) 22/03/2012 - Cambridge Medicolegal Forum, "The attribution of persistent pain after trauma and the concept of acceleration" lecture.
- 156) 25/04/2012 – 27/04/2012 – Lectured at British Pain Society ASM, Liverpool.
- 157) 18/05/2012 - World Institute of Pain UK and Eire Annual Dinner, Royal Society of Medicine, 1 Wimpole Street. Guest speaker.
- 158) 07/06/2012 - 3<sup>rd</sup> Hands-on Cadaver Workshop – Pain Intervention & Neuromodulation, Guy's Hospital London.
- 159) 08/06/2012 – 10/06/2012 - VII International Travelling Pain Symposium London-Lake Annecy.
- 160) 14/06/2012 - British Pain Society Council meeting, Churchill House London.
- 161) 22/06/2012 - British Pain Society Website Development Meeting.
- 162) 27/06/2012 – 30/06/2012 - 15<sup>th</sup> World Congress of Pain Clinicians WSPC, Granada Spain.
- 163) 05/07/2012 - Cambridge Medicolegal Forum, Downing College Cambridge.
- 164) 13/09/2012 - 2<sup>nd</sup> Medicolegal Conference, Peterhouse, Cambridge.
- 165) 20/09/2012 - Royal Society of Medicine, University of Birmingham Pain Forum and Interventional Cadaver Workshop. Birmingham.



- 166) 28/09/2012 - IPM SIG Annual Scientific Meeting, Radisson Blu Hotel Manchester Airport.
- 167) 11/10/2012 - Speaking at the Chambers of Grahame Aldous Q.C. Annual Clinical Negligence Seminar, Law Society, London.
- 168) 17/10/2012 – Speaking at Downing College, Cambridge “Thoracic Outlet Syndrome”.
- 169) 24/10/2012 - Faculty of Pain Medicine Study Day – Managing the Pain Service: “The dilemma of diagnosis in pain clinic – we have a responsibility to diagnose patients in the pain clinic)” debate.
- 170) 08/11/2012 - Cambridge Medicolegal Forum, Girton College Cambridge.
- 171) 30/11/2010 - 01/12/2012 - 3<sup>rd</sup> PNS masterclass, Guys Hospital, London.
- 172) 24/01/2013 - Speaking at conference on complex issues in clinical negligence (topic of chronic pain and CRPS), London.
- 173) 01/02/2013 - British Pain Society Council Meeting, Red Lion Square London.
- 174) 01/03/2013 - Guy's & St Thomas' Master Class – the Truth About RF Treatment (course instructor).
- 175) 07/03/2013 - Cambridge Medicolegal Forum.
- 176) 23/03/2013 – Personal Injury Barrister Association Meeting lecture, St Catherine's College Oxford “Generation and Attribution of Chronic Pain”.
- 177) 10/04/2013 - Conference on Medicolegal Aspects of Pain, University of Birmingham Pain Forum Day.
- 178) 16-19/04/2013 - The British Pain Society Annual Scientific Meeting, Bournemouth.
- 179) 19/04/2013 – The British Pain Society Council Meeting, Red Lion Square London
- 180) 14-15/06/2013 - III International Conference on Interventional Pain Medicine & Neuromodulation, Warsaw (attending and speaking).
- 181) 20/06/2013 – The British Pain Society Council Meeting, Red Lion Square London.
- 182) 24/06/2013 - “Jackson Reforms” Cambridge Medicolegal Forum, Downing College Cambridge.
- 183) 25/09/2013 – The British Pain Society Council Meeting, Red Lion Square London.
- 184) 27/09/2013 - Cambridge Medicolegal Conference, Peterhouse Cambridge.
- 185) 14/11/2013 - Lecture to medical students “Pain Medicine as a career”, Downing College.
- 186) 05/12/2013 – The British Pain Society Council Meeting, Red Lion Square London.
- 187) 11/12/2013 - Two lectures at Pain Syndrome Conference 2013, Liverpool Law Society.
- 188) 14/03/2014 – Attendance at “Medicolegal complications of radiofrequency”, St Thomas' Hospital Pain Management Department, London.
- 189) 19/03/2014 - AvMA Webinar Recording – Medicolegal Issues in Pain Management, BMA House London.
- 190) 05/04/2014 – Lecture “Bringing clarity to Neuropathic Pain Guidelines”, Neuropathic Pain Masterclass, at Ascot.
- 191) 10/04/2014 – Lecture on “Botox and Prolotherapy procedures in the lumbar and pelvic area”, University of Birmingham Interventional Pain Management Cadaver Workshop.
- 192) 29/04/2014 – 01/05/2014 - BPS ASM, Manchester.
- 193) 09/05/2014 – Lecture - RSM “legal aspects of pain”; attended meeting and chair.
- 194) 16/05/2014 – Lecture - “Update on neurobiology of chronic spinal pain”, British-Serbian Pain Symposium, Belgrade.
- 195) 17/05/2014 – Lecture - “Botulinum toxin in Pain Medicine - has it a role?”, British-Serbian Pain Symposium, Belgrade.
- 196) 22 – 23/05/2014 – Lecture – “Intervention Pain Management and Medicolegal Considerations”; 5<sup>th</sup> Hands-on Cadaver Workshop “Pain intervention and neuromodulation”, London.
- 197) 11/09/2014 – Personal injury seminar, Law Society, 9 Gough Square, London.
- 198) 19/09/2014 – Lecture on “diagnosis in pain medicine”, University of Birmingham International Pain Management Cadaver Workshop.
- 199) 24/09/2014 – Lecture on “Medicolegal issues encountered in Neuropathic Pain Patients”, Northern Pain Group Pain Masterclass, Durham.
- 200) 26/09/2014 – Lecture on “Epidemiology of CRPS”, Cambridge Medicolegal Conference, Peterhouse Cambridge.
- 201) 01-04/10/2014 - 4<sup>th</sup> Biannual International Multidisciplinary Pain Congress, Eindhoven, The Netherlands. Lecture given – “Nature advantages of observational medicine versus RCTs”.
- 202) 17/10/2014 - IPM SIG Annual Scientific Meeting, Radisson Blu Hotel, Manchester Airport.
- 203) 14/11/2014 – Chair at discussion session of The London Pain Forum, Reform Club Pall Mall.
- 204) 15/11/2014 – Lecture “Chronic Pain – The Pain Consultant's Perspective”, Personal Injuries Bar Association (PIBA) Winter Conference, Gray's Inn London.
- 205) 05/12/2014 - Lecture “Medicolegal: Watch Your Back”. London Spine Pain & Neuromodulation Symposium, St Thomas' Hospital, London.

- 206) 10/12/2014 – Lecture on "Peculiarities of pain states in clinical negligence cases" at the Clinical Negligence Conference, Liverpool Law Society.
- 207) 16/12/2014 - Chair at meeting - Cambridge Medicolegal Forum, Downing College Cambridge.

**Upcoming events:**

- 15-17/04/2015 - Lecture at Interventional Pain Management Cadaver Workshops, University of Birmingham.
- 21-23/04/2015 – British Pain Society Annual Scientific Meeting, Glasgow.
- 22-23/05/2015 – Speaking at Pain Therapy Association of Serbian Medical Society, 10<sup>th</sup> BISOP.

## **GRANTS AND AWARDS**

East Anglian Regional Health Authority Research Fellow October 1991 for 18 months.	£33,000
Grant from Glaxo Pharmaceuticals (administered by Dr Stephen Hunt for equipment and running costs for my work on IEGs). August 1992 -1994	£30,000
Marmaduke Shield Fund: University of Cambridge. For the cost of a microscope system. November 1992	£ 6,014
Charles Slater Travel Fund November 1993	£ 445
PhD Studentship funded by Glaxo from October 1995	£60,000
Oxford and Anglia Health Authority Research Fellowship From October 1995	£32,000
Post doctoral position funded by SKB. From October 1995	£110,000
Appointed John Farman Professor at the Royal College of Anaesthetists 1996-7	
CeNeS Post doctoral position from October 1998 for 2 years	£107,000
R & C and McCormack Research for post doc for two years from April 1998	£85,000
Syngenix for a post doc 2 years from October 1998	£85,000
Gunn Foundation, Vancouver for a Phd student from October 1998	£45,000

## **OTHER ACTIVITIES**

### **I. Activities at Medical School: ~**

- Drama Society. I performed in a number of productions.
- Christian Union. I was on the executive committee 1981-3 and President from 1982-3.
- Community Medicine Project. Diabetic care in General Practice.

- Elective Period. I spent 10 weeks at the Rama Krishna Mission community Health Project and The Institute for Tropical Medicine, both in Calcutta, India.

**ii. Interests**

- Jogging
- Hill Walking
- Gardening
- Reading

I take an active part in the community life of the Parish Church of St Benet's, Cambridge

This is the annexure marked "RM2" referred to in the affidavit of  
Rajesh Munglani sworn at Cambridge, England this 22<sup>nd</sup> day  
of April 2015 before me

Signature

A person duly authorised to administer oaths by the law of England &  
Wales

RICHARD DESMOND TRAVERS GIFFORD - SOLICITOR

## PAIN AND SUFFERING IN CANCER PATIENTS

Rajesh Munglani and Dr Arun Bhaskar

**Abstract:** Pain affects most cancer patients due to the disease itself or its treatment and recent studies indicate that persistent severe pain continues to be prevalent despite advances in treatment. The World Health Organization (WHO) ladder and liberal use of opioids still do not provide adequate pain relief in a quarter of patients and pain medicine consultants are often able to help many of them. Unfortunately despite all possible interventions we recognise that a small number of patients still continue to suffer severe uncontrolled pain. In others, whilst the severe physical pain may be controlled, they continue to suffer 'mental and emotional pain' in the form of suffering and loss of autonomy and may undergo existential crises. As such, questions as to the role of medicine, whether to relieve suffering in all its forms or simply to maintain existence without due regard for quality of life are raised.

**Keywords:** CANCER, DISTRESS, DYING, OPIOIDS, PAIN, SUFFERING

Pain in cancer patients is a difficult and challenging problem to manage for clinicians and healthcare professionals. Most cancer patients experience pain of varying intensity at some point in their cancer journey, and it is prevalent at all stages of the disease, from the time of diagnosis, during treatment and up to their end of life.

The most common reason for pain in patients with cancer is due to metastatic bone disease; tumour invasion of tissues, nerves and other organs can cause severe pain (Davis and Walsh 2004). Treatments like radical surgery, radiotherapy and chemotherapy can also cause damage to tissues and nerves and lead to severe and sometimes chronic pain in these patients.

A third of the pains in cancer patients are considered to be neuropathic

pain due to nerve damage, be it from the cancer or from the treatment of the cancer, but often it is a mixture of neuropathic pain and pain from inflamed organs and tissues (known as nociceptive pain). Patients (and their families) often express a fear of spending the last days of their lives in severe pain and associated suffering.

### Studies on Patients' Experience of Cancer Pain

The prevalence of pain in cancer patients has generally been under-recognised until recently. A meta-analysis of 52 studies over a period of nearly 40 years between 1966 and 2005 (van den Beuken-van Everdingen et al. 2007) showed that the prevalence of cancer-related pain is much higher than previously thought. This comprehensive analysis showed that 59% of patients reported poorly-controlled pain during ongoing oncological treatment, and that the experience of moderate to severe pain increased as the disease progressed, with 64–90% of patients with advanced disease in pain towards their end of life. Even in cancer patients who had successful curative treatment, a third of them reported ongoing persistent chronic pain (Pachman et al. 2012). In another review of the published literature of 26 studies, with a total of more than 1500 patients, looking at the treatment of cancer pain (Deandrea et al. 2008) it was found that 43% of patients reported that their pain was undertreated. This could be due to several factors including poor assessment and acknowledgement of pain, lack of medications or reluctance to use them, both by the patients and the clinicians, and treating the pain as a symptom rather than identifying the underlying mechanisms and managing them. The self-reported prevalence of pain in patients attending oncology outpatients was shown to be significant; more than a third of these patients had poor pain control, particularly in their last year of life (Valeberg et al. 2008).

Giant strides have been made in the understanding, surveillance and treatment of cancer over the last two decades, and these have resulted in improved survival rates (and sometimes the cure) of cancers. However, this cannot be said to be true about the successful management of cancer pain.

The WHO pain ladder (World Health Organization 1986) has been widely used as the gold standard in the management of cancer pain. It has been reported that the pain in 90% of patients with cancer pain can be controlled using the step-wise pain ladder (Ventafredda et al. 1985), but six years later it was reported that only 75% of patients with advanced cancer benefitted from the WHO ladder (Grond et al. 1991). Almost twenty years later, one of the largest studies to date on the prevalence, treatment and impact of cancer pain, The European Pain in Cancer (EPIC) Survey, showed that despite the developments, pain in these patients is still poorly controlled and has a significant negative impact on their quality of life (Breivik et al. 2009). This recent study also highlighted that cancer-related pain was widely prevalent, of longer duration and intensity and at times happening with greater frequency than was previously understood. This survey was carried out in twelve European countries where the healthcare systems are well developed, and more than 5,000 patients participated in the study.

In the EPIC Survey (Breivik et al. 2009), 31% of patients reported that pain was the primary complaint that made them decide to visit their doctor and subsequently led to their cancer diagnosis. Almost all patients reported to have pain at some point and more than a quarter of these patients did not have any regular analgesia prescribed, despite being in moderate or severe pain. 57% of patients in the study reported that they had experienced pain every day and 88% of the patients had experienced significant pain during the past month. About 10% (573 patients) of the telephone respondents of the EPIC survey were invited for an in-depth interview about their pain. More than 50% of these patients felt that their quality of life was not considered as part of the clinical management by the healthcare professionals and a third of them felt that their doctor did not have enough time to address their pain issues.

Interestingly, a quarter of the patients felt that their doctor did not know how to control their pain and despite this less than 10% of the patients were referred to specialist pain clinicians or to palliative care teams. Nearly 70% of patients had their pain management supervised by medical oncologists (42%), family practitioners (19%), other specialists (16%) and other health workers (5%). 3% of patients did not have any

clinical input at all into their pain management, despite being in moderate to severe pain. On detailed questioning, two-thirds of these patients reported that their pain was not assessed properly on any validated pain scales and one in four patients could not recall their clinician asking them any questions about their pain. The most poignant observation from this cohort of 573 patients was that despite the existing treatments and input from healthcare professionals, one in three of these cancer patients reported that sometimes the pain is so bad that they felt like they wanted to die.

The findings of all these latter studies contradict the earlier findings of the late twentieth century (Ventafridda et al. 1985) which suggest the WHO pain ladder is able to routinely and reliably control cancer pain. Indeed, other authors have now also questioned the validity and efficacy of the pain ladder (Ferreira et al. 2006, Nolte 2009, Vargas-Schaffer 2010, Zeppetella 2011, Forbes 2011).

### **Why Are We so Bad at Treating Cancer Pain?**

One of the main reasons why the WHO ladder fails to deliver its primary objective of 'Freedom from Cancer Pain' in most patients is the over-reliance on drugs, particularly strong opioids, as the mainstay in the management of pain (Muller-Schwefe et al. 2014). Despite the fact that there has been a better understanding of the limitations of opioids in managing these patients with complex cancer pain (Muller-Schwefe et al. 2014), the practice of giving escalating doses of opioids in an attempt to 'get on top of the pain' and 'make the patient pain-free' is still continued in many practices.

The EPIC Survey also highlighted that opioids are still the most commonly prescribed analgesics for managing cancer pain. 37% of respondents were on weak opioids (Codeine, Dihydrocodeine etc.) and 46% were on strong opioids (Morphine, Oxycodone, Fentanyl etc.). Another finding during the survey was that though most patients initially responded that their pain control with these medications was effective (60%), and very effective (24%), on more elaborate questioning more than two-thirds of these patients acknowledged that the medications

they were currently on were not always adequately controlling their pain (Breivik et al. 2009).

Concerns have been raised over suggestions that the higher doses of opioids required for pain control may contribute towards considering palliative sedation prior to death (Oosten et al. 2011). Even in other groups of patients, there is little evidence for any meaningful improvement in analgesia, and indeed there is evidence for deterioration of quality of life with long-term opioid usage (Munglani 2013) (Munglani 2014).

### **The Issue of Breakthrough Pain in Cancer**

In the EPIC survey, 54% of patients also reported that they experienced breakthrough pain. Breakthrough cancer pain (BTcP) has been defined as a transitory increase in pain intensity on a baseline pain of moderate intensity in patients on analgesic treatment administered at least once a week (Mercadante et al. 2012). Two-thirds of these patients experiencing breakthrough pain did not have any medications prescribed to address this issue.

Nearly half of the patients suffering from cancer-related pain are unaware of the side-effects of their analgesics and adjuvant drugs. This lack of understanding leading to poor compliance with the medications are some of the main reasons pain is not adequately reported and managed in a third of patients suffering from cancer pain (Breivik et al. 2009). Constipation is the commonest reported side-effect followed by nausea & vomiting, sedation and psychological effects. Central nervous system side-effects due to opioid therapy and other analgesics used for managing pain in cancer patients are often under-recognised (Vella-Brincat and Macleod 2007). This can lead on to poor quality of pain control as well as having a significant impact on the quality of life for the patient. Additionally it produces unwarranted strain for the carer and healthcare professionals who are involved with these patients.

Patients who have been diagnosed with advanced cancer also have emotional distress and suffering in addition to the physical pain due to the cancer and the treatment received for it (Mercadante 2014). Distress, or existential suffering, is not always recognised as a separate entity



distinguishable from pain either by patients, relatives or medical staff (Lyness 2004). In assessing pain, when patients are often asked 'are you in any pain?' the answer is almost always in the affirmative, and then they are encouraged to take the prescribed regular or rescue analgesia, usually strong opioids, and often in frequencies as close as every hour. This would invariably lead on to central nervous system side-effects like somnolence, drowsiness and sedation, but also other subtle effects like cognitive dysfunction and memory problems (Vella-Brincat and Macleod 2007). The aforementioned side-effects could be measured using sedation scores and also other early warning scoring systems, but that would identify only a part of the underlying problem. Family members and/or caregivers, who have known these patients for quite some time, often pick up subtle signs like cognitive dysfunction, memory lapses and personality changes. It can be difficult for healthcare professionals to accept that patients with advanced cancer may be addicted to their drugs (Ballantyne 2007) and they would continue to believe that the patients are taking the medications only because they are suffering from their physical pain.

### **The Lack of Efficacy of Continued Opioids Due to Increased Tolerance and Paradoxical Increases in Pain Perception Due to Opioids (Opioid-Induced Hyperalgesia)**

Opioid tolerance (Chang et al. 2007) and opioid-induced hyperalgesia (Silverman 2009) are also often poorly recognised, and giving opioids more frequently and at a higher dose often fuels a vicious cycle, all of which contributes towards poor pain management. Opioid tolerance is a neurophysiological adaptive mechanism that develops in people when they are exposed to opioids for a prolonged period of time, often resulting in requiring higher doses to achieve the same level of analgesia (Chang et al. 2007). It is thought to be due to desensitisation of the anti-nociceptive mechanisms due to prolonged exposure to opioids, and also possibly due to opioid receptor down regulation (Vorobeychik et al. 2008).

Opioid-induced hyperalgesia or opioid-induced abnormal pain sensitivity is a paradoxical increase in pain perception seen in patients who have been using opioids long-term, and is due to sensitisation of pro-nociceptive mechanisms (Gardell et al. 2006). Both opioid tolerance and opioid-induced hyperalgesia would result in dose escalation by the clinically treating staff: this may be useful to improve analgesic efficacy in the opioid tolerant patient (Brinkschmidt and Neumeier 2011), but would be exactly the wrong approach in a subject in a patient with opioid induced hyperalgesia as the further administration of opioid in this situation would paradoxically *increase* the pain sensitivity and lower the pain threshold, thus resulting in overall increased pain experience by the patient (Chang et al. 2007).

Further dose escalations in such patients could result in physical dependence, which is defined as 'a state resulting from chronic use of a drug that has produced tolerance and adverse physical symptoms (withdrawal symptoms) occurring from sudden discontinuation or rapid dose reduction of the said drug' (Meera 2011).

Addiction or substance abuse is the compulsive and repetitive use of a drug (Modesto-Lowe et al. 2012), often at doses that could be harmful and one may develop tolerance and physical dependence as a result of it. Fortunately, addiction is not reported to be common in cancer patients (Ballantyne 2007). However the community wide stigmata associated with addiction leads to an inherent fear amongst patients of taking these medications, and reluctance of clinicians to prescribe them.

Unfortunately and perversely dependence, tolerance and opioid induced hyperalgesia can occur simultaneously in a patient due to the complexities of the pharmacological mechanisms involved and the fact that these opioids may have multiple active metabolites; all of which can have competing effects.

The other consequence of poorly-controlled pain, despite using high doses of strong opioids, is a reliance on other agents like ketamine, benzodiazepines, gabapentinoids etc. resulting in polypharmacy (Kotlinska-Lemieszek et al. 2014). Other modalities used in the management of pain, including cognitive behavioural therapy (CBT), mindfulness and complementary therapy are often not made available to many patients.

### The Role of Pain Medicine in Treating Cancer Pain

Interventional management of cancer pain (Bhaskar 2012) is used rarely except in a few specialist centres with trained personnel, despite there being good evidence for it in the management of pain in patients with life-limiting diseases like pancreatic cancer (Bahn and Erdek 2013). Neuroablative (nerve destruction) procedures for intractable pain had been employed for more than 40 years, but their use has declined since better availability of opioids in managing cancer pain, particularly in Europe and North America, along with a major liberalisation in drug policy in the US in the 1970s, the adverse consequences of which are still being felt today (the discussion of which is beyond the scope of this article but see (Hansen 2014) for a critique).

The other reason for moving away from using neuroablative or neurolytic blocks is the higher risk of complications, and this has been replaced by the use of external or implantable intrathecal drug delivery systems (Stearns et al. 2005). The advantage of using intrathecal drug delivery (delivering strong analgesics directly into the spinal fluid) is that equianalgesic doses are only a small fraction (1/300 – 1/1000) of the systemic doses; hence the main central nervous system side-effect profile is very much limited, meanwhile providing excellent analgesia (Upadhyay and Mallick 2012). Unfortunately, not many patients have timely access to these highly specialised pain services.

The WHO ladder has added interventions and intrathecal drug delivery as the fourth step after using strong opioids. However, there is a huge delay in referring patients for suitable interventions. In practice, patients with advanced disease and no potential oncological treatment options, even if only palliative, have to suffer uncontrolled pain and the side-effects due to the systemic opioid therapy (Dale et al. 2011). In the UK, despite NICE Guidelines (Improving Supportive and Palliative Care for Adults with Cancer 2004) that stipulate 'each Cancer Network should have a named specialist for advanced pain management techniques' and 'each Local Specialist MDT should have an anaesthetist with expertise in nerve blocks and neuromodulation techniques' there has been an under-utilisation of these services.

By way of explanation, anaesthetists who have such specialised training and practices in pain became known as Consultants in Pain Medicine and since 2007 have been recognised with their own Faculty of Pain Medicine within the Royal College and can become members after further specialised training and an exam. Many have long since given up their anaesthetic practice and are now running their own independent departments and clinics. Of the authors of this article, one continues to do a limited amount of anaesthesia along with his pain practice (AB) whilst the other has been in full time Pain Medicine for 15 years (RM).

Surveys have shown that in the UK there is patchy provision of services and inconsistent partnership between the specialties of pain medicine and palliative medicine (Linklater et al. 2002). This is confirmed in later studies of 160 UK pain consultants (63% response rate) showing that referral rates from palliative medicine to pain clinics were low, with 53.85% receiving five or less referrals per year (Kay et al. 2007).

### **Pain Control of Cancer in the UK**

The UK is seen as one of the top countries, where cancer pain management and palliative care services are seen as a model to the rest of the world. Cancer Research UK reported that more than 331,000 patients were diagnosed with cancer in 2011 (more than 14 million cases were diagnosed all over the globe in 2012). Going by the above statistics alone, there are at least more than 100,000 patients with poorly-controlled pain, which is of moderate or severe intensity. Most of these patients would be in a situation where their pain is under-reported and under-treated. However with appropriate specialist input and by optimising the pain management with appropriate analgesics, adjuvants and interventions, most of these patients could get adequate and satisfactory pain relief. Despite this, there would be still be a group of patients, albeit small, who are suffering severe pain despite the best efforts of their clinicians and specialists.

A Cancer Patient Experience Survey of more than 67,000 cancer patients carried out by the Department of Health in 2010, answering 74 multiple choice questions, showed that 85% of the patients were satisfied that their doctors did everything they could to control their

pain. Despite this endorsement with positive satisfaction scores, the EPIC survey and other studies have shown that this does not equate to adequate pain-control in a large number of these patients.

### **Do We Still See Cases of Unbearable Suffering?**

As Consultants in Pain Medicine, we are only asked to intervene when other specialties are not managing to control the symptoms of pain, and hence we tend to see pain at the challenging end of the spectrum, i.e. pain uncontrolled by 'conventional' means. In this context, 'conventional' would include those types of analgesics, hypnotics and other medications and infusions which have undoubtedly improved pain control in palliative care settings, including oral and transcutaneous opioids, benzodiazepines, ketamine and topical local anaesthetics.

Despite these major efforts as outlined in the preceding paragraphs, as Consultants in Pain Medicine we still see patients in severe distress; unfortunately they are often over-medicated and confused following quite natural attempts to control their symptoms, and suffer with little or no quality of life.

Fortunately we are able to help some of these patients with optimisation of medication and, on many occasions, often using spinal delivery of the same drugs as mentioned above, or the use of neuroablative techniques. In such situations we never work alone, but in conjunction with our oncology, palliative care and primary care colleagues as well as other specialties as necessary, including surgeons and rehabilitation professionals, and not forgetting volunteers and priests for spiritual support etc.

Unfortunately, at least twice a year, most individual pain consultants come across cases where, despite the interventions of everyone, patients experience pain and distress. They are undoubtedly suffering along with those around them, including family and loved ones and the attending medical and nursing staff. Some of us who are heavily involved with cancer patients in busy tertiary centres see many more cases like that in our practice. In our experience it is in these situations that comments 'to put someone out of their misery' come from patients and their relatives,

or other phrases such as 'I wouldn't let my dog suffer like that' are used to put things into perspective about the suffering. The failure to control the suffering of an individual in such situations diminishes the individual; they are often over-sedated to the point of confusion. Additionally, in our opinion, it undermines the role of the medical and other professionals involved in the care of said patient, who are possibly powerless to act to address the situation.

What the authors want to emphasise, both for ourselves and, it is fair to say, amongst most Pain Consultants in the UK, is that we all predictably see, but thankfully not frequently, cases of patients coming from hospitals, hospices and also in the community, whose pain and distress is not relieved adequately. Indeed it is to be acknowledged that some are suffering terribly for very long periods of time. Fortunately we can help many of them, but there are clearly some we cannot without essentially making the patients heavily sedated. The great difficulty is if there does not seem to be an imminent prospect of dying; this often leads to great distress for all concerned in the decision making.

### **Our Own Experience**

In a previous article, one of the authors (RM), when discussing the concepts of ongoing unrelieved pain and suffering and the pressure to consider euthanasia in such circumstances (Munclani 2012), mentioned a patient with severe rectal pain which defied any response to specialist palliative and pain medicine input. This case was mentioned anonymously to a professional colleague who is opposed to the concept of assisted dying and, whilst discussing what therapeutic options were left, the use of intrathecal phenol was considered. Despite knowing fully that this treatment would have made the patient doubly incontinent and possibly paralyse him permanently, this colleague said to the author that the patient 'should be made to have the treatment even if he did not want to' for achieving better pain control; according to him this was a better option. The latter comment begs the question: Exactly what is the purpose of the medical profession – the simple mere prolongation of existence or, in fact, the maintenance of quality of life? What about

the autonomy of the patient in such a circumstance: to choose what treatment he should have rather than be subjected to?

### **Reflective Practice to Improve Management of Pain in Cancer**

The apparent failure of conventional pain management in cancer should cause us to reflect on our practice and look at all the factors that might be contributing to the persistent experience of pain. We should carefully analyse the situation of the patient and their pain in relation to the diagnosis, and see how it can be improved and ensure that appropriate protocols are being followed. Yet despite adequate resources, some patients continue to be in significant pain, distress and suffering.

### **Other Symptoms as Well as Loss of Autonomy as a Motivator for Request for Assisted Dying**

It is clear that even if one is able to control most symptoms of pain in about 90% of patients with optimal availability of best practice, including protocols, guidelines and drugs/ interventions with the availability of clinicians willing to provide such care (which is not always the case), the simple fact remains some patients continue to request assisted dying, because they have lost the will to live and see only a painful death in front of them.

Their quality of life, in their own eyes, has been so destroyed, particularly with loss of function and bodily image, that they see very little meaning in such continued existence. We have particularly observed this in patients with head and neck cancers and those with pelvic cancers where there is double incontinence and loss of sexual function. We have seen similar views expressed in other non-malignant cases, in cases of severe breathlessness due to chronic obstructive pulmonary disease or heart failure and also motor neurone disease; this has been the experience of many senior clinicians.

The recognition that some patients 'have had enough', despite adequate pain control, is recognised in the literature (Prue et al. 2006,

Fried et al., 2007, Morrow et al., 2002). In particular fatigue, including 'fatigue with life', does seem to be a persistent issue when pain is eventually and thankfully controlled. This has been a topic of discussion elsewhere (Munglani 2012).

### **Cases of Unrelieved Suffering and Pain in Cancer Despite Significant Medical Input**

It must be understood that doctors do not like discussing 'failures of therapy' for a number of reasons. It is not easy for them to accept what is happening despite their best efforts, and this acceptance is even more distressing for the patients and relatives and other caring staff. We have often come across patients, who are clearly suffering, continuing to say to their relatives and attending medical staff that they are 'okay' in order to avoid distressing and upsetting those around them.

#### *Case study 1*

The above-mentioned fact was a painful but invaluable lesson learnt by one of the authors (AB) while he started as a Consultant in Pain Medicine at one of the largest cancer hospitals in Europe. Jack (name changed to maintain anonymity) was a senior aircraftman in the RAF when he was diagnosed with Ewing's sarcoma, an aggressive form of bone cancer, for which he underwent an above-knee amputation. He was discharged from the RAF and was working as an electrician when he was diagnosed with a recurrence of his disease, which had by now spread to his left lung and chest-wall. He was first seen in the pain clinic for advice regarding the management of his phantom limb pain and stump pain. This was addressed successfully and he carried on with his chemotherapy and radiotherapy.

It was evident that the disease was progressing at a rapid rate and this resulted in severe chest wall pain despite adequate medical management. He had excellent analgesia following a selective nerve destructive procedure targeting the chest wall; a few weeks later this was repeated to target the base of the lung and the diaphragm. The pain from his chest wall was very well controlled, but he was keen on



reducing his opioids as it was now making him very drowsy following the pain interventional procedures. Jack was aware that he was dying and wanted to have 'a Christmas that everyone will remember'. We decided to deliver his opioids via an intrathecal catheter and he was transferred to the hospice for continuing care. Jack's family and friends organised a large barbecue party, which was attended by more than a hundred friends and family members.

Despite very good pain control, Jack was distressed as he was getting increasingly breathless due to the tumour filling his chest cavity, and this was also made worse by panic attacks, especially at night affecting his sleep. Increasing lymphedema, with the fluid retention affecting both lower limbs, further compounded this and this restricted his wheelchair mobility significantly. Jack felt that he should rather die than suffer like this, but efforts were being made to keep him settled with multiple combinations of medications, which made him very drowsy and confused. In moments of lucidity he made it clear that he wanted to die, as he did not want to suffer anymore. This continued for a fortnight, despite being on a 'care of the dying' pathway and on most days Jack reiterated to all concerned that he just wanted to die. One evening Jack said his goodbyes to his family and to his medical team, including the author (AB), and said he wished he would not wake up the following day. And he didn't.

#### *Case study 2*

On reflection, this is in stark contrast to what has happened to another serviceman in recent memory. Senior Aircraftman Mike Goody of the RAF brought pride to our nation by winning four gold medals in the recently concluded Invictus Games 2014. Mr. Goody was on patrol in Afghanistan in 2008 when he was trapped beneath his vehicle for more than three hours after it ran over an IED. This resulted in a compound fracture of his left ankle, which required multiple surgeries over the next two and a half years. During this time he suffered depression, nightmares, alcoholism and Post-traumatic Stress Disorder (PTSD). The doctors advised him to have further surgeries to improve the situation, but he was suffering ongoing intractable pain, which made him frustrated as he felt he was depending on his friends and family to move around. He convinced his

doctors to perform a below knee amputation and the rest is history – winning four gold medals in the Invictus Games; he is now training to be a paramedic.

This raises the ethical dilemma of how one patient can have his normal but painful limb amputated when it was saved from severe trauma, but yet another, who was dying from a terminal illness, was allowed to continue to suffer needlessly despite all efforts from the treating team? In our minds, we did not achieve anything by prolonging Jack's life against his wishes; we just prolonged his suffering and the inevitable death for weeks.

### Conclusion

The management of symptoms and the distress experienced by patients facing death are sometimes beyond the realms of medicine. Doctors and other healthcare professionals find themselves helpless in these situations, where they are failing in their duty of care despite their best efforts. Involvement of pain and palliative care specialists, and with spiritual and family support, we may be able to alleviate the suffering of most of these patients. We need to accept that sometimes we cannot cure certain diseases and alleviate certain symptoms. Then the efforts should be towards respecting the wishes of the patient whilst maintaining their dignity and also their independence of body, mind and spirit. The lawmakers of the land should support these patients and their clinicians at looking to support not only the right to live, but also the right to die without enduring unnecessary suffering.

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