

Pain Medicine

Repairing a Fractured Dream

IN 2000, John D. Loeser (Seattle, Washington) wrote the following:

Will pain specialists disappear? This is not a trivial question when one is addressing members of a pain association. However, from the perspective of a nation's health care delivery system, the advent or demise of pain specialists is not likely to be noticed. This is especially true in the United States, where most physicians who specialize in pain are anesthesiologists, who will just retreat to the operating room if pain medicine disappears.¹

More recently, in an editorial accompanying one of many epidemiologic studies that are revealing how dismal the real outcomes of chronic pain treatments are, particularly opioid-based treatments,²⁻⁷ Katz wrote the following:

Referral to pain clinics is particularly helpful when patients have pain that could be alleviated by a nerve block. These patients are, however, the minority. Sending patients to a pain specialist to help with outpatient opioid medication can ease the burden of the primary care physician, and many clinics have interdisciplinary staff to help manage underlying mental health and substance use problems. However, such referrals undermine the relationship between patients and their primary care physicians and suggest that the pain, which is very much a global problem, is in some way separable from physical and mental health. Furthermore, from a practical point of view, pain clinics might not be an option for uninsured low income patients.⁸

Are We Losing Ground?

Not long ago, pain management consisted of opioids combined with compassionate care, applied successfully and almost exclusively to the treatment of acute and cancer pain. There were no sophisticated pain interventions; pain was not a disease, a specialty, a journal, or a clinic. Pain research and pain clinics burgeoned in the second half of the twentieth century.⁹ Chronic pain became not a common burden of humankind but a condition that nobody should have to suffer, to any degree.¹⁰ When attempts were made to translate the undoubted gains made in the treatment of acute and end-of-life pain to chronic pain, trouble began. After 20 yr of

practicing pain medicine in the United States, I believe I see more suffering now than I ever saw when all physicians did was aggressively treat pain at its worst and most distressing. In the case of chronic pain, we fail patients because we promise more than we can give.^{5,11,12*} For many patients with severe pain at the end of life or related to trauma and surgery, we have lost our greatest weapon (*i.e.*, opioids), at least for patients treated for a long time who become refractory to treatment.¹³⁻¹⁵

The state of long-term opioid treatment should be considered first. We see a picture of increasing use despite lack of evidence for effectiveness.¹⁶ When it is not working, we have been taught to increase the dose until it is, although experience suggests that if it is not working, it is not going to work. Worse still, high doses are associated with toxicity and the refractoriness that may eventually make it impossible to treat pain effectively.¹⁷ We are providing a treatment that for many patients is not improving their pain but is compromising their lives and futures. However, even this ignores the bigger societal problem of rampant prescription opioid abuse that affects all strata of society, from teenagers popping "oxys" to the poor and disadvantaged, who see duping their physicians into prescribing opioids as a way to pay for their groceries. Both abuse and death rates associated with prescription opioids have increased alarmingly and in direct correlation with increased prescribing for chronic pain.^{18,19} That is not to say that there are not some patients whose lives can be improved by opioid treatment; it is to say that current indiscriminate prescribing must be reexamined. Who taught us to do all this? In large part, it has been the drug companies that have for years picked the message and the messengers while sponsoring much of the postgraduate education and all the major pain meetings.^{20,21}

Henry Beecher, M.D., Patrick Wall, D.M., F.R.S., and Ronald Melzack, O.C., O.Q., F.R.C.S., were pioneers of the concept that pain does not simply occur along a line-labeled system, as depicted in the famous Descartes drawing of the boy with his foot in the flame, but is instead a plastic phenomenon that changes according to circumstance. More profound, and more important, Beecher also observed that drug effects and pain are altered according to context.

Quantitative study of the psychologic effects of drugs is an urgent need; such work is properly a part of pharmacology. The possibility of accurate quantitative work in this field has been demonstrated; but even so, accomplishments to date constitute no more than a beginning in what promises to be a great development in pharmacology.²²

Beecher recognized, as long ago as the 1940s, that drugs can have different effects in the same patient in different circumstances. The context in which opioids are given, for example,

Accepted for publication October 15, 2010. The author is not supported by, nor maintains any financial interest in, any commercial activity that may be associated with the topic of this article.

* National Center for Health Statistics. Health, United States, 2008: With chartbook. Hyattsville, MD: 2009. Available at: <http://cdc.gov/nchs/data/health/health09.pdf>. Accessed October 10, 2010.

Copyright © 2011, the American Society of Anesthesiologists, Inc. Lippincott Williams & Wilkins. Anesthesiology 2011; 114: 243-6

Table 1. Pain Society Memberships by Specialty

Specialty	Major Pain Societies for US Physicians			Total	% Clinical
	IASP*	APS†	AAPM‡		
Clinical					
Anesthesiology	2,333 (31)	990 (30)	843 (36)	4,166 (31)	41
Psychology/behavioral sciences	611 (8)	495 (15)	6	1,112 (8)	11
Physical medicine and rehabilitation	284 (4)	198 (6)	365 (15)	847 (6)	8
Nursing (includes nurse practitioners, physician assistants, registered nurses, and midwives)	337 (4)	396 (12)	13 (1)	746 (6)	7
Medicine (includes internal medicine, primary care, family practice, rheumatology, pediatrics, dermatology, cardiology, emergency medicine, geriatric medicine, gastroenterology, hematology, occupational medicine, osteopathic medicine, and sports medicine)	467 (6)	99 (3)	170 (7)	736 (6)	7
Neurology	278 (4)	165 (5)	84 (4)	527 (4)	5
Surgery (includes neurosurgery, orthopedics, general surgery, obstetrics and gynecology, ophthalmology, otolaryngology, plastic surgery, podiatry, trauma surgery, urology)	246 (3)	132 (4)	60 (3)	438 (3)	4
Dentistry/oral medicine	227 (3)	132 (4)	NA	359 (3)	4
Pharmacology (includes pharmacy and clinical pharmacology)	173 (2)	99 (3)	6	278 (2)	3
Psychiatry (includes psychosomatic medicine)	104 (1)	66 (2)	55 (2)	225 (2)	2
Oncology	40 (1)	66 (2)	4	110 (1)	1
Other alternative types (includes acupuncture and chiropractic)	81 (1)	NA	NA	81 (1)	1
Other clinical types (includes physical therapy, radiology, respiratory therapy, clinical neurophysiology, orthopedic medicine, palliative medicine, occupational therapy, nuclear medicine, and surgical technician)	549 (7)	NA	15 (1)	564 (4)	6
Research					% Research
Neuroscience (includes neurobiology, neuropharmacology, neurophysiology, and neuropsychiatry)	1,175 (15)	132 (4)	NA	1,307 (10)	74
Other nonclinical types (includes anthropology, healthcare administration, law, media, philosophy, public health, publishing, medical technology, medical writing, pathology, social sciences, and veterinary medicine)	136 (2)	NA	NA	136 (1)	8
Other research (includes clinical research, epidemiology, pathology, research and development, and statistics)	246 (3)	66 (2)	NA	312 (2)	18
Others (pain medicine and undeclared)	340 (4)	264 (8)	752 (32)	1,356 (10)	
Total	7,627	3,300	2,373	13,300	

Data are given as number (percentage) of each group.

* The IASP has international members (76%) and US members (24%). Data are per IASP membership statistics from September 22, 2010.

† Data are per APS statistics from the APS Web site (accessed September 25, 2010). ‡ Data are per AAPM statistics provided by the Executive Office (September 23, 2010).

AAPM = American Academy of Pain Medicine; APS = American Pain Society; IASP = International Association for the Study of Pain; NA = not applicable.

can markedly alter tolerance to their effects.^{23,24} Attention to the behavioral aspects of pain may even, in some patients, obviate the need for drugs; at the same time, drugs may become ineffective when the powerful placebo is lost.²⁵ Another great pioneer of our field, John Bonica, M.D., whom many consider the founder of modern pain medicine, also

recognized that drugs and injections alone do not work for chronic pain; they must be combined with physical and particularly behavioral approaches. So what happened to the multidisciplinary model that Bonica espoused and all of Beecher's work suggested? It became unsupportable because of a failure to recognize that the less glamorous and more

ponderous aspects of clinical care are actually worth paying for because they work, even if not with dramatic immediate effects.^{26–28} The value of the model is still recognized, as suggested by this segment from the American Society of Anesthesiologists Web site:

Frequently the anesthesiologist heads a team of other specialists and doctors who work together to help you manage your pain. The anesthesiologist or other pain medicine doctors (such as neurologists, oncologists, orthopedists, physiatrists, and psychiatrists) and nonphysician specialists (such as nurses, nurse practitioners, physician assistants, physical or rehabilitation therapists and psychologists) all work together to evaluate your condition. Then this ‘team’ of specialists will develop a treatment plan designed just for you.†

In reality, how often does such an ideal setup exist? How many multidisciplinary pain centers have had to be closed, and how many academic pain programs have had to focus on interventional approaches to the near exclusion of all else to meet the production metrics expected by their hospitals and bean counters? The model for economic survival is not the model for good care.^{29,30} In many senses, we are trapped: choosing production-line medicine because we no longer get paid for thoughtful interactions, overusing procedures because they are instantly satisfying and heavily reimbursed, and towing the corporate line (overtly or subliminally) because industry supports our educational and research efforts. But if we, or at least our leaders, do not rise above all of this, then we certainly will lose ground.

How Can We Turn Things Around?

We are anesthesiologists, and anesthesiologists remain the dominant specialists in pain medicine (table 1). Beecher and Bonica were both anesthesiologists; their ideals are as relevant today as they ever were and should be guiding us now and in the future. We have come so far. Unraveling the basic mechanisms of pain, even to the molecular level, has opened up both real and potential possibilities in terms of novel therapeutic interventions. Advances in imaging have allowed us to better understand central neural function and pain mechanisms (research)³¹ and to perfect regional techniques as never before (clinical practice). Advances in genetics and pharmacogenetics are beginning to shed light on which patients are at risk for chronic pain, addiction, and hyperalgesia; and which drugs are suitable for which patients. We are on the

† The management of pain. 1995–2009 American Society of Anesthesiologists. Available at: <http://www.asahq.org/patientEducation/managepain.htm>. Accessed September 23, 2010, but now defunct.

‡ REMS and Opioid Analgesics Webinar. Available at: <http://www.fda.gov/downloads/Drugs/DrugSafety/InformationbyDrugClass/UCM163668.pdf>. Accessed October 10, 2010.

§ Hannenberg, A. Letters – The Doctors, the Nurses and the Anesthesia – New York Times. Available at: http://www.nytimes.com/2010/09/12/opinion/112anesthesia.html?_r=2&pagewanted=print. Accessed October 10, 2010.

brink of being able to tailor treatments much more precisely.³² Computer- and Internet-based programs are opening up new possibilities in terms of outcomes research, overcoming the limitations of randomized trials, and truly understanding in large populations what our treatments are doing. Computer-based clinician and patient-centered tools can aid practice, especially within the constraints of “high-efficiency” health care.^{33–35} What should our leaders be doing then? We must revive the multidisciplinary model. We should encourage the government and other noncorporate entities to fund our research so that we are not overreliant on corporate sponsorship. We also should lobby for a fee schedule that produces a better match between reimbursement and proven outcomes.

This is not intended as a message of gloom and doom. Rather, it is intended to help end the complacency and self-satisfaction that has brought us to where we are now (*i.e.*, experiencing growing doubts that pain specialists have the means to alleviate chronic pain).⁸ Interventions alone will never be enough. As for patients taking opioids, we cannot simply refuse to prescribe or shuttle these patients through high-production clinics. We were at best complacent and at worst active in creating the opioid problem that we see today; it is up to us to help turn it around. Our clinics should help the clinicians in primary care (the primary prescribers) select the right patients for long-term opioid therapy and should be able to offer exactly the type of ideal care outlined by the American Society of Anesthesiologists itself to those (hopefully few) patients who need opioids and specialty care. We must perform the outcomes research coupled with the basic science that will allow us to identify who is helped and by what means and which patients will be better off with non-medical approaches. I would like to be able to hold my head high and say that what I am doing, and what my specialty is doing, is helping to relieve the burden of chronic pain. And what better time than now to take stock and begin to turn things around, when it is becoming increasingly clear that if we do not lead the pain field in the right direction, others will do it for us.^{8,36,‡§}

Jane C. Ballantyne, M.D., F.R.C.A., Penn Pain Medicine Center, Philadelphia, Pennsylvania. jane.ballantyne@uphs.upenn.edu

References

- Loeser JD: The future: Will pain be abolished or just pain specialists? *Pain: Clinical Updates* IASP Press 2000; 8:1–9
- Braden JB, Russo J, Fan MY, Edlund MJ, Martin BC, Devries A, Sullivan MD: Emergency department visits among recipients of chronic opioid therapy. *Arch Intern Med* 2010; 170:1425–32
- Sullivan MD, Edlund MJ, Fan MY, Devries A, Brennan Braden J, Martin BC: Trends in use of opioids for non-cancer pain conditions 2000–2005 in commercial and Medicaid insurance plans: The TROUP study. *Pain* 2008; 138:440–9
- Eriksen J, Sjøgren P, Bruera E, Ekholm O, Rasmussen NK: Critical issues on opioids in chronic non-cancer pain: An epidemiological study. *Pain* 2006; 125:172–9
- Volinn E, Fargo JD, Fine PG: Opioid therapy for nonspecific

- low back pain and the outcome of chronic work loss. *Pain* 2009; 142:194-201
6. Wilson-MacDonald J, Burt G, Griffin D, Glynn C: Epidural steroid injection for nerve root compression: A randomised, controlled trial. *J Bone Joint Surg Br* 2005; 87:352-5
 7. Arden NK, Price C, Reading I, Stubbing J, Hazelgrove J, Dunne C, Michel M, Rogers P, Cooper C: A multicentre randomized controlled trial of epidural corticosteroid injections for sciatica: The WEST study. *Rheumatology (Oxford)* 2005; 44:1399-406
 8. Katz MH: Long-term opioid treatment of nonmalignant pain: A believer loses his faith. *Arch Intern Med* 2010; 170:1422-4
 9. Gallagher RM, Fishman SM: Pain medicine: History, emergence as a medical specialty, and evolution of the multidisciplinary approach, Cousins and Bridenbaugh's neural blockade, *Clinical Anesthesia and Pain Medicine*, 4th edition. Edited by Cousins MJ, Carr DB, Horlocker TT, Bridenbaugh PO. Philadelphia, Lippincott Williams & Wilkins, 2008, pp 631-43
 10. Brennan F, Carr DB, Cousins M: Pain management: A fundamental human right. *Anesth Analg* 2007; 105:205-21
 11. Martin BI, Deyo RA, Mirza SK, Turner JA, Comstock BA, Hollingworth W, Sullivan SD: Expenditures and health status among adults with back and neck problems. *JAMA* 2008; 299:656-64
 12. Hashemi L, Webster BS, Clancy EA: Trends in disability duration and cost of workers' compensation low back pain claims (1988-1996). *J Occup Environ Med* 1998; 40:1110-9
 13. Mao J, Price DD, Mayer DJ: Mechanisms of hyperalgesia and opiate tolerance: A current view of their possible interactions. *Pain* 1995; 62:259-74
 14. Angst MS, Clark JD: Opioid-induced hyperalgesia: A qualitative systematic review. *ANESTHESIOLOGY* 2006; 104:570-87
 15. Mitra S, Sinatra RS: Perioperative management of acute pain in the opioid-dependent patient. *ANESTHESIOLOGY* 2004; 101: 212-27
 16. Chapman CR, Lipschitz DL, Angst MS, Chou R, Denisco RC, Donaldson GW, Fine PG, Foley KM, Gallagher RM, Gilson AM, Haddox JD, Horn SD, Inturrisi CE, Jick SS, Lipman AG, Loeser JD, Noble M, Porter L, Rowbotham MC, Schoelles KM, Turk DC, Volinn E, Von Korff MR, Webster LR, Weisner CM: Opioid pharmacotherapy for chronic non-cancer pain in the United States: A research guideline for developing an evidence-base. *J Pain* 2010; 11:807-29
 17. Ballantyne JC, Mao J: Opioid therapy for chronic pain. *N Engl J Med* 2003; 349:1943-53
 18. Kuehn BM: Efforts aim to curb opioid deaths, injuries. *JAMA* 2009; 301:1213-5
 19. McLellan AT, Turner B: Prescription opioids, overdose deaths, and physician responsibility. *JAMA* 2008; 300:2672-3
 20. Ballantyne JC: Opioid controls: Regulate to educate. *Pain Med* 2010; 11:480-1
 21. Angell M: Relationships with the drug industry: Keep at arm's length. *BMJ* 2009; 338:b222
 22. Beecher HK: The measurement of pain: Prototype for the quantitative study of subjective responses. *Pharmacol Rev* 1956; 9:59-209
 23. Hyman SE, Malenka RC, Nestler EJ: Neural mechanisms of addiction: The role of reward-related learning and memory. *Annu Rev Neurosci* 2006; 29:565-98
 24. South SM, Smith MT: Analgesic tolerance to opioids. *Pain: Clinical Updates*. IASP Press 2001; 9:1-4
 25. Beecher HK: The powerful placebo. *JAMA* 1955; 159:1602-6
 26. Cutler RB, Fishbain DA, Rosomoff HL, Abdel-Moty E, Khalil TM, Rosomoff RS: Does nonsurgical pain center treatment of chronic pain return patients to work? A review and meta-analysis of the literature. *Spine (Phila Pa 1976)* 1994; 19: 643-52
 27. Karjalainen K, Malmivaara A, van Tulder M, Roine R, Jauhiainen M, Hurri H, Koes B: Multidisciplinary biopsychosocial rehabilitation for subacute low back pain among working age adults. *Cochrane Database Syst Rev* 2000; (3):CD002193
 28. Flor H, Fydrich T, Turk DC: Efficacy of multidisciplinary pain treatment centers: A meta-analytic review. *Pain* 1992; 49: 221-30
 29. Giordano J, Schatman ME: A crisis in chronic pain care: An ethical analysis. Part three: Toward an integrative, multidisciplinary pain medicine built around the needs of the patient. *Pain Physician* 2008; 11:775-84
 30. Dubois MY, Gallagher RM, Lippe PM: Pain medicine position paper. *Pain Med* 2009; 10:972-1000
 31. Tracey I, Mantyh PW: The cerebral signature for pain perception and its modulation. *Neuron* 2007; 55:377-91
 32. Costigan M, Belfer I, Griffin RS, Dai F, Barrett LB, Coppola G, Wu T, Kiselycznyk C, Poddar M, Lu Y, Diatchenko L, Smith S, Cobos EJ, Zaykin D, Allchorne A, Shen PH, Nikolajsen L, Karppinen J, Männikkö M, Kelempisioti A, Goldman D, Maixner W, Geschwind DH, Max MB, Seltzer Z, Woolf CJ: Multiple chronic pain states are associated with a common amino acid-changing allele in KCNS1. *Brain* 2010; 133:2519-27
 33. Podichetty VK, Weiss LT, Fanciullo GJ, Baird JC: Web-based health survey systems in outcome assessment and management of pain. *Pain Med* 2007; 8(suppl 3):S189-98
 34. Ballantyne JC: Is lack of evidence the problem? *J Pain* 2010; 11:830-2
 35. Chou R, Ballantyne JC, Fanciullo GJ, Fine PG, Miaskowski C: Research gaps on use of opioids for chronic noncancer pain: Findings from a review of the evidence for an American Pain Society and American Academy of Pain Medicine clinical practice guideline. *J Pain* 2009; 10:147-59
 36. Ballantyne JC: U.S. opioid risk management initiatives. *Pain: Clinical Updates*. IASP Press 2009; 17:1-5