The Future: Will Pain Be Abolished or Just Pain Management Specialists?

The Past

Before 1960. Prior to 1960 there were no pain specialists. Only one pain textbook had been written—the first edition of Bonica’s Management of Pain, published in 1953. It was mainly the work of one man. There were no journals devoted to pain, no dedicated research laboratories, and no funding programs aimed at pain research or training for clinicians. Some physiological research was carried out on normal volunteers and very little on patients. What was labeled “pain” in most research was really nociception. A few pioneers—Leriche, Noordenbos, and Livingston—were ahead of their peers. Of course, all were surgeons. Livingston had a pain laboratory and published his clinical observations and speculations in 1943. Beecher investigated the placebo response. Bonica described himself as self-taught in pain management, largely during his military service. Major textbooks of medicine, surgery, and other specialties rarely mentioned pain management. Pain was always described as a byproduct of a disease state; the implication was that proper treatment of disease would relieve pain. The sensory nervous system was envisioned as a passive set of wires that conducted incoming impulses to the brain.

1960–1970. In 1960, Bonica became Chairman of Anesthesiology at the University of Washington and began his international campaign on behalf of pain research and management. His appointment occurred at a time of blossoming of academic medical centers and rapid expansion of the National Institutes of Health (NIH), when funding for research and training became abundant in the United States. Dedicated pain research programs were launched worldwide. In 1965, the Melzack–Wall gate theory was published in Science. Its impact on clinical and research activities was profound. The nervous system was recognized to modulate sensory information, both at the primary synapse and in the brain. The number of journal articles addressing pain began to increase, but textbooks were still oblivious to pain as a clinically important problem.

1970–1980. Bonica convened the International Pain Symposium in Issaquah, Washington, in May 1973. The pain movement was launched at that time, largely, but not exclusively, through his efforts. The International Association for the Study of Pain (IASP) derived from that meeting, which also launched IASP’s journal Pain and its task forces, committees, triennial congresses, and national chapters. Other journals were founded by those with special professional or regional issues. The biopsychosocial approach became an alternative to the biomedical concept of pain, and the desirability of multidisciplinary pain treatment became an integral part of the pain movement. Modulation of afferent information became widely recognized as the rule, not the exception. Research
on pain flourished, but there were few animal models for chronic pains that plague patients. The NIH began to recognize that pain research was within its mandate and to encourage it. Training and continuing education programs became much more common. Research articles relevant to pain rapidly increased in number and quality; a few textbooks identified pain as an important clinical issue.

1980–1990. Pain research exploded in this decade, as did all aspects of neuroscience. Standards for clinical training and patient care were established. The number of books and scientific papers related to pain continued to increase. Terminology was standardized, and multicenter clinical trials became feasible. Palliative care became a specialty of its own, and because of the rapidly expanding elderly population, was supported in many countries, although initially the concept was less well received in the United States. In the United States, managed care and the rationing of health care became common topics for journalists and politicians. It never was the care that was to be managed, but, instead, the costs of care. Other countries had different forms of rationing and cost containment. These issues were debated before there were sufficient outcomes data to compare alternative strategies, so we know that health care management was never a purely rational process. The citizens of some countries were happy to be able to travel to others or to purchase private health care when rationing became oppressive. Many doctors fled settings of rationing or managed care. Pain management was caught up in a much wider problem: the politicization of health care. Many new pain organizations were launched, both of health care providers and patients. More articles about pain appeared in the lay press than ever before. Alternative health care strategies were widely used for pain management. Molecular biological approaches to the nociceptive process and central modulation of pain expanded our knowledge of the biological basis of pain.

The Present

1990–2000. The molecular biology of pain thrived in this decade, providing astounding insights into the cellular and membrane basis of the transmission of nociceptive information. At the same time, powerful imaging techniques (fMRI and PET scanning) offered new methods of looking at brain function on a psychological and cognitive level. Basic scientists promulgated the idea that their study of nociceptive mechanisms would lead to an adequate understanding of the genesis of pain. The study of the mechanisms of downstream modulation and cognitive and affective processes developed less rapidly, for methodological, conceptual, and financial reasons.

The biopsychosocial model found even more widespread acceptance as a better way to conceptualize clinical pain problems. The “opium wars” moved from China to North America, where the debate over the proper use of narcotics for patients with chronic pain was based on little scientific information but much observer bias. We are still looking for a balanced approach, and outcomes-based guidelines remain only a hope for the future.

Pain, suffering, pain behaviors, impairment, and disability also became hotly debated issues. The linkages between these phenomena are looser than many would like us to believe, and unworkable disability determination systems are a global problem of developed nations. Attempts to rationalize and make more equitable the social support networks offered to those who cannot or will not work have met with resistance from those with vested interests in preserving the status quo. Many of the issues regarding this aspect of pain and its assessment involve intellectual disciplines that are too broad for one individual to adequately master. It is my belief that most of those engaged in the provision of health care and the administration and adjudication of issues related to pain and its related impairments and disabilities fail to adequately grasp the roles of affect, environment, and anticipated consequences on patients.10

The Future

Basic sciences. The neurosciences will continue to develop exponentially, led by the desire of pharmaceutical companies to find profitable new drugs. Some of the areas that will be developed include peripheral mechanisms that translate tissue injury into nociception, targeting of membrane channels and receptors that are unique to the nociceptive system, and changes within the nervous system that occur in neuropathic pain states. New modulators of communication between and within nerve cells will be discovered. Much more difficult to undertake will be studies of the spinal cord and brain related to the modulation of sensory information, including pain. Imaging techniques will provide insights into brain-behavior relationships. Pain will be viewed as the product of a conscious mind and not just a passive response of the brain to external stimuli. Better models for many human pain states will be devised, and animal experimentation will help researchers to develop new treatments.

Clinical sciences. The most important clinical step is the development of clinical guidelines based on outcomes research. Traditional consensus guidelines no longer suffice. Much of the pain movement’s energy must be focused on this area, for it will be the single most important strategy to keep pain management viable. In the interim, we need to move toward treatment by protocol so that outcomes can be compared in multicenter studies. Determination of meaningful outcomes will also be a battleground. It is clear that patient self-report of pain is important, but not sufficient. Functional status, health care utilization, and work status must also be assessed. We must be careful, however, to maintain enough flexibility in guidelines to accommodate our limited ability to precisely diagnose the causes of pain states. Different patients may need very different treatment strategies, even though they carry similar or even identical diagnoses. Indeed, different mechanisms for pain genesis probably exist within a single clinical diagnostic rubric. Expert judgment must accompany treatment guidelines. Nowhere is this more important than in the establishment of reasonable criteria for the use of opioids in treating chronic pain.

Pain management is caught up in the global issue of how much health care each country wants to fund and who will decide which treatments are funded. If we do not align ourselves with those who make these critical decisions, pain clinicians may be left out of the funded health care providers club. We must prove our worth by demonstrating positive outcomes and by maintaining patient demand for our services. Of course, this takes us back to the issue of who “we” are. Pain management should mean more than just giving pills, performing procedures, or providing biofeedback. These technologies are a legitimate part of what we may want to offer our patients, but clinicians who provide only such a service need to be looked at as specialists.
to be consulted when a need arises. They should not be in the position of managing the care of a patient with chronic pain. Put another way, pain management means more than symptom control. It also means restoration of normal function.

Pain and disability issues. The determination of impairment and disability due to pain is a major issue in developed societies. The disability system was designed for overt injuries: damage to the body can be seen and measured, impairment assessed by physicians, and disability awarded based on that impairment. The American Medical Association’s Guides to the Evaluation of Permanent Impairment, which is the best-publicized system for the rating of impairment, has never been validated and is completely arbitrary. Its section on pain is too opaque to be useful in determining impairment. Indeed, the guides seem to deny the existence of impairment unless there is a loss of body part or function. We need a better conceptual basis for dealing with the social and economic aspects of pain. Throughout the developed countries, patients are plagued by subtle injuries in which impairment cannot be measured. Medical education does not train physicians to rate such patients, nor should they be required to do so: this is a political problem. This problem is a good example of the medicalization of modern life, so aptly described by Illich almost 20 years ago. The recognition that being on disability is a comorbidity factor for most illnesses should lead to changes in the way health care providers and politicians think about disability status.

Health care goals. How we snicker and guffaw about the leeches and purges used by our 18th- and 19th-century colleagues. Their patients usually paid their bills gratefully, although Voltaire and Shaw saw through these useless therapies. What can you and I do to reduce the risks that 21st-century doctors will scoff at our attempts to be useful? I think that the course is clear. We need to provide humane, caring treatment based on the best available information, while constantly seeking to improve our knowledge base through properly conducted clinical trials. It is essential that we preserve the caring role, as that has been the single defining trait of clinical practice. It certainly has not been our technology that has kept the health care professions going since the dawn of recorded history.

We need to fight for funding for comprehensive pain management, not just for procedures to treat those who hurt. Pain management must be included in any type of health plan organized by a country or insurance company. Treatment guidelines and algorithms must be developed that are based upon outcomes, costs, and risks. There is certainly no single way to treat all patients, but rational steps toward a stated outcome must be the standard.

Finally, education must be a major effort. We need to start by educating patients about health care and its rational basis. Then we must encourage every school for health professionals to incorporate basic sciences relevant to pain into its core curriculum. Clinical education must also be amplified to give pain management the prominent position it deserves. Additionally, every training program for clinicians must adopt standards for pain management education within its discipline. Finally, we need a small number of high-quality fellowships to train the next generation of pain managers. All of these efforts will require strong leadership in the pain world; as pain specialists, we must present a coordinated front to those who do not understand what we do or why we do it.

Will pain be abolished? The abolition of acute postopera-
tive and post-traumatic pain is a possible outcome of the explosion in our understanding of the mechanisms of pain. The problem is the need to develop a method of temporary abatement of pain, as the permanent loss of all perception of tissue damage is already recognized to be a potentially lethal and socially disruptive event. Children born with the congenital inability to perceive tissue damage develop Charcot joints, infections, corneal abrasions, and self-injurious strategies for manipulating their parents and their environment. Most do not survive into adulthood, and those who do are usually physically and socially deformed. I recommend Andrew Miller’s Ingenious Pain for those who wish to read a fascinating novel about this issue.

Temporary regional blockade of nociception or dorsal horn function has great promise to improve the well-being of those who undergo surgery or trauma. Agents that specifically block channels located only upon Aδ and C-fiber axons or that are transported by the membranes of such axons and then disrupt RNA transcription are already used in experimental animals. Drugs that modify central processing and inhibit dorsal horn transmission may also become available. More widespread use of psychological strategies to reduce anxiety and fear will also reduce pain from surgery or trauma. These strategies will be introduced by pain specialists but will rapidly move into the province of all physicians who deal with such pain. The continued use of this combination of strategies will not be dependent upon the specialty of pain management, but their development and refinement will be centered in pain research laboratories.

Chronic pain management will not fare as well. First, we still have many uninformed physicians, lawyers, administrators, and members of the public to contend with. Pain specialists may also fall into this category. There are so many arguments about the nature of chronic pain that it is naive to think that more science will resolve them. I am reminded of the State of Kansas, whose board of education voted to abolish the teaching of evolution and cosmology to schoolchildren. A proposal that these subjects should be required for admission to all colleges would punish the children of Kansas for the behavior of this ignorant and irresponsible board.

The complex nature of chronic pain, related to tissue damage, injury to the nervous system, affective state, and interactions with the environment, will long delay its resolution into manageable components that can be targeted by pharmacological, psychological, or physical interventions. Another important issue is the need for all health care providers to carry on their work despite the absence of irrefutable evidence for the efficacy of what they do. Our ignorance of the natural history of chronic pain also makes outcomes research difficult. Finally, there is the epistemological problem of the inherent nature of chronic pain and its genesis. To the extent that this is a phenomenon of industrialized societies, the treatment cannot focus upon the individual sufferer, but must be directed at the social structure and physical environment in which the individual works and plays. This is a tall order, and falls outside the customary purview of medicine in general and pain specialists in particular. It is tempting to predict that chronic pain will be seen as a byproduct of industrialized society in the 20th century and perhaps those that will follow. As Fordyce states, “Pain is a transdermal phenomenon.”

Clearly, some chronic pains, such as those that follow cancer or a defined injury to the nervous system, do have their primary locus within the patient. These can be addressed
through research, both clinical and basic, and we have every right to expect that molecular biological approaches will clarify the pathogenesis of these pains and lead to the development of successful therapies. Pain specialists will be important in focusing attention on these patients and in developing new treatments based on basic science advances.¹⁵

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. The huge schism between pain specialists who believe that most patients with chronic pain need procedures or treatments and those who believe that a comprehensive, multidisciplinary approach is required has led to confusion in the marketplace. We have procedure-oriented health care systems in many countries, and it has been difficult to widen the horizon of those who pay the bills and make policy decisions. Furthermore, the financial resources of the drug and device manufacturing industry are potent influences upon both legislation and administrative decision-making. Multidisciplinary pain medicine has much less clout. We could easily lose sight of the fact that a proceduralist who treats patients in pain may or may not be a pain management specialist. A radiologist who interprets imaging studies of those who hurt is not considered a pain specialist. Until the pain management movement can speak with one voice, we are in real jeopardy in either a managed care or a fee-for-service system. The politics of this issue have been identified for years, but no resolution appears imminent.

For pain management to survive as a medical discipline, we will have to work very hard. First, we must define our mission and the boundaries of our activities. Second, we must produce outcomes data if we are to sell ourselves as an integral part of a 21st-century health care system. Third, we must show the public why we are better than other providers producing the desired outcomes. Fourth, we must figure out how to get paid for doing our jobs.

Physicians entered the last millennium as priests and left it transformed into the lay priests of the welfare state. Today we have a technical and dehumanized medicine that is devoid of a cultural language, without a consistent philosophy, and soon, I predict, to be devoid of books. Although medicine may flourish in the 21st century, doctors are likely to be replaced by health technicians. Patients, however, will still be in need of a sympathetic clinician who will support their perseverance, courage, hope, and trust. I hope that pain management will be part of that caregiver’s repertoire.

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References

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