

# ■ Keynote Address for Primary Care Forum

## Low Back Pain: A Twentieth Century Health Care Enigma

Gordon Waddell, DSc, MD, FRCS

Despite greater knowledge, expertise, and health care resources for spinal pathologies, chronic disability resulting from nonspecific low back pain is rising exponentially in western society. Medical care certainly has not solved the everyday symptom of low back pain and even may be reinforcing and exacerbating the problem. An historic review shows that there is no change in the pathology or prevalence of low back pain: What has changed is our understanding and management. There are striking differences in health care for low back pain in the United States and the United Kingdom, although neither delivers the kind of care recommended by recent evidence-based guidelines. Medical care for low back pain in the United States is specialist-oriented, of high technology, and of high cost, but 40% of American patients seek chiropractic care for low back pain instead. National Health Service care for low back pain in the United Kingdom is underfunded, too little and too late, and 55% of British patients pay for private therapy instead. Despite the different health care systems, treatment availability, and costs, there seems to be little difference in clinical outcomes or the social impact of low back pain in the two countries. There is growing dissatisfaction with health care for low back pain on both sides of the Atlantic. Future health care for patients with nonspecific low back pain should be designed to meet their specific needs. [Key words: acute, chronic, epidemiology, health care, history, low back pain, treatment] **Spine 1996;21:2820-2825**

Human beings have had backaches throughout recorded history,<sup>1</sup> but we now face an epidemic of chronic disability resulting from simple back "strains and sprains" (Figure 1). Why? With advances in knowledge and greater resources, the problem should be getting better, but it is not. Despite our efforts, the problem is getting worse. Why? What has gone wrong with health care for low back pain (LBP)? This review will look at the history of health care for LBP, current health care for LBP in the

United States and in the United Kingdom, and how the health care system for LBP should develop in the future.

### ■ Nonspecific Low Back Pain

Diagnostic triage is fundamental to clinical treatment and the organization of health care for patients with LBP.<sup>2,7</sup> Diagnostic triage includes possible serious spinal pathology, nerve root problems, and nonspecific LBP.

Nonspecific LBP also may be described as "simple backache," the everyday bodily symptom that most adults get at some time in their life. This is the common "mechanical" back pain of musculoskeletal origin in which symptoms vary with physical activity. Clinically, simple backache commonly is related to physical "strains," although these often are normal daily activities, and perhaps in reality, it usually develops spontaneously.<sup>18</sup> Nonspecific LBP may be very painful and often spreads as referred pain to one or both buttocks or thighs, but it should be a benign, self-limiting condition.

Epidemiologic studies show that simple backache has a point prevalence of approximately 15-30%, a 1-month prevalence of 30-40%, and a lifetime prevalence of 60-80%.<sup>8</sup> Backache is almost universal. Different figures in different studies appear to depend on the exact wording of the questions rather than on any systematic variation. In particular, there is no evidence that the prevalence of LBP is lower in the United States than in Europe. This fallacy appears to be based on a US prevalence of 15%, which often is quoted from the National Health and Nutrition Examination Survey II,<sup>13</sup> but that survey only recorded LBP "lasting at least 2 weeks." Other US surveys with more comparable questions show similar prevalence to European rates.<sup>17,31,36</sup>

There is no historic evidence that LBP is any different, any more common, or any more severe than it always has been.<sup>1</sup> The only annual population survey that consistently has used the same questions and methodologic approach over time<sup>23</sup> has shown no change in the prevalence of LBP during the past 15 years. This is the period during which chronic low back disability has increased exponentially (Figure 1). There is no evidence of any change in the pathologic basis or the prevalence of the symptom of LBP to explain the current epidemic. Back-

From The Glasgow Nuffield Hospital, Glasgow, Scotland.  
Presentation of this manuscript at the October 13-14, 1995, International Forum for Primary Care Research on Low Back Pain in Seattle, Washington was made possible by grants from The Group Health Foundation, The Prudential Center for Health Care Research and Wyeth-Layerst Laboratories.  
Acknowledgment date: January 10, 1996.  
Acceptance date: January 31, 1996.  
Device status category: 1.

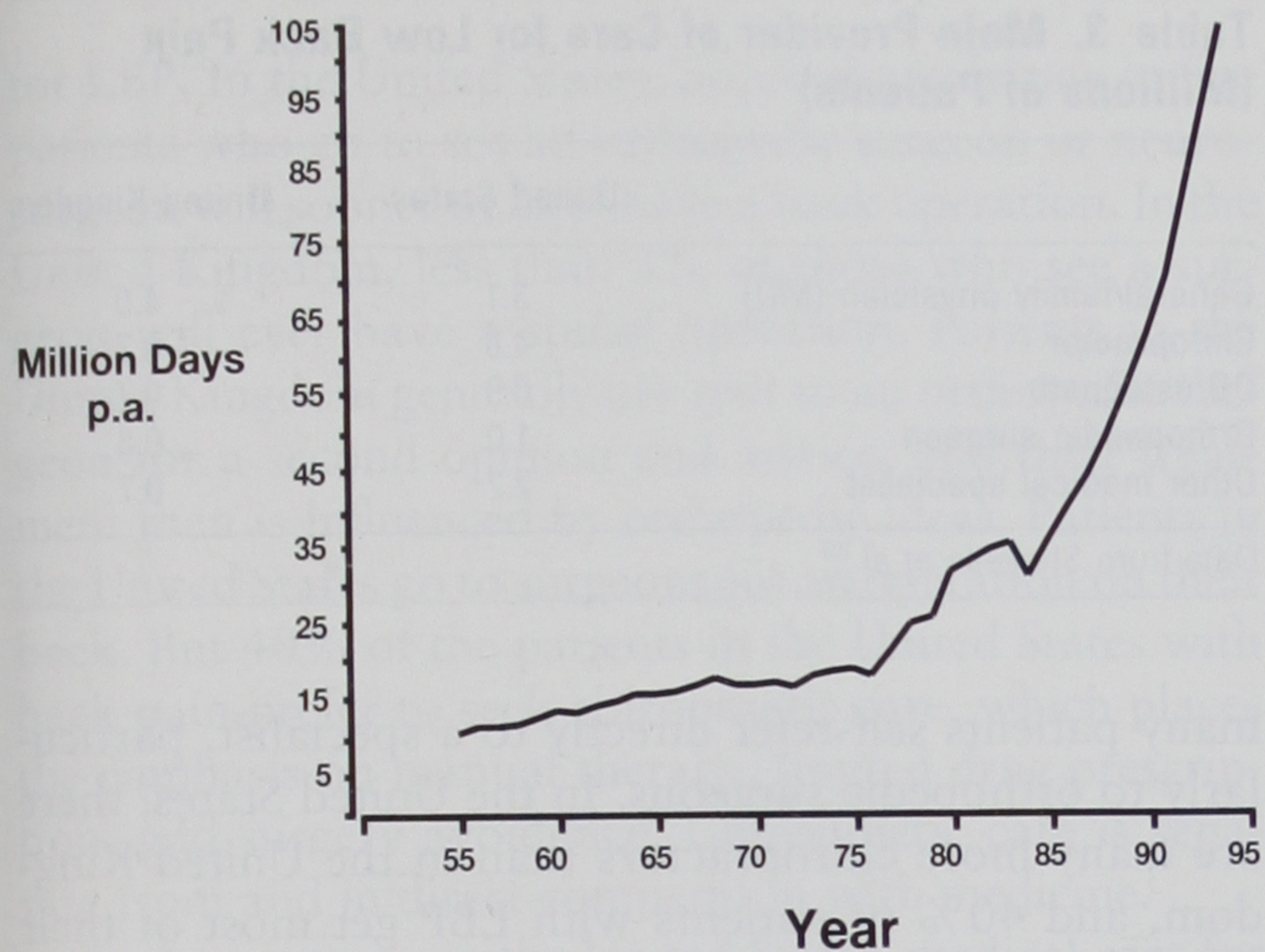


Figure 1. Forty-year trends in chronic low back disability. United Kingdom statistics for sickness and invalidity benefits for back incapacities from 1953–1954 to 1993–1994 (based on statistics supplied by the Department of Social Security).

ache has not changed. What has changed is our understanding of LBP and what we do about it.<sup>1</sup>

There now is a great deal of evidence that psychological and social factors are important in low back disability.<sup>37</sup> Fear of pain and what we do about pain may be more disabling than pain itself.<sup>24,38</sup> There are several recent prospective cohort studies that show that these factors are important at a much earlier stage than believed previously.<sup>4,9,12</sup> Understanding the problem depends on a biopsychosocial model of LBP and disability (Figure 2).<sup>2,7</sup>

### ■ The Historic Development of Modern Clinical Management for Low Back Pain

The oldest surviving surgical text, the Edwin Smith papyrus from 1500 BC, includes a case of back strain. The clinical presentation and assessment is little different from today. The account ends:

*“Treatment: Thou should place him prostrate on his back . . .”*

At this tantalizing point, the copy stops, and we will never know how the ancient Egyptians treated back pain. This is sometimes quoted as the earliest description of bedrest, but that seems unlikely. The contemporary evidence suggests that it was more likely to be the starting point for some form of local application or manipulation. For the next 3.5 millennia, back pain was regarded as one of the fleeting pains of life or rheumatics. As in underdeveloped countries today, people no doubt sought symptomatic relief from various practitioners, most of whom were not medical. But LBP received scant medical attention in days of short life expectancy and limited medical resources.

Modern clinical management of LBP dates from the disease model of medicine in the 19th century.<sup>34</sup> The premise is that human illness is the outward expression

of disease and that medical management simply is a matter of physical investigation, diagnosis, and physical treatment to cure the disease and the illness. The history of modern management of nonspecific LBP is the history of our attempts and failure to achieve this.

Three key ideas in the 19th century tried to fit LBP into the disease model and still form the basis for “traditional” clinical management of LBP today. The syndrome of spinal irritation<sup>3</sup> focused attention on the spine and the nervous system and suggested that the painful back was “irritable.” Railway spine<sup>14</sup> linked back pain to trauma. It also was closely related to the start of modern social security systems and established back pain as a work-related and compensable condition. The third key idea was therapeutic rest,<sup>33</sup> which, for the first time, proposed rest as a treatment rather than simply the consequence of serious illness. The discovery of the ruptured disc<sup>27</sup> drew these ideas together and made them into a marketable package that dominated thinking about back pain for half a century. These ideas also firmly established LBP as an orthopedic problem. Orthopedics came to dominate clinical thinking and management of LBP, with the emphasis on discs and degenerative changes, although discs probably have little to do with most simple backache and most radiographic findings are normal age-related changes. Orthopedics also held out the ultimate illusion of a surgical “fix.” Today, 175 of the 276 members of the International Society for the Study of the Lumbar Spine are orthopedic surgeons.

Since World War II, there has been an explosion of medical interest and knowledge in LBP, producing an ever-increasing armamentarium of therapies, high-technology investigations, and invasive procedures. There is

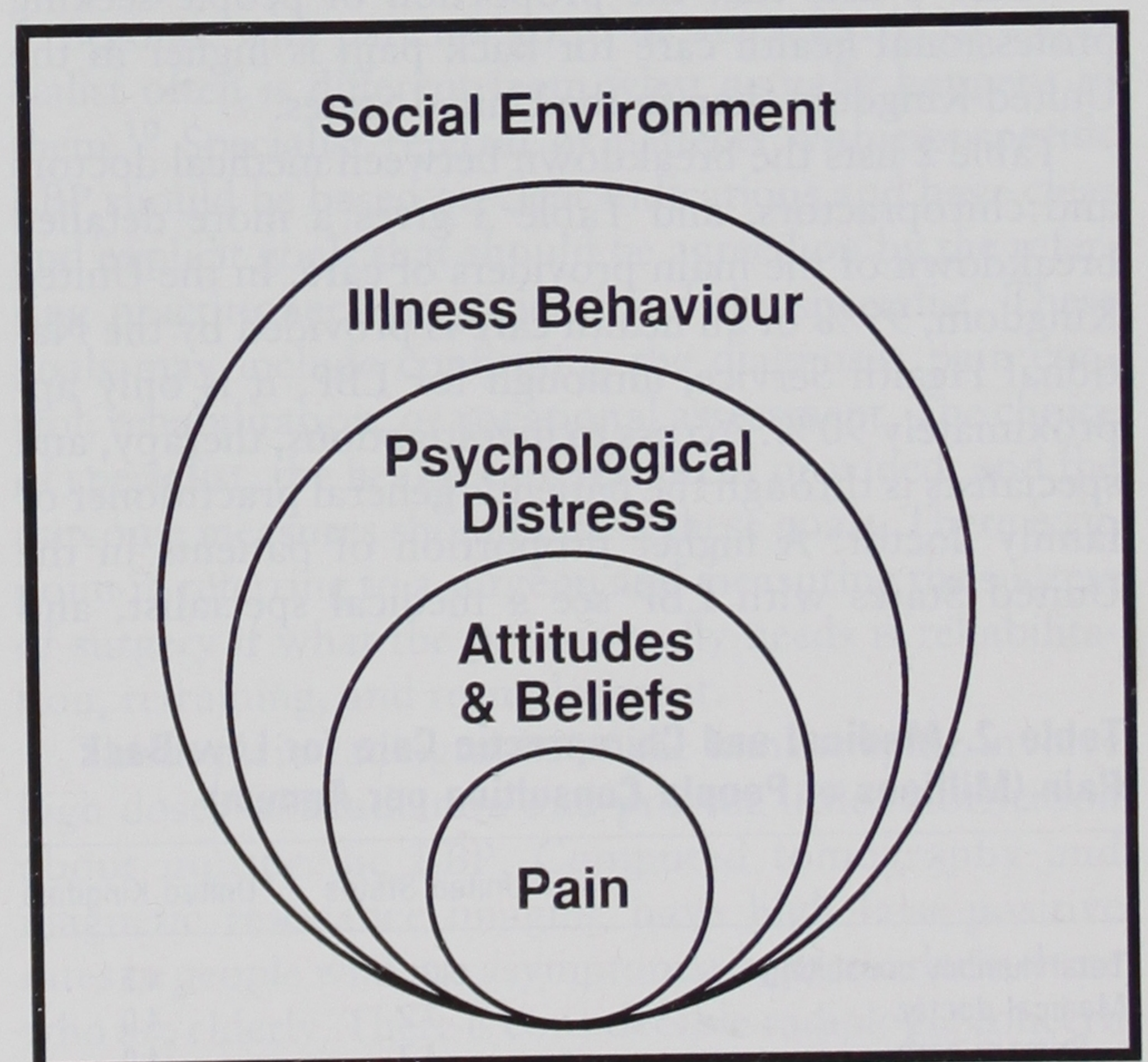


Figure 2. A biopsychosocial model of low back pain and disability (adapted with permission from Waddell et al<sup>38</sup>).

**Table 1. Annual Health Care Consumption for Low Back Pain**

	United States	United Kingdom
Date of most data	1990	1993
Total population	255 million	55 million
Millions of people consulting for low back pain		
Population surveys	24 (9.4%)	6.9 (12.5%)
Medical record data	12 (4.7%)	4.5 (8.2%)

improved access to health care and rising health care use. This has been associated with a great increase in social support, and it is now acceptable in western societies that healthy young adults may be disabled permanently, receive large amounts of compensation, and even take early retirement for a simple back strain. Low back disability continues to rise at an exponential rate (Figure 1). Modern medicine and better social security certainly have not solved the problem. Modern medicine and better social support have many benefits, but we may question whether they have helped this problem or whether they actually have reinforced and exacerbated chronic low back disability.

#### ■ United States and United Kingdom Health Care for Low Back Pain

It is illuminating to compare health care for LBP in the United States<sup>19,29,31,32,36</sup> and in the United Kingdom,<sup>8,20,25</sup> both countries for which we now have considerable information. Low back pain seems to be the same in the United States and in the United Kingdom, but how do the very different health care systems affect the care that American and British patients receive?

Table 1 lists that the proportion of people seeking professional health care for back pain is higher in the United Kingdom than in the United States.

Table 2 lists the breakdown between medical doctors and chiropractors, and Table 3 gives a more detailed breakdown of the main providers of care. In the United Kingdom, 99% of all health care is provided by the National Health Service, although for LBP, it is only approximately 90%. Access to investigations, therapy, and specialists is through the patient's general practitioner or family doctor. A higher proportion of patients in the United States with LBP see a medical specialist, and

**Table 2. Medical and Chiropractic Care for Low Back Pain (Millions of People Consulting per Annum)**

	United States	United Kingdom
Total number consulting	12	4.5
Medical doctor	7.2	4.0
Primary care	4.7	4.0
Medical specialist (referred from another physician)	2.5 (45%)	1.5 (100%)
Chiropractor	4.8	0.3

**Table 3. Main Provider of Care for Low Back Pain (Millions of Patients)**

	United States	United Kingdom
General/family physician (MD)	3.1	4.0
Chiropractor	4.8	0.3
DO/osteopath	0.9	0.7
Orthopaedic surgeon	1.0	0.8
Other medical specialist	2.2	0.7

Data from Shekelle et al.<sup>29</sup>

many patients self-refer directly to a specialist, particularly to orthopedic surgeons. In the United States, there are many more chiropractors than in the United Kingdom, and 40% of patients with LBP get most of their health care from chiropractors. The relatively small but growing number of chiropractors in the United Kingdom practice much like in the United States. Osteopaths in the United States are much like primary care medical doctors, whereas in the United Kingdom, osteopaths practice much like chiropractors, so they are not comparable.

Table 4 compares the treatment received and the annual costs of LBP.<sup>8,16</sup> Cherkin et al<sup>6</sup> showed that "who you see is what you get," and this is reflected in the investigations and treatments received by patients in the United States and the United Kingdom. Carey et al<sup>5</sup> found that this specialty variation had little effect on outcomes, although it had major impact on costs. Health care for back pain in the United Kingdom mainly is in primary care and consists of rest, analgesics, plain radiography, and physical therapy. It is high volume, low technology, and low cost. It often also is long delayed, and only 2% of National Health Service patients receive physical therapy within 3 months of onset of symptoms.<sup>7</sup> Dissatisfaction with National Health Services for LBP is so high that 55% of patients with LBP vote with their feet and their wallets to obtain private therapy. There really are two different patterns of health care for back pain in United States: 1) medical care and 2) chiropractic care. Medical care has a high specialist element with high rates of computed tomography, magnetic resonance imaging, and surgery. It is high technology and high cost. Orthopedics is the dominant specialty in both countries, but US and UK orthopedic surgeons do different things

**Table 4. Treatment Received for Low Back Pain (Numbers of Patients per Annum)**

	United States	United Kingdom
Physical therapy	1.5 million	1.3 million
Plain x-rays	4 million	1.5 million
Spinal CT, MRI	1.8 million	100,000
Nonsurgical hospitalizations	265,500	76,000
Spinal operations	279,000	24,000
Fusion	46,500	<2000
Cost		
Health care	\$33 billion	\$1 billion
Total costs to society	>\$100 billion	\$9 billion

for LBP. In the United States, approximately one in five patients who go to see an orthopedic surgeon or neurosurgeon will sooner or later have a back operation. In the United Kingdom, less than 3% of those who see a surgeon will ever have a spinal operation. Patients in the United Kingdom generally are sent to an orthopedic surgeon for a second opinion and advice, and their treatment then is influenced by orthopedic ideas. Patients in the United States go to surgeons for an operation on their back. But 40% of the patients in the United States with back pain prefer to seek chiropractic care, which places the emphasis on manual therapy, limited drug prescription, and surgery avoidance. Chiropractic care is separate from and in direct competition with medicine.

As a caricature, in the United States, medical care for LBP is overspecialized, overinvasive, and overexpensive, whereas in the United Kingdom, National Health Service care for back pain is underfunded, too little, and too late. In both countries, many patients are dissatisfied and seek a better alternative. But we may question if the different health care in the United States and the United Kingdom has much effect on clinical outcomes or the social impact of LBP and disability.

Many of the problems with health care for LBP on both sides of the Atlantic are because of failure to separate and provide for the different needs of patients with nonspecific LBP from those with serious spinal disease or nerve root problems. The main emphasis of most medical care is to detect these clear medical diseases, and most specialist services focus on their investigation and treatment, but these are small minorities in the mass of patients with nonspecific LBP. In general, we do not provide resources or appropriate services for patients with simple backache. Conversely, specialist services are swamped by patients with simple backache, which may cause delay for those who do need and can benefit from them. Worse, patients with simple backache may receive inappropriate and even harmful investigations and treatment designed for different problems. The relative balance of these difficulties varies in each health care system.

There is growing dissatisfaction with health care for LBP on both sides of the Atlantic.<sup>7,11</sup> There is wide agreement that present medical services largely are inappropriate and ineffective for patients with nonspecific LBP. Many routine treatments that are used widely for LBP are ineffective yet continue to consume large amounts of health care resources. Much routine management for LBP is directly contrary to the scientific evidence that now is available.<sup>2</sup> Both the U.S. and the U.K. Departments of Health recently have produced clinical guidelines for acute LBP.<sup>2,7</sup> They suggest how clinical management could be improved, but change in clinical practice also depends on change in the health care delivery systems. Physicians and patients only can get what actually is available, and treatment always will be constrained and directed by the services available and by referral patterns. At present, there is a mismatch between

what patients with nonspecific LBP need, the treatment recommended by recent clinical guidelines, and the health care available and received.

### ■ The Health Care System for Patients With Low Back Pain

How would the health care system need to be reorganized to deliver the kind of clinical management proposed in these guidelines? We should be able to identify common principles of a good service for patients with LBP, even if the system always will differ in each country. In general, specialist services for serious spinal disease, nerve root problems, and surgery are satisfactory, provided patients are referred and seen without delay. The problem is to provide a better service for the large number of people with nonspecific LBP without blocking those specialist services for patients who do need them.

First, diagnostic triage is fundamental to appropriate referral and to the division of responsibility between primary care and specialist services.<sup>2,7</sup> Most nonspecific LBP is and should be managed most appropriately in primary care. Specialist services are designed to investigate and treat patients with serious spinal disease, nerve root problems that do not settle, and those who require consideration of surgery. These specialist services generally are inappropriate for patients with nonspecific LBP and provide them with a poor and ineffective service. Orthopedic surgeons in particular are the wrong specialists to provide or control health care for nonspecific LBP. Health care for nonspecific LBP should be distinguished and organized separately from these specialist services. There should be a fundamental shift in resources from specialist services to support management of nonspecific LBP in primary care.

Second, why patients go to or are referred to a specialist often is different from what actually happens to them.<sup>10</sup> Specialist referral of patients with nonspecific LBP should be based on clear indications and have clear and explicit goals that should be agreed on by the referring practitioner, the patient, and the specialist. These goals may include confirming the diagnosis, pain control, rehabilitation, or vocational assessment. The choice of specialist, the health care resources provided, and the outcome measures should reflect these goals. There is no point in referring to a surgeon and measuring the success of surgery if what the patient really needs is rehabilitation, retraining, and reemployment.

Third, plain radiographs of the lumbar spine involve high doses of irradiation and provide little information about nonspecific LBP. Computed tomography and magnetic resonance imaging have high false-positive rates in people who are asymptomatic, particularly those who are elderly. There is considerable radiologic concern about the overuse of these investigations in nonspecific LBP. Overinvestigation leads directly to overtreatment. These investigations should be ordered on clear clinical indications according to radiologic guidelines.<sup>2,28</sup>

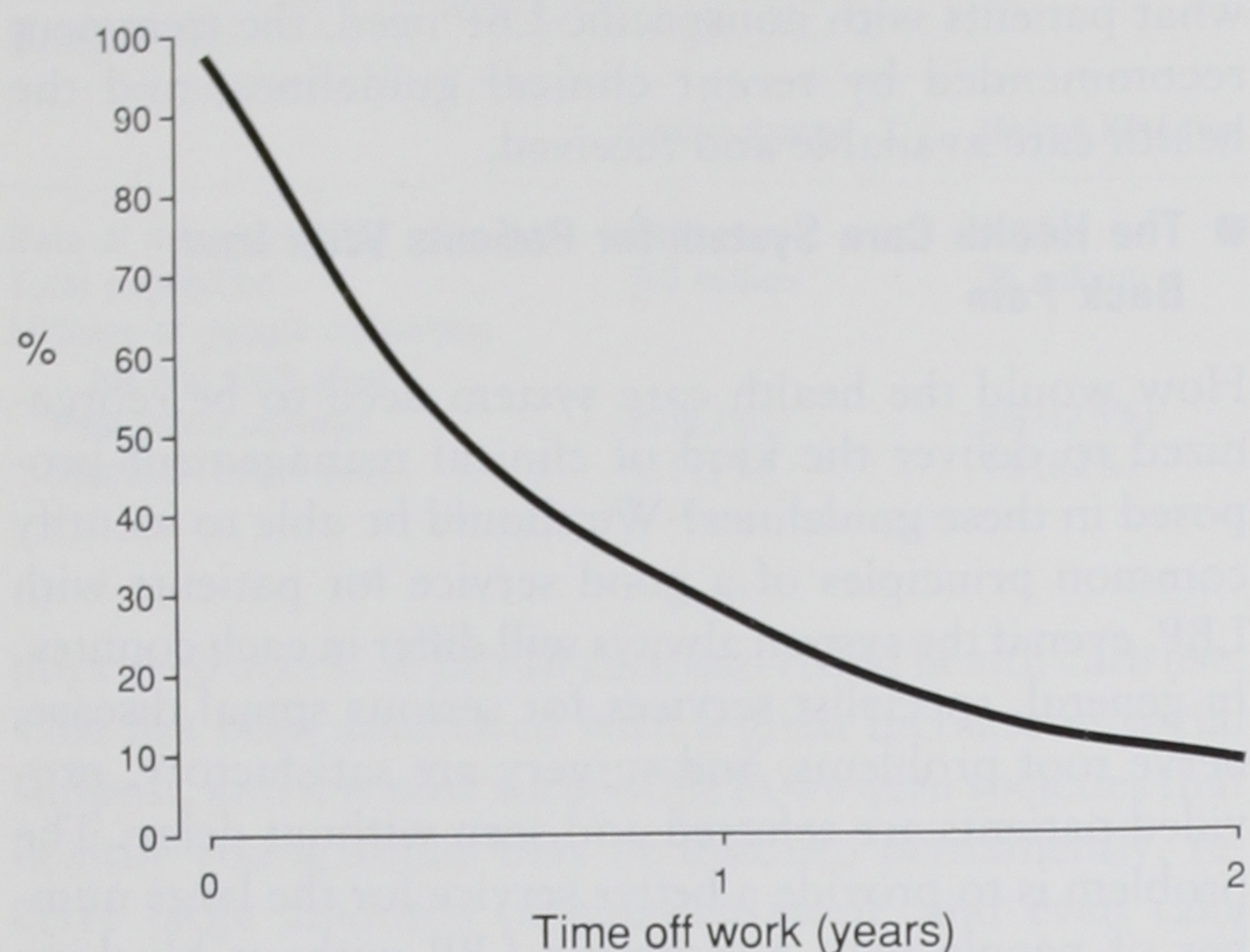


Figure 3. Diminishing chance of return to work with increasing time out of work resulting from low back pain (based on data from Clinical Standards Advisory Group<sup>8</sup>).

Fourth, the primary focus of health care for nonspecific LBP should change from pain relief alone to an equal emphasis on control of pain and overcoming activity limitation. Low back pain and disability are equally important, and both must be managed simultaneously. We cannot wait until pain has gone before starting rehabilitation. The best method of achieving lasting relief of pain is to get the patient back to normal activity. But recovery may not mean the complete absence of pain. Residual symptoms may remain or pain may recur. The natural history of nonspecific LBP is that it is a recurrent problem. The patient must be given accurate information and advice and develop realistic expectations.<sup>35</sup> The patient must share responsibility with the therapist or practitioner for his or her own recovery and continued treatment.

Fifth, the emphasis of physical therapy for nonspecific LBP should change from symptomatic methods,<sup>21,30</sup> which have been shown to be ineffective,<sup>22</sup> to early activation and restoration of function, as in all other musculoskeletal conditions. This requires a fundamental shift in physical therapy practice and resources.

Sixth, the longer a person is out of work because of LBP, the lower that person's chance to return to work (Figure 3).<sup>26</sup> Once a person is out of work because of LBP for 6 months, that person only has a 50% chance of returning to his or her previous job. Once a person is out of work for 2 years, he or she is unlikely to get reemployed in the current economic situation. Physicians, therapists, and practitioners should be more conscious of the dangers of chronicity. There should be a fundamental shift in resources to provide effective management at an early stage to prevent chronicity rather than the rather expensive but relatively ineffective management of established pain and disability.

Seventh, one of the clear goals of health care for nonspecific LBP should be to maintain patients at work or

return them to work as rapidly as possible.<sup>15</sup> Clinical treatment and the information and advice given to patients should be based on knowledge and understanding of the patient's work situation. There should be much closer communication and liaison between health care and the work place. Health care is not complete or wholly successful, and clinical responsibility is not fulfilled until the patient is returned to work.

Eighth, the aim of health care to control pain and restore the patient to normal activity is different from, and sometimes in direct conflict with, the need for medical certification for social support or compensation.<sup>15</sup> Responsibility for clinical management should be separate from administrative decisions on compensation. The physician or practitioner who is caring for the patient should not be the one who provides medical certification for compensation.

## Conclusion

Back pain is a 20th century health care disaster. There is wide agreement that most current health care for nonspecific LBP is inappropriate and ineffective. We need a fundamental change in clinical management of LBP in line with recent clinical guidelines. We also need fundamental reorganization of the health care system to deliver that improved management.

## Acknowledgment

The author thanks Dr. Dan Cherkin for assistance in tracing US statistics. The UK statistics are analyzed with permission from the Clinical Standards Advisory Group.

## References

- Allan DB, Waddell G. An historical perspective on low back pain and disability. *Acta Orthop Scand* 1989;60:1-23.
- Bigos S, Bowyer O, Braen G, et al. Acute low back problems in adults. Clinical Practice Guideline No. 14, AHCPR Publication No. 95-0642, Rockville, MD: Agency for Health Care Policy and Research, Public Health Service, US Dept of Health and Human Services 1994:1-160.
- Brown T. On irritation of the spinal nerves. *Glasgow Med J* 1828;1:131-60.
- Burton AK, Tillotson KM, Main CJ, et al. Psychosocial predictors of outcome in acute and subchronic low back trouble. *Spine* 1995;20:722-8.
- Carey TS, Garrett J, Jackman A, et al. The outcomes and costs of care for acute low back pain among patients seen by primary care practitioners, chiropractors and orthopaedic surgeons. *N Engl J Med* 1995;333:913-7.
- Cherkin DC, Deyo RA, Wheeler K, et al. Physician variation in diagnostic testing for low back pain. Who you see is what you get. *Arthritis Rheum* 1994;37:15-22.
- Clinical Standards Advisory Group Report on Back Pain. London: HMSO, 1994:1-89.
- Clinical Standards Advisory Group. Epidemiology Review: The epidemiology and cost of back pain. Annex to the CSAG Report on Back Pain. London: HMSO, 1994:1-72.
- Coste J, Delecoeuillerie G, Cohen de Lara A, et al. Clinical course and prognostic factors in acute low back pain: An in-

- ception cohort study in primary care. *Br Med J* 1994;308:577-80.
10. Coulter A, Bradlow J, Martin-Bates C. Outcome of general practitioner referrals to specialist out-patient clinics for back pain. *Br J Gen Pract* 1991;41:450-3.
  11. Deyo RA, Cherkin D, Conrad D, et al. Cost, controversy, crisis: Low back pain and the health of the public. *Annu Rev Public Health* 1991;12:141-56.
  12. Deyo RA, Diehl AK. Psychosocial predictors of disability in patients with low back pain. *J Rheumatol* 1988;15:1557-64.
  13. Deyo RA, Tsui-Wu Y-J. Functional disability due to back pain. *Arthritis Rheum* 1987;30:1247-53.
  14. Erichsen JE. On railway and other injuries of the nervous system. London: Walton & Maberly. 1866.
  15. Fordyce WE (ed). Back pain in the workplace: Management of disability in non-specific conditions. Seattle: IASP Press, 1995:1-75.
  16. Frymoyer JW, Durett CL. The economics of spinal disorders. In: Frymoyer JW, ed. *The Adult Spine: Principles and Practice*, 2nd ed. Philadelphia: Lippincott-Raven, 1997:143-150.
  17. Frymoyer JW, Pope MH, Clements JH. Risk factors in low-back pain. *J Bone Joint Surg* 1983;65A:213-8.
  18. Hall H, McIntosh G, Wilson L, et al. The spontaneous onset of back pain. Presented to ISSLS, Helsinki, June 18-22, 1995.
  19. Hart LG, Deyo RA, Cherkin DC. Physician office visits for low back pain. *Spine* 1995;20:11-9.
  20. Hickman M, Mason V. The prevalence of back pain. A report prepared for the Dept of Health by the Office of Population Censuses and Surveys, Social Survey Division, based on the Omnibus Survey, March, April, June 1993. London: HMSO, 1993:1-24.
  21. Jette AM, Smith K, Haley SM, et al. Physical therapy episodes of care for patients with low back pain. *Phys Ther* 1994;74:101-10.
  22. Koes BW, Bouter LM, Beckerman H, et al. Physiotherapy exercises and back pain: A blinded review. *Br Med J* 1991;302:1572-6.
  23. Leino PL, Berg MA, Puschka P. Is back pain increasing? Results from national surveys in Finland. *Scand J Rheumatol* 1994;23:269-76.
  24. Lethem J, Slade PD, Troup JDG, et al. Outline of a fear-avoidance model of exaggerated pain perception. *Behav Res Ther* 1983;21:401-8.
  25. McCormick A, Fleming D, Charlton J. Morbidity statistics from general practice. Fourth national study 1991-1992. Office of Population Censuses and Surveys Series MB5 No. 3, London: HMSO, 1995:1-366.
  26. McGill CM. Industrial back programs: A control program. *J Occup Med* 1968;10:174-8.
  27. Mixter WJ, Barr JS. Rupture of the intervertebral disc with involvement of the spinal canal. *N Engl J Med* 1934;211:210-5.
  28. Royal College of Radiologists. Making the best use of a department of clinical radiology: Guidelines for doctors. Third Edition, London: RCR, 1995:1-96.
  29. Shekelle PG, Markovich M, Louie R. Comparing the costs between provider types of episodes of back pain care. *Spine* 1995;20:221-7.
  30. Sweetman BJ, Heinrich I, Anderson JAD. A randomized controlled trial of exercises, short wave diathermy and traction for low back pain with evidence of diagnosis-related response to treatment. *J Orthop Rheumatol* 1993;6:159-66.
  31. Taylor H, Curran NM. *The Nuprin Pain Report*. New York: Louis Harris & Associates, 1985:1-233.
  32. Taylor VM, Deyo RA, Cherkin DC, et al. Low back pain hospitalization: Recent United States trends and regional variations. *Spine* 1994;19:1207-13.
  33. Thomas HO. *Contributions to surgery and medicine*. London: Lewis, 1874.
  34. Virchow R. *Die Cellular pathologie in Ihrer Begrundung auf physiologische und pathologische*. Berlin: A Hirschwald, 1858.
  35. Von Korff M, Deyo RA, Cherkin D, et al. Back pain in primary care: Outcomes at one year. *Spine* 1993;18:855-62.
  36. Von Korff M, Dworkin SF, Le Resche LA, et al. An epidemiologic comparison of pain complaints. *Pain* 1988;32:173-83.
  37. Waddell G. Biopsychosocial analysis of low back pain. *Clin Rheumatol* 1992;6:523-57.
  38. Waddell G, Somerville D, Henderson I, et al. A fear-avoidance beliefs questionnaire (FABQ) and the role of fear-avoidance beliefs in chronic low back pain and disability. *Pain* 1993;52:157-68.

*Address reprint requests to*

Professor Gordon Waddell, DSc, MD, FRCS  
*The Glasgow Nuffield Hospital*  
*Glasgow G12 0PJ*  
*Scotland*