

The Physical Medicine and Rehabilitation Algorithm for Managing Low Back Pain and Disability

Mark J. Sontag, M.D.



An algorithm for managing low back pain and disability has been developed and applied successfully to an industrially injured population. The algorithm is necessary to facilitate early return to work and limit the spiraling medical/legal costs associated with industrial low back injuries.

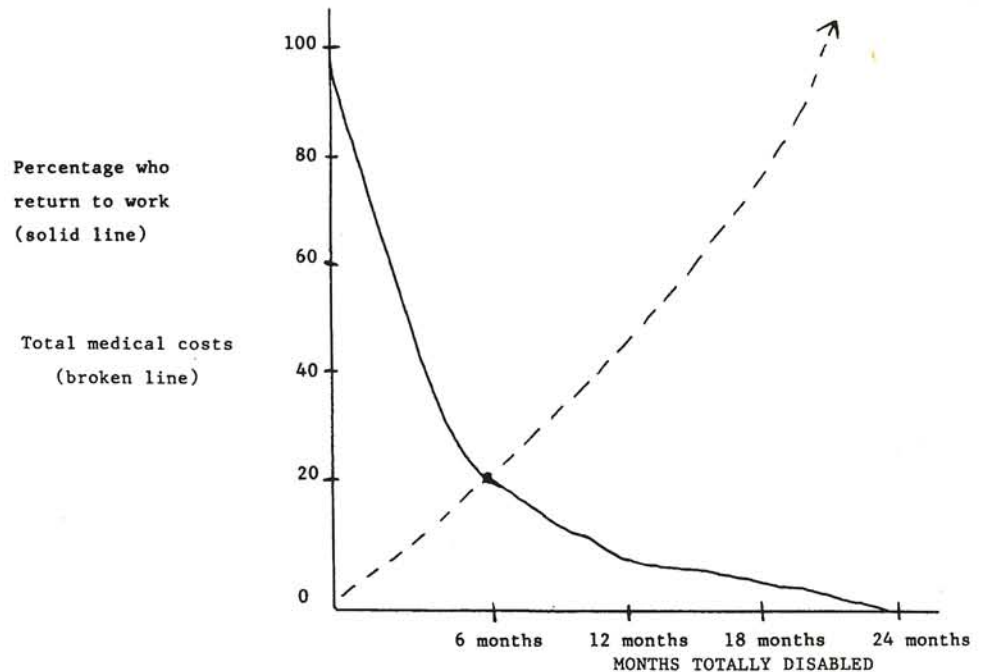
Low back pain is the most frequent cause of disability in persons under age 45 years, and the third most frequent cause in the 45-64 year old age group.¹ Currently there are 2.6 million Americans temporarily disabled and 2.6 million Americans permanently disabled by chronic low back pain.² Approximately 2% of all workers injure their backs annually.³ The

majority of injured workers return to work within 60 days, yet 2 - 3% develop chronic disabling complaints.⁴ Low back disability from 1960 to 1980 increased 14 times faster than the actual population growth.⁵ Social Security disability awards from 1957 to the mid 1970's increased 347% for all conditions, yet increased 2,680% for back pain.⁶ Incredibly, 10% of all the low back injuries accounted for 80% of the total costs.⁷ It is estimated that 50% of individuals disabled due to low back pain have absolutely no objective findings.

Figure I. illustrates that as the length of time off work increases, medical/legal and disability costs accelerate. This increasing expenditure does not

Figure I

RETURN TO WORK AND TOTAL COSTS
IN RELATIONSHIP TO LENGTH OF TOTAL DISABILITY



result in improved outcome (return to work), and might actually contribute to prolonging the disability. The ability to ever work again decays rapidly after six months. If an injured worker has not returned to work within two years of the injury, he/she will never work again.⁸ The following treatment algorithm necessitates resolution of work status at three months post injury, prohibiting the development of iatrogenic or system-related permanent disability.

Table I. outlines the algorithm for managing low back pain and disability. Patients are managed according to their clinical presentation and length of time post injury. Neuro positive implies a diminished or increased reflex and/or true motor weakness or atrophy (does not include sensory findings, as these are often subjective). If a patient is seen for the first time with pain that has lasted more than six or twelve weeks, one would still start with Step A and progress to Steps B and C.

All patients go through Step A. This step ensures that every patient has a clinical diagnosis based on a thorough history and physical exam which is often supplemented with routine lumbo/sacral x-rays. Intervention is aggressive and timely, emphasizing early activity (maximum of one day of bed rest), exercises specific for the injury, limited modalities, and immediate back education and ergonomic instruction. The therapy should be directed at

reducing pain and inflammation, restoring spinal function, eliminating obstacles to returning to work, and targeting a realistic return to work date.

If after six weeks the injured worker is not able to return to work, then Step B begins. The clinician now must definitely establish a diagnosis us-

ing all the sophisticated diagnostic tools available to him/her. At this point the system needs to identify the legitimately injured worker and expose the malingerer or the patient motivated by secondary gain. Advanced diagnostics, including imaging studies (MRI scan, CT scan, bone scan, flexion/extension x-rays, discograms), neurophysiology stud-

Table I

Algorithm for Managing Low Back Pain and Disability

	LBP Only	LBP & leg pain, neuro negative	LBP & leg pain, neuro positive
Pain < 6 weeks	A	A	A & B
Pain > 6 weeks	B	B	B & D
Pain > 3 months	C	C	C & D

Step A - Reduce Pain and Restore Function

1. Accurate working diagnosis based on hx, PE, x-rays
2. Early intervention (exercise is diagnosis specific)
3. Back education/ergonomics

Step B - Establish Diagnosis

1. Advanced diagnostics
2. Diagnostic/therapeutic injections
3. Advanced stabilizer training

Step C - Resolution

1. Emphasize function, not pain
2. Functional or work capacity evaluation
3. RTW, P&S (voc rehab), IME
4. Psychological evaluation

Step D - Surgical Considerations

1. Progressive neurological deficiency
2. Intractable pain

ies (EMG, SSEP), and laboratory studies should enable the clinician to isolate a pathophysiologic pain generator. Diagnostic and therapeutic injections (epidural, facet injection, selective nerve root injection) can isolate the actual pain generator, particularly when the sophisticated diagnostic studies have identified many abnormal structures (i.e. multi-level degenerative disc protrusion). The cortisone injections will often provide symptomatic relief which can facilitate rehabilitation, restore function, and contribute to return to work. They also provide an insight into pain tolerance, pain behavior, and non-physiologic responses. Often, additional lumbar spine stabilization instruction is required for the more seriously injured worker.

At 12 weeks post-injury, Step C, resolution of the injury and workers' compensation claim, must be in sight. California state law mandates that at 90 days post-injury the clinician must determine if the worker will return to his/her regular and customary work, or is a candidate for vocational rehabilitation. Assuming the patient has received appropriate treatment through Steps A and B, ongoing therapy to reduce pain will not be beneficial in altering eventual outcome. Therapy, home exercises, or a gym program should emphasize functional goals, such as increased lifting capacity or sitting tolerance, in order to facilitate return to work. Occasionally a functional or work capacity evaluation and a work hardening program might facilitate

return to work.⁹ Psychological evaluations might be necessary in identifying psychiatric or psycho-social barriers to recovery.

At three months post-injury, the injured worker has either returned to work, entered vocational rehabilitation, or has been deemed capable of working despite subjective complaints not substantiated by objective findings or diagnostic tests (Independent Medical Examination).

Rarely will an injured worker require surgical intervention, Step D. Those individuals with a progressive neurological deficit which correlates with anatomical imaging studies should undergo prompt decompression. The majority of spinal surgery, however, is performed on the basis of subjective pain complaints. Only those individuals who have a definitive pathophysiologic pain generator which is repetitively alleviated temporarily with injections, who have no psychological risk factors, and who have not responded to Steps A, B, or C, should be considered for surgery.

In summary, the above physical medicine and rehabilitation algorithm facilitates accurate diagnosis, early intervention, and early return to work while limiting total medical/legal costs and long term disability.

References

- (1) Andersson, G.B.J.: Low Back Pain in Industry, *Spine* 6:53-56, 1981.
- (2) Prevalence of Selected Impairment. United States - 1977. Hyattsville, MD, National Center for Health Statistics, 1981. (DHHS publication [PHS], series 10, No. 134, 1987).
- (3) Alston, W. et al. A Quantitative Study of Muscle Factors in the Chronic Low Back Syndrome. *Journal American Geriatric Society* 14:1041-1047, 1966.
- (4) Frymoyer, J.W.: Back Pain and Sciatica. *New England Journal of Medicine* 318:291-300, 1988.
- (5) Cats-Baril, W.L., Frymoyer, J.W.: Identifying Patients at Risk of Becoming Disabled Because of Low Back Pain. *Spine* 16:605-607, 1991.
- (6) Fordyce, W.: Back Pain, Compensation, and Public Policy Prevention in Health Psychology. Edited by Rosen, J. Solomon, L. Hanover, VT: University Press of New England, 1985, pp. 127-140.
- (7) Spengler, D.M.: Back Injuries in Industry: a Retrospective Study. *Spine* 11:241-245, 1986.
- (8) Beals, R.K., Hickman, N.Y.: Industrial Injuries of the Back and Extremities: Comprehensive Evaluation - An Aid in Prognosis and Management. *JBJS [Am]S4A*:1593-1611, 1972.
- (9) Sontag, M.J.: Functional Assessment of the Spinal Pain Patient. *Physical Medicine and Rehabilitation: State of the Art Reviews*. Vol. 4, No. 2, June 1990.