Impact on Placement and Range of Job Alternatives
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In general, any spinal cord injury will substantially reduce the range of job alternatives available to the client. However, specific vocational handicaps can be anticipated based on the level of cord damage. Individuals with low-level lesions should be able to return to gainful employment, but most do not, indicating that factors other than physical disability influence eventual return to work. Moreover, external factors such as employer discrimination and reluctance to hire the handicapped can affect an individual's potential for placement.

Despite federal laws that attempt to prevent discrimination on the basis of disability, such discrimination does exist. Many employers are uncomfortable with hiring the disabled because they fear an impact on insurance rates and other employees in the firm, changes in work site for accessibility, and a general feeling of discomfort regarding working with and being around a handicapped individual. Many of these fears can be allayed through proper employer education but there will always be a segment of industry and business that will not consider hiring a handicapped worker. Nothing in the law requires an employer to hire an individual when major changes in the work site or major exceptions to company policy must be made for the new employee to successfully stabilize on the job. There are numerous factors that affect the spinal cord injured person’s ability to be successful at achieving employment. A discussion of the changing socioeconomic problems confronting spinal cord injured people also can be reviewed by Carleton Pilsecker. James Crouse has studied extensively employment after spinal cord injury. A discussion of this topic can be found in the Archives of Physical Medicine and Rehabilitation Volume 73, February 1992, pages 163 through 169.

In discussing the placement of the spinal cord-injured individual, person who has no experience in the actual job placement of these patients will quickly rattle off state and federal laws against discrimination. However, employment discrimination is, in reality, only a small part of the problem involved in placing the vocationally handicapped spinal cord-injured patient.

Some of the basic problems in placement of the spinal cord injured are: the substantial reduction in the range of job alternatives available; limited educational and vocational skills to offer the labor market; a lack of professional assistance in selective placement; the lack of employer education programs; and the need for re-engineering the job site or specific job tasks to meet the physical needs of the individual. For these reasons, placement of the spinal cord-injured tends to be difficult, although by no means impossible. The level of lesion and the type and number of complicating factors will have a direct bearing on placement opportunities. Patients who are not on a proper bowel-management program or who cannot maintain a proper bowel- or bladder-management program may find their employment potential adversely affected. The patient who is bowel-
incontinent on a frequent basis or who must leave the job site repeatedly throughout the day because of bowel- or bladder-management programs may find an employer unwilling to cooperate.

Decubitus ulcers, because of their prolonged healing times, have a devastating impact on a worker's job longevity. Urinary tract infections and kidney stones that remove the individual from the job site for treatment also restrict or limit the potential for the individual to maintain gainful employment. Psychological factors, including work attitude and/or the development of adaptive skills, can also play a critical part in employment longevity.

The key to successful placement of the spinal cord-injured patient is appropriate professional assistance in career guidance and exploration and selective placement. Although the range of job alternatives is severely reduced, there are jobs within the competitive labor market, which can be considered, particularly for patients with lower level lesions. The restricted range of alternatives is even greater for any patient whose lesion is at a level that involves the upper extremities. Those spinal cord patients who also have back problems at or above the level of lesion which result in substantial chronic pain may be combining with their other vocational handicaps all of the problems which go with the back-injured individual.

However, once selective placement has been accomplished, spinal cord-injured individuals frequently make excellent employees. They tend to be loyal and recognize the difficulty they face in making a shift to alternative employment. Statistics generally suggest that attendance on the job and tardiness are less of a problem with these and other handicapped individuals than with the non-handicapped population.

**Vocational Handicaps by Level of Lesion**

The vocational implications of spinal cord injury are as varied as the levels of neurological impairment and completeness of the lesion. As with any injury of a catastrophic or non-catastrophic nature the first step in determining vocational implications is to assess the existence of vocational handicaps. It is possible to provide only a general overview of what can be anticipated in terms of the vocational handicaps resulting from spinal cord lesion in this section. Each case must be judged on an individual basis but a general listing of vocational handicaps for occupationally significant characteristics eliminated by specific levels of spinal cord lesion is provided in the following sections.

**Cord Lesions at S-2 through T-6**

Vocational handicaps include loss of the following skills and abilities:

1. Eye-hand-foot coordination to move levers, pedals, and steering mechanisms
simultaneously;
(2) Stamina to remain standing for long periods of time;
(3) Stamina to work long and irregular hours when required;
(4) Working ability in eye-hand-foot coordination to make graceful movements;
(5) Ability to perform work requiring repetitive bending, kneeling, stooping, crouching, crawling, and climbing, or balancing; and
(6) Ability to perform work requiring lifting, carrying, pushing, and/or pulling at levels involving heavy or very heavy work activity.

It is easy to see that of approximately 313 occupationally significant characteristics and a broad range of physical demands, only a few are directly eliminated by a spinal cord lesion at the level of S-2 through T-6: for example, jobs requiring the ability to independently ambulate and/or walk and stand for prolonged periods would be directly eliminated from the individual's repertoire of vocational alternatives. However, the actual potential to return to work is as directly affected by the individual's ability to develop educationally and vocationally as it is by actual physical limitations. Individuals with spinal cord lesions at this level (assuming no other substantial limiting factors) should be able to return to gainful employment. Nevertheless, statistics from the NSCIDRC suggests that only twenty percent of all spinal cord cases were working by the third post accident year. Twenty-seven percent of the incomplete paraplegics and 22% of the complete paraplegics were employed. Even with the addition of homemaker and student to the definition of working or otherwise productively occupied individuals, only 47% of all spinal cord injuries studied fell into this category by the third post-accident year. This seems to suggest that a variety of other factors besides physical disability play an important part in the eventual return to work. Certainly, the degree to which the individual has adjusted to the disability and his or her psychosocial environment is a part of the basis upon which post injury activity is founded.

**Cord Lesions at T-5 through C-6**

Substantially greater vocational handicaps exist with this spinal cord-injury population owing to involvement of the upper extremities, including the intercostals; the interossei (which spread and close the fingers); opponens pollicis (which controls the thumb and small finger opposition); extensor digitorum longus (for finger extension); triceps (for elbow extension); pronator teres (for wrist pronation); extensor carpi radialis (for wrist dorsiflexion); biceps (for elbow flexion); and deltoid (for shoulder flexion and abduction). More serious physical complications limit functioning to such a degree that they may even impede work tasks that would otherwise appear to be primarily cognitively based. For example, although a patient may have the intellectual or cognitive ability to learn and apply photographic processes and techniques, higher-level lesions may result in physical problems that directly impede the individual's ability to perform the tasks involved in such activity. Additional examples of vocational handicaps that may occur within these levels of lesions include:
(1) The ability to apply various techniques in cosmetology and barbering;
(2) Ability to exercise necessary craft or artistic skills when required in demonstrating and instructing;
(3) Ability to shed inhibitions in order to perform in public;
(4) Ability to apply the theory and techniques of food preparation;
(5) Ability to apply certain types of craft techniques, processes, and principles;
(6) Ability to operate a cash register, calculator, or similar office machine;
(7) Ability to adjust to fluctuating circumstances;
(8) Ability to perform work done by subordinates and to train new employees when required (depending upon the selectiveness of the occupation);
(9) Ability to adjust to different work environments;
(10) Dexterity with the fingers and hands;
(11) Eye-hand coordination;
(12) Eye-hand-foot coordination to move levers, pedals, and steering mechanisms simultaneously;
(13) Finger and hand dexterity to position feed or otherwise work with objects in a standardized manner;
(14) Finger and manual dexterity and motor coordination as required to use surgical instruments and/or apparatus with precision and speed;
(15) Finger dexterity for administering injections and performing autopsies;
(16) Finger dexterity and eye-hand coordination to use test apparatus or precision instruments;
(17) Finger dexterity and eye-hand coordination for taking dictation or typing;
(18) Finger dexterity for sewing;
(19) Finger dexterity and manual dexterity to use kitchen tools, appliances, and utensils;
(20) Finger dexterity and eye-hand coordination to use hand tools and manually controlled power tools when executing work to close tolerances;
(21) Precision and accuracy in working to close detail;
(22) Physical strength, agility or stamina;
(23) Stamina to remain standing or walking for prolonged periods;
(24) Stamina to maintain high levels of concentration, alertness, and performance during prolonged periods (in selected cases); and
(25) Stamina to work long and irregular hours when required.

**Cord Lesions at C-5 and Above**

C-5 tetraplegics may be able to pursue gainful employment, given appropriate rehabilitation guidance and substantial personal motivation. With the C-5 tetraplegic, all of the muscle groups described in the previous sections are involved, with greater weakness or paralysis of the deltoids than may be found in the C-6 lesion. As the lesions continue up the cord (C-4, C-3, C-2 and C-1), the potential for a return to gainful employment is substantially less. Of all tetraplegics with incomplete lesions, only 18 percent had returned to work by the end of year three while for tetraplegics with complete lesions, only 10 percent had returned to work by the end of the same period. All of the vocational
handicaps outlined are pertinent to these higher-level lesions, and many additional cognitive tasks may be eliminated because of a patient's very poor physical functioning level.

**Conclusion**

Nothing in this reading assignment should be taken to imply that an individual may not be able to develop vocationally to a point greater than may be suggested in this review. General trends have been presented, individual cases must be assessed separately with consideration given to a variety of factors including the age, education, work history, transferable skills, and level of lesion and completeness of lesion of the specific patient. (See Chart 1 for vocational handicaps for specific impairments.)

**Diminution of Earning Capacity**

The calculation of diminution of earning capacity in the spinal cord-injured patient is no different than the calculation for any other type of non-catastrophic or catastrophic disability. For additional information in this regard the reader should refer to previous case examples.

**Availability of Institutional Care**

Few facilities in the United States offer long-term care for the spinal cord-injured. Where institutionalization is necessary, care is usually provided by nursing homes with no adequate facilities for rehabilitation.

Although long-term or permanent institutional care is generally inappropriate for spinal cord-injured patients, institutionalization may represent the only alternative for older patients or patients with higher level lesions, particularly where costs are a critical deciding factor. In such cases, the primary facilities available are nursing homes, although they generally represent a wholly inadequate atmosphere and rehabilitation setting for such patients. They should be considered as a last resort only, and should not be considered solely on the basis of funding.

Facilities exist for temporary care of the spinal cord patient. These are independent living facilities designed to train the individual in advanced techniques for maintenance of activities of daily living on an independent basis. They typically call for no more than six to eighteen months of residence. Of late there has been a great deal of discussion about finding alternative funding sources for the development of long-term care facilities for upper level lesions where independence is promoted and care provided as necessary.

To view Chart 1, “Vocational Handicaps Associated with Spinal Cord Injuries”,

Impact on Placement and Range of Job Alternatives 5
click here (please see attached .pdf document “LCP2- Lesson 3-Chart 1- Vocational Handicaps Associated With Spinal Cord Injuries”)

Works Cited:

Carleton Pilsecker, (Full Citation Missing).


Florida’s Worker’s Compensation Medical-Surgical Fee Schedule; Florida Relative Causes Schedule; Florida Hospital (Orlando, Florida) Hospital Utilization Study October to December 1981.

National Spinal Cord Injury Data Research Center. (Full Citation Missing).