

Medical Management and Rehabilitation in the Workplace: Emerging Issues¹

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INTRODUCTION

The articles in this issue were produced in conjunction with a symposium entitled "Ergonomic Barriers to Rehabilitation and Employment: A Symposium on Models and Methods" hosted by the University of Michigan Rehabilitation Engineering Research Center: Ergonomic Solutions for Employment in Ann Arbor, Michigan on May 19 and 20, 1999. This symposium was concerned with helping people overcome physical barriers to employment with special emphasis on work-related musculoskeletal disorders.

Manual work continues to be an important part of our industrial economy. A strong economy and record low unemployment rates of 4% have placed particularly heavy demands on the American work force (1). Contributing to this trend is the growth of small industries that often rely on manual work methods, as opposed to automation, to achieve high levels of productivity with minimal capital investment. Manual labor often affords employers much more flexibility in dealing with product mixes and schedules than can be achieved with automation. In addition to the obvious economic necessities, work is also an important part of self-fulfillment.

Unfortunately, there are still many in our society who need and want jobs, but are unable to obtain them as a result of congenital conditions, diseases or accidents. According to Kraus *et al.* (2), the number of noninstitutionalized people in the United States with a work disability is estimated to be 16.9 million, which represents 10.1% of the working age population (16–64 years old). As might be expected, the prevalence of work disabilities increases from 4% for the 16–24 age range to 23% for the 55–64 age range. The prevalence of severe work disability increased from 2.5% in the 16–24 age group to 17.7% of those in the 54–65 range. According to LaPlante *et al.* (3), the unemployment

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rate is twice as high for persons with disabilities, and this is not due solely to their disability. In addition, 30% of people with work disabilities live below the poverty level versus 10% percent of people without work disabilities. These trends can only be expected to continue unless steps are taken to help employers understand that just because some persons have or have had diseases and injuries, they should not be excluded from the work force.

Why Musculoskeletal Disorders?

In some cases exposure to workplace risk factors causes or contributes to workers' injuries or illnesses. According to the Bureau of Labor Statistics, BLS (4), there were 1,833,380 lost workday injuries and illness in 1997. The greatest fraction of these cases, 52.5%, involve musculoskeletal sprains, strains, carpal tunnel syndrome, tendonitis and soreness and pain. Because both work and personal factors may contribute to some cases, these conditions are sometimes referred to as "work-related musculoskeletal disorders," or WMSDs (5).

In addition to employers' concerns for the well being of their work forces, there are legal issues to be addressed. Section 5A1 of the 1970 Occupational Safety and Health Act "General Duty Clause" has been used to fine employers for unsafe working conditions as a result of high incidence of musculoskeletal disorders (6). This act has resulted in numerous citations against employers for repetitive motion disorders. Late in 1999, OSHA (7) proposed an Ergonomics Program regulation to specifically address WMSDs. Some key components of this proposal are provisions for identifying and controlling WMSD risk factors, identifying WMSDs, and medical management of affected workers. The proposed medical management program can be characterized in part as a rehabilitation program. This is because it requires employers and health care providers to work together to determine the contribution of work to each case, to define work restrictions, and to find ways of modifying jobs so as to facilitate return to work of affected workers and to prevent future occurrences. In addition to reducing the incidence and severity of musculoskeletal disorders in the workplace, the proposed medical management program could help to identify and overcome barriers for other persons with special needs due to pre-existing conditions and help to avoid conflicts arising under the Americans with Disabilities Act.

The importance of medical management/rehabilitation in the control of disability associated with musculoskeletal disorders was supported by testimonies from employers with successful ergonomic programs at OSHA stakeholder meetings (7) and by published studies (8–13). A common feature of these programs is that they all used a team approach, which included health care providers and employers, to obtain and compare information about affected workers and potential jobs and for determining work restrictions and accommodating affected workers. The importance of the team approach has been previously described by Feuerstein (14). Although a team approach provides access to many of the necessary resources for case management/rehabilitation, McKenzie *et al.* (8) described examples where so-called light duty jobs were found by the team of physician and human factors specialist to be more stressful than original jobs. Formal procedures are needed for evaluating workers and jobs and for determining work restrictions.

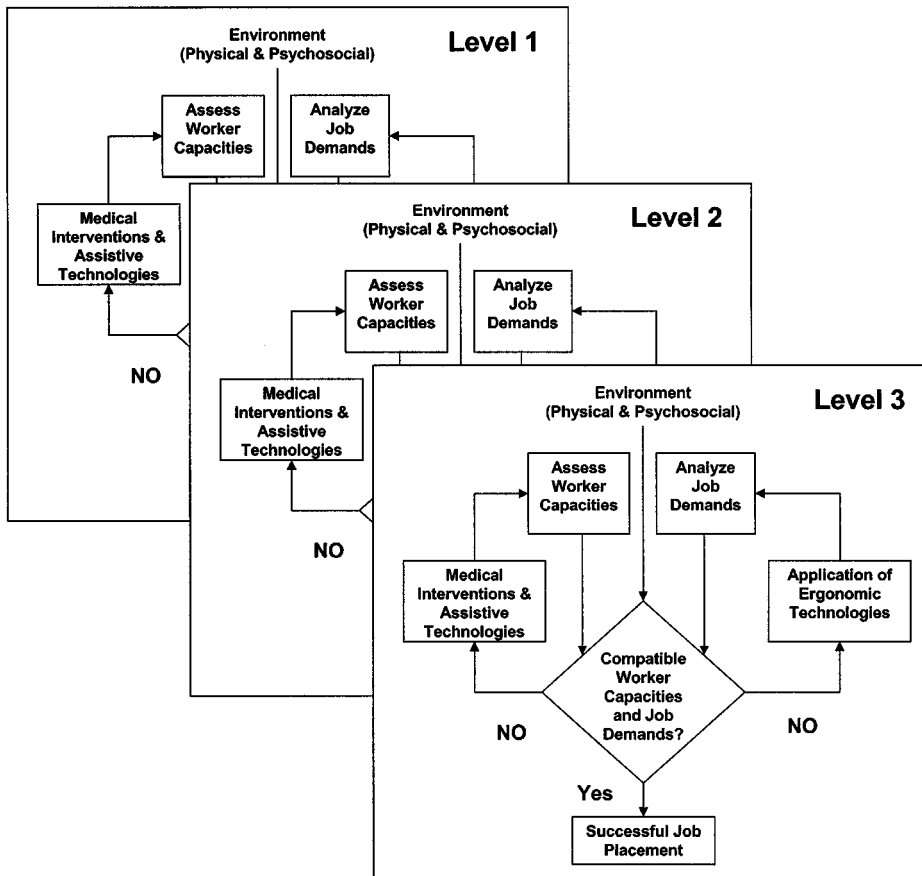


Fig. 1. Proposed hierarchical model of medical management/rehabilitation process provides breadth and depth as needed for identifying gaps between worker capacities and job demands and designing interventions.

A Conceptual Model

A conceptual model for describing the medical management/rehabilitation process is shown in Fig. 1. Such models are implicit in procedures described by Gilbert (15), Bridges (16), Nieuwenhijesen (17) and Weisman (18) for evaluating people and jobs and have been proposed by WHO (19) and IOM (20) for developing policies and organizing statistical data gathering. As do previous models, the model proposed in Fig. 1 includes various provisions characterizing worker capacities, job demands, and physical and social factors. The relationships between the worker, job, and environmental factors are primary determinants of peoples' ability to participate in a given work setting, as well as sustaining disability. Some of the previous models (16,17) specify fixed lists of worker, job, and environmental attributes that are compared one to one. These models tend to force a fixed level of detail on the process that in some cases is excessive and in other cases inadequate. This limitation can be overcome if the medical management/rehabilitation is treated as a

hierarchical process as shown in Fig. 1. Often, the starting point is to interview a worker or employer. Additional information can be enhanced by the inclusion of a medical opinion and a work site inspection; however, these will be most effective if they are tailored to the specific worker and job. For example, a health care provider probably would ask different questions of a patient with carpal tunnel syndrome than one with vision impairment. Similarly, a punch press job would be analyzed differently than a custodial job. The next level might involve a physical examination by a health care provider and analysis of the work place exposures using specialized tools. The final level of analysis includes laboratory tests of the worker and use of instrumental methods to evaluate the job. In each case, the evaluation measures would become increasingly specialized. Worker capacities and job demands are in some cases compared one-to-one, but in other cases one worker factor may be compared with two or more job factors, e.g., worker endurance may be compared with object weight, reach distance and frequency.

The proposed model is still under development and is presented here to provide a general overview of the process and to provide a framework for presenting the symposium. The symposium was conducted to gather a background about existing models and to gain input from other investigators working in the field. Some of these presentations are included in this special issue of the *Journal of Occupational Rehabilitation*.

THE SYMPOSIUM PAPERS

Butler (21) presents an overview of Workers' Compensation and describes some of the traditional economic concerns that influence the rehabilitation processes. One of the important findings of this paper is that "workers are not passive with respect to economic concerns." This raises questions about the validity of morbidity studies based on worker compensation claims. It also supports the need for well-defined case criteria. Beaton *et al.* (22) found that measurements of prevalence, overall disability, difficulty at work and pain interfering with work among newspaper reporters varied with different case criteria and were not directly comparable. This reinforces Butler's finding and speaks to the need to make sure all persons involved in the medical management/rehabilitation process, e.g., workers, health care providers, employers and insurance companies, understand what each means with the term "musculoskeletal disorders" and how it relates to the others. Amick *et al.* (23) found that people-oriented culture is strongly correlated with safety climate, ergonomic practices, and disability management; that ergonomics practices are correlated with safety climate and disability management; and that disability management is correlated with safety climate. This work supports the importance of strong "management commitment" and a well defined program structure. Feuerstein (24) conducted a 3-year longitudinal intervention program to reduce musculoskeletal impairment and disability among sign language interpreters. The program was targeted at 1) reducing musculoskeletal overexertion by reducing workload and biomechanical strain, while increasing flexibility and endurance through tailored exercise and pre-shift "warm ups" through instruction in certain strengthening and flexibility exercises, 2) improving the ability of workers to manage job stress and musculoskeletal pain, 3) reducing biomechanical exposure through work organization and work style changes, 4) reducing organizational sources of stress by improving supervisor's managerial skills to address work-related upper extremity problems and provide increased

supervisor support, and 5) educating workers and supervisors regarding the optimal utilization of health care resources. The program was associated with substantially reduced reporting of upper extremity problems, reduced indemnity costs, and reduced health care costs.

Faucett *et al.* (25) examined the contribution of occupational and non-occupational factors to work status of community-based patients with carpal tunnel syndrome (CTS) based on criteria published by NIOSH. The study recruited a community-wide sample of patients and included cases that were non-occupational as well as occupational in etiology. They found that continuing to work was associated with work modifications, a company with 250 or fewer employees, and infrequent use of force. They also found that loss of work was associated with job strain but not receipt of Workers' Compensation. This last result may on the surface appear to contradict Butler's finding, but the data were based on a plant-wide study of many disorders, while Faucett's was based on a narrowly defined medical condition from different employers. Gates (26) provides an overview of the social process associated with disability and returning to work, which highlights the importance of the supervisor's role. Although the examples are based on cases with psychiatric diagnoses, her recommendations are equally applicable to musculoskeletal cases. Important components of the return to work process include providing and interpreting information about the workplace for the worker, securing appropriate accommodations, and training the *supervisors and coworkers* on how to accommodate. This collection of papers should provide a valuable resource for those persons concerned with facilitating a safe and effective return to work in employees with a number of persistent health problems that could present a barrier to work re-entry.

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