A Case Management Tool for Occupational Health Nurses

DEVELOPMENT, TESTING, AND APPLICATION

by Judy A. Mannon, MS, RN, COHN, CIRS, CCM, Karen M. Conrad, PhD, MPH, RN, Carolyn L. Blue, MS, MSN, RN, and Sharon Muran, MS, RN(C), COHN

Today, occupational case management is implemented by a variety of occupational health professionals, including occupational health nurses. For example, occupational health nurses are exploring employee satisfaction with occupational case management (Conbere, 1992). At this time, however, empirical research is limited, and measurement tools to accurately document effectiveness are virtually nonexistent. According to Marschke (1993), existing case management research is limited to descriptive data and usually focuses on only one of the three case management components: structure, process, or outcome.

This article describes the development and testing of a nursing case management tool that may be used by occupational health nurses to facilitate appropriate health care services for injured workers. Donabedian's (1980) quality assessment framework of structure, process, and outcome was used to guide tool development. To test how the nursing case management tool may be applied, the authors conducted a retrospective chart review on 61 musculoskeletal firefighter injury episodes.

The outcome measure was length of disability for each firefighter injury. A six step approach to the case management process is presented with occupational health nursing activities offered in each step. The article concludes with recommendations for implementation of a case management program.

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INJURY DISABILITY CASE MANAGEMENT

Among United States workers, over a half million take an estimated 5 months leave from work each year due to a physical disability, with only 48% of them returning to work (Tate, 1992). Few studies have addressed length of disability

following an injury, particularly musculoskeletal injuries.

Studies suggest that when rehabilitation interventions are established early, the injured worker may indeed return to work earlier (Haig, 1990). Haig (1990) suggested three strategies that may decrease injury disability and facilitate return to work: develop a return to work plan with the injured employee; identify factors that may delay return to work; and establish an employer/medical provider relationship as soon as possible. These strategies parallel the components of the case management process identified by Conbere (1992) and others as an effective management technique to decreasing losses following injury.

Albrecht (1992) noted that, although a wide variety of professionals in the case management business use similar disability concepts, they operationally define them differently. The Americans With Disabilities Act defines disability as "a physical or mental impairment that substantially limits one or more of an individual's major life activities" (US Department of Justice, 1991).

The insurance industry and most state workers' compensation laws define disability in relationship to one's ability to work. Workers' compensation benefits are paid weekly based on an average weekly wage and lost work days (Alliance of American Insurers, 1988).

One approach to managing injuries has been the development of injury case management guidelines. Two nationally known length of disability guidelines make recommendations about the expected amount of time off (in weeks) from work based on diagnoses, injured body part, or ICD-9 codes (Doyle, 1991; Reed, 1991).

Reed (1991) acknowledged that defining disability is complicated and encompasses not only the physiologic problem but also the psychosocial issues. He goes on to say that disability, as a complex issue, encompasses several aspects of a person's being. He refers to disability as "a state in which the individual is unable to perform his/her job at the same level of efficiency as before the illness or injury occurred."

In Reed's (1991) guidelines, a minimum and maximum length of disability is based on the experiences of occupational health professionals. The minimum length is defined as the time in which the majority of employees are able to work with accommodations or restrictions, while functioning at a lesser level of ability than prior to the injury or illness (Reed, 1991). Maximum length of disability is defined as the time when additional information is needed from health professionals to identify complications, possibly inappropriate treatment, or access to specialty treatment (Reed, 1991).

Doyle (1991) described a usual course of treatment for each non-complicated surgical and medical diagnostic code. He developed return to work guidelines by consulting with risk management professionals and health actuaries.

Both guidelines offer suggestions for a limited number of diagnostic codes when establishing an occupational case management return to work plan. However, care must be taken when using the guidelines not to rely solely on the documented, expected length of disability.

It seems reasonable that implementing an occupational health case management program early can help decrease the maximum length of disability. The occupational health professional must take a proactive approach to disability management.

This approach can be initiated by obtaining comprehensive injured employee information at the onset of the injury rather than at a maximum point in the treatment process, as suggested by Reed (1991). In most cases early intervention is likely to improve the return to work outcome (Tate, 1992).

The definitions noted above are only a few of the many definitions of disability that make the world of rehabilitation and return to work so complex and difficult to study and manage. Familiarizing oneself with the many definitions of disability is important in managing work related injuries.

Musculoskeletal Injury Disability

Musculoskeletal injuries are common among workers and costly to employers. Musculoskeletal back injuries represent 32% of compensable injuries and 42% of compensation costs (Peters, 1990). Nationally, musculoskeletal injuries affect approximately 50% of the working population (US Department of Health and Human Services, 1986). According to Leigh (1989), the number one injury reported among a sample of 1511 professions, ranging from crafts persons to professionals, was back injury and strains. Employers' costs for these injuries continue to escalate despite restructuring efforts by business and government.

While musculoskeletal injuries will not be eliminated in the work environment, several strategies have been developed to address this problem. One such strategy is a quality occupational case management model.

Firefighter Musculoskeletal Injuries

One worker group in need of injury disability case management is firefighters. Firefighters are one of the top three occupations experiencing musculoskeletal injuries (Karter, M.J. Jr, "Patterns of Firefighter Injuries, 1987-1988," unpub-

lished data, 1991; US Department of Health and Human Services, 1990). According to Karter ("Patterns of Firefighter Injuries, 1987-1988," unpublished data), 32% of the injuries that occurred to firefighters were identified as muscle pain, strains, sprains, dislocations, or fractures. These injury types were reported as a result of riding in an emergency vehicle, extinguishing fires, rescuing victims, and maintaining equipment.

Over 36% of the most frequently reported injuries were classified as strains and sprains affecting the trunk or back area. A total of 51.5% of strains and sprains were reported to affect the leg, foot, arm, and hand ((Karter, M.J. Jr, "Patterns of Firefighter Injuries, 1987-1988," unpublished data, 1991).

According to the *1990 Death and Injury Survey* published by the International Association of Firefighters (1990), lost work hours occur at a rate of 8.9 times greater per 100 firefighters than private industry workers. Due to the physical nature and high stress of the work associated with emergency situations, firefighters are at greater risk for injury than other physically demanding occupations, particularly musculoskeletal injuries (Karter, 1991).

CONCEPTUAL FRAMEWORK

The components of the case management process may be viewed in terms of structure, process, and outcome based on Donabedian's (1980) quality assessment definition. Donabedian's components provided the framework for development of the case management tool.

Structure is described as the physical setting, credentialing of professionals, and standards of practice (Conbere, 1992). Structure includes such factors as the employer's return to work policy, qualifications of staff, and resources available for case management. These structural issues drive the case management process. All these factors influence injury management and ultimately affect the length of disability outcome. Personal characteristics of the injured worker are also considered structural elements: demographics, employment history, and injury type.

Process refers to facilitating care, coordinating services, and solving day to day problems. Process also may include obtaining feedback from clients and team members about approaches to care (Henderson, 1988).

Outcome is the desired event that must occur in a predictable and timely order. In the instance of case management, outcome is defined as attainment of the return to work objectives. Examples of outcome measures can be demonstrated by length of disability, length of treatment, and employee/employer satisfaction.

Ideally, these outcome events are a collaborative effort developed with the client, the client's family, and all team members (Henderson, 1988). For example, team members facilitating care for an injured worker should include the nurse case manager, physician, social worker, discharge planner, physical therapist, occupational therapist, speech therapist, vocational counselor, psychologist, home care provider, insurance carrier, and attorney. Expenses and cost savings can be directly related to outcomes; however, objective data in this area are limited.

METHODS

Research Design

The researchers conducted a retrospective chart review of routinely charted clinical data among firefighters over a 4½ year period from 1988 to 1992. The reviewed charts were part of a larger study whose aim is to describe musculoskeletal injury characteristics sustained by firefighters (Blue, 1992).

Setting

The setting for the chart review was a suburban, hospital based occupational medicine clinic located in the Midwest. The clinic provides medical treatment services for occupational related injuries and illnesses. The clinic is used exclusively by the firefighter municipality for injuries sustained during work hours. Life threatening occupational emergencies to the firefighters are serviced by the nearest hospital. A formalized hospital based case management program at the clinic was under consideration at the time of this study.

Sample

The study population for this project was a convenience sample of 46 documented firefighter charts from one suburban municipal fire department. A total of 61 injury episodes were reported by the 46 firefighters. The unit of analysis was the injury episode, not the individual firefighter.

Data Collection Procedures

Institutional Review Board approval was received prior to data collection. The chart review entailed the following steps. A master code list of the firefighter charts was developed by the occupational clinic to maintain confidentiality. At the researchers' request, the coded and copied charts were retrieved to conduct the chart review. The first author served as the chart reviewer.

Instrument

A two part paper and pencil instrument was designed to obtain the raw data from identified

charts. Part I of the instrument consists of 43 questions taken from the primary study (Blue, 1992). An additional seven questions were added to Part I to obtain information on return to work and length of disability.

Part I of the instrument included: questions on demographics and general social, family, and individual characteristics of the injured firefighter; injury characteristics; and return to work information on disability. Items on return to work were developed from the literature and from discussions with experts in the field of occupational health and rehabilitation. The outcome measure—length of disability—was measured in weeks and was operationalized in two ways. The first measure, *time to return to work date,* was the time period from the date of injury to the return to work date. The second measure, *time to case closure date,* was the time period from the date of injury until case closure.

Part II of the instrument is the occupational case management tool. The checklist was developed to measure the case management activities (process) among occupational health professionals providing injury management services to injured workers.

The Case Management Activity Checklist was developed by Mannon (1993) from the literature and discussions with experts in the field of occupational health and rehabilitation. Sample items are shown in the Figure. To check content validity, colleagues and faculty practicing in occupational health reviewed a draft of the tool. Questions were revised, based on this review, prior to data collection. The checklist consists of 27 items with Yes, No, and Not Applicable responses. A manual for the checklist instrument was also developed to guide the reviewer when conducting the file reviews (Mannon, 1993).

Thus, "process" (Donabedian, 1980) was operationalized as six nursing activities associated with the facilitation of services for the injured worker and collaboration among professionals and workers in establishing benchmarks and achieving anticipated outcomes. The checklist is separated into six subscales or steps that coincide with a chronological order of the case management process. The following occupational nursing case management activities included in the tool are a step by step process similar to those established by the American Hospital Association (1987):

1. Identification of Case/Case Disposition (2 items): This is achieved by using a case management checklist and a red flag checklist (not shown). The red flag checklist has evolved as a standard used by rehabilitation specialists.
2. Assessment (8 items): Assessment information is obtained by the occupational case manager through home visits, physician visits, employer visits, plant walk through, attorney discussions, and interviews with additional case providers.
3. Return to Work Plan (5 items): The third activity is identified as goal setting in collaboration with care providers, injured firefighter, family, and attorney.
4. Resource Identification (4 items): The fourth activity is the actual implementation of the treatment plan. Identifying additional outside resources and negotiating service contracts is also conducted during this phase by the occupational health nurse case manager.
5. Collaborative Communication (4 items): Collaborative communication among team members is the key to a successful rehabilitation/return to work outcome. Communication is an ongoing process to case closure.
6. Evaluation (4 items): During this step continuous monitoring of services is most important to insure that services remain appropriate and of the highest quality within the agreed upon budget. Activities during this step should be re-evaluated and new benchmarks negotiated if initial goals are not achieved.

To insure data collection reliability by a single reviewer, a test-retest reliability assessment was conducted over a 4 week period. A random sample of five firefighter charts that contained a total of six injury episodes was used. Eight of the 12 items analyzed for reproducibility had a perfect Kappa score of 1. Due to missing data at time 1, no correlations could be computed on the remaining four items.

Data Analysis

Data were analyzed using EPI Info Version 5 (Stone Mountain, GA: USD, Incorporated) and SAS Version 6.03 (Cary, NC: SAS Institute, Inc.). The data were cleaned and cross checked for errors. Descriptive statistics in the form of frequencies and cross tabulations were generated.

Injuries identified by the ICD-9 codes were compared with available disability ICD-9 code guidelines published by Reed (1991). Frequency data were also generated on the reported ICD-9 codes. Two lengths of disability measurements were established for each ICD-9 code. Percentages and frequencies were also computed for items in the Case Management Activity Checklist.

RESULTS

Injury Characteristics

The mean age at time of injury (N = 60) was 40.3 years. Fifty-nine injury cases were returned

SAMPLE ITEMS (Total = 27)	YES	NO	N/A
Case Disposition			
1. Appropriately identified injured employee for case management?			
Assessment			
3. Employer phone contact made by clinical service provider?			
If yes, date: By whom:			
4. Recommended treatment plan developed with primary provider?			
If yes, date: By whom:			
Return to work planning			
13. Target return to work date documented?			
If yes, by whom:			
15. Need for accommodation at worksite identified and documented?			
If yes, by whom: How was this identified?			
Resource identification			
16. Ergonomic on site job evaluation referral?			
If yes, by whom:			
19. Outside consultant referral for second opinion or independent medical evaluation?			
If yes, by whom:			
Collaborative communication			
21. Primary provider (clinic) staff meetings?			
If yes, who arranged:			
List members attending:			
23. Meet with employer monthly to provide return to work status of injured employee?			
If yes, who meets:			
Evaluation			
24. Contact made with employee following return to work to evaluate health status and ability to perform work activity?			
If yes, who made contact:			
26. Contact made with the employer following a return to work to evaluate accommodation?			
If yes, who made contact:			

Figure: Case Management Activity Checklist. Available from Judy Mannon, MS, RN, COHN, CIRS, CCM, Wausau Insurance Companies, 901 Warrenville Rd, Ste 500, Lisle, IL 60532-4344.

to work. Approximately 46% of the reported firefighters injured were released to restricted work while the remainder returned to regular firefighter work.

In about 38% of injuries, the cause was listed as lifting and carrying firefighter equipment or people. Eighteen percent of the injuries were from slips and falls, 8% were from being caught/trapped, 8% were due to being struck by an object, and 5% were due to jumping. The remaining 23% were classified as "other" and included ladder/hose apparatus accidents and exercise related accidents.

Injuries were identified by ICD-9 diagnostic codes. Lumbar, cervical, and general back injuries made up the largest percentages of injuries, accounting for 45.9% of the total injury episodes. This finding parallels national firefighter statistics.

Total length of disability was measured in weeks for each identified ICD-9 code from the occurrence of the injury to case closure. About 10% of the injured incurred no disability weeks. Half of the injured experienced about 2 weeks of disability. The largest number of disability weeks for a single injury was noted as 217.7. The average length of time a case was open to case closure was 27.6 disability weeks.

The average length of time off (return to work time) was 6.1 weeks. Eleven of the injury episodes did not incur any lost time days.

Over half of the injuries were reported to result in workers being released to work with restrictions, supporting an early return to work philosophy. Restrictions included sedentary work (lifting up to 10 lbs. occasionally), light work (lifting up to 20 lbs. occasionally and 10 lbs.

frequently), and medium work (lifting up to 50 lbs. occasionally and up to 30 lbs. frequently) (US Department of Labor, 1986). Due to inconsistent chart documentation or lack of documentation, it was not possible to determine when restrictions were removed or evaluated.

Nursing Case Management Activities

The case management process is divided into six steps as previously described. Findings for each step are presented in the same sequence.

1. Case Disposition. Of the 61 injuries, 54 were classified as cases that might benefit from case management intervention.

2. Assessment. The assessment phase showed that, in 56.7% of the injuries, phone calls were made primarily to obtain authorization for payment and to report work status to the insurance administrator. Work status was discussed with the firefighter's immediate supervisor in only 8.2% of injury cases. Over 50% of the applicable cases for follow up reported to the clinic after receiving emergency hospital care. It was interesting to note that only 18% of the charts reviewed included a complete history. Social history was documented in 9.8% of the injury episodes. No vocational history was documented on any charts.

3. Return to Work Planning. Less than 10% of the 61 injury episodes revealed documented target return to work dates, and 6.6% documented anticipated physical ability levels. Only one work site accommodation need was documented among the 61 firefighter injuries.

4. Resource Identification. No on site job visits or vocational counselor services were arranged. However, 11 injuries (18%) were referred for work hardening or physical therapy and 29 injuries (47.5%) were referred for a second medical opinion.

5. Collaborative Communication. No documentation was found about meetings with consultant referrals, clinic staff, or employer.

6. Evaluation. Case closure was reported on all (N = 61) of the cases by noting the date of last clinic visit. Although the injured worker was released by the clinic to return to work, no information was available about actual return to work of the injured firefighters.

DISCUSSION

This study found that, on average, a firefighter injury case episode was open 7.1 months from injury to case closure. This could be compared to length of treatment. No studies in this area about recommended length of treatment for a specific ICD-9 injury code were available for comparison. The average length of time off (return to work date) was about 6 weeks.

It would be noteworthy to examine the employer's insurance workers' compensation files to determine whether or not the injured firefighters were accommodated at restricted duty. Availability of restricted duty jobs can be a problem. This dilemma is not new to occupational health; due to the heavy nature of firefighter work, returning to sedentary or light limited restricted duty is rarely possible.

Case management is not new to the insurance industry nor to private and public rehabilitation professionals. Rehabilitation professionals have conducted studies in an attempt to market services by demonstrating cost savings and employer/employee satisfaction. As state certifications become mandatory for case managers, occupational health professionals are beginning to take a more active role in defining the process.

The Case Management Activity Checklist was designed to provide information about nursing activities among occupational health nurses in an occupational clinic servicing firefighters with musculoskeletal injuries. As noted, the clinic is in the process of developing and implementing an occupational case management program, so the lack of data from the activity checklist was anticipated. The information from this descriptive study can serve as a baseline for planning future clinic case management evaluations.

Through a formalized audit, the information obtained in this study identifies the current case management strengths and weaknesses at this clinic. In 50% of the managed cases firefighters returned to work with restrictions. This is a strength upon which the clinic may build. This fact also illustrates the support from the occupational health professionals at this clinic in facilitating early return to work.

This step by step process provides the framework for conducting case management. The occupational case management process provides a foundation for the future of injury management in occupational health nursing. The process also can be used by many nursing specialties in managing disabilities and facilitating employee return to work.

Case Disposition

Case disposition was determined using the case management identification list. Musculoskeletal injuries are classified as a potential high cost diagnosis often requiring multiple office visits and lengthy treatment with referrals to specialists for second opinions.

Lost time from work, particularly among firefighters, supports the potential for prolonged disability due to decreased physical ability levels. The need for a career or job change as a result of a

permanent physical limitation could contribute to increased claim costs.

Assessment

It is important to obtain the history and as much information about the employee, the injury, the current treatment plan, and the employer as possible. This information enables the case manager to identify: whether immediate intervention is necessary to provide appropriate and timely treatment; what long range interventions will be needed for rehabilitation and return to work; and immediate interventions of case management that could improve the quality of the care provided for the family as a whole and the management team (American Hospital Association, 1987).

A complete history should include a past and present health history, height, weight, vital signs, and allergy information (LaDou, 1990). The occupational information should focus on current job demands such as physical demands, environmental conditions, past and present exposures, and past work history (LaDou, 1990).

Living conditions, family support systems, and financial issues are factors that play a role in the development of a rehabilitation plan. For example, transportation to the health care provider may need to be arranged if the employee lives alone.

Return to Work Planning

The return to work plan anticipates physical disability levels and target return to work dates. Discussions with health care providers and the employer obtain data about physical demand levels of the current job. Alternate limited duty work may be negotiated during this step. The objective during this step is to match a job, either temporary or permanent, with physical ability levels to enable the employee to return to work when medically stable.

Resource Identification

The case manager must maintain a working knowledge of appropriate medical, social, vocational, and financial providers within a reasonable geographic area of the injured employee's residence. In other words, the case manager must be astute to the strengths and weaknesses of the diverse providers. The case manager also coordinates treatment and may refer the employee for social, vocational, or financial aid services when necessary.

The resource identification section in this study focused on four areas of possible need: on site job evaluation, work hardening, consultant referral, and vocational counseling. Experience with providers in these four areas is most helpful in developing an effective return to work plan.

Lost time from work, particularly among firefighters, supports the potential for prolonged disability due to decreased physical ability levels.

Collaborative Communication

According to the American Hospital Association (1987), a case manager needs to possess an understanding of medical terminology and the ability to converse with medical providers. The case manager also must be able to explain technical medical information to clients and families in a non-confusing manner.

The case manager must have the ability to communicate diplomatically with employers at all management levels. During this step, scheduling staff meetings with the case management team also helps to develop the circle of communication. Collaborative communication is the most important step in the entire case management process. It begins within 24 hours of the injury and is maintained with consistent intensity through follow up and the successful return to work of the injured employee.

Evaluation

Individual case closure should be reached in this step. The overall quality evaluation of the program is ongoing. Follow up also should be conducted during this step. Continuous monitoring of services is required to determine appropriate care or to redirect care when treatment or return to work objectives are not realized. Use of vendor standards and contracts is mandatory for appropriate monitoring of provider services.

Defining disability is difficult and attempting to measure disability is even more difficult. This study offers two measures for length of disability: the total amount of weeks from the injury occurrence to return to work, which may be restricted or non-restricted work; and the total amount of time in weeks from the injury occurrence to case or chart closure.

Many nursing specialties continue to struggle with a definition of case management. A formalized definition was synthesized by Mannon (1993) for this study:

> Occupational case management is defined as a collaborative process, led by an occupational health nurse,

among care provider, employer, employee, and family in the procurement of appropriate quality health care, social services, and vocational services to meet the intended outcome within a self contained budget.

Most recently the American Association of Occupational Health Nurses (1994) issued a position statement on case management for Occupational Health Practitioners.

> Case management is a process of coordinating an individual client's health care services to achieve optimal, quality care delivered in a cost effective manner.

Disability guidelines provide a tool for health professionals in establishing benchmarks for return to work and occupational health injury management. However, care must be taken not to rely solely on the guidelines. Guidelines should not supersede a quality case management process that manages appropriate treatment and facilitates an early return to work.

Developing an early return to work plan with the case management team may be the most effective means of facilitating treatment in regard to rehabilitation and return to work outcome. The Americans With Disabilities Act (July 26, 1992) requires employers to focus on accommodating injured and disabled individuals. Occupational health professionals are being asked to identify and implement, in a timely manner, reasonable accommodations for employees. A solid occupational health case management program will provide the foundation that enables nurses to accept this challenge.

As the U.S. health care system changes, the occupational health nurse is positioned to move into the role of occupational health case manager. This is an exciting time of change for occupational health and nursing. Through the development of audit tools such as the one presented in this descriptive study, occupational health nurses will be able to document case management activities and provide employers with measurable outcomes. Occupational health nurses hold the key to the future of occupational case management and its place in the new health care system.

An injured worker has a 50% chance of returning to work after an absence of 6 months or longer, a 25% chance of returning to work after 1 year, and almost no chance of returning to the work force after 2 years (Kelsey, 1980). Through early intervention of an occupational case management program, a decrease in disability days from injury to return to work may be realized.

RECOMMENDATIONS

The researchers offer the following recommendations to facilitate the case management process:

- Develop an educational in-service training program for the occupational clinic staff, focusing on the six steps of occupational case management.
- Conduct nursing audits quarterly to identify weak areas in the case management process.
- Use a history form that includes occupational, medical, vocational, and social history.
- Conduct clinic staff meetings to discuss progress of each injury identified for case management.
- Conduct monthly staff meetings with outside consultants. This will provide an avenue for communication and return to work planning.
- Communicate with the injured worker's supervisor following office visits to provide work ability progress reports.
- Communicate with injured employee by phone at intervals between office visits to check on health status and progress. These contacts also provide an opportunity for the nurse to answer questions the injured employee may not remember during the office visits.
- Communicate with the employee and employer following return to work to confirm the appropriateness of job placement and the employee's health status.

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IN SUMMARY

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Development, Testing, and Application.

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1. Case management is a process of coordinating an individual client's health care services to achieve optimal, quality care delivered in a cost effective manner. The case manager establishes a provider network, recommends treatment plans that assure quality and efficacy while controlling costs, monitors outcomes, and maintains a strong communication link among all the parties.

2. Through development of audit tools such as the one presented in this article, occupational health nurses can document case management activities and provide employers with measurable outcomes.

3. The Case Management Activity Checklist was tested using data from 61 firefighters' musculoskeletal injury cases.

4. The activities on the checklist are a step by step process: case identification/case disposition; assessment; return to work plan; resource identification; collaborative communication; and evaluation.