ELSEVIER
SAUNDERS

Clin Occup Environ Med
4 (2004) 259–271

CLINICS IN
OCCUPATIONAL AND
ENVIRONMENTAL
MEDICINE

# Workers' compensation reform

Douglas C. D'Andrea, MD, John D. Meyer, MD, MPH*

*Division of Occupational and Environmental Medicine, Department of Medicine, University of Connecticut Health Center School of Medicine, 263 Farmington Avenue, Dowling North, Farmington, CT 06030-6210, USA*

State legislatures framed workers' compensation laws in the early twentieth century to address the growing problem of work-related injuries and disability caused by the increase in workplace accidents that accompanied the Industrial Revolution. Workers' compensation guaranteed injured workers and their families timely payment for medical costs, lost wages, and death benefits. The first constitutionally upheld workers' compensation law was passed in 1911 in Wisconsin, and by 1920, all but eight states had passed workers' compensation laws.

From the outset, the structure of the workers' compensation system has reflected a balance between the competing interests of businesses seeking affordable costs, labor demanding adequate and prompt benefits, and insurers attempting to attain reasonable profits. Reform efforts have thus faced the dynamic tension between these interests as well as the need to respond to larger social and economic changes. In the 1960s and 1970s, workers' compensation programs expanded to cover more workers and increase the amount of benefits in response to concerns that existing benefits were inadequate and failed to provide support for workers and their families during periods of disability. In the 1980s and 1990s, the increased benefits and unprecedented increases in the price of health care services drove up the cost of workers' compensation for businesses and insurers. Fee schedules, limited physician choice, restricted eligibility, lower benefits, and managed care were incorporated into workers' compensation to contain or reduce costs for businesses and insurers.

The authors are supported in part by Training Program Grant T01CCT112056-06 from the National Institute of Occupational Safety and Health, and Career Development Grant HD01409 from the National Institute of Child Health and Human Development.

* Corresponding author.

*E-mail address:* meyer@uchc.edu (J.D. Meyer).

1526-0046/04/$ – see front matter © 2004 Elsevier Inc. All rights reserved.
doi:10.1016/j.coem.2004.02.008

## Origin of workers' compensation

Before the era of workers' compensation legislation, workers had to sue their employer to recoup medical costs and lost wages arising from injury and for indemnification for consequent impairment, such as loss of a digit, limb, or eye. For a lawsuit to be successful, an injured worker had to prove that the injury resulted from the employer's negligence. Several defenses were available to the employer, including contributory negligence on the part of the worker, voluntary assumption of risk by the employee, and negligence by a "fellow servant," through which many suits were challenged. Because of the inherent danger of work and the common law defenses, lawsuits against an employer were usually costly and time consuming, and without an interim means of support during litigation, families of injured workers were destitute. Many injured workers and their families ultimately received nothing; those who did receive compensation received small sums averaging only a few hundred dollars, from which attorney fees, funeral costs, and other expenses had to be deducted [1].

Newer views of accidents as the inevitable consequence of work in a newly industrialized society where work was inherently hazardous gained acceptance in the late nineteenth century, supplanting theories that the worker bore primary responsibility for health and safety at work. The rising toll of injury and workers uncompensated for their loss became one element in the roster of nineteenth century social ills that engendered the new legislation of the progressive era. Public dissatisfaction demanded an entirely new system that would abandon the need to demonstrate employer liability to protect workers and their families.

States consequently implemented a system that imposed unilateral liability without fault on the employer and required employers to insure against that liability. Employers accepted no-fault liability and paid for benefits, including medical care and lost wages, in exchange for relief from costly lawsuits. Workers' compensation was a historical compromise between the worker and employer. The no-fault system replaced the need to demonstrate employer negligence, and workers needed only to prove an injury was caused by work. In return for guaranteed and timely benefits, workers relinquished their right to sue the employer, and workers' compensation became the "exclusive remedy" for injured workers.

The first comprehensive workers' compensation act was passed in New York in 1910 but was ruled unconstitutional in 1911 by the New York Court of Appeals. The court held that assigning liability without fault to the employer was not constitutional and violated principles of due process under state and federal constitutional laws [2]. Legislators responded by abandoning comprehensive and compulsory acts and passing statutes that permitted employers to opt out of the system [1]. Employers choosing not to be bound by compensation plans would be subject to liability suits without benefit of common law defenses.

In 1913, New York passed a constitutional amendment permitting a compulsory law, and in 1917, the US Supreme Court ruled that this compulsory law,

along with an elective workers' compensation system in Iowa and an exclusively state-managed fund in Washington, was constitutional [1]. With constitutional barriers removed, workers' compensation systems were rapidly adopted by the majority of states, and by 1920 all but 6 of the 48 states had adopted compensation acts [3]. In 1963, Hawaii was the last state to implement workers' compensation laws [1].

Workers' compensation is a collection of independent state-based systems and national programs for federal workers. Congress had passed a program to cover federal workers in 1908 [1]. With the exception of New Jersey and Texas, all states require employers to provide insurance through either state funds or private insurers [4]. Although not uniform, there are significant similarities among programs, and all programs share fundamental provisions, including exclusive remedy, no-fault liability, waiting periods, exemptions, maximum and minimum indemnity benefits, and coverage of medical and rehabilitation benefits. Elements such as physician choice, fee schedules, and managed care are optional parts of many programs, and were, as noted later, key elements in reform and attempts to control costs.

## Early reforms expand coverage and increase benefits

Initial compensation laws varied widely from state to state and were often inadequate, excluding large groups of workers and limiting benefits for lost wages and, particularly, medical care. For instance, medical care was limited to between 14 and 30 days, and more than half of the states capped total medical payments to between $25 and $250 dollars [5]. Several states had no provisions for medical benefits [6]. The first workers' compensation laws also did not explicitly cover occupational diseases, although some courts and workers' compensation administrators extended coverage to some forms of disease under "injury" policies [7]. Indemnity benefits were also limited and, on average, paid only half of lost income, to a maximum of $10 to $12 per week [5]. In 1920, the average weekly wage in manufacturing was $26.02 [8]. Payments were also limited generally to 6 years, and no state provided benefits beyond 10 years [5]. Most acts applied only to specific hazardous industries, and none covered all groups of employees.

Early reform efforts between the 1920s and 1960s tried to broaden workers' compensation, extending coverage to more workers and kinds of jobs, increasing indemnity and medical benefits, and adding coverage for some industrial diseases. In 1920, state or federal workers' compensation programs covered 67.4% of workers, but by 1940, the number of insured workers was 80%. After reforms in 1970, this number reached 87%, where it has remained relatively stable [1]. However, the proportion of workers covered varies widely from state to state—from nearly 100% in Vermont, Hawaii, and Maine to 72% in Texas and Louisiana [1]. Certain groups of workers continue to be excluded or limited in many states,

including domestic workers, agricultural workers, independent contractors and the self-employed, business owners and partners, and, in some states, workers employed by small companies with five or fewer employees [4].

During this same period, limitations on medical coverage were also addressed. As noted, most early state laws limited the duration and amount paid for medical care. The restriction of these laws becomes apparent when one realizes that most claims were submitted for the cost of medical care rather than for wage replacement for lost time and that employment-based health insurance was in its infancy and covered very few workers.

In 1920, only six states provided unlimited medical benefits for injured workers, and initial laws permitted employers to choose physicians and limit access to services [9]. By 1960, all but 14 states had eliminated limits on medical benefits and provided unlimited coverage for injured workers [9]. Many states also began to give injured workers the right to choose their medical provider. States, businesses, and insurers recognized that arbitrary limits on care were ultimately costly and that access to adequate medical care brought about early recovery and prevented disability, limiting the overall economic and social costs of workplace injuries [9]. These early workers' compensation reforms addressed some of the limitations in coverage, but there were still significant gaps in coverage and benefits, particularly for occupational disease and certain groups of workers. Fourteen states retained limitations on medical compensation, affecting approximately 13% of all eligible workers [9]. Two states provided no coverage for occupational diseases, and 19 others provided for only scheduled diseases that were specifically enumerated. Entire classes of workers continued to be excluded, and at the end of the 1960s, approximately 20% of all American workers lacked any workers' compensation coverage [10].

Payments for lost wages had also failed to keep up with postwar inflation, and cash benefits replaced only a small proportion of lost wages. For instance, in 1962, Illinois replaced only 18% of an injured worker's estimated present and future wage loss. States, on average, replaced less than 20% of estimated lost wages to the families of injured workers who died in industrial accidents [11]. There was little evident improvement by the end of the decade. In 1968, 43 states had maximum allowable workers' compensation benefits for permanent total disability that were below the 1966 poverty line standard [11]. Substantial changes in workers compensation would await the 1972 Report of the National Commission on Workers Compensation Law.

The commission, established by the Occupational Safety and Health Act of 1970, reviewed the adequacy of state workers' compensation systems and enumerated 19 essential recommendations as model standards for state workers' compensation systems [12]. The essential elements of their recommendations were compulsory coverage by employers, comprehensive coverage of all workers, particularly domestic workers and agricultural workers, full medical benefits for occupational disease, full coverage of medical and physical rehabilitation services, elimination of arbitrary limits on duration of benefits, and an increase in weekly benefit amounts. The commission recommended that states be given 3 years to

conform to the standards, after which federal legislation would mandate compliance with them.

Federal action was never taken because states began to adopt some of the commission's recommendations broadening and extending coverage. More than 400 amendments to workers' compensation were passed in 1973 [13]. The most significant changes were increases in maximum benefits. The commission recommended an immediate increase in benefits to two thirds of salary and then scheduled increases to an ultimate 200% of the average weekly wage in the state. In 1972, the average of state weekly maximum benefits was $56; by 1982, it had increased to $105 [1]. Many states even adopted sliding scale maximum limits based on a state's weekly wage to ensure benefits kept pace with inflation [1].

However, even in 2002 no state has adopted all the recommendations, and a few have not even adopted half of the recommendations the commission thought were essential. The average rate of compliance with the recommendations is approximately 68% [14]. Few states cover agricultural, household, or casual workers, and many states have retained exemptions for other classes of workers, such as employees of charitable organizations. Fourteen states have failed to provide maximum weekly benefits for temporary total disability commensurate with the commission's recommendation, and a few states continue to limit the dollar amount or duration of medical or physical rehabilitation costs.

## Escalating medical costs and economic crisis in the 1980s

Between 1965 and 1985, the average medical costs of workers' compensation increased 12.5% each year [15], and by 1985, medical expenses for workers' compensation reached $7.4 billion, or 34% of workers' compensation benefits [15]. Rapid inflation in the price of medical care during this period and increased use of services from expanded benefits were the principal contributors to the increased cost of workers' compensation. The relatively limited use of managed care also partly explains this increase in services and medical costs in workers' compensation. Trends toward expansion of workers' compensation benefits ran counter to nascent efforts to control costs in general health care programs. The establishment and expansion of health maintenance organizations (HMOs), given impetus by the Nixon administration's legislative program, were the first stirrings of managed care strategies designed to contain costs by limiting fees and controlling services. These methods were yet to reach workers' compensation systems, which remained principally in a fee-for-service model in this period.

Although initially modest in scale, the differential benefits for medical services under workers' compensation (first-dollar coverage, lack of copayments, and often extended medical and rehabilitation services) suggested to observers that shifting of costs to the compensation system from private insurance was a consequence of these countercurrent trends in coverage [16]. This situation may in fact be aggravated in the coming decades, despite increased controls in the

workers' compensation system, as employers reduce or eliminate private health benefits, although studies in this area remain sparse.

Although there were few statutory changes in benefits, costs continued to increase during the 1980s. Between 1985 and 1991, workers' compensation medical payments increased at an average annual rate of 14.6%, and cash benefits increased at an annual rate of 11% during the same period [17]. By the 1980s, workers' compensation was rising at a rate of more than one and a half times that of national health care costs. The differences were attributed to the absence of cost control mechanisms, copayments and deductibles, the cost of litigation with its secondary effect of complicating care and possibly delaying recovery, inability to obtain discounts, and worker choice of physician [18].

The cost of workers' compensation to employers increased from 1.66% of payroll in 1984 to 2.18% in 1990 [17]. The insurance industry lost money in every year between 1984 and 1991, even when including income on investments. Approved rate increases could not keep pace with the escalating costs of insurance, precipitating a crisis that forced statutory administrative reforms, benefit reductions and limitations, and other changes in the early and mid-1990s [17].

## Cost containment and managed care in the 1990s

Various strategies were implemented beginning in the 1980s to reduce or limit the growth of medical costs in workers compensation. Limiting the overall amount and duration of medical care, although initially a common restriction in early workers' compensation programs, had been supplanted by the national commission's recommendations for expanded benefits. Absolute statutory limits on the duration and amount of services, although effective in reducing costs, were unfair to those with legitimate needs and were politically difficult to implement. Some states retained limitations on the duration rather than the dollar amount of medical care. In the absence of the ability to limit care, techniques borrowed from HMOs and managed care, limiting fees and establishing schedules, along with restricting physician choice became common strategies by insurers to reduce cost.

Medical costs nevertheless continued to rise, and in response to business and insurer concerns, more sweeping changes were made to the structure of workers' compensation systems. More than half of states amended their workers' compensation laws between 1989 and 1997 [19]. Although the specific changes varied among states, some general trends were common in the 1990s. Eligibility rules for workers' compensation were made more restrictive, making it more difficult to qualify for benefits. Statutory levels of benefits were substantially reduced, particularly for permanent partial disability, along with institution of higher bars to a judgment of permanent total disability. Employers increased efforts at prevention and disability management. Finally, after years of operating in the parallel general health care system, managed care was integrated into the workers' compensation system. The effects of each of these reforms are examined in turn.

### *Fee schedules*

Fee schedules limit professional and hospital charges for physician encounters, procedures, and services. States use various scales to establish these maximum allowable fees. Acceptance of this strategy has been rapid in the last two decades. Nine states had used fee schedules for some procedures in 1972; this grew in both number and application, and by 2001, 42 states had fee schedules for numerous procedures and services provided by physicians, chiropractors, physical therapists, and hospitals [20]. Bill review programs were mandated by most states to enforce fee schedules.

There is controversy regarding the effectiveness of fee schedules to reduce overall costs of medical care. Some analysts report there is little correlation between the use of fee schedules and medical costs among various states [4]. For instance, from 1980 to 1985, medical costs grew relatively rapidly among seven states with fee schedules, including Oregon, California, and Colorado. Whereas the median average growth rate for this period was 13.1%, average growth rate for costs per claim increased 17.6% for Oregon, 16.1% for California, and 16.1% for Colorado [15]. Fee schedules that are low enough to limit costs may also limit access and diminish quality of care in the absence of other control mechanisms. Strict fee schedules can dissuade health care providers from caring for injured workers, and the trend in the last several years has been to relax limits to improve the quality of care [20].

### *Limiting physician choice*

Restricting a worker's initial choice of provider or the ability to change providers is the most common cost control strategy, and it has been implemented by almost all states [20]. The degree to which a worker's choice is limited varies from state to state. States may limit a worker's choice of providers to an approved list or may restrict the worker from switching physicians. Although choice of physician has received much attention, it remains unclear whether it affects the cost or quality of medical care. Some studies show that limiting physician choice reduces health care costs [21], whereas others show that these limitations increase costs [22]. Regardless of statutes, workers seem to choose doctors similarly in both worker-choice states and employer-choice states. When injured workers of both employee-choice and employer-choice states have been interviewed, the source of referral to their treating physician was similar and comparably distributed among family doctors, employer physicians, and hospital emergency rooms or urgent care clinics. Moreover, satisfaction with care was also similar between groups, regardless of how the choice of physician was made. The proportion of workers who were unhappy with their care was approximately the same—typically less than 15% [23].

Physician choice may nevertheless be critical to implementing some cost controls, particularly in the managed care setting. Provided that quality care is delivered to injured workers, states that regulate or mandate participation in

managed care plans in which an employee will not opt out of the system may realize greater savings in medical costs through the managed care program [24]. Physician choice may also be an important factor in litigation and decisions about termination of benefits where limitations exist [23].

### *Limiting eligibility*

In the 1990s, a number of states began to limit eligibility for benefits and exclude various conditions. Some states limited compensation when a discrete verifiable accident was not the major cause of disability. Such limitations also more narrowly construe the definition that a compensable injury arise out of and in the course of work, demanding that a workplace injury be the primary cause of disability. Claims were denied when work was merely a contributory or triggering factor in a longer disease process. Some states stiffened requirements that injured workers support medical diagnoses with objective medical evidence, thereby excluding diagnoses based on subjective symptoms. Conditions that could be considered part of the natural aging process, such as osteoarthritis of the knees or spine, were also excluded regardless of whether work could be shown to have contributed to their acceleration or progression.

High-cost conditions were principally targeted and definitions of "injury by accident" were narrowed to exclude these conditions and reduce benefits. Psychological conditions and cumulative trauma disorders were subject to stricter requirements for eligibility or were completely excluded from compensation [19]. In 1987, Montana excluded from coverage injuries from emotional or mental distress and disease not caused by injury [25]. Virginia stopped compensation for conditions of gradual onset or those that arise from repetitive (as opposed to discrete and single) insult and excluded carpal tunnel syndrome and hearing loss, declaring them ordinary diseases of life. Similar exclusions have been adopted by other states [25]. States also imposed stricter rules and shorter time limits for filing claims and for reopening cases when a condition progresses [19].

### *Reduction in benefits*

Substantial reductions in benefits were passed by many states. For instance, Connecticut statutory reforms in 1993 resulted in the single largest reduction in benefits since inception of the workers' compensation system in 1913. Compensation benefits for total disability, partial disability, and death were reduced by 5%—to 75% of the employee's average weekly earnings (after reduction for federal, state, and social security taxes), and the maximum weekly compensation benefit was reduced from 150% to 100% of the state's average weekly wage [26]. The number of weeks of scheduled benefits was reduced and capped at 520 weeks [26]. Compensation for certain injuries and workers was eliminated. The bill excluded mental and emotional claims that were not a significant result of employment and excluded social and recreational injuries and nonresident employees working in Connecticut [26]. Other restrictions adopted by many

states have included limiting compensation when an injury aggravates a pre-existing condition, restricting compensation for particular conditions, and restricting compensation for permanent disability [19].

## Managed care

Oregon, New Mexico, and Florida were among the first to adopt managed care and use review. In 1990, Oregon permitted employers to contract with state-certified managed care organizations, and it limited workers' choice among its panel of physicians. Although some latitude was permitted to workers to see their primary care physicians, they were subject to the rules and fee structure of the managed care organization. By the mid 1990s, managed care, use review, and practice guidelines were incorporated into many workers' compensation programs across the country. In 1997, 26 states had statutes regulating or mandating the use of managed care organizations or plans [24]. The remaining states did not have explicit policies regarding managed care but did permit their use within the limits of other workers' compensation statutes. Eleven of the 26 states with explicit policies on managed care in the compensation system—among them Colorado, Florida, Connecticut, and New Jersey—required employees to see providers within exclusive networks.

Managed care relies on provider organizations to provide cost-efficient quality care. Managed plans can reduce costs by eliminating excessive or unnecessary treatment, establishing health care objectives, facilitating communication between patients and providers, and monitoring the delivery of health care. Efficient and effective care, in combination with active case management, can return workers to work sooner, thereby reducing costs associated with lost time. States regulate managed care organizations, enumerating various requirements, such as minimum number of providers, use review, dispute resolution, and data reporting.

Both use review and treatment guidelines are necessary components of managed care. Use review evaluates the appropriateness of treatments and examines length of hospital stays, referral to specialists, and provision of procedures. Use review often takes the form of authorization of care. Guidelines are intended to aid providers in making appropriate and efficient clinical decisions to reduce cost and improve quality of care. Reviews often focused on care provided by physical therapists and chiropractors, principally because extended treatment schedules led to perceptions of overuse and even fraud [20].

Florida adopted a substantial use review system in 1991 [23]. Insurance carriers and self-insurers submit detailed use review programs that are approved by the workers' compensation agency. The agency also requires monitoring of high-cost cases and uses particular treatment codes as triggers that provide the basis for both denying payment and disciplinary action against providers. Next to limiting provider choice and fee schedules for providers and hospitals, use review and treatment guidelines had become the most common cost containment strategies

among states, regardless of whether they had added managed care policies to their workers' compensation statutes. In 1997, 20 states mandated use review and 21 states required the use of treatment guidelines [24].

The results of large-scale and case studies to evaluate the impact of managed care on constraining workers' compensation costs have been previously summarized [27]. Studies of managed care in Washington State, Florida, New Hampshire, and Florida indicate that total workers' compensation costs per claim were reduced on average 20% to 30%, with savings in both medical and indemnity costs. Medical cost savings resulted mostly from discounted fees and use of fewer medical services, whereas savings in indemnity costs arose from fewer claims for lost wages and shorter periods of disability. Managed care proponents attribute the decrease in costs to more efficient and effective care that eliminates unnecessary procedures and inappropriate services, facilitates early recovery, and reduces disability of injured workers. On the other hand, critics highlight more restrictive criteria for diagnosis of work relatedness, premature return to work before complete recovery, conservative impairment ratings, and lower benefits as reasons for the savings. These same studies have shown that workers consistently are less satisfied with care provided by managed care plans, possibly because of limitations on provider choice, less access to health care, and a perception that managed care is lower in quality.

## The impact of cost containment and managed care

In the 1980s, workers' compensation medical costs continued to increase faster than general medical costs. Implementation of managed care initiatives was viewed, as in the general insurance realm, as a means by which costs could be controlled through pressure on the provision of services. This proved a more politically palatable option for states to control compensation costs than trimming benefits or eligibility; the ability to exclude costly outliers and conform to more mainstream insurance mechanisms provided additional impetus to this trend. Inflation in health care costs declined from high double digits to less than 5% per year [28]. In fact, by the early 1990s, the costs of medical benefits for workers' compensation began to decline, reducing by more than 2% a year before beginning to rise again at an annual average of 6% [29].

The steady decline in premiums during the latter part of the 1990s was also in part due to fewer reported accidents and fewer claims for workers' compensation. Workplace accidents declined by almost half between 1992 and 2001. Some analysts reported that initiatives to control costs had caused workers to be denied benefits and discouraged them from submitting claims [30].

The mid 1990s became a very profitable period for insurers through the combination of reduced benefits and lower medical costs. Between 1994 and 1997, the industry was the most profitable it had been in 20 years [17]. Price competition among insurers, a consequence of improved financial position, became intense by the late 1990s, and insurers offered very low rates to increase market

share. Many large employers who had previously been self-insured purchased policies at very low prices during this period [31].

However, by the end of the 1990s, costs began to increase again at rates faster than general medical care. Analysts hypothesized that the benefits of cost containment had worked through the system by the end of the 1990s and lost their effectiveness. Fee schedules had been reduced to the extent possible without compromising the quality of care. Eligibility had already been tightened and benefits were reduced in many states [20]. By the beginning of the twenty-first century, workers' compensation costs and reform have become the center of debate in many states.

## Summary

Throughout the history of workers' compensation, reform efforts have been responses to the competing interests of business seeking affordable costs, labor demanding adequate and prompt benefits, and insurers attempting to attain reasonable profits in the light of larger social and economic trends. In the 1960s and 1970s, workers' compensation programs expanded to cover more workers and increase the amount of benefits in response to the recognition that existing benefits were inadequate and failed to provide support for workers and their families during periods of disability. The increase in benefits, accompanied by unprecedented increases in the price and use of health services, drove up the cost of workers' compensation. In the 1980s and 1990s, reform efforts focused on reducing the cost of medical care in response to the concerns of businesses and insurers that workers' compensation had become too costly and was reducing profitability. States responded by tightening fee schedules, limiting physician choice, restricting eligibility, lowering benefits, and integrating managed care into workers' compensation.

Cost management is now generally in use for workers' compensation. Although managed care had resulted in significant medical savings, the cost of workers' compensation is again rapidly increasing in some states, where workers' compensation legislation is again at the center of debate. Overuse of medical services, fraud, and subjective and inconsistent disability determination that increases litigation have been identified as cost drivers in some of the states with the most costly workers' compensation [32]. Increasing the use of treatment guidelines, placing limitations on use of services such as chiropractic and physical therapy, developing more objective criteria for determining level of disability, and streamlining dispute resolutions have been offered as solutions. Controlling costs alone, however, cannot solve other problems of workers' compensation. For instance, studies continue to show that only a fraction of injured workers files claims, and the benefits received are often inadequate [30,33]. Future workers' compensation reform will need to focus on the costs of the system and its inclusiveness and effectiveness to support the workers and their families it was intended to protect.

## References


[1] Larson A. Historical development of workers' compensation. In: Larson A, editor. Larson's workers' compensation law. New York: M. Bender; 1997. p. 9.

[2] *Ives v South Buffalo*, Ry. 201, N.Y. 271, 94 N.E. 431 (1911).

[3] Greenwood J. A historical perspective on workers' compensation in the context of national health policy debate. In: Greenwood J, Tarrico A, editors. Workers' compensation health care cost containment. Lorham: LRP Publications; 1992. p. 1–25.

[4] AFL-CIO. Workers' compensation and unemployment insurance under state laws. Pub No. 01143–05-R-15. Washington, DC: AFL-CIO; 2001.

[5] Reed AH. Adequacy of workers' compensation. Cambridge: Harvard University Press; 1947.

[6] Abner B. The adequacy of workmen's compensation as social insurance: a review of developments and proposals. Wisconsin Law Review 1963;January:57.

[7] Barth PS, Hunt A. Workers' compensation and work-related illness and disease. Cambridge (MA): Massachusetts Institute of Technology Press; 1980.

[8] US Department of Labor. Handbook of labor statistics. Washington, DC: US Department of Labor, Bureau of Labor Statistics; 1972. p. 185.

[9] Cheit E. Injury and recovery in the course of employment. New York: John Wiley & Sons, Inc.; 1961. p. 37–46.

[10] Senate and Public Welfare Committee. Report No. 91–1282 on S. 2193, 91st Congress, 2d Session, October 6, 1970. In: The Job Safety and Health Act of 1970. Washington, DC: Bureau of National Affairs, Inc.; 1971. p. 239–40.

[11] Page J, O'brien MW. Bitter wages: Ralph Nader's study group report on disease and injury on the job. New York: Grossman Publishers; 1973.

[12] John Burton's worker's compensation resources. National commission on state workmen's compensation laws. The 1972 report of the national commission on state workmen's compensation laws. G.P.O. document no. 477-053. Available at: http://www.workerscompresources.com. Accessed January 13, 2004.

[13] Johnson F. Changes in workmen's compensation laws in 1973. Monthly Labor Review 1974; 97(1):32.

[14] US Department of Labor. State compensation laws in effect January 1, 2003 compared with the 19 essential recommendations of the national commission on workmen's compensation laws. Available at: John Burton's Workers' Compensation Resources http://www.workerscompresources.com. Accessed January 22, 2004.

[15] Boden L. Workers' compensation medical costs: a special case. In: Greenwood J, Tarrico A, editors. Workers' compensation health care cost containment. Lorham: LRP Publications; 1992. p. 27–52.

[16] Ducatman AM. Workers' compensation cost-shifting: a unique concern of providers and purchases of prepaid health care. J Occup Med 1986;28:1174–6.

[17] John Burton's Worker's Compensation Resources. Workers' compensation benefits and costs in 2001. Available at: http://www.workerscompresources.com/Data_and_Articles/NASI/2003/JB_Statement.htm. Accessed January 5, 2004.

[18] Whittington G. Changes in workers' compensation laws. Monthly Labor Review 2003; January:25–30.

[19] Burton J, Spieler E. Workers' compensation and older workers. National Academy of Social Insurance: Health and income security No. 3. Available at: www.nasi.org/publications2763/publications.htm. Accessed January 12, 2004.

[20] National Conference of Insurance Legislators. Managing workers' compensation medical costs: an overview of state strategies, July 2002. Available at: http://www.ncoil.org. Accessed January 12, 2004.

[21] Eccleston SM. Managed care and medical cost containment in workers' compensation: a national inventory 1995–1996. Cambridge: Workers' Compensation Research Institute; 1995.

[22] Durbin D, Appel D. The impact of fee schedules and employer choice of physician. NCCI Digest 1991;6(3):45–7.

[23] Lewis J. Legislative reform efforts and the medical benefit. In: Workers' compensation health care cost containment. Lorham: LRP Publications; 1992. p. 101–21.

[24] Eccleston S, Victor R. Regulatory trends in workers' compensation managed care. Occup Med 1998;13(4):787–98.

[25] Tinsley LC. State workers' compensation: legislation enacted in 1987. Monthly Labor Review 1988;111(1):62–8.

[26] Connecticut General Assembly. 1993 session: an act reforming the workers' compensation system. Connecticut PA 93–228. Available at: www.cga.gov.ct.us. Accessed January 20, 2004.

[27] Dembe A. Evaluating the impact of managed health care in workers' compensation. Occup Med 1998;13(4):799–821.

[28] Harris J. Managed occupational health. Occup Med 1998;13(4):625–43.

[29] Williams CT, Reno VP, Burton JF. Workers' compensation benefits, coverage, and costs, 2001. Washington, DC: National Academy of Social Insurance; 2003. p. 17.

[30] Rosenman KD, Gardiner JC, Wang J, Biddle J, Hogan A, Reilly MJ, et al. Why most workers with occupational repetitive trauma do not file for workers' compensation. J Occup Environ Med 2000;42(1):25–34.

[31] American Academy of Actuaries. The workers' compensation system: analysis of past, present, and future, spring 2000. Available at: htttp://www.actuary.org/pdf/casualty/workers.pdf. Accessed January 5, 2004.

[32] Reville R, Seabury S, Neuhauser F. Evaluation of California's permanent disability rating schedule: interim report. Document DB-443-ICJ. Santa Monica (CA): RAND Institute for Civil Justice; 2003.

[33] Boden LI, Galizzi M. Economic consequences of workplace injuries and illnesses: lost earnings and benefit adequacy. Am J Ind Med 1999;36(5):487–503.