

Reducing the Costs of Work-Related Musculoskeletal Disorders

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Measuring the Costs of Illness

□ Direct costs

- the costs of resources consumed
 - costs of medical care
 - time costs
 - transportation costs

□ Indirect costs

- losses of potential output at home or work
- reductions in health-related quality of life

Measuring Indirect Costs

- ❑ Loss of output at work
 - Difference between projected lifetime earnings with and without illness
- ❑ Loss of output at home
 - Imputed from wages paid to household workers who perform similar tasks
- ❑ Loss of quality of life
 - Typically not included in cost of illness studies

Direct and Indirect Costs of Selected Musculoskeletal Disorders

	Fractures	Arthritis and rheumatism	Back and spine disorders
Total costs	\$4.1	\$5.9	\$8.1
Direct costs	\$2.0 (49%)	\$2.1 (36%)	\$0.7 (8%)
Indirect costs	\$2.1 (51%)	\$3.7 (64%)	\$7.5 (92%)

Cost data reported in billions, 1994 Canadian dollars.

Source: Coyte, et al. (1998).

Costs of Work-Related Back Pain

- ❑ Single most common work-related injury
 - 25% of claims – 30% of costs
- ❑ Prolonged work absences
 - 40% of lost-time claims
- ❑ Large productivity losses
 - \$28 billion annually (1996 dollars)
- ❑ Cost distribution is highly skewed

Cost Distribution Across the Natural History of Back Pain

	Cases	Medical costs	Indemnity costs	Total costs
Less than one month	50%	12%	4%	7%
1-3 months	25%	23%	18%	20%
3-6 months	12%	23%	20%	21%
More than 6 months	13%	42%	58%	52%

Source: Williams et al. (1998).

Workplace Characteristics and Chronic Disability

- Schultz et al. 2002
 - Workers' compensation claimants in BC
 - 192 in sub-acute phase
 - 61 in chronic phase
 - Predictors of return to work:
 - Fear of job loss
 - Job accommodations

Workplace Characteristics and Chronic Disability

- Fransen et al. 2002
 - New claims for back injuries in NZ
 - 854 claimants
 - Predictors of transition from acute to chronic back pain:
 - Not receiving light work accommodations
 - Jobs that require heavy lifting

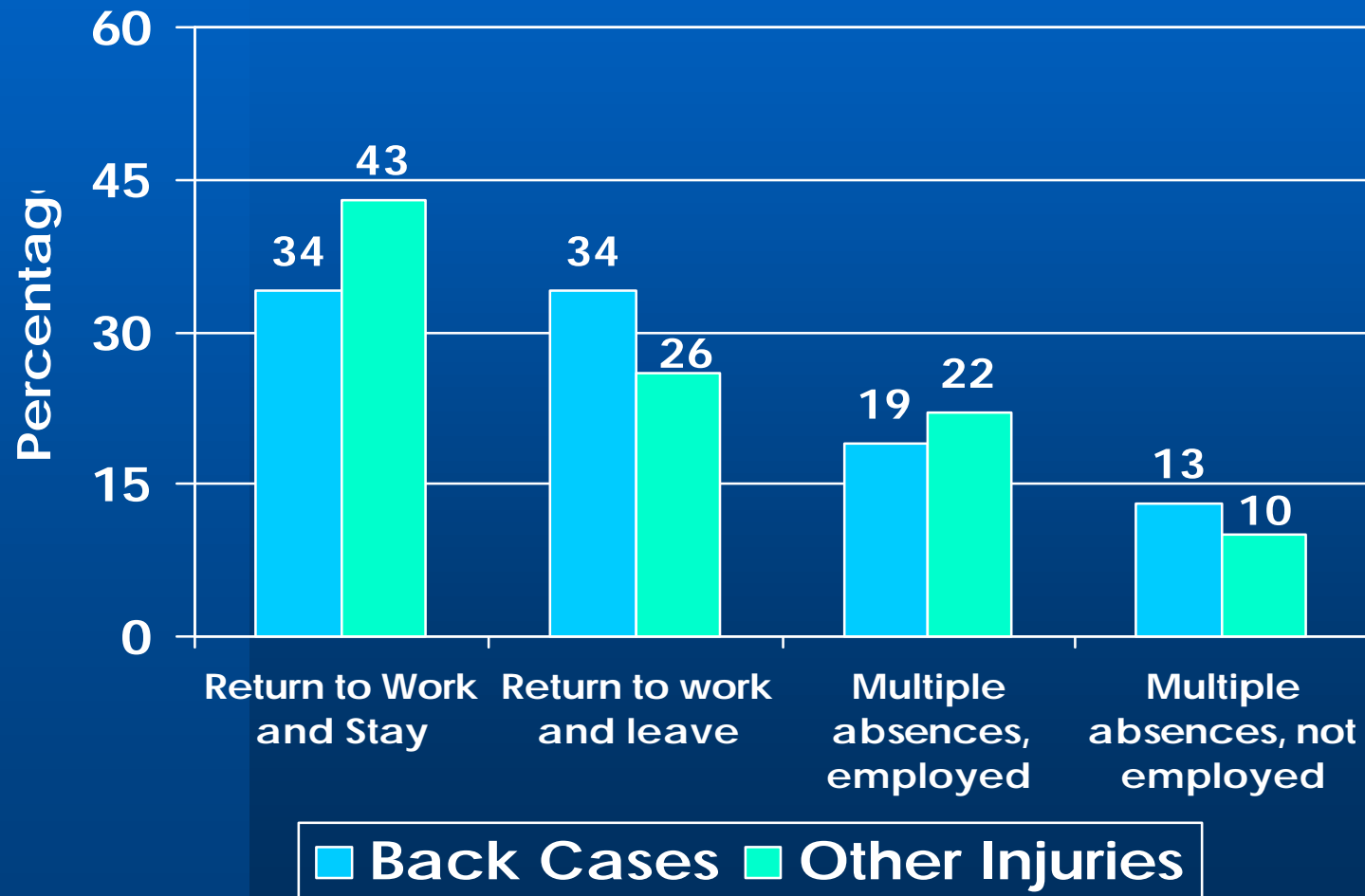
Workplace Characteristics and Chronic Disability

- ❑ Murphy and Courtney 2000
 - Back claims from a single insurer for 44 states
 - 107,867 claimants
 - Predictors of high cost claims
 - Injuries caused by slips and falls from elevation, motor vehicle crashes, violence, mechanical materials handling
 - Injures in construction and service industries

Workplace Characteristics and Chronic Disability

- Johnson et al. 1998
 - Ontario workers with permanent impairments from work-related injuries
 - 829 back claims
 - 1,255 claims for other injuries
 - Analyzes post-injury work disability for 3-15 years after injury

Post-Injury Work Disability Patterns



Work-Related Factors Associated with Chronic Disability

	Light work accommodations	High unemployment region
Return to work and stay	+	+
Return to work and leave	-	+
Multiple absences, employed	+	-
Multiple absences, not employed	-	-
<i>Source:</i> Johnson, et al. (1998)		

Compensation Benefits and Chronic Disability

- Rainville et al. 1997
 - Patients referred to a spine rehabilitation program
 - 85 patients - 47 receiving benefits
 - At one year, compensated patients report less improvement in pain, depression and disability, controlling for differences at baseline

Compensation Benefits and Chronic Disability

- Johnson et al. 1998
 - Work disincentive effects of WC disability benefits are stronger for back cases than for other injury groups
 - The difference is the single most important reason the rate of return to work is lower for back cases (73%) than for non-back cases (79%)

Summary: Work-related Factors Associated with Chronic Disability

- ❑ Not receiving job accommodations, especially light work accommodations
- ❑ Less fear of job loss
- ❑ High-risk industries
 - Construction
 - Service
- ❑ High risk jobs
 - Heavy lifting
 - Working at high elevations
 - Mechanical materials handling
- ❑ Receiving disability compensation

Problems with existing studies

- ❑ Lack of high-quality data
 - Adequate sample sizes
 - Nationally representative samples
 - Measures of severity at onset
 - Sufficient follow-up period
- ❑ Lack of a multidisciplinary approach
 - Epidemiology – for health outcomes
 - Economics – for cost outcomes

The Arizona State University Healthy Back Study

- ❑ Prospective cohort study of work-related back pain designed to analyze the costs and outcomes of different modes of care
- ❑ Combines survey data from injured workers with cost data from workers' compensation claims files
- ❑ Five national employers enrolled in study employee base of nearly 200,000 workers

The Arizona State University Healthy Back Study

- ❑ Adequate sample sizes?
 - 1,921 baseline interviews
 - 60,000 claims records
- ❑ Nationally representative sample?
 - Age, gender, not region
- ❑ Measures of severity at onset?
 - Pain intensity
 - Functional limitations – Roland-Morris scale
 - Health-related quality of life – SF12

The Arizona State University Healthy Back Study

- ❑ Sufficient follow-up period?
 - Follow-up interviews at one month, three months, 12 months after injury
- ❑ Multidisciplinary approach?
 - Research team includes economists, epidemiologists, MD, DC

Principal Investigators

- **William G. Johnson, Ph.D.**

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Arizona State University

Dr. Johnson is an economist with extensive experience in survey research and design including: the first survey of the victims of asbestos-related disease, the largest interview study of injured workers ever conducted (Ontario Survey of Workers with Permanent Impairments), the only interview survey of the victims of medical malpractice (Harvard Medical Malpractice Study)

- **Marjorie L. Baldwin, Ph.D.**

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Dr. Baldwin is an economist who has published extensively in the areas of discrimination against workers with disabilities and employment outcomes after work-related injuries

Co-investigators

□ John Frank, M.D.

Scientific Director, Institute of Population and Public Health, Canadian Institutes of Health Research

Senior Scientist, Institute for Work and Health, Toronto

Dr. Frank is a physician and epidemiologist with a long history of research on the treatment of back pain

□ Pierre Côté, D.C., Ph.D.

Associate Scientist, Institute for Work and Health, Toronto

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Dr. Côté is a chiropractor and epidemiologist with research expertise in the prevention and treatment of back pain and disability

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