

# Bouncing Back From Back Pain / Marjorie L. Baldwin, MD

## Bouncing Back from Back Pain

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## Background

- The workers' compensation model, designed for accidental injuries such as fractures, burns, etc. is not well suited to cumulative trauma injuries such as back pain
  - Difficult to attribute back pain to a specific workplace event
  - Difficult or impossible to evaluate with objective tests – no consensus on best treatments
  - A return to work does not necessarily mark the end of an episode of back pain
- Workers with lengthy and repeated work absences impose tremendous costs on the workers' compensation system, primarily in the form of disability payments for lost work time
- Can we identify, early in an episode of back pain, which cases are likely to become long-duration, high-cost claims?
- We tested the predictive power of five common measures of the severity of back pain to evaluate the ability to predict work disability for up to one year after onset

## Learning Objectives

- Be able to
  - identify four common patterns of post-injury employment among workers who have filed claims for occupational back pain
  - describe the nature and purpose of five common measures of the severity of back pain
  - compare the relative validity of the severity measures in predicting return to work outcomes in the first year after onset

## Data: ASU Healthy Back Study

- Study population
  - Drawn from four employers with over 200,000 workers in 37 states
  - Representing services and manufacturing, public and private sector
- Employers notified the research team when a worker filed a compensation claim for occupational back pain
  - Received 4,901 notifications between 1999 and 2002
- Baseline interview conducted as soon as possible after onset, follow-ups at 1, 6, 12 months

## Data: ASU Healthy Back Study

- Survey collected information on:
  - History of back pain
  - Self-reported severity measures
  - Health care providers/Satisfaction with health care
  - Return to work/Job accommodations
  - Job satisfaction
- Merged with administrative data/first reports of injury for:
  - Demographics
  - Job history
  - Nature of injury and claims data

## Data: Self-Reported Severity Measures

- Back or leg pain intensity
  - Numerical rating scale (NCS-101)
  - Intensity of pain from '0' (not bothersome at all) to '100' (extremely bothersome)
- Functional limitations
  - Roland-Morris scale
  - Percent disability from 0 (not limited at all) to 100 (very limited)
- General health status
  - SF-12 mental and physical components
  - Health-related quality of life from 0 (very poor) to 100 (perfect health)

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## Data: Sample questions from Roland-Morris

- I stay at home most of the time because of my back.
- I change position frequently to try and get my back comfortable.
- I walk more slowly than usual because of my back.
- Because of my back I am not doing any of the jobs that I usually do around the house.
- Because of my back, I use a handrail to get upstairs.

Roland MO, Morris RW. A study of the natural history of back pain. Part 1: Development of a reliable and sensitive measure of disability in low back pain. Spine 1983; 8: 141-144

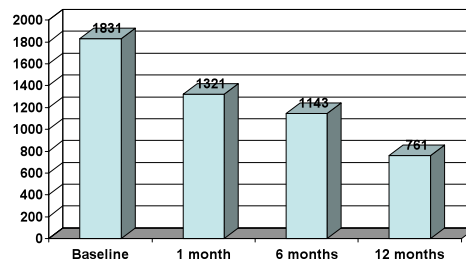
## Data: Sample questions from SF-12

- Does your health now limit you in the following activities? If so, how much?
  - Moderate activities, such as moving a table, pushing a vacuum cleaner, bowling, or playing golf
  - Climbing several flights of stairs
- Yes, limited a lot/ Yes, limited a little/ No, not limited at all
- How much of the time during the past four weeks
  - Have you felt calm and peaceful?
  - Did you have a lot of energy?
  - Have you felt downhearted and depressed?
- All the time/most of the time/ some of the time/a little of the time/none of the time

## Data: Study Sample

- Eligibility criteria
  - Age 18 and over
  - Filed a WC claim for back pain between Jan 1 1999 and June 30 2002
- Exclusion criteria
  - Injury = fracture
  - Claim denied or litigated
  - 2<sup>nd</sup> or subsequent claims
- N=1,831 workers
  - 51% of eligible claims

## Data- Sample sizes



## Methods: Outcomes Measure

### Patterns of post-injury employment at 6 and 12 months

- Pattern 1
  - No time off work associated with back pain (no absence)
- Pattern 2
  - A return to work after initial absence and no subsequent spells of pain-related work absence (return and stay)
- Pattern 3
  - A return to work after first absence followed by one or more spells of pain-related work absence (multiple episodes)
- Pattern 4
  - Absent from work since the onset of back pain (not yet returned)

## Methods: Estimating models

- Which severity measures are best at identifying potentially high-risk cases?
  - Logistic model where dependent variable=1 for workers who experience patterns 3 or 4 (poor work outcomes)
  - Estimated at 6 (N=585) and 12 (N=332) months post-onset, using severity measures collected at the baseline interview
  - Compare p-values to identify which severity measures are significant predictors of outcomes

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## Methods: Model specifications

- **Basic model**
  - Controls for age, gender, expectations of recovery, right to choose a health provider, work experience, job satisfaction, firm
  - Excludes severity measures
- **Comparison models**
  - Basic model + back pain intensity + leg pain intensity
  - Basic model + Roland-Morris score
  - Basic model + SF-12 physical + SF-12 mental
  - Basic model + all severity measures

## Results: Correlations between Severity Measures

	Back pain	Leg pain	Roland-Morris	SF-12 physical	SF-12 mental
Back pain	1.00	.47	.63	-.59	-.36
Leg pain	.47	1.00	.49	-.39	-.37
Roland-Morris	.63	.49	1.00	-.72	-.50
SF-12 physical	-.59	-.39	-.72	1.00	.21
SF-12 mental	-.36	-.37	-.50	.21	1.00

## Results: Patterns Models at 6 Months

P-values from each comparison model

Back pain	.002			.84
Leg pain	.37			.26
Roland-Morris		<.0001		.03
SF-12 – physical			<.0001	.19
SF-12 mental			<.0001	.02

## Results: Patterns Models at 12 Months

P-values from each comparison model

Back pain	.07			.25
Leg pain	.28			.26
Roland-Morris		<.0001		.24
SF-12 – physical			.011	.16
SF-12 mental			.001	.03

## Limitations of the study

- **Missing observations**
  - Loss to follow-up
  - Missing data
- **Lag times in conducting interviews** – especially the baseline interview
- **Self-selection of participating employers**
  - Committed to disability management and providing job accommodations to facilitate returns to work
- Somewhat limited generalizability of results

## What to do with high-risk cases?

- Recent research suggests interventions that emphasize returning to normal activities, including work, reduce long-term disability from back pain relative to usual care
  - Steenstra *Spine* May 2009
- Intervention involved worker, occupational health physician, worker's supervisor, and ergonomist implementing a return to work plan with appropriate accommodations
- Intervention was particularly effective for older workers and those who had been sick before – effectiveness of intervention was not correlated with gender, type of work, functional limitations, or pain

[www.iwh.on.ca/highlights/workplace-program-speeds-rtw](http://www.iwh.on.ca/highlights/workplace-program-speeds-rtw)

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### Summary – Employment patterns

- Identify four common patterns of post-injury employment among workers who have filed claims for occupational back pain
  - Stable patterns:
    - no absence
    - return and stay
  - Unstable patterns:
    - multiple spells of absence
    - not yet returned

### Summary – Self-reported severity measures

- Describe the nature and purpose of five common measures of the severity of back pain
  - Numerical ratings of the intensity of back/leg pain
  - Roland- Morris scale – functional limitations
  - SF-12 – overall mental/physical well-being
- Physical SF-12, Roland-Morris, and back pain intensity measures are highly correlated
- Mental SF-12 is only weakly correlated with other measures

### Summary – Predictive validity of severity measures

- Compare the relative validity of the severity measures in predicting return to work outcomes in the first year after onset
  - Self-reported measures of the severity of back pain add significant predictive power to models of post-onset employment patterns.
  - Two quick and easy baseline measures of back and leg pain intensity are significant predictors of poor work outcomes up to twelve months after onset.
  - An injured worker's mental health has a significant impact on long-term employment outcomes that should not be overlooked.