



From Research to Reality™

Liberty Mutual Research Institute for Safety
Harvard School of Public Health

Physical Therapy and Disability Duration in Occupational Knee Injuries

Karen Hopcia, MS APRN, BC, COHN-S

Collaborators

Liberty Mutual Research Institute for Safety

Barbara Webster, Co-Investigator
Radoslaw Wasiak, Consultant
Santosh Verma, Consultant

Harvard School of Public Health

Eileen McNeely, Advisor
Jeffrey Katz, Harvard Medical School
Karen Kuntz, Decision Science

BLS Knee Injury Statistics

- In 2003, 4.3 million work related injuries
 - 1.3 million injuries requiring time off work
 - About half occur from MSD sprains and strains
 - Knee injuries are a significant portion of MSD injuries (105,860 workers injured a knee)
- Injuries requiring days off per 10,000 FTW
 - Back 34.6
 - **Knees - 12.1**
 - Fingers – 12.1
- There is significant lost work days from knee injuries
 - Shoulders - 18
 - Wrists - 17
 - **Knees - 14**

Literature Review – Surgery

- Surgery for knee meniscal tears are a common intervention and usually done arthroscopically
- Approximately 500,000 meniscal surgeries are performed each year
- MRI has increased precision of diagnosis and detects symptoms in asymptomatic people
- Yet information about the effectiveness of treatments after surgery remains scant.

Liberty Mutual Injury Statistics

- In 2000, Liberty Mutual knee claims were 7.1% (n = 38,101) of all claims and 9.7% of all claim costs.
- About 15% of the claims involved meniscal surgery of one or both knees.

Literature Review – Physical Therapy

- Physical therapy is a common intervention after meniscal surgery
 - Insufficient data to determine if PT improves outcomes or diminishes recovery time
 - Guidelines for PT modalities after surgery vary
 - Home programs were found to be as effective as supervised PT in a couple of studies
 - However, one paper suggests PT is important for recovery in physically demanding jobs

Physical Therapy Services

- PT services are driven by provider variables, patient variables and state regulations
- PT in WC is different from group health
- PT services in WC are driven by 2 "gatekeeping" mechanisms
 - ◆ Mandated limitations on services
 - ◆ Mandated utilization review
- Physicians prescribe PT services in many states
- Services are adjusted based on WC reimbursement
 - If visits are limited, services are bundled
 - If services are limited, single service or shorter duration

Literature Review - Age

- Increased age may play a role in the outcomes of meniscal surgery
- Acute vs. chronic knee injury identified as the main confounder to recovery rates and may be correlated with age
 - Prolonged recovery times
 - Prolonged rehabilitation times and costs
 - Less optimal outcomes

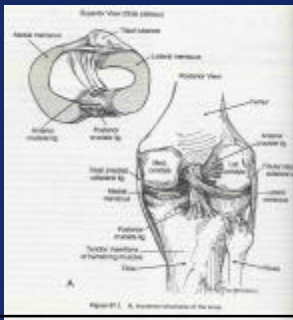
Purpose

- The purpose of this project is to investigate how the pattern (individual vs. bundled services) and type (active vs. passive) of physical therapy after meniscal surgery impacts disability duration in work-related knee claims.

Hypotheses

1. It is hypothesized that there is no relationship between quantity, duration and type of physical therapy utilization and disability duration and recurrence.
2. Older workers will have higher utilization of physical therapy treatments and longer disability durations after meniscal surgery.

Knee Anatomy



Methods - Sample

- Claims will be retrieved from the Liberty Mutual WC database according to the following criteria:
 - injured body part (53) for knee;
 - date of injury from 1/01/00 to 12/31/02.
- Create a homogenous cohort for injury severity utilizing inclusion and exclusion criteria
 - Inclusion Criteria
 - ◆ Meniscal resection which fall under CPT 29880-29881
 - Exclusion criteria
 - ◆ Subjects with identified medical co-morbidities that can be identified by codes including neoplasm, inflammatory disease or infection.
 - ◆ Trauma and injuries which affect more body parts than the knee.
 - ◆ Exclude subjects with bilateral knee injuries
 - ◆ Exclude other knee procedures such as ACL repair

Methods – Independent Variable

- Physical therapy services will be divided into active and passive modalities using an algorithm containing procedure and provider designation codes using CPT codes.
 - Active modalities: exercise, work hardening
 - Passive modalities: massage, heat or ice

Methods – Dependent Variable

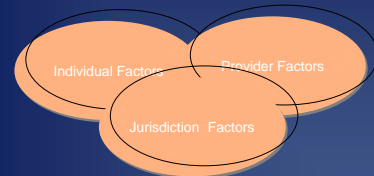
- Outcome will be disability duration as measured by Total Temporary Disability count
- Analysis will be utilized to detect recurrence of disability between 1 and 6 months after RTW
- Statistical analysis:
 - Descriptive statistics
 - Cox regression modeling

Do severe cases get more PT?

- Severity controlled by
 - The selection of meniscal surgery as a ubiquitous yet finite injury
 - Exclusion criteria of multiple injuries and surgical interventions
 - Control of the chronicity of knee injuries using age stratification
- Evaluation of Utilization Review and state patterns

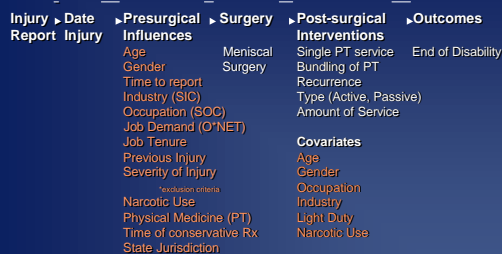
Variables of Interest

- Variables listed in the previous table will be analyzed in the following categories



Overlap and interaction of variables

Surgical Flow Diagram



Limitations

- Severity
 - Including acute vs. chronic knee injury
- Missing bills
- Misclassification of PT
- Confounders
- State differences
- Disability duration
 - Surrogate for return to work
 - Variance in light duty programs