Fatigue Management, including OSA at Union Pacific

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Fast Facts in The USA

- **Miles of Track**: 32,300
- **Employees**: 45,500
- **Locomotives**: 8,500
- **Freight Cars**: 104,700

The largest railroad in North America
Operating in the western two-thirds of the United States
The system serves 23 states
Freight Transportation
Commuter Operations in Chicago, IL
Union Pacific Health Functions

**Human Resources**
- Health Promotion
- Health & Medical Services

**Safety**
- Occupational Health Psychology
- Industrial Hygiene

**Labor Relations**
- Employee Assistance Program
Challenges For Union Pacific

- Geographically dispersed population
- Rural locations
- Mobile population
- Employee demographics
- Thirteen unions
- Benefits design issues
Where We Started

- Exercise Opportunities
- HealthTrack Program
- Medical Self-Cared
- By The Numbers: 0-1-2-4
UP Wellness
Well-Being Assessment and Follow-Up

11 Risk Factors:

- Overweight/Obesity
- Asthma
- Blood Pressure
- Inactivity
- Stress
- Nutrition
- Fatigue
- Diabetes
- Cholesterol
- Smoking
- Depression
What We Have Found

• Risk Factors Which Increased Injury Likelihood
  – Stress
  – Depression
  – Fatigue
  – Overweight

• Employees presenting with risk of fatigue were 81% more likely to have an on-duty injury.

• Employees with the following were 2xs more likely to experience injury:
  – Overweight
  – Diabetes
  – High Blood Pressure
Safety Integration

• Relationship between safety & health
  – Targeted programming to address predictors of safety incidents
  – Focus Program Integration
  – Health education briefs to be used in conjunction with Safety programs
  – Development of joint goals and measurements related to business objectives
    • Service Unit Safety Action Plan
    • Health and Medical Scorecard
Union Pacific’s Fatigue Risk Management System (FRMS)

• Risk Management Model
  – Identify, measure and prioritize risk and develop and implement controls

• Addresses Critical Challenges
  – 24/7 Operations & 24/7 Society
  – Unsupervised TE&Y workforce
  – Aging/new workforce
  – Unhealthy society

• Scientifically based “toolbox” approach
Key Elements of FRMS

• Ensuring employee preparedness: ensure that individuals who received an adequate average sleep opportunity have achieved sufficient sleep to ensure safe level of alertness [SLA]
  – Education on signs & symptoms
  – Education & policy regarding minimal sleep and reporting
  – Shared Responsibility partnerships with employee, labor organizations and government

• Additional Countermeasures (Toolbox)

• Research - ongoing process of pertinent research to ensure FRMS is evidence-based.
Fatigue Risk Management System Model

Figure 1. Fatigue risk trajectory. There are multiple layers that precede a fatigue-related incident, for which there are identifiable hazards and controls. An effective FRMS should attempt to manage each layer of risk.
Focus on Behavioral Symptoms Associated with Fatigue

Behavioral Symptoms

- Sleepiness (Epworth)
- Sleep Problems (Pittsburgh)
- Weight
- Performance
- Mood/Depression (Beck)

Symptom Checklists
Self-report Behavioral Scales
Physiological Monitoring
Sleep Disorder Screening
Shared Responsibility of Employee and Employer

Safety is the outcome of appropriately managed risks
Sleep Medicine

• FRMS
  – Centre for Sleep Research (UNISA)
  – Panel Approval

• FAID/Boardgame

• Sleep Disorders
  – Screening

• Labor/Industry/DOT
  – Medical Guidance

• Congress
Union Pacific/Federal Railroad Administration Research Agenda

• Assess the relationship between safety, health and risk factors such as: fatigue, sleep disorders, stress, depression, etc.

• Part of UP FRMS

• Create evidence-based interventions

• Partnerships with Labor and Regulators

• Bottom-line Implications: Improve employee health and safety while reducing medical costs and improving productivity.
Fatigue & Sleep Disorders Research

• Sleep Disorders – University Services
  – Objectives:
    • Assess percentage of TE&Y at risk for excessive daytime sleepiness
    • Demonstrate viability of sleep assessment as part of re-certification process
  – Methods
    • N= 437
    • Epworth Sleepiness Scale
    • Scores ≥ 10 categorized at risk
University Services Sleep Disorders Research continued

• Results
  — At risk employee is > 35% (95% CI 35.4 – 44.8%)
  — Willingness to participate (confidentiality maintained)
  — Confirmation Study
    • Scores ≥ 10 offered opportunity to wear a device to determine presence of OSA
    • 20 tests ordered, 10 completed
    • 9 confirmed positive for OSA

• Recommendations
  — Additional Research
  — Continued Voluntary Screening
  — Continued Awareness & Education
Actigraph Sleep Research

- Kansas City Actigraph – University of Denver

  - Objectives
    - Determine fatigue levels
    - Behavioral implications of feedback
    - Gather data for biomathematical validation

  - Methods
    - Sleep Diaries/Self Report
    - Two Types of Actigraphs
    - Epworth Sleepiness Scale & PSQI
    - N (Questionnaire) = 180 (60.4% response rate)
    - N (Actigraph) = 36
Actigraph Sleep Research continued

• Results

  — Lower mean sleepiness score than other sites (match approximate national average)

  — Behavioral outcomes (actigraph):
    • No statistical difference between those with feedback actigraph and those with non-performance actigraph
    • Those with self-efficacy more likely to use data to change behavior
    • Those without self-efficacy (external locus of control) unwilling to change behaviors

  — Implications for changing behaviors and providing concrete change
Why is UP doing research?

• To address concerns related to:
  – Health
  – Safety & Performance
  – Health, Safety & Cost
Fatigue and Sleep Disorders Interventions

- Evidence-based
- Education (industry leading)
- Occupational Health Nurses
- Resiliency
- Depression Recommendations
  - Increased screening and awareness
  - Manager training in signs and symptoms
Medical Community

- Understanding Safety Sensitive
- Understanding Sleep and Erratic Shiftwork
- Resources for referral
- Physician Consultants/Occupational Health Nurse Network
Contact Information

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