How to Incorporate Health Risks into New or Existing Fatigue Models
Outline

• Overview
• Brief assessment
  • Application
• Online tracker
  • Application
• Summary discussion
Work and Fatigue

• The average work week has grown to almost 50 hours a week in the U.S.
• The typical U.S. employee works the equivalent of one extra month per year
  • Compared to those in 1970
• More than 1/3 of Americans work 10+ hours/day
  • 39% are working weekends
“U.S. workers hit a record low level of well-being on the job in October of last year. In 2009, on average, only 49 percent of all Americans provided positive responses in the four categories of work environment that we measure. These categories include job satisfaction, a trusting work environment, collaborative supervision, and an opportunity to use their strengths each day.”

- John Harris
Chief Wellness Officer
Healthways
Magnitude of Fatigue

• JOEM fatigue study
  • 37.9% of U.S. workers report fatigue on the job
  • Fatigue costs companies approximately $136 billion in lost productivity
  • Fatigue reduces work performance
    • Interferes with concentration
    • Increases time needed to accomplish tasks

Magnitude of Fatigue

- Fatigued workers:
  - Less productive and more prone to illness
  - More distracted therefore more likely to be involved in a safety accident
- More than twice as likely to experience health-related lost productive time
Magnitude of Fatigue

- Rate of lost productivity for all health-related reasons
  - Higher for workers reporting fatigue, 66%
  - Compared with 26% for workers not reporting fatigue
- Total lost productive time
  - Averaged 5.6 hours/week for workers reporting fatigue
  - 3.3 hours for those not reporting fatigue

Ricci, et al. 2007
Fatigue Risk Factors

- Fatigue has been shown to be related to the following risk factors:
  - High blood pressure
  - Diabetes
  - Poor dietary habits
  - Physical inactivity
  - Excessive use of alcohol, tobacco, and/or caffeine
  - Overweight/obesity
  - Increased risk for metabolic syndrome
    - Develop sleep apnea and breathing difficulties
Brief Sleep Assessment

• Health Improvement Solutions Sleep and Fatigue Survey (HIS-SFS)
  • Used to evaluate/help individuals understand their current sleep situation and lifestyle habits
  • Generates three scores based on responses
Brief Sleep Assessment

• Question topics (partial list of topics):
  • Age
  • Gender
  • Height/weight
  • Physical activity level
  • Alcohol use
  • Tobacco use
  • Sleep issues/problems
  • Daytime alertness
  • Hours of sleep per night
Brief Sleep Assessment

• Unique features:
  • Includes lifestyle questions
  • Screens for possibility of sleep disorders
  • Looks at an individual’s risk factors
  • Provides customized feedback
    • Personal report
      – Nearly 140,000 variations
      – 9 pages with detailed feedback and graphics
      – Option of customized cover letter
      – Referrals to local sleep centers/screenings, when appropriate
Brief Sleep Assessment

• Customized personal report
  • Generates three scores:
    1. Sleep score
    2. Lifestyle behavior and health
    3. Overall score
Brief Sleep Assessment

1. Sleep score
   • Relates to the presence of sleep disorders, impaired sleep, and/or both
   • Topics include:
     • RLS
     • Sleep apnea
     • Insomnia
     • Family/job responsibility
     • Sleep hygiene
2. Lifestyle behavior and health
   • As it relates to sleep
   • Topics include:
     • Overweight/BMI
     • Physical activity
     • Life challenges/Stress
     • Alcohol use
     • Tobacco use
Brief Sleep Assessment

3. Overall Score
   • Combination of sleep score and lifestyle behavior and health
   • Provides a broader snapshot of individual’s sleep situation
CONFIDENTIAL PERSONAL REPORT FOR:

Name
Employee ID#

Month ##, Year

The following information is provided based on how you answered the questions of the HIS-SFS (Health Improvement Solutions - Sleep and Fatigue survey). In this personal report you are given three scores: a sleep score, a score that is related to your lifestyle behaviors that can affect sleep, and an overall score. The overall score gives you an understanding of your current sleep situation and how your lifestyle can play a role in the amount and quality of sleep you get.

The feedback in this personal report should not take the place of your doctor’s advice, and should not be considered a diagnosis of a condition.

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Implications

- Use results to review associations between health risks and fatigue/sleep issues
- Use scoring as variable into model input/output
- Ability to use HRA data to sensitize risk levels
Online Fatigue Management Tracker

- Allows participants to track sleep patterns/progress and set specific goals
- Comparisons between the relationships of specific behaviors and sleep
  - Illustrate relationship between sleep and other modifiable health risk factors
    - Example: sleep and physical activity
- Presented in a visual graphic
Online Fatigue Management Tracker

• Educational component
  • Provide information regarding general recommendations:
    • Getting good rest
    • Sleeping and shift work
    • Sleeping disorders
    • Health practices that can improve sleep /help eliminate sleep difficulty
Online Fatigue Management Tracker

• Components include:
  • Site Introduction
    • Description of tracker and capabilities
  • Information Gathering
    • Personal health status, behaviors related to sleep, and associated topics (i.e. BMI, nutrition)
  • Personal Sleep Profile
    • Tailored feedback based on responses to initial question set
Online Fatigue Management Tracker

• Components include:
  • Personal Goals
    • Goals specific to responses of initial question set
    • Reduce/eliminate negative health behaviors
  • Tracking Tools
    • Tools to chart progress over time
  • Education
    • Links to education, general recommendations, and health practices
  • Data Reporting
    • Provide number of participants assessing tracker weekly/monthly
Online Fatigue Management Tracker

- Tracking Tools

Daily Hours of Sleep Per Day
Online Fatigue Management Tracker

- Tracking Tools

Minutes of Physical Activity Per Day

![Physical Activity Graph]

- Physical Activity
- 1/1/2008
- 1/15/2008
- 1/29/2008
- 2/12/2008
- 2/26/2008
- 3/11/2008
- 3/25/2008
- 4/8/2008
- 4/22/2008
- 5/6/2008

- Minutes of Physical Activity Per Day

Online Fatigue Management Tracker

- Tracking Tools

Daily Hours of Sleep with BMI

[Graph showing daily hours of sleep with BMI from 1/1/2008 to 5/6/2008, with two lines: one for hours of sleep and one for physical activity.]
Impliedations

• Able to help users see connection between lifestyle risks and fatigue
• Allow for variation in model output scores over time
• Merger of tracker and modeling input/output information
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