Looking at Level Three: Critical Incidents, Fatigue and Mood

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Fatigue Risk Management System Model

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**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.
Fatigue Scores are Indicators Only

- Fatigue scores are indicators only of the impact of sleep deprivation.
- They are based on a statistical analysis of research performed into fatigue levels over a broad sample of population and provide guidance on the fatigue of an individual.
Level #3: Assessment of Symptoms Related to Fatigue
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.
### 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

- Sleepiness (Epworth)
- Sleep Problems (Pittsburgh)
- Weight
- Performance
- Mood/Depression (Beck)
Focus on Behavioral Symptoms Associated with Fatigue

Symptom Checklists
Self-report Behavioral Scales
Physiological Monitoring
Sleep Disorder Screening

Behavioral Symptoms

Individual Differences

Job Demands
Life Events
Work Schedule

Biological Capability & Adaptive Resources

Vulnerability
Genetic Predisposition

Diathesis Stress Model

Depression

Sleepiness
Lapses
Errors
Accidents

Sherry (2009)
Behavioral Consequences Resulting of Fatigue in Workplace

Diathesis Stress Model

- Individual Differences
- Job Demands
- Critical Incidents
- Work Schedule
- Biological Capability & Adaptive Resources
- Vulnerability
- Genetic Predisposition
- Sleepiness
- Lapses
- Errors
- Accidents
- Depression

Sherry (2009)
Studies Done in Several Locations

- Kansas City
- San Antonio
- Seattle
- Los Angeles
- Roseville
- Denver
- Salt Lake City
Method is always to invite all employees arriving on duty to complete a survey packet.

Packet includes a number of measures including:
- Epworth
- Pittsburgh
- Beck
- PCL-C
Demographics

- Marital Status:
  - Married 65.9%
  - Divorced 7.1%
  - Single 27.1%

- Gender
  - Male 97.3%

- Race
  - White 80.4%
  - Hispanic 9.9%
  - African Am 4.4%
## Involved in a Traumatic Event

<table>
<thead>
<tr>
<th></th>
<th>Frequency</th>
<th>%</th>
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</thead>
<tbody>
<tr>
<td>No</td>
<td>251</td>
<td>21.8</td>
</tr>
<tr>
<td>Yes</td>
<td>316</td>
<td>27.4</td>
</tr>
<tr>
<td>Missing</td>
<td>586</td>
<td>40.8</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>1153</strong></td>
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</table>
Post Traumatic Stress Checklist

N=659
# Relationships Between Critical Incidents Mood and Fatigue

<table>
<thead>
<tr>
<th></th>
<th>PTSD Screen</th>
<th>BDI Depression</th>
<th>Suicide Ideation</th>
<th>Epworth Sleepiness</th>
<th>Pittsburgh Sleep Quality</th>
<th>Insomnia</th>
<th>Job Satisfaction</th>
<th>Turnover Intent</th>
<th>Intent to Work Safe</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Traumatic Event</strong></td>
<td>.192*</td>
<td>.046</td>
<td>-.115</td>
<td>.033</td>
<td>.175*</td>
<td>.119*</td>
<td>-.131</td>
<td>.130**</td>
<td></td>
</tr>
<tr>
<td><strong>GCA/T</strong></td>
<td>.124*</td>
<td>.068</td>
<td>.165*</td>
<td>.010</td>
<td>.081</td>
<td>.034</td>
<td>-.123*</td>
<td>.318</td>
<td>.0</td>
</tr>
<tr>
<td><strong># Fatalities</strong></td>
<td>.263*</td>
<td>-.121</td>
<td>-.058</td>
<td>.059</td>
<td>.020</td>
<td>.058</td>
<td>-.275</td>
<td>.033</td>
<td>.078</td>
</tr>
<tr>
<td><strong>Killed close</strong></td>
<td>.203*</td>
<td>-.047</td>
<td>-.078</td>
<td>.156*</td>
<td>.192*</td>
<td>.169*</td>
<td>-.110</td>
<td>.292*</td>
<td>-.104</td>
</tr>
<tr>
<td><strong>Near Miss</strong></td>
<td>.180*</td>
<td>.103*</td>
<td>-.010</td>
<td>.062</td>
<td></td>
<td></td>
<td></td>
<td>.092</td>
<td>-.060</td>
</tr>
<tr>
<td><strong>Injured</strong></td>
<td>.191*</td>
<td>.102*</td>
<td>.001</td>
<td>.076*</td>
<td></td>
<td></td>
<td></td>
<td>.119</td>
<td>-.107</td>
</tr>
</tbody>
</table>
Critical Incidents and Trouble Sleeping

OR = 1.28
Traumatic Events & Trouble Sleeping

OR = 1.5, Chi Square = .08
Trauma & Sleepiness

OR = 1.02, Chi Sq = ns
Grade Crossing Events & Sleepiness

OR = 1.7, Chi Square = .05
The Issue...

Depression

Traumatic Events

Fatigue
Issues of causality

- Fatigue and depression are related

Need for additional research

Follow-up with structured clinical interviews

Health education & screening