Understanding Fatigue and Alertness: A Proactive Way to Manage the Risks in the Workplace

Presented by

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ABOUT CIRCADIAN AUSTRALIA

❖ Global leader in 24/7 workforce health and safety solutions for over 30 years
❖ Serves over 50% of the Fortune 500 and many international 24/7 companies
❖ Helps establish government policy and industry standards for the 24/7 workforce
What is Fatigue?

Fatigue can be described as:
“a state of impaired physical and/or mental performance and lowered alertness arising as a result of inadequate restorative sleep. Other mediators of fatigue are time of day and length of time awake”
Consequences and Costs of Fatigue

Injuries and Fatalities
Employee Turnover and Absenteeism
Adverse Health Consequences
Adverse Family & Social Impacts
Productivity
Equipment Damage, Wear and Tear
Corporate Reputation
How fatigue affects us?

- State of impaired mental/physical performance
- Reduced vigilance/attentiveness
- Loss of cognitive and logical reasoning skills
- Impaired judgment
- Reduced motor coordination
- Slower reaction time
- Inability to process communications
- Reduced productivity
- Impaired or reduced alertness that impacts safety
What Causes Fatigue?

1. Circadian (Body Clock) Factors
2. Sleep Factors (Sleep Hygiene)
3. Work and Environmental Factors
4. Personal Factors
5. Sleep Disorders
What’s the outcome of fatigue?

Not alert enough to do the job safely
IN SIMPLE TERMS

Fatigue does not discriminate.

Everyone is impacted in different ways.

There is no one size fits all way to manage fatigue.

Fatigue is managed through personal awareness and understanding.
Fatigue is a company wide issue

Who in your organisation could have a fatigue related issue that impacts the safety and productivity of your operation?

- Pilots
- Cabin Crew
- Engineers
- Ramp Staff
- Operations and load control
There is only one real cure for fatigue

- Fatigue is mitigated by obtaining sufficient restorative sleep.
- The key to safe operations is ensuring that staff are alert when you need them.
Fatigue Risk Management
5 Steps to managing the Risks

**Defence 1**
- Sufficient Staffing Levels
- Workload-Staffing Balance Proportional 24/7 staffing

**Defence 2**
- Sufficient Sleep Opportunity
- Shift / Duty scheduling, Overtime policies, Fatigue risk models

**Defence 3**
- Sufficient Sleep Obtained
- Employee training Sleep disorder treatment & compliance

**Defence 4**
- Sufficient Workplace Environment
- Workplace design, Light color filtering, Rest policies

**Defence 5**
- Sufficient Alertness Behavior
- Peer monitoring Fitness for duty audit, Alertness monitoring

**Goals**
- Sufficient Staffing Levels
- Sufficient Sleep Opportunity
- Sufficient Sleep Obtained
- Sufficient Workplace Environment
- Sufficient Alertness Behavior

**Metrics**
- Excessive overtime Staffing Imbalance
- Schedule Driven Fatigue Risk
- Sleep Deprivation Lifestyle stress
- Workplace Environment Fatigue
- Fatigue-related Errors

**FACTS**
- Incidents & Accidents

**Fatigue Risk Root Cause Analysis**

Fatigue Risk Management Plan
Case Study
RFDS WO FRMS Case Study
The Project

A three step process in developing a plan to achieve the outcomes.

1. Scientific based review of the rosters and work practices.
2. Creation of a system based on the scientific data analysis and CASA requirements.
3. Empowering the staff through policies, systems and education to manage and understand their alertness levels.
The Science
Bio-mathematical model (CAS) Validation

At a Fatigue risk score of mid to high 50’s the risk of incidents, accidents & errors increases exponentially

CAS Fatigue Risk vs. Human Error Incidents
Composite risk curve across multiple diverse transportation and industrial operations
The Science
CAS Fatigue data

435 months of work hours analysed
Highest fatigue score was 45. Mean was 33
Education & Data Collection

• Pilots volunteered to wear Readiband actigraph wristband sleep trackers 24/7 for 2-3 weeks
• Actigraphy data was de-identified and analysed by Circadian Australia
• Pilots offered confidential one-on-one sleep analytics consultations to determine root cause sleep disruption factors and interventions recommended to improve sleep quality and quantity
• Pilots provided with Circadian Australia Fatigue Training Online courses
Wrist Actigraphy

Predictive Fatigue Monitoring Solution
Wrist Actigraphy
Predictive Fatigue Management Video
Your Readiband captures activity data to calculate when and how well you sleep. Learn more »

**SUMMARY**

**DETAIL**

**EFFECTIVENESS ZONES**

**EXPORT**

**Effectiveness**

**Asleep**

**Manual sleep/wake input**

**Mon, Dec 5**

Quantity 5hr 00min

From 05:15

To 10:44

Confidence 3

**Tue, Dec 6**

Quantity 5hr 00min

From 23:25

To 07:14

Confidence 5

**Wed, Dec 7**

Quantity 3hr 35min

From 23:15

To 06:54

Confidence 5

**Thu, Dec 8**

Quantity 5hr 35min

From 22:55

To 06:54

Confidence 5
The Outcome

A system that acknowledges the risks and provided tools to manage them.

An education program for each person to understand their own limitations.

A system that met the commercial needs.
Key elements to manage risk

Any risk management systems needs to include all participants to be valid.

- Managing only one sector leaves all the rest at risk.

- Pilots
- Cabin Crew
- Engineers
- Ramp Staff
- Operations and load control
The flaw in using only prescriptive rules.

1. Prescriptive duty rules work on the following assumptions:
   1. All participants are equal, and
   2. Work loads are equal for all days.

   Unless all staff and their work days are the same this means people can work legally while unfit for duty or be stopped from work when safe.

   A fatigue management solution will meet regulatory operational, commercial and social needs.
Defenses Against Fatigue

1. Roster – adequate recovery time
2. People – sufficient number to do the work
3. Education – supervisors, schedulers,
4. Workplace - stimulation
5. Monitoring - observe

Organisational culture of acting upon fatigue when reported

An individual is as responsible for their fatigue management as the organisation they work for.
How can we help?

Circadian Australia and Techsafe Aviation can:

- work with you to understand the fatigue risk of your business.
- Analyse your current operations to ascertain if fatigue is a systemic issue.
- Work with your staff to understand whether fatigue is a personal issue.
- Deliver a cost effective solution to mitigate fatigue risks, whilst achieving corporate requirement.