TRI-STATE SAFETY SUMMIT '24

NAFMP
North American Fatigue Management Program

Fatigue Management Program Roadmap Course

Tri-State Safety Summit

March 19, 2024

COMMERCIAL VEHICLE SAFETY ALLIANCE
CVSA®

Get the slides at the bottom of the page of nafmp.org/webinars

Course Schedule

Session	Central Time	Topic
1	10:00 - 10:50 am	**Fatigue, Safety Culture & Partnerships**
Break	10:50 - 11:00 am	Break / Template Completion
2	11:00 am - 11:50 pm	**Education & Training**
Break	11:50 - 12:00 pm	Grab Lunch / Template Completion
3	12:00 - 12:50 pm	**FRMS & SDMP**
Break	12:50 - 1:00 pm	Break / Template Completion
4	1:00 - 1:50 pm	**Scheduling, Technologies & Next Steps**
Closing	1:50 - 2:00	Submit Template/Registration for Certificate of Completion

Poll

Alertness and fatigue are like an on/off switch, you are either awake or asleep

- True
- False

Vigilance Spectrum

- **Delta brain waves:** Deep sleep. 1 to 4 Hertz
- **Theta brain waves:** Sleeping or daydreaming when awake. 4 to 8 Hertz
- **Alpha brain waves:** Awake and calm. 8 to 12 Hertz
- **Beta brain waves:** Awake, alert, busy, and focused. 12 to 38 Hertz
  - **Low beta waves:** Thinking. 12 to 15 Hertz
  - **Beta waves:** Performing or focusing. 15 to 22 Hertz
  - **High beta waves:** Excited or anxious. 22 to 38 Hertz
- **Gamma brain waves:** Highly alert and conscious. 30 to 80 Hertz

Poll

The only cause of fatigue is insufficient sleep

- True
- False

Alertness Has Supply & Demand

- Supply Factors
  - Internal individual susceptibility: circadian rhythm, amount of sleep, time of day, time awake, stimulants, other drugs, health, genes, mood
- Demand Factors
  - Task related: Time on task, task complexity, task monotony
  - Environmental: Road conditions, weather, stress (heat, noise, vibration), vehicle design, social interaction, other stimulation

Poll

In truck/bus crash statistics, driver fatigue is…

- The number 1 cause
- Not a significant cause
- Underrepresented

NTSB Report

- Factors That Affect Fatigue In CMV Crashes
  - The National Transportation Safety Board believes that the incidence of driver fatigue is underrepresented in FARS in general and in FARS specifically with regard to CMV drivers.
  - Research has suggested that CMV driver fatigue is a contributing factor in **30 to 40 percent** of all CMV crashes.

Crash Causation: 87% Driver Related

- **Non-Performance:** Driver fell asleep, was disabled by heart attack or seizure or physically impaired for another reason
- **Recognition:** The driver was inattentive, distracted by something inside or outside the vehicle or failed to observe the situation adequately for some other reason
- **Decision:** Driver was driving too fast for conditions, misjudged the speed of other vehicles or followed other vehicles too closely
- **Performance:** Driver panicked, overcompensated or exercised poor directional control

Crash Causation Associated Factors

- 14% Inadequate Surveillance
- 13% Fatigue
- 10% Felt Under Work Pressure From Carrier
- 9% Inattention
- 8% External Distraction
- **54% Total: Crashes where diminished vigilance was involved**

FMCSA Large Truck Crash Causation Study

CMV Driving Worsens Fatigue

- Tight schedule to get enough sleep
- Extended work hours + commuting
- Changing work schedules
- Work/sleep periods conflict with circadian rhythm
- Limited time for rest & naps
- Unfamiliar & uncomfortable sleep locations
- Sleep disruptions
- Difficulty finding nutritious food on the road
- Limited opportunities for exercise
- Personal, work and environmental stressors

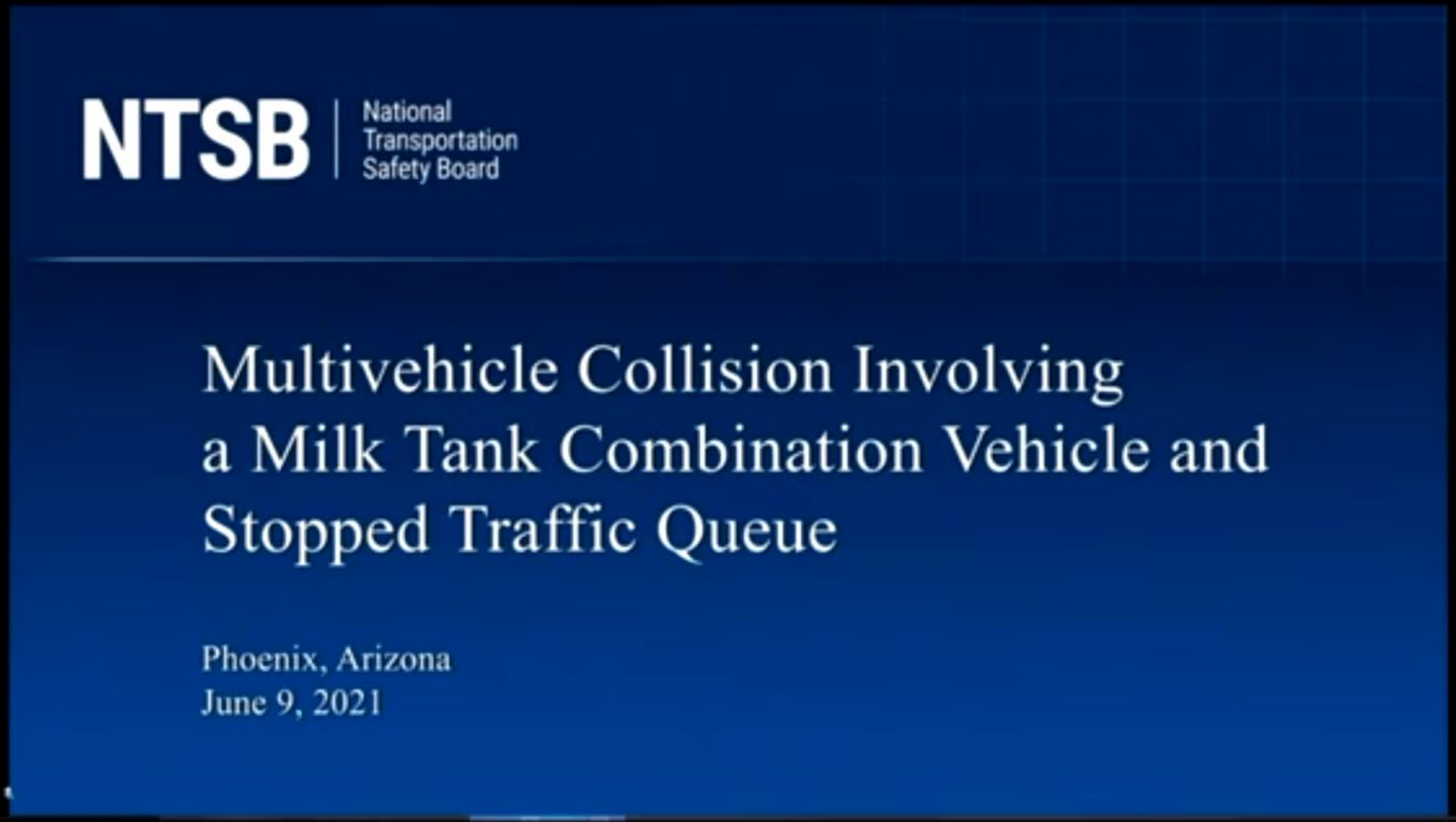
Fatigue Crash Characteristics

- Usually single-vehicle
- Road departure
- Driver alone
- Often on monotonous roads
- Most in early morning, between 2-7 am
- Usually, serious crashes

NTSB Crash Investigation

NTSB Crash Investigation Page

NTSB Video


NTSB
National Transportation Safety Board
Multivehicle Collision Involving a Milk Tank Combination Vehicle and Stopped Traffic Queue
Phoenix, Arizona
June 9, 2021

Crash Investigation Results: Driver

- Expired CDL/Medical?
- Prior violations, convictions, crashes?
- Tested positive for alcohol or drugs?
- Speeding?
- New driver / New truck?
- Pre-existing medical conditions?
- Prescription drug use?
- Calling, texting, not facing the road?
- Not holding steering wheel?
- Kept a regular schedule?
- How long were prior workdays?
- How long prior sleep opportunity?
- What was the time of day?
- How many signs of upcoming stopped traffic were before crash?
- Responded to brake lights?
- Pressed the brakes?
- Died?

Milk Tanker Crash Cause Determination

- NTSB determined that the probable cause of 2021 multivehicle crash in Arizona was the truck driver's failure to respond to the fully conspicuous traffic queue, likely **as the result of fatigue**

- Contributing to the crash was the carrier's
  - **Poor oversight of its drivers**
  - **Lack of fatigue management program**
  - **Failure to enforce its own policies, such as those regarding on-duty hours**

- All a consequence of the carrier's inadequate **safety culture**

Read NTSB press release

"A program to manage driver fatigue in agricultural transportation and collision avoidance technology would have prevented a fatal 2021 multivehicle collision in Phoenix where a tractor-trailer carrying milk crashed into stopped traffic"

NAFMP

North American Fatigue Management Program

nafmp.org

Fatigue Management Program (FMP)

1. Safety Culture
   - Partnership Among Carriers, Shippers, Receivers & Brokers
   - Education & Training

2. Fatigue Risk Management System
   - Sound Scheduling Practices
   - Sleep Disorder Screening & Treatment Program
   - Fatigue Management Technologies

Benefits

- Lower Fatigue Related Crashes
- Lower Legal Liability Exposure
- Cost Reduction
  - Driver retention
  - Medical costs
  - Maintenance
- Labor force
  - Safer
  - More productive
  - Healthier & happier

Return-On-Investment

- Report on Schneider National Inc. OSA Implementation Program showed a significant return on investment
  - Significant savings on medical costs for diagnosed and treated drivers
    - Drivers diagnosed and treated with CPAP, **average savings of $550 per driver/month**
  - 73% reduction in preventable crashes among drivers treated for OSA
  - Retention rate of treated OSA drivers was 2.3 times greater than for all company drivers

NAFMP ROI Calculator

FMP Template

- Microsoft Form
- Navigate with form controls
- Don’t use browser controls
- Save PDF at the end
- Edit form with MS Account

- Select **YES** for grading

- **Complete it during breaks**

FMP Template Rubric

1. Steering Committee Terms of Reference — 10%
   a. Policy
   b. Responsibilities
   c. Documentation process

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2. Safety Culture — 40%
   a. Education - 10%
   b. Training - 10%
   c. Ongoing communication - 20%

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3. Fatigue Risk Management System — 40%
   a. Operation - 2%
   b. Predictive, Proactive, & Reactive Controls - 20%
   c. Risk Assessment - 5%
   d. Measures and countermeasures - 5%
   e. Evaluation - 8%

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4. Timeline — 10%
   a. Introduction
   b. Training
   c. Evaluation

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5. Total — 100%

Steering Committee Terms of Reference

a. Policy
b. Responsibilities
c. Documentation

Assemble Steering Committee

- Responsible for development, oversight and support
- All levels of the organization, especially drivers
- Varying levels of experience
- Representative of the organization's general population
- Sample terms and responsibilities
  - Implementation Manual, Appendix B, Page 153

[Inset Company Name] Terms of Reference: FMP Steering Committee

Purpose

The Fatigue Management Program Steering Committee (FMPSC) is responsible for coordinating all fatigue management activities at [inset company name]. This includes responsibility for gathering, analyzing, and reporting on data that facilitates the assessment of fatigue among commercial motor vehicle (CMV) drivers. The FMPSC is also responsible for ensuring that the FMP meets the safety objectives defined in the FMP Policy, that HOS requirements are met, and that the FMP facilitates the management of safety risks in general.

Terms of Reference

The FMPSC is directly responsible to the VP of Safety and reports through the Department of Safety. Its membership includes at least one representative of each of the following groups: management, dispatch, and drivers.

The tasks of the FMPSC are to:

- Develop, implement, and monitor processes for identification of fatigue hazards;
- Ensure that comprehensive risk assessment is undertaken for fatigue hazards;
- Develop, implement, and monitor measures and countermeasures to manage identified fatigue hazards;
- Develop, implement, and monitor effectiveness of FMP performance metrics;
- Be responsible for the design, analysis, and reporting of studies that measure driver fatigue, when such studies are needed for the identification of hazards, or for monitoring the effectiveness of controls and mitigations;
- Ensure that all relevant personnel receive appropriate FMP education and training, and that training records are kept as part of the FMP documentation;
- Develop and maintain strategies for effective communication with all parties;
- Ensure drivers and other relevant personnel receive responses to their fatigue reports;
- Communicate fatigue risks and the performance of the FMP to top management;
- Develop and maintain FMP documentation;
- Ensure that it has adequate access to scientific and medical expertise as needed, and that it documents recommendation made by these specialist advisors and the corresponding actions taken;
- Keeps informed of scientific and operational advances in fatigue risk management principles and practices; and
- Manage effectively and be accountable for FMP resources.

The FMPSC will meet monthly. Minutes will be taken during meetings and distributed within 10 working days after each meeting. The FMPSC will present an annual budget request in [designated part of the financial cycle] and an annual report of all expenditures.

Develop Policy

- FMP Steering Committee with input from drivers
- Needs to address
  - All elements
  - Scope: as hazards are identified, add or remove applied operations
  - Shared responsibility and accountability between management, drivers, dispatchers and others
  - Safety objectives: specific, motivational, attainable, relevant and trackable
  - Clearly written and signed by executive accountable
  - Clearly communicated in the organization
  - Management commitment to fatigue reporting and continuous improvement
  - Regular evaluation of FMP
  - Sample policy, Implementation Manual, Appendix C, Pages 155-157

FMP Policy Example 1 (adapted from ICAO, 2011)

[Insert Company Name] Fatigue Management Program Policy

As a commitment to the continuous improvement of safety, [insert company name] has a Fatigue Management Program (FMP) to management fatigue-related risks.

This FMP applies to all operations in [insert company name]. The FMP manual describes the processes used for identifying fatigue hazards, assessing the associated risks, and developing, implementing, and monitoring controls and mitigations.

Under this policy:

Management is responsible for:

- Providing adequate resources for the FMP;
- Providing adequate staffing levels to minimize fatigue risk;
- Providing drivers with adequate opportunities for recovery sleep between duties;
- Creating an environment that promotes open and honest reporting of fatigue-related hazards and incidents;
- Providing fatigue management training to drivers, dispatch, and other FMP support staff;
- Demonstrating active involvement in and understanding of the FMP;
- Ensuring that the fatigue risks within their area(s) of responsibility are management appropriately;
- Regularly consulting with drivers regarding the effectiveness of the FMP; and
- Demonstrating continuous improvement and providing an annual review of the FMP.

Drivers are responsible for:

- Making appropriate use of rest periods (between shifts and periods of duty) to obtain sleep;
- Participating in fatigue management training and education;
- Reporting fatigue-related hazards and incidents as described in the FMP manual;
- Complying with the FMP Policy;
- Informing their manager or supervisor immediately prior to or during work if;
    - They know or suspect they or another driver are suffering from unacceptable levels of fatigue; or
    - They have any doubt about their or another driver's capability to accomplish their duties.

Fatigue Management must be considered a core value of our business as it provides a significant opportunity to improve the safety and efficiency of our operation and to maximize the well being of our staff.

Policy authorized by:

(Signed)_____
[Insert title of accountable Executive]

Date:_____

FMP Policy Example 2 (adapted from RTA[110])

[Insert Company Name] Fatigue Management Program Policy

The purpose of this policy is to establish the requirements for managing driver fatigue in [Insert Company Name]. It is intended that this policy will reduce the risk of fatigue-related injuries and incidents in the workplace.

Scope and coverage
This policy applies to all employees, especially those whose work involves shift work, extended hours, and on-call arrangement.

Policy statement
[Insert Company Name] is committed to providing and maintaining safe systems of work for all its employees, including those drivers whose work involves shift work, extended hours, or on-call arrangements.

Fatigue is a mental or physical exhaustion that prevents a person from functioning normally and can impair safe work performance.

Fatigue can be caused by both work and non-work related factors. Non-work related factors include family responsibilities, social activities, health issues (such as sleep disorders), study commitments, and sporting commitments. Work factors include shift work, especially night shifts, working unusual shifts, and working extended hours.

While not all people respond to fatigue in the same way, fatigue can cause reduced concentration, impaired coordination, compromised judgment, and slower reaction times; ultimately increasing the risk of incidents and injuries.

Responsibilities
Managers and drivers have a responsibility to ensure that fatigue does not impact the safety, health, and well-being of themselves and others.

Under this policy:

Management is responsible for:

- Applying risk management in consultation with staff, especially in consultation with drivers;
- Ensuring systems of work that minimize the risk of fatigue, for example: reasonable rosters, reasonable overtime practices, and adequate opportunities for recuperation between shifts;
- Providing opportunities for drivers to obtain adequate rest from work;
- Monitoring workloads, work patterns, dispatch practices, and roster arrangements to ensure drivers are not placed at risk from fatigue;
- Consulting with drivers when introducing shift work or new roster systems; and
- Providing information, instruction, and training about fatigue risks to health, safety, and well-being of drivers.

Drivers are responsible for:

- Participating in risk management processes;
- Using time off from work to recuperate in order to be fit and able for the next shift;
- Participating in education and training in order to gain an understanding of fatigue;
- Avoiding behaviors and practices that contribute to the development of fatigue, and which could place themselves and others at risk; and
- Recognizing signs of fatigue that could place health, safety, and well-being of themselves and others at risk and reporting this to their manager or supervisor.

Policy authorized by:

(Signed)_____
[Insert title of accountable Executive]

Date:_____

Define Roles & Responsibilities

- Management
  - Ensuring implementation, adequate resources & adequate staffing
  - Provide drivers with adequate opportunities to recover from sleep debt
  - Creating a safety culture that supports honest reports of fatigue
  - Providing FMP education and training to all relevant employees
  - Ensuring fatigue hazards are managed or monitored
  - Regularly communicating effectiveness of FMP with drivers
  - Providing commitment to continuous FMP improvement
- Drivers
  - Choosing behaviors that reduce fatigue risk
  - Appropriately using available opportunities for rest/sleep
  - Reporting instances of fatigue or when adequate rest could not be obtained
  - Attending and participating in FMP education and training
  - Communicating with management when known or suspected that they or another driver is suffering from dangerous levels of fatigue

Develop Documentation Process

- Policies & objectives
- Processes and procedures
- Each party‘s accountability, responsibility and authority
- Education and training program description, requirements and attendance records
- Data, findings and recommendations, FRMS

Safety Culture

a. Ongoing Communication
b. Education
c. Training

What Is a Safety Culture

- Shared behavior pattern and beliefs related to safety
- Safety is a value
- Safety is a part of company's identity
- Shared responsibility for safety
- Commitment to helping others perform safely

Module 2: Safety Culture

Safety Culture vs Crashes

- Crashes are usually the result of risky behavior
- Drivers' behaviors are influenced by environmental & personal factors
- Positive safety cultures attempt to change factors that occur before and after the occurrence of risky behavior
- Positive safety culture is necessary prior to implementing an FMP

Top Management "Buy In"

- Employees often follow authority or top management and look to them for guidance in times of change
- Champion the FMP through face-to-face interactions
- Avoid lip service
- Attend and participate in all meetings concerning the FMP
- Emphasize the benefits of the FMP and beliefs in its success
- Provide positive feedback, praise, and recognition for all employees involved in the FMP
- Be actively involved in the development of the FMP

Build Trust

- Involve employees from all levels of the organization in the development of the FMP
- Seek specific feedback about the FMP
- Actively listen to all concerns
- Provide opportunities for choice in the FMP development process among employees
- Consider CMV driver fatigue management a value and not a priority
- You should be expected to follow the FMP

Management Education and Training

- Critical for you to fully understand the concepts behind the FMP before developing the FMP
- Organizational culture change requires all employees to understand the basic principles behind change
- Management needs education & training in the best practices related to the FMP in order to champion the FMP

Develop Accountability

- Strive towards self-directed responsibility and accountability
- Recognize and acknowledge involvement in the FMP
- Hold employees accountable for things in their control
- Develop SMART (Specific, Motivational, Achievable, Relevant, Trackable) goals
- Feedback on progression toward goal accomplishment
- “Fact-find” not “fault-find”
- Focus on process measures instead of outcome measures

Develop Policies for Recognition

- Specific behaviors
- Participation in FMP development, implementation, and evaluation
- Policies for recognition & rewards should be well defined & easily understood
- Achievable, but motivating
- Develop policies for both group and individual recognition
- Group recognition should not be contingent on an individual's failure(s)

Support the FMP

- Need to show continued support for the FMP
- Formal and informal communication to gather feedback regarding the FMP
- Follow through with pre-defined rules for reward and recognition
- Visibility and participation in all meetings related to the FMP
- Actively listen to all feedback and address issues with the steering committee
- Post weekly/monthly charts tracking progress of the FMP

Provide Ongoing Communication

- Management
  - Maintain formal & informal communication channels
  - Remain active in fatigue related discussions
  - Actively listen and address all FMP-related feedback
  - Attendance at fatigue-related meetings to demonstrate FMP commitment
    - Change or align policies and procedures
    - Recognize and acknowledge drivers' efforts
    - Provide and receive feedback with/from drivers
    - Encourage correct fatigue management behaviors
  - Face-to-face meetings
    - Messages clearly stated, timely, and based on credible evidence
    - Opportunity to hear criticism directly from drivers & address their concerns
    - Opportunity to privately provide drivers with corrective feedback outside group
    - Opportunity to praise and recognize drivers actively involved
    - Opportunity for drivers to observe enthusiasm of management and reinforce FMP as a value

Shipper and Receiver Best Practices

1. Realistic Trip Schedules
2. Reduce Loading/Unloading Delays
3. “Driver-Friendly” Queuing Practices
4. Off-Hour Parking Access

Module 6: Shippers & Receivers

TCA/NITL Code of Ethics

- Established by the National Industrial Transportation League (NITL) and Truckload Carriers Association (TCA)
- Voluntary Guide to Good Business Relations
  - 25 shipper/receiver and 22 carrier/driver guidelines
- Often incorporated by reference into carrier-shipper contracts
- Has not solved all problems but has increased mutual understanding and cooperation

Selected Shippers & Receivers Guidelines

- Maintain reasonable hours for loading and unloading according to volume of shipments with appropriate consideration for offering evening and weekend hours. Provide carriers/drivers 24-hour access to facility contacts to facilitate resolution of loading/unloading issues
- Promptly load/unload trucks that arrive within the scheduled time. Accommodate or reschedule pickups deliveries when unforeseeable events intervene. Make reasonable effort to be flexible in loading/unloading trucks that arrive early or late or without an appointment
- Establish reasonable transit times based on compliance with government regulations
- If available, provide a safe harbor (parking) for drivers who cannot legally drive to another location or for early arrivals
- Treat drivers with courtesy and respect. Provide drivers access to safe, clean, and well-lit restrooms, water and other comfort facilities where available

Selected Carrier & Drivers Guidelines

- Quote transit times that can clearly be achieved within driver hours-of-service regulations and prevailing speed limits
- Communicate in a timely manner to shipping and receiving personnel all significant delays or problems with performing to pickup or delivery specifications prior to failure
- Strive to meet all service commitments to deliver shipments on a timely basis (when loaded on time and allowing for a reasonable transit time)
- Provide shipper/receiver with timely advance notice of possible service failures based on contract and/or tender expectations
- Be forthcoming and provide honest and proactive information to shippers regarding safety status changes and potential companywide status

Education & Training Courses

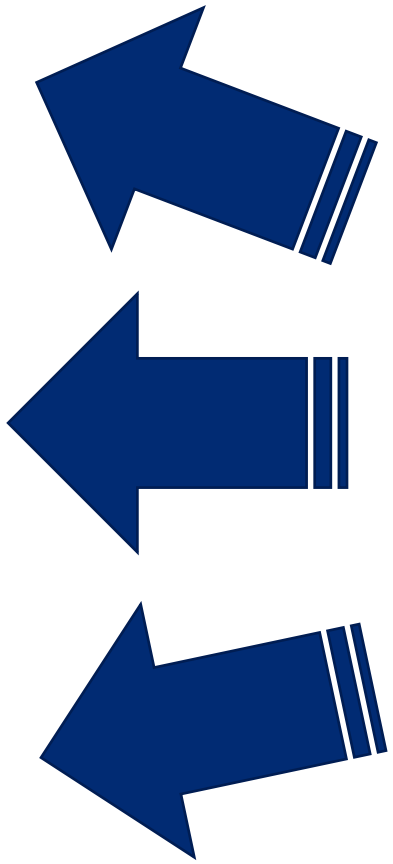
- eLearning Platform & PowerPoint Downloads
  - Motor carrier executives and managers
    - Module 1 (Intro), 2 (Safety Culture), 7 (Sleep Disorders), 10 (Technologies)
  - Motor carrier trainers
    - Module 5 (Train-the-Trainer)
  - Motor carrier dispatchers and driver managers
    - Module 9 (Scheduling)
  - Freight Shippers, Receivers, Brokers
    - Module 6 (Role of shippers & receivers on driver safety)
  - Drivers
    - Module 3 (Driver Ed), 8 (Sleep Disorders) & 9 (Scheduling)
  - Driver Families
    - Module 4 (Family Ed)

Reminders, Please

- Not medical professional
- Consult your medical provider before following any lifestyle recommendations or if you feel any discomfort
- You are responsible for any consequences of following any recommendations provided
- Be aware and try to eliminate the stigma associated sometimes with sleeping, metabolic diseases, substance abuse and mental health
- Do not allow any recommendations cause you to worry or become obsessed with a toxic wellness culture

Wellness Affects All Body Systems

- Messaging
  - Nervous
  - Endocrine
  - Immune
  - Reproductive
- Plumbing
  - Respiratory
  - Cardiovascular
  - Digestive
  - Urinary
- Support
  - Skeletal
  - Muscular
  - Integumentary



- Sleep
- Positive Relationships
- Positive Behaviors
- Nutrition
- Exercise

What will kill you faster?

- No Sleep
- No breathing
- Starvation
- Dehydration

Importance of Sleep: Biology

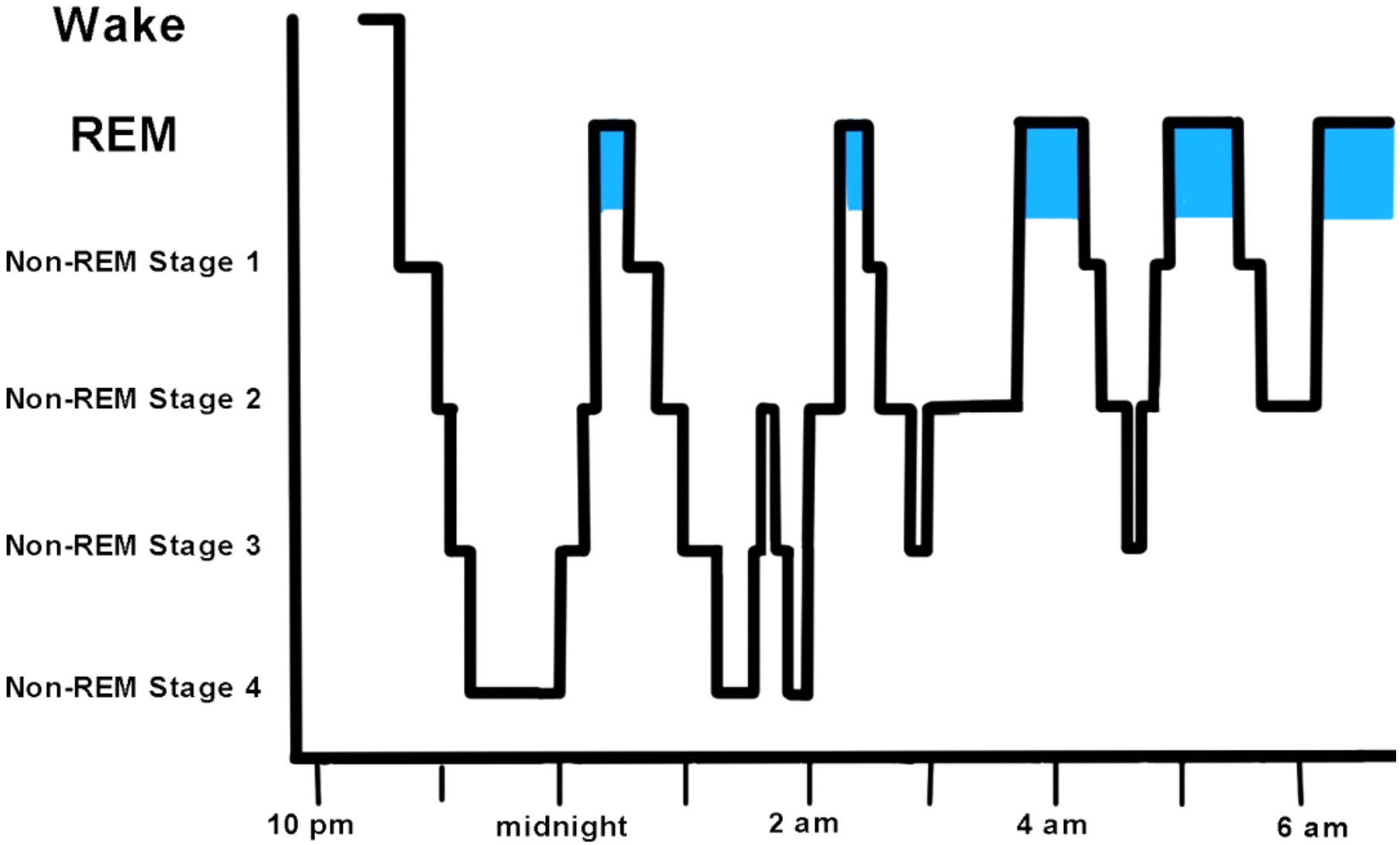
Sleep Functions

- Energy recharge
- Cellular restoration
- Brain function
- Emotional wellbeing
- Metabolism maintenance
- Immunity enhancement
- Heart health

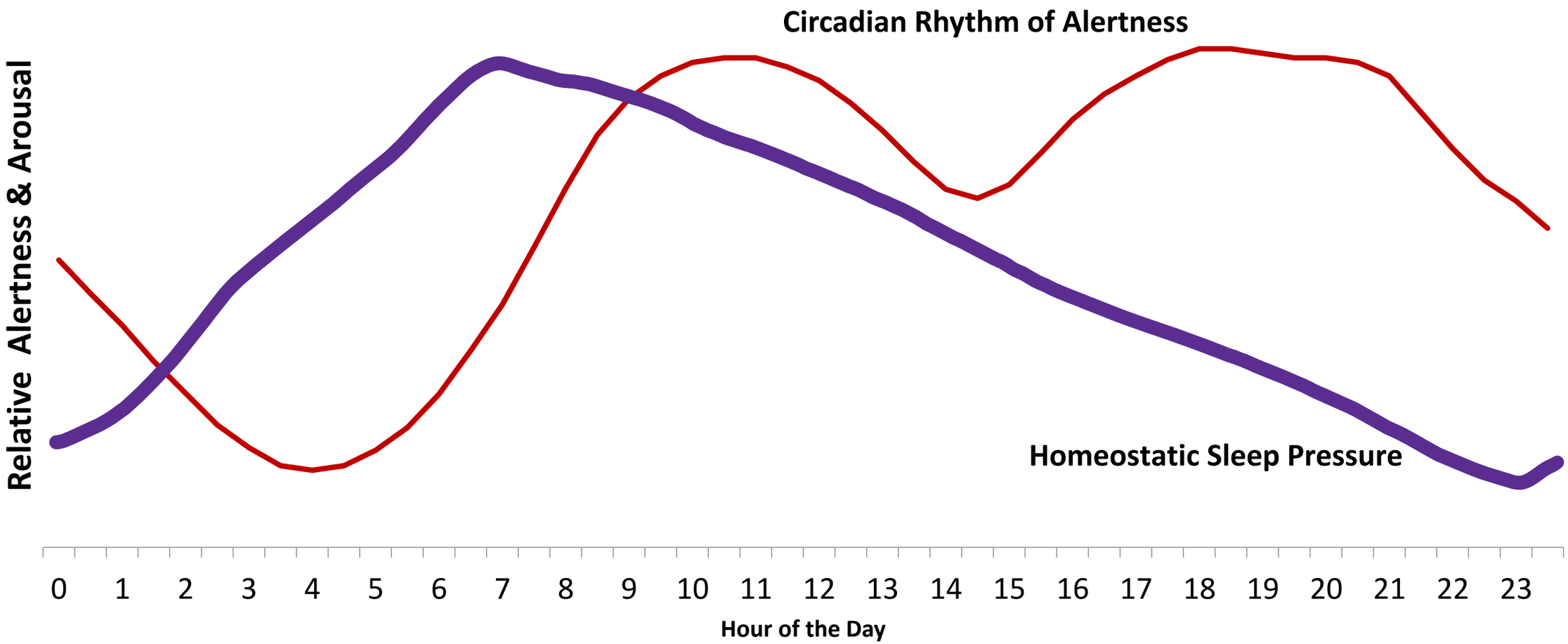
Sleep Deprivation Effects

- Metabolic disorder
- Reduced immune system functioning
- Gastrointestinal problems
- Disrupts relationships
- Worsens psychiatric conditions
- Decreased quality of life & Increased sick days

Sleep Architecture



Sleep Drivers: The Clock & the Timer



Energy Stimulation Hygiene

- Light
- Temperature
- Sound
- Substances
  - Food
  - Caffeine
  - Alcohol
  - Nicotine
  - Amphetamines
  - Medications

Energy Release Hygiene

- Exercise
  - Early: Cardio & Strength
  - Anytime: Stretching & Breathing (Blow your nose & sleep position)
- Make bed the sleep trigger
  - Spine alignment
    - Supportive bed & pillows
- If cannot sleep and are anxious
  - Get up
  - Don’t throw a party
  - Do something relaxing
- Relax
  - Land worries on paper
  - Meditate, practice yoga, pray or read something calming
  - Intimacy

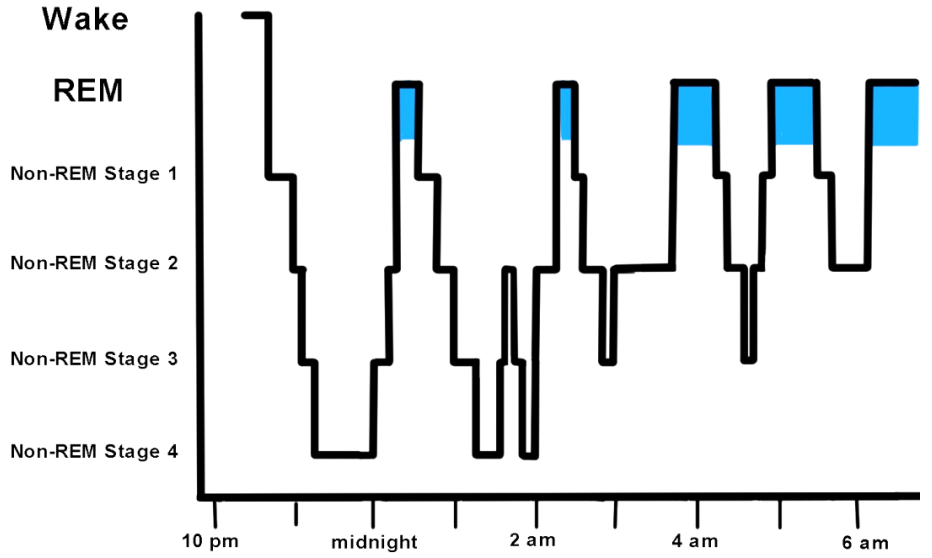
Poll

What is the optimal duration of a nap?

- 5 min
- 20 min
- 60 min
- 90 min
- 120 min

Naps & Sleep Inertia

- Naps
  - Best fatigue countermeasure
  - Improves alertness & performance
  - Planned naps reduced subsequent dozing by 50% & errors by 34%
  - Optimal duration 20 min / 90 min
  - Longer naps may delay onset of next main sleep
- Sleep inertia
  - Grogginess upon awakening
  - May last 20 minutes or more
  - May affect driving
  - Caffeine may help



How to Payback a Sleep Debt?

- Sleep debt
- Full night sleep
- May require several nights of full sleep
- Avoid deprivation
- Sleep until you wake up
- Make extra deposits on the weekend

Webinar: Sleep Hygiene

Poll

What is the single most important predictor of wellbeing and longevity?

1. Low cholesterol
2. Not smoking
3. Warm relationships
4. Exercising
5. Meditation
6. Normal blood pressure

Relationships Affect Wellness

- Stress with isolation from family & friends
- Finding and sustaining network of family, friends & coworkers
- Keep in touch, communicate
- Value and foster each relationship
- Do fun things together
- Be positive
- Show support
- Have family take Module 4 (Family Ed)

Webinar: Nurturing Positive Relationships

Stress Effects

- Headaches
- Sleep disturbances
- Difficulty concentrating
- Short temper
- Upset stomach
- Job dissatisfaction
- Low morale

Positive Behaviors

- Positive outlook and behaviors
- Balance between work and personal life
- Pursue personal interests
- Support network
- Try to improve job environment
- Get serious about relaxing
  - Relaxation breathing
  - Short walks
  - Meditation
  - Reading
  - Find method that works best for you

Webinar: Mindfulness

Poll

The purpose of diets is to lose weight

- True
- False

Weight Loss Is the Wrong Goal

Where Does Body Weight Come From

- Liquids, Muscles, Bones, Subcutaneous Fat, Visceral Fat

- Weight loss is regained in 1-5 years
- May lack essential nutrients and may be harmful
- May take pleasure out of eating
- May lead to eating disorders
- Snake oil is medical quackery
- Goal is to stay healthy, enjoy food and share it with others

Obesity vs Metabolic Syndrome

- U.S. Adults (240 million)
  - 70% Non-Obese (168 million)
    - 60% Healthy (101 million)
    - 40% Metabolic Syndrome (TOFI) (67 million)
  - 30% Obese (72 million)
    - 20% Healthy (14 million)
    - 80% Metabolic Syndrome (58 million)
  - Total healthy: 115 million
  - Total Metabolic Syndrome: 125 million

- Metabolic Syndrome
  - Non-alcoholic fatty liver disease
  - Diabetes
  - Cardiovascular disease
  - Hypertension
  - Lipid abnormalities
  - Polycystic ovarian cancer
  - Dementia

Nutrition

- Essential Macronutrients
  - Carbs with Fiber (veggies, fruits, whole grains)
  - Fats except artificial trans fats (fatty fish, dairy, nuts, seeds, avocado)
  - Proteins (fish, seafood, chicken, beef, pork, dairy)
  - Water

- Essential Micronutrients
  - Vitamins
  - Minerals

Webinar: Nutrition

Malnutrition

- Ultra processed food
  - Lack of fiber
  - Excess sugar, salt, oils, fats and many additives
  - Engineered to taste good
  - Cheap & convenient
  - Aggressively marketed
  - Addictive
- Liquid candy
  - Soda
  - Juice
  - Any sweetened/alcoholic drinks

- Toxic to the liver and brain
  - Excess sugar
  - Excess protein
  - Drugs

10 Types of Snacks for the Road

1. Unsweetened drinks: Water, sparkling water with lime/lemon, coffee, tea, herbal infusions
2. Any seeds: Pumpkin, sunflower, cacao nibs, flax, chia, hemp
3. Any nuts: Almonds, walnuts, pecans, cashews, pistachios
4. Any veggies: Romaine hearts, celery, carrots, cucumber, cherry tomatoes, bell peppers
5. Any fruits: Berries, apples, oranges, clementines, bananas, plums, pears, pineapple
6. Spreads: Guacamole, hummus, plain yogurt/Greek, plain nut butters, cheese, pesto
7. Not so smooth smoothies (keep the fiber): Made with any of those above
8. Any protein: Boiled eggs, rotisserie chicken, ribs, lamb/steak skewers, sashimi, fish fillet
9. Beans: Pinto, black, kidney, edamame, chickpeas
10. Minimally processed cereals: Steel cut oatmeal, barley, bulgur, brown rice, plain popcorn

Sample Food Choices on the Road

- Breakfast
  - Eggs any style with veggies instead of fries, veggie omelet
  - Fruit with nuts, plain yogurt, or cheese
  - Drop at least one side of the bread on egg sandwich
  - Avoid cereals
- Lunch & Dinner
  - Any protein with cooked veggies
  - Any protein with uncooked veggies (salads, bare burger/sandwich loaded w/veggies)
  - Order steak or ribs with collard greens, spinach or other veggies
  - Drop ultra processed sides: fries, mashed potatoes, mac & cheese and other
  - Have the burrito bowl without the tortilla
  - Make fruits your go to dessert alone or with nuts, plain yogurt, or cheese
- Don’t feel guilty when deviating into wrong lane, just don’t stay there

Poll

I drink caffeinated drinks all day and sleep just fine

- Fact
- Myth

Caffeine

- Alerting effects:
  - Begin in ~20 minutes
  - Peak in 60-90 minutes
  - Can last for hours
- Caffeine content in coffee varies widely
- Tea has about ½ the caffeine of coffee
- Large individual differences in the time required to metabolize caffeine
- Drink in small sips to “nurse” the cup over a longer period
- Like any stimulant, caffeine makes sleep more difficult
- Generally, avoid caffeine within 6-8 hours of main sleep period
- Effects vary - some people are even more sensitive
- Reduce caffeine intake
- Increase time between last dose & bedtime

Poll

To unwind and sleep better, it helps to take a night cap

- Fact
- Myth

Alcohol

- Not permitted in CMVs
- Some drivers may use alcohol as a sleep aid at home
- Alcohol may make you sleepy, but it actually *disrupts* sleep:
  - Disrupts REM and deep sleep
  - Causes “rebound” awakening after a few hours
- Disruptive effects increase with age
- Performance impairment effects greater when you are also sleepy
- Alcohol makes OSA worse

Smoking & Tobacco Use

- Leading preventable cause of disease, death, and disability
- ~20% of Americans smoke, but nearly **half** of CMV drivers do
- Causes lung cancer, COPD and other lung diseases, heart disease, and many other medical conditions
- >$1,000 per year in medical costs for each smoker
- Reduces oxygen flow to the brain; worsens OSA
- Strategy: ***QUIT!!!***
  - See your doctor
  - Call 1-800-QUIT-NOW
  - Click www.smokefree.gov or
  - Click www.hc-sc.gc.ca

Amphetamines

- Illegal or available only with a prescription
- Too strong for general use
- Increase activity level but do not improve performance reliably
- Increase heart rate and metabolism, sometimes dangerously
- Often you “crash” several hours after use

Sleeping Pills

- Hypnotics = drugs used to induce sleep
- Some also used to treat anxiety and stress disorders
- General categories:
  - Non-prescription Over-The-Counter (OTC); e.g., Tylenol PM, Benadryl
  - Prescription:
    - Benzodiazepines (e.g., Halcion, Restoril)
    - Nonbenzodiazepines (e.g., Ambien, Lunesta)
- No sleeping pill provides 100% natural sleep
- Most have side effects
- Most are habit-forming
- Some cause withdrawal symptoms
- Must allow full time for drug to leave your body before driving

Poll

Based on what I learned today, I should stop taking sleeping pills immediately

- Yes
- No

Other Medications

- Common side effects:
  - Drowsiness
  - Other fatigue
  - Insomnia
- Accordingly, many prescriptions specify when the drug should be taken (e.g., at bedtime)
- Follow dosage instructions carefully
- Safety regulations restrict driver on-road use of medications with stated fatigue side effects

Poll

Exercising right before going to sleep is not recommended…

- Always true
- Depends on exercise type
- Always false

Exercise

1. Cardiopulmonary
2. Strength bearing
3. Stretching & balancing

- Enhances alertness
- Promotes better sleep
- Lowers stress
- 10-minute walks twice or more per day
- Work out more vigorously on weekends
- Take exercise equipment with you on trips
- Keep a record of your exercise
- Set daily and weekly goals
- Find out what you like and do it

Webinar: Exercise

Poll

Drivers can tell when they are fatigued…

1. Always, based on their perception
2. When trained to recognize it
3. Rarely; that's why it's a problem

Objective Signs of Fatigue

- Eyelid drop or loss of focus
- Yawning
- Wandering, scattered or disjointed thoughts, dreamlike visions
- Head movements, gentle swaying, jerking
- Reduced field-of-view (AKA: tunnel vision, highway hypnosis, white line fever)
- Fidgeting, shifting positions, adjusting windows & HVAC
- Progressive weaving, crossing rumble strip, drift and jerk steering
- Delayed or incorrect responses
- Microsleeps

General Strategies

- SLEEP!!!
  - Main sleep
  - Naps
- Maintain a healthful lifestyle
  - Follow the five wellness basics
- Practice sleep hygiene
  - Try to keep a regular schedule
  - Go with your circadian rhythm – don’t fight it
  - Wind down before sleep
    - Less physical activity
    - Lower lights
- Be smart about caffeine use

At-Home Strategies

- Get the best sleep possible before starting a trip or work week
- Communicate your sleep needs and get your family's support
- Bedroom should be:
  - Completely dark
  - Cool
  - Quiet
- Pre-sleep routine
- Be active but don't exhaust yourself. Take time to relax

On-the-Road Strategies

- Try to get as much sleep on the road as you get at home
- Rest breaks with **naps** are most beneficial
- Rest breaks without naps
- Moving your body
- Conversation if it is not distracting
- Exercise
- Avoid heavy meals
- Wear your safety belt

Night Driving Strategies

- Advantage of night driving: less traffic
- Disadvantages:
  - Fatigue, related to circadian rhythms
  - More drunk/reckless motorists
  - Poor visibility
- Use light and dark to “fool” your body:
  - Bright lights simulate daybreak
  - Dark simulates night and bedtime
- Use caffeine, but carefully
- Consider taking sleeper berth period/nap in pre-dawn hours
- Get more recovery sleep on weekends
- Not for everybody

Dealing with Shift/Time Zones Strategies

- Be aware of your “body clock”
- Short trips/shift changes: stick with your regular sleep schedule
- Longer changes:
  - “Pre-adjust” before change
  - Shift your pre-bed, “evening” routine
  - Use light and dark to help you adjust
  - To stay awake, be physically active and interact with others
- Getting more sleep generally makes changes easier

Team Driving Strategies

- Plan sleeper berth periods in advance to be compliant and beneficial
- When possible, take sleep periods during circadian valleys
- Avoid both caffeine and strenuous activity in hours before breaks
- Keep sleeper berth totally dark or use eyeshades
- Don’t drive immediately after awakening
- Team driving is a partnership
- To sleep well, each driver must have full confidence in the other driver
- Driver should strive to be a “smooth operator”
- Agree on a game plan for sleep and rest that meets each driver’s needs

Fatigue Risk Management System

a. Operation
b. Predictive, Proactive, & Reactive Controls
c. Risk Assessment
d. Measures and countermeasures
e. Evaluation

Poll

A safety culture is nice to have but not necessary for an effective fatigue risk management system

- True
- False

Effectiveness of FRMS

"While FRMS are likely to be effective, in organizations where safety cultures are insufficiently mature and resources are less available, these systems may be challenging to implement successfully"

How effective are Fatigue Risk Management Systems (FRMS)? A review

February 2022

Fatigue Risk Management System

1. **Applicability**: Operations at risk
2. **Identification & Data Collection**: Risk determination
   - **Predictive**: Previous experience, evidence-based scheduling, math models
   - **Proactive**: Self-reported, questionnaires, performance reviews, scientific literature review, planned vs actual time worked
   - **Reactive**: Determine if fatigue was a factor in crash, near crash or violation
3. **Assessment**: Classify hazards

   Probability + S**everity = Tolerability**
4. **Development**: Measures/countermeasures to reduce/eliminate risks
5. **Evaluation**: Continuously monitor effectiveness of FRMS

Implementation Manual: Chapter 4, Pages 57-74

Step 1: Identify Operations

- Different operations within a fleet experience varying risks of driver fatigue
- Determine whether FRMS strategies apply to entire organization or specific operations
- Identify operations that experience significant driver fatigue

Step 2: Identify fatigue hazards

- Fatigue hazards are a significant risk for fleet management operations

- Three processes for identifying fatigue hazards
  - Predictive
  - Proactive
  - Reactive

- Using all three processes can help make informed decisions based on scientific principles and data

2.a Predictive Processes

- Focuses on detecting factors that negatively impact driver alertness
- This information is used to develop driver schedules and workplace conditions that minimize the future effects of driver fatigue
- Three different ways
  - Previous experience
  - Evidence-based scheduling
  - Bio-mathematical models

2.b Proactive Processes

- Monitoring and analyzing reports of fatigue in the fleet operation
- Multiple data sources for fatigue identification should be used to create a more detailed and complete picture of fatigue in the operation
- Five approaches
  - Self-reported fatigue risks
  - Driver, dispatch, and manager fatigue questionnaires
  - Fatigue-related driver performance reviews,
  - Review of fatigue-related CMV driving literature
  - Analysis of planned schedules and time worked vs actual schedules and time worked

2.c Reactive Processes

- Responding to identified fatigue-related events
- Include incident reporting, fatigue-related accident investigations, and near-miss reporting
- Triggered by fatigue reports, crashes, near-crashes, and violations
- Designed to identify how driver fatigue may have contributed to incidents
- Goals are to identify how fatigue may have been mitigated and prevent future occurrences

Step 3: Assess Safety Risk of Fatigue Hazards

- There are two aspects of risk assessments
  - Measuring the likelihood of the fatigue hazard
  - Evaluating the severity of possible outcomes from it

- A dual assessment helps in prioritizing measures to control or mitigate identified fatigue hazards

3.a Define Risk Probability

Category	Meaning	Value
Frequent	Likely to occur many times (has occurred many times)	5
Occasional	Likely to occur sometimes (has occurred infrequently)	4
Remote	Unlikely to occur but possible (has occurred rarely)	3
Improbable	Very unlikely to occur (not known to have occurred)	2
Extremely Improbable	Almost inconceivable the event will occur	1

Adapted from the International Civil Aviation Organization

3.b Define Fatigue Risk Severity

Category	Meaning	Value
Catastrophic	• Multiple deaths • Equipment destroyed	A
Hazardous	• A large reduction in safety margins, physical distress, or a workload such that drivers cannot be relied upon to perform their tasks accurately or completely • Serious injury • Major equipment damage	B
Major	• A significant reduction in safety margins or a reduction in the ability of drivers to cope with adverse operating conditions as a result of increased workload or as a result of conditions impairing efficiency • Serious incident • Injury to persons	C
Minor	• Nuisance • Operating limitations • Use of emergency procedures • Minor incident	D
Negligible	• No significant consequences	E

Adapted from the International Civil Aviation Organization

3.c Fatigue Risk Assessment Matrix

Risk Probability		Risk Severity				
		Catastrophic A	Hazardous B	Major C	Minor D	Negligible E
Frequent	5	5A	5B	5C	5D	5E
Occasional	4	4A	4B	4C	4D	4E
Remote	3	3A	3B	3C	3D	3E
Improbable	2	2A	2B	2C	2D	2E
Extremely Improbable	1	1A	1B	1C	1D	1E

Adapted from the International Civil Aviation Organization

3.d Risk Tolerability Matrix

Fatigue Risk	Assessment Risk Index	Suggested Criteria
Intolerable Region	5A, 5B, 5C, 4A, 4B, 3A	Unacceptable under the existing circumstances.
Tolerable Region	5D, 5E, 4C, 4D, 4E, 3B, 3C, 3D, 2A, 2B, 2C	Acceptable based on risk mitigation. May require management decision.
Acceptable Region	3E, 2D, 2E, 1A, 1B, 1C, 1D, 1E	Acceptable.

Adapted from the International Civil Aviation Organization

Step 4: Develop Fatigue-Related Performance Measures and Countermeasures

- Appropriate controls and mitigation strategies should be selected and implemented

- It is critical to communicate these controls and mitigation strategies to relevant personnel to ensure they understand what each hazard is and how the strategies are designed to reduce fatigue hazards

Sample Controls and Mitigation Strategies

- Scheduling tools/practices: NAFMP Module 9
- Cooperation with shippers, receivers and brokers: NAFMP Module 6 & webinar recording
- Protocols for napping/resting: NAFMP Module 3
- Sleep disorder prevention, screening, and treatment: NAFMP Modules 7 & 8 and webinar recording
- Fatigue management technologies: NAFMP Module 10 & webinar recording

Step 5: Continuously Evaluate the FRMS for Effectiveness

- Data gathered should be compared to the safety performance objectives of the FMP
- Gradual decreases of fatigue should provide insight into the effectiveness of the FMP
- Dramatic decreases of fatigue should not be expected immediately
- Behavioral change requires time, and patience is needed when determining the overall effectiveness of the FMP

Evaluation Determination

- If mitigation strategies perform to an acceptable standard, they should become part of the normal monitoring and evaluation of the FMP

- However, if the selected mitigation strategies do not perform to an acceptable standard, FRMS processes should be reviewed and revised and/or new approaches should be considered

Can't Manage What Can't Be Measured

- To know if interventions are changing behavior, measure and track what needs to be changed
- Measuring behaviors allows them to be monitored and reviewed
- Operationally define behaviors so they can be tracked
- Measurement can be focused on the specific behavior (**process measures**) or the result of the behavior (**outcome measures**)

Process Measures

- Measures that focus on the occurrence of specific behaviors
- Process measures have been found to increase the occurrence of safe behaviors in transportation
- Process measures specific to the FMP
  - Follow policies and procedures
  - Policies and procedures implemented correctly
  - Information on the FMP has been conveyed
  - Subjective perceptions and opinions of the FMP

Outcome Measures

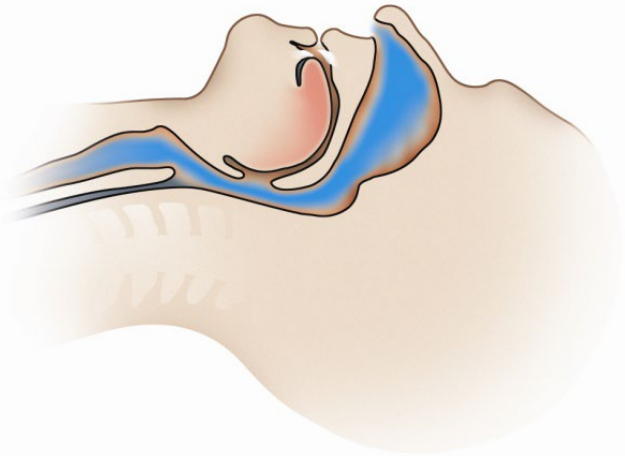
- Sleep duration
- Sleep quality
- Alertness
- Job satisfaction
- Injuries
- Violations
- Crashes
- Sick leave days

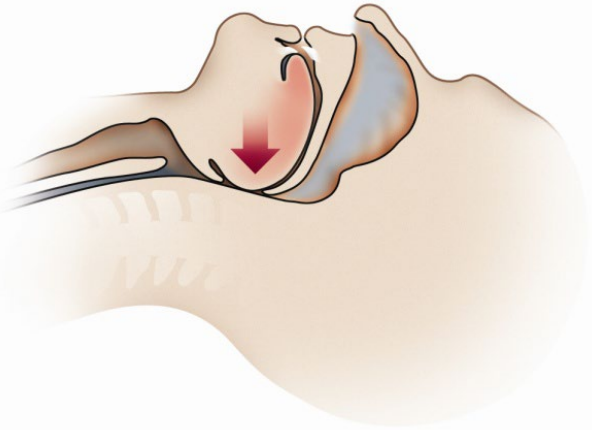
Fatigue Susceptibility

- Sleep Deprivation
  - Sleep-related behaviors
  - Sleep hygiene
- Individual Differences
  - Genetic variations
  - Health & fitness
- Medical conditions
  - Medications
  - Sleep disorders
    - Insomnia, narcolepsy, restless leg syndrome, sleepwalking, abnormal circadian rhythms, obstructive sleep apnea (OSA)

Obstructive Sleep Apnea

- **Apnea** = stoppage of breathing lasting 10+ seconds
- OSA = breathing stops repeatedly during sleep due to closures of the upper airway
- Apnea rate per hour:
  - <5 = normal
  - ≥5 = OSA
- OSA severity (mild, moderate, severe) based on rate
- Some people with severe OSA can have 100 per hour





Warning Signs & OSA Risk

- Sleep disorder symptoms
  - Excessive daytime sleepiness (EDS), extremes in ability to go to sleep
- OSA warning signs
  - Reduced performance, loud and irregular snoring especially with gasping, high blood pressure, diabetes
- OSA higher risk
  - Obese individuals, male, 45+ years old, large neck size, recessed chin, small jaw, large overbite, family history

Poll

OSA diagnosed and treated drivers are medically disqualified from operating a CMV

- True
- False

OSA Health & Safety Implications

- Health Implications
  - Metabolic syndrome
    - Non-alcoholic fatty liver disease
    - Diabetes
    - Cardiovascular disease
    - Hypertension
    - Lipid abnormalities
    - Polycystic ovarian cancer
    - Dementia
  - Diminished quality of life
  - Clinical depression
  - Decreased sex drive and performance
- Safety Implications
  - EDS – Asleep at the wheel
  - Decline in cognitive function
  - Impaired driving performance
  - Decreased reaction time
  - No braking: serious crashes
    - More fatalities
    - More costly

Corporate Responsibilities Poll

- Implementing a SDMP may result in a significant ROI from
  - Savings on medical costs
  - Reduction in crashes
  - Greater retention rate
  - All of the above
  - None of the above

Carrier Corporate Responsibilities - Return-On-Investment

- Report on Schneider National Inc. OSA Implementation Program showed a significant return on investment
  - Significant savings on medical costs for diagnosed and treated drivers
    - Drivers diagnosed and treated with CPAP, **average savings of $550 per driver/month**
  - 73% reduction in preventable crashes among drivers treated for OSA
  - Retention rate of treated OSA drivers was 2.3 times greater than for all company drivers

Carrier Corporate Responsibilities - Potential Legal Liability Issues

- Currently no federal mandates requiring carriers to screen, test, treat, and monitor drivers with OSA
- Motor carrier may not require or permit a driver to operate a CMV if the driver has a condition — including OSA— that would affect his or her ability to safely operate the vehicle
- Successfully treated drivers may regain their “medically-qualified-to-drive” status

Carrier Corporate Responsibilities - Legal Risk Management Strategies

- Carrier Policies
  - Consistent with federal regulatory rules and recommendations
- Education
  - Safety culture: Managers, trainers, dispatchers, drivers, families
  - NAFMP Modules
- Documentation
  - Accurate & up-to-date documentation showing consistent implementation of FMP
- Communication
  - Verify and document PAP compliance
  - Remove any driver who fails to meet regulatory minimum requirements
- Confidentiality
  - Driver health records
- Consultation
  - Regularly consult with legal counsel on related policies, procedures, and practices

Carrier Corporate Responsibilities - OSA Crashes Sample Claim Litigation

- Carrier should have known the driver had a sleep disorder
  - Evidence: driver medical examination reports, carrier health records, reports of witnessed EDS in the workplace
- Carrier did not monitor and follow-up with a driver with OSA who was prescribed PAP treatment
  - Evidence: driver logs, treatment records
- Carrier's Fatigue Management Program (FMP) was inappropriate, incomplete, or not implemented
  - Evidence: carrier records, driver logs, employee testimonials

Sleep Disorders Management Program

1. Education
2. Screening
3. Testing
4. Treatment
5. Monitoring

Module 7: Sleep Disorders Management (Motor Carriers)

Module 8: Sleep Disorders Management (Drivers)

Webinar: A Motor Carrier's Guide to Establishing a Sleep Disorders Management Program

Step 1: Education

- OSA Education – NAFMP Module 8 for Drivers
  - Signs and symptoms of OSA and sleep disorders
  - Health and safety implications of OSA
  - Testimonials (success stories)
  - Health & wellness
  - Treatment options
- OSA testing and treatment information
- Your sleep disorders program
  - Roles, responsibilities, policies & procedures
- Announcements, fliers, newsletters, videos
- Family Support – NAFMP Module 4

Step 2: Screening - Methods

- Questionnaires
  - Epworth Sleepiness Scale, Berlin, Functional Outcomes of Sleep, Pittsburg Sleep Quality
  - Limitations: Subjective & relay on willingness of respondent to report symptoms
- Objective assessments
  - Multiple Sleep Latency Test
  - Maintenance of Wakefulness Test
  - Limitations: Labor intensive, expensive
- Physical Examination
  - >30 BMI, > 15.5/17 neck circumference, >36/40 waist circumference, craniofacial features (receding chin, large tongue, small airway/Mallampati score), micrognathia or retrognathia
- History
  - Family, metabolic disease, age 42 or older, male or postmenopausal female, untreated hypertension, type 2 diabetes, untreated hypothyroidism, loud snoring, witness apneas, stroke, coronary or artery disease

Step 2: Screening - Recommendation

- Drivers who meet the following criteria should be required to undergo OSA testing:
  - Categorized as high risk for OSA according to the Berlin Questionnaire, **OR**
  - BMI ≥ 40 kg/m^2, **OR**
  - Judged at risk for OSA from clinical physical examination evaluation **OR**
  - Admitted fatigue or sleeping during wakeful period **OR**
  - Involved in a sleep-related CMV crash

Step 3: Testing

- Laboratory polysomnography (PSG) gold standard
  - Brain (EEG), heart, airflow, O_2 saturation, body movement
  - Apnea Hypopnea Index (AHI)
    - Mild: 5-15 per hour
    - Moderate: 15-30 per hour
    - Severe: >30 per hour
- Home Sleep Apnea Test (HST/HSAT)
  - Only appropriate for evaluation in high-risk populations without significant medical problems
  - Chain of custody must be secured
  - Validated against PSG
  - Objectively records oxygen saturation, nasal pressure, and sleep/wake time for a minimum of 5 hours

Step 4: Treatment

- Positive airway pressure (PAP) devices
  - Continuous, automatic, bi-level
  - Effective when used properly/consistently
- Dental/oral appliances
  - Only for mild/moderate; Not for severe OSA
  - Monitoring compliance can be a challenge
- Surgery
  - Primarily for severe obstructive anatomy
  - Secondarily when PAP is not tolerable/adequate
- Lifestyle habits
  - NAFMP Module 3 & Driver Series Webinars on Keys to Wellness
  - Manage metabolic disease
  - Avoid alcohol/sedatives
  - Wellness keys
    - Sleep hygiene, positive relationships, positive behaviors, nutrition, exercise

Step 5: Monitoring

- Compliance coaching & education
  - Mask discomfort, nasal congestion, eye irritation
- Drivers with OSA must demonstrate adequate PAP compliance and effectiveness to continue driving legally
- PAP treatment monitoring procedures must be in place for drivers
- Web-based
  - Recommended for monitoring following initiation of PAP treatment and at least until consistent and adequate PAP use has been established by patient
- PAP data cards
  - Recommended for alternative long-term compliance monitoring or as backup to web-based data collection

Step 5: Monitoring - Recommendations

- Individuals on PAP treatment for OSA must demonstrate and document compliance
  - Graded certification upon proof of compliance
    - 1 month, 3 months, 12 months
- Annual recertification required for individuals who have undergone surgical treatments
  - Sleep disorders testing with AHI < 10 AND
  - No daytime sleepiness

Poll

- **Drivers must use their PAP device when at home; while on the road, PAP use is optional**
  - True
  - False

Supporting a SDMP - Non-compliance

- Identify reasons
  - Personal
    - Don’t like being tied to a PAP machine
    - Poor/restless sleep with PAP machine
    - Partner dislikes PAP machine
  - Motivational
    - Benefits of PAP use do not out-weigh drawbacks
    - Drivers dislike carriers mandating PAP use while drivers are not in service
  - Driver bearing the cost

- Take actions
  - Flag non-compliant drivers
  - Verbal warnings
  - Identify reason(s) for non-compliance
  - Work with driver to address problem(s)
  - Pay for or help with driver costs
  - Technical issues
  - Motivational issues
  - Temporary driving restrictions
  - Continued coaching/support
  - Termination/job redistribution

Supporting an SDMP - Carrier Managers Can Help

- Advise driver on locations where idle restrictions are an issue
- Help locate PAP suppliers while driver is on the road
  - Supplies, repairs, replacement parts
- Shared efforts by managers and drivers contribute to the FMP
- Organize a PAP-users group to support drivers
  - Drivers may discuss experiences, challenges, solutions, tips, etc.
  - Support groups should actively engage & offer tips to drivers who experience challenges
  - Successful PAP users can provide invaluable help to others just starting treatment
  - Monitoring recommended

Supporting an SDMP - Common Myths & Misperceptions

- PAP therapy causes more sleep disruptions than having OSA
  - Proper equipment, mask fit and machine settings are imperative
- All PAP machines are created equal
  - Vast differences in PAP machine types and brands
- PAP machines are noisy and disruptive
  - Current PAP devices are much quieter compared to snoring
- PAP is impossible or difficult to use in the vehicle
  - Technology enables PAP use in the vehicle
- Patients diagnosed with OSA and prescribed PAP will likely be on PAP for the rest of their life
  - Metabolic syndrome may increase the severity of OSA
  - Controlling metabolic syndrome may eliminate the need for PAP in some cases

Facilitating Driver Behavior Change

- Establish safety culture
- Set good example
- Assess needs
- Develop a plan
- Implement program in supportive environment
- Evaluate and improve program

- Overcome ambivalence
- Target specific behaviors
  - PAP compliance
  - Communicate with staff
- Specific goals
  - Increasing PAP use
  - Lifestyle improvements
- Social support

OSA Case Study Focused Group Report

- NAFMP Implementation Manual: Pages 85 – 118
- Recommendations
  - Trust & cooperation requires being up front and honest with drivers about OSA Program and what they are being screened for is important for drivers
  - Include subjective & objective assessments to screen drivers for OSA
    - Questionnaires, physical examinations and personal observations
  - Involve the carrier's occupational health team
  - Have a graded rating system for OSA screening to prioritize highest risk drivers
  - Provide early OSA educational video and information
    - Drivers and other staff to support drivers
    - Carrier's OSA Program
    - Treatment options, especially lifestyle modification and wellness habits

Additional Report Recommendations

- OSA Testing
  - Laboratory PSG is gold standard for diagnosing OSA but it's expensive and requires access to sleep laboratory
  - HST is cost effective and convenient but there are chain-of-custody concerns

- OSA Treatment
  - APAP is the recommended first-line treatment
    - Providing drivers with the appropriate mask is crucial for success & compliance
    - Drivers should be aware of the detailed compliance monitoring protocols in place
      - Wireless compliance monitoring devices better for newly diagnosed
      - Data cards are acceptable for drivers with an established record of PAP compliance

Final Report Recommendations

- Provide drivers with 24/7 support as they adjust to PAP treatment
  - First two weeks are critical
  - Parts, supplies, equipment
  - Solid support team
    - OSA program team
    - OSA provider staff
- Driver support groups
  - Life changing event
  - Share problems and solutions
  - Driver champions to support fellow drivers
- Less than 24-hour turnaround
  - From tested to treatment set-up and sending OSA-positive drivers back on the road
- Communication and coordination by all OSA program players
  - Drivers, carrier staff, OSA provider staff

Scheduling Practices

- Sound scheduling and routing
- Time of day, recent sleep, continuous hours awake, cumulative sleep debt
- Shared responsibility mitigating driver fatigue in work schedules
- Regular schedules
- Forward vs backward scheduling
- Consider travel time to employment location
- Consider rests and naps during work shift
- Maximum of 16 hrs. per day or less
- Maximize benefits of scheduling tools
- Develop customized strategies for managing fatigue

Module 9: Driver Scheduling and Tools

Fatigue Management Technologies Types

1. Scheduling & Trip Planning
2. Fitness for Duty Testing
3. Performance Monitoring
4. Driver Monitoring

Module 10: Fatigue Technologies

Webinars: The Alertness Toolkit and NAFMP Solutions Series

Scheduling & Trip Planning

- Fatigue Prediction Mathematical Models
- Route Optimization Tools
- Dispatch and Communication Tools

Fitness for Duty Testing

- Psychomotor Vigilance Tests
- Reaction Time Tests
- Speech Analysis
- Fatigue Questionnaires
- Behavioral Observation
- Wellness Check

Performance Monitoring

- Computer Vision
- Steering Movements
- Lane Departure
- Telematics Systems
  - GPS Tracking
  - Fuel Consumption
  - Harsh Braking and Acceleration Events

Driver Monitoring (DM)

- Computer Vision
- Eye-Tracking
- Physiological Sensors
- Activity Trackers
- Other Emerging Technologies

DM - Computer Vision

- Eyelid Detection
- Gaze Tracking
- Head Pose Monitoring

DM - Eye-Tracking

- Percentage of Eyelid Closure over the Pupil over Time (PERCLOS)
- Blink Rate and Duration

DM - Physiological Sensors

- Electroencephalography (EEG)
- Heart Rate Variability (HRV):
- Skin Conductance

DM - Activity Trackers

- Movement Patterns
- Sleep Quality Monitoring

DM - Other Emerging Technologies

- Skin Temperature
- Speech Analysis
- Facial Expression Analysis
- Brain-Computer Interfaces (BCIs)

Fatigue Technology Best Practices

1) Must be integrated into overall FMP
2) Take full advantage of the technology capabilities
3) Develop well-defined protocols
4) Explain the role of technology to drivers
5) Create meaningful driver expectations
6) Present consistent and detailed feedback to drivers
7) Maintain a positive atmosphere
8) Reinforce that safety is everyone's responsibility

Technology Catalog Sources

- 2020 Review of Commercially Available Devices to Detect Fatigue and Distraction in Drivers
  - By Institute for Road Safety Research in the Hague, Netherlands
- 2019 Commercial Motor Vehicle Operator Fatigue Detection Technology Catalog and Review
  - By National Surface Transportation Safety Center for Excellence
- 2019 Research Report - Fatigue/distraction detection technology use in the Australian road freight transport sector
  - By Australia's National Heavy Vehicle Regulator (NHVR)

Timeline

a. Introduction
b. Education & Training
c. Evaluation

Develop Implementation Timeline

- FMP Steering Committee monitors activities to follow timeline
- Timely implementation helps driver buy-in
- Timeline should be developed and adhered to
- Ensure control measures and mitigation strategies are established
- Actions promptly taken to mitigate fatigue hazards
- Commitment of management

Awareness, Education, and Kick-Off

- All employees must be aware of and educated on the purpose, policies, and procedures involved in the FMP
- Awareness and education help to reduce resistance to the FMP
- Holding a kick-off meeting(s) helps show your support and “buy-in” for the FMP
- Ensure all employees fully understand the reason behind the FMP and how it works

Introduction & Awareness

- All employees need to be informed
- Communications should consider employees needs
  - Reading levels
  - Difficulty reading English
  - Differences between daytime & nighttime shift workers
  - Long-haul versus short-haul drivers
- Communication methods based on fleet needs
  - Website, email or other electronic communications
  - Newsletters, bulletins, fliers
  - Seminars, one-on-one and group meetings
- Kickoff by Steering Committee
  - Ensure all employees know the principles, policies and procedures
  - Awareness of why the FMP is important to reduce fatigue and promote wellness
  - Kickoff celebration or meeting held at the onset of the FMP implementation
  - Support and participation will develop trust in the FMP

Education & Training

- Core component
- All relevant personnel
- Foundation of knowledge and skills
- Fatigue basics
- Role responsibilities
- Fatigue controls and effective mitigation strategies

Monitor & Evaluate

- FMP should be reviewed when
  - Operational changes
  - Staffing patterns or scheduling changes
  - Fatigue indicators suggest hazards are not being reduced or eliminated
  - New technologies, tasks or equipment is added
- FMP Review
  - Controls and countermeasures working as intended?
  - Implemented as expected?
  - New fatigue hazards developed?
  - Compare occurrence of fatigue related crashes, near-crashes, injuries, violations and other related data before FMP implementation

Measure Successes & Failures

- Continued measurement is critical
- Measurement helps gauge the impact of the FMP and employee acceptance
- Use predefined measures developed by the steering committee
- Use both quantitative and qualitative measures

Next Steps

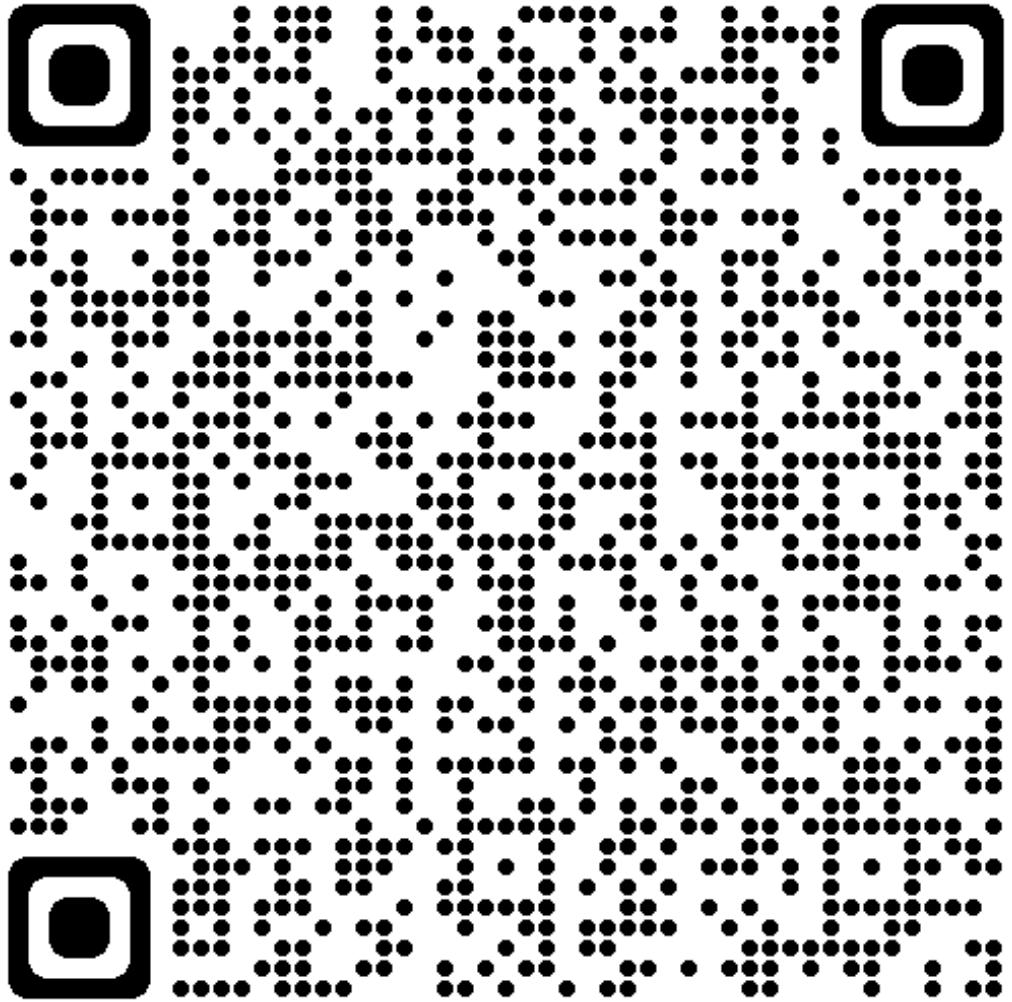
Next Steps

1. Complete FMP Template Now
2. Have drivers take Module 3: Driver Education & Training
3. Register for live courses and webinars and watch recordings

All resources available from nafmp.org

Register for Certificate of Completion

- **Please do it now**
- **Form will be closed immediately after this session**
- **Confirm email is accurate or you will not receive certificate**



Recap

- ✓Download Slides
- ✓Submit FMP Template for Grading/Feedback (Now)
- ✓Register for Certificate of Completion (Closes soon!)
- ✓FMP Ingredients
- ✓The single thing to remember
- ✓What's the NAFMP website?
- ✓What's the NAFMP LMS address?

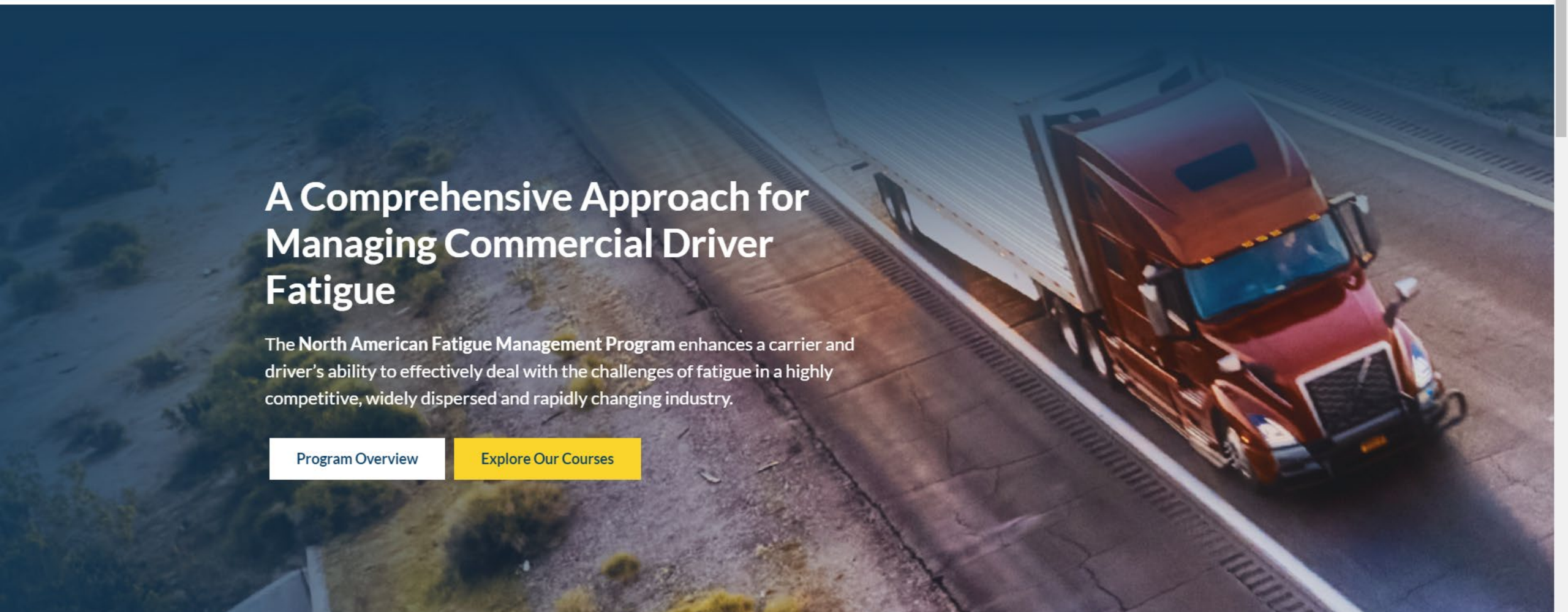
nafmp.org

CVSA

Français English

NAFMP
North American Fatigue Management Program

About NAFMP | Improve Driver Safety | Training | ROI Calculator | Contact | Webinars

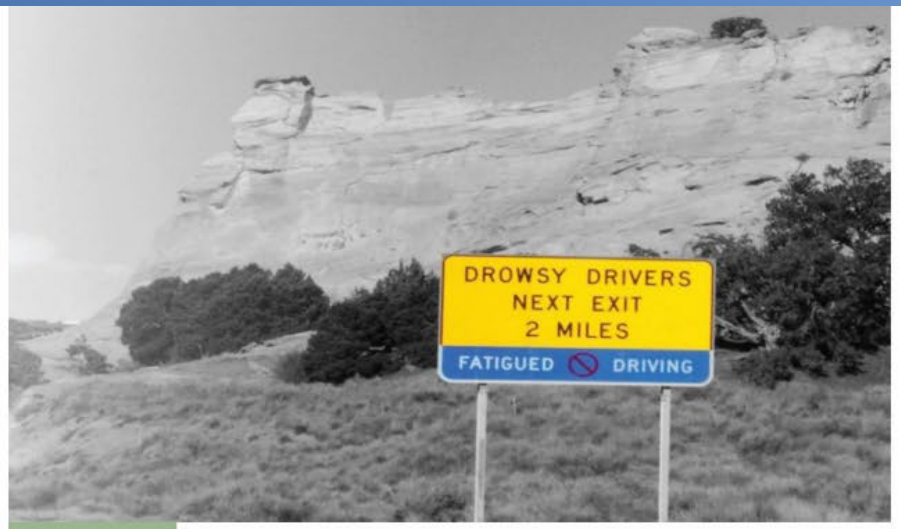


A Comprehensive Approach for Managing Commercial Driver Fatigue

The **North American Fatigue Management Program** enhances a carrier and driver's ability to effectively deal with the challenges of fatigue in a highly competitive, widely dispersed and rapidly changing industry.

Program Overview | Explore Our Courses

Implementation Manual



Guidelines and Materials to Enable Motor Carriers to Implement a Fatigue Management Program

IMPLEMENTATION MANUAL

Sponsored by the North American Fatigue Management Program

NAFMP
North American Fatigue Management Program

eLearning Platform: lms.nafmp.org

NAFMP English (en) You are not logged in. (Log in)

NAFMP North American Fatigue Management Program

Fatigue Management Community Forum

No matter your role in managing fatigue, you are welcome to join in the conversation. Questions, comments, and feedback are encouraged. Thank you for your participation. Please select here to log in or create a new free account.

Search courses

Available courses

Module 01

FMP Introduction and Overview

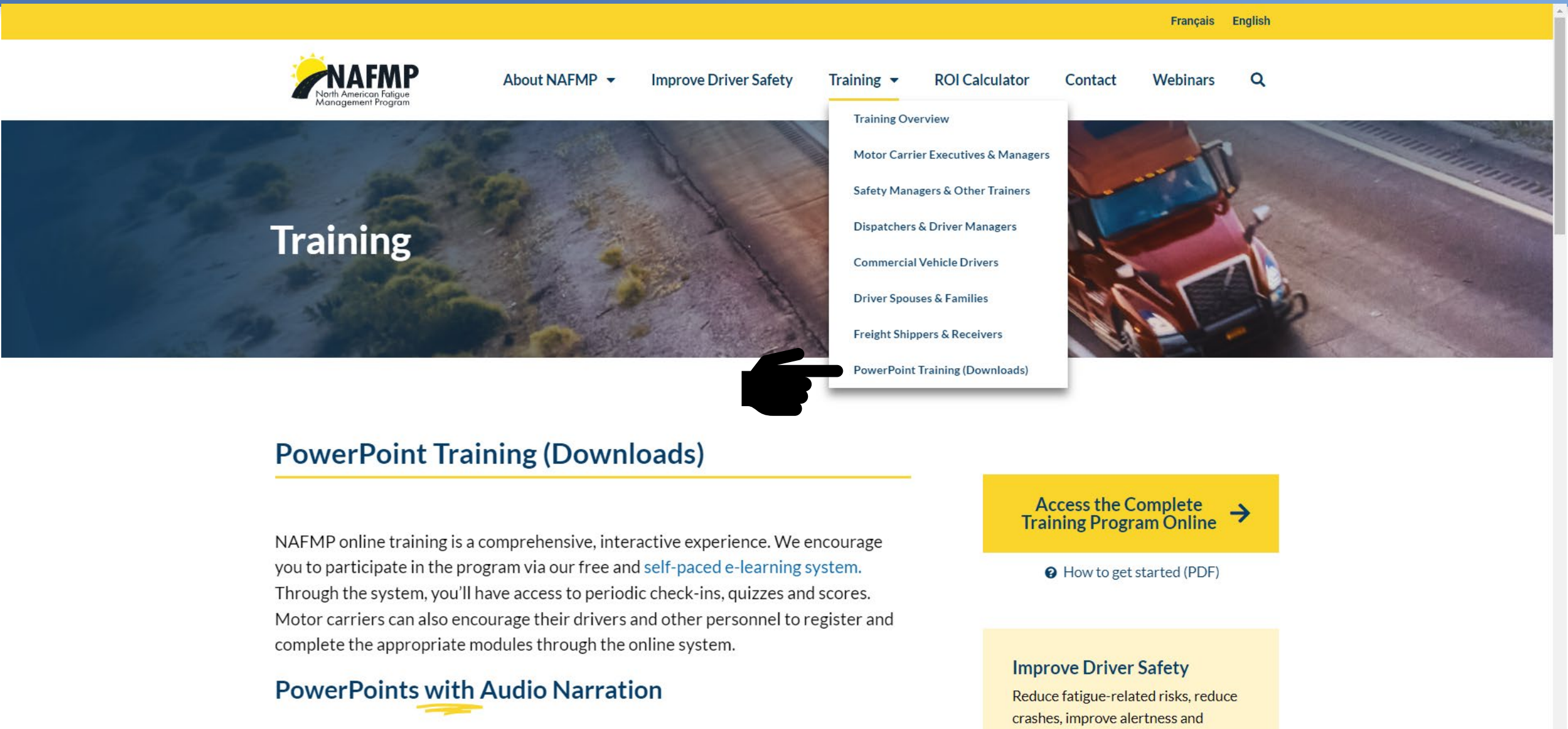
Target Audience: Carrier executives and other managers
Estimated Duration: 45 min

Module 02

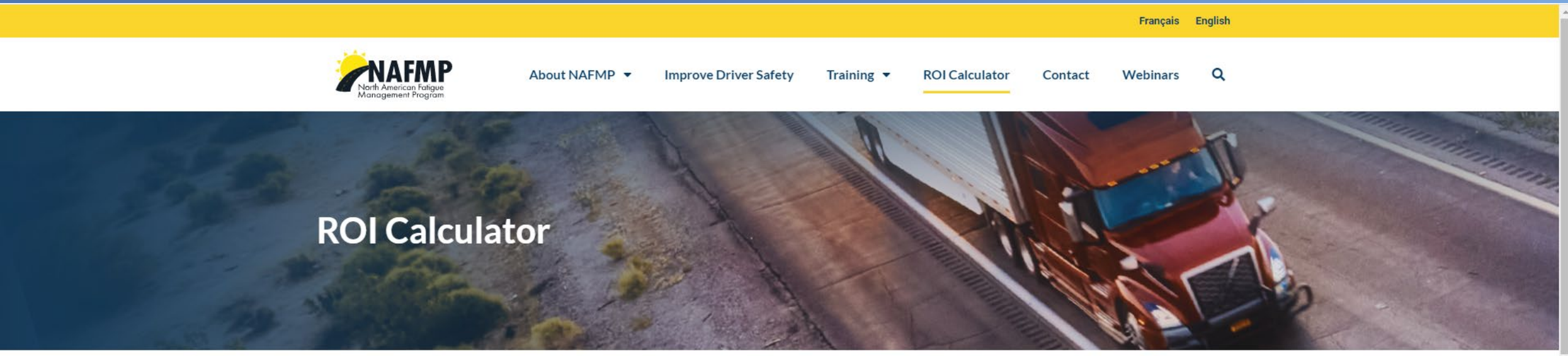
Safety Culture and Management Practices

Target Audience: Carrier executives and other managers
Estimated Duration: 1.5 hours

PowerPoint Presentations



ROI Calculator



Return on Investment (ROI) Calculator

Estimate the monetary benefits of implementing the North American Fatigue Management Program either in its entirety or in select components in a customized program, i.e., fatigue management training, sleep disorder screening and treatment, technology deployment, and scheduling tools.

Click on the links below to download the ROI Calculator and User Guide:

Calculator User Guide (PDF)

Calculator Download (Excel

Access the Complete Training Program Online →

How to get started (PDF)

Improve Driver Safety

Reduce fatigue-related risks, reduce crashes, improve alertness and promote job satisfaction.

Webinars

Français English

NAFMP North American Fatigue Management Program

About NAFMP | Improve Driver Safety | Training | ROI Calculator | Contact | Webinars

Webinars and Courses

Register for upcoming live NAFMP sessions and check out previous recordings and slides below.

Upcoming

Access the Complete Training Program Online →

How to get started (PDF)

Improve Driver Safety

Questions & Other NAFMP Sessions

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Fatigue Management Specialist
Commercial Vehicle Safety Alliance

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202-998-1830

ATRI Top Industry Issues

2023 Top Industry Issues

1. Economy (5)
2. Truck Parking (3)
3. Fuel Prices (1)
4. Driver Shortage (2)
5. Driver Compensation (4)
6. Lawsuit Abuse Reform (10)
7. Driver Distraction (#7 in 2018)
8. Driver Retention (7)
9. Detention / Delay at Customer Facilities (6)
10. Zero-Emission Vehicles

ATRI American Transportation Research Institute

Thank You

Please keep safe, well & alert

CVSA®