FATIGUE RISK MANAGEMENT TOOLKIT

**For Residents, Leaders, and Policy Makers
in Canadian Postgraduate Medical Education**

Acknowledge. Act. Adapt.

FRM GRF

Fatigue is an occupational risk in medical education that impacts residency training and workplace health and safety, with potential implications for patient safety.

Successful management of fatigue risk is the shared responsibility among all those who have a role within medical education.

Acknowledge. Act. Adapt.

ACKNOWLEDGE

Fatigue Risk affects us all.

Within a shared responsibility framework, trainees have a key role in managing and reporting their own fatigue to their supervisors, peers and to the healthcare team. To support this, leaders within medical education are accountable for ensuring practices are in place that enable and protect every trainee's ability to fulfill their role in the management of fatigue risk.

Fatigue Risk affects us all.

▶ Executive Summary + Background

▶ FRM Principles + Committees

▶ Policy Implementation + Governance

ACT
Tools are available to foster change.

The strategies employed to prevent and manage the hazard of fatigue during residency training must be comprehensive and reflective of each local context and recognize the impacts and consequences of fatigue on the physical, professional, occupational and psychological/sociological aspects of medical education.

Fatigue Risk is actionable on all levels.

- Executive Summary
- Recommendations for Training and Education + Case Studies
- Risk Mitigation Tools + Strategies
- System Recommendations

Any successful risk management approach necessitates the development of a culture that actively discusses and recognizes fatigue as a risk in training and practice. This includes ongoing incorporation of meaningful, actionable steps that improve the safety of the clinical learning environment. The risk of doing nothing is greater, and the status quo is not acceptable.

Create a culture in which Fatigue Risk Management is the norm.

- Executive Summary
- Auditing the FRM System
- Facilitating FRM Infrastructure
- Appendix + References

ADAPT
It's our responsibility to make a just culture.

The risk of doing nothing is greater, and the status quo is not acceptable.

ACKNOWLEDGE

Resident wellness matters.

👁 SNEAK PEEK

Acknowledge
Executive Summary

Fatigue is an occupational risk
in residency training.

Medical residency training, like many occupations with demanding work hours, poses a safety risk to trainees; fatigue is one of these risks. In the past, and in some current situations, residents have been scheduled for duty periods of 24 or more consecutive hours without restorative sleep. At the centre of debate regarding resident duty hours have been concerns regarding the negative implications of such hours worked by residents on their physical, mental, and occupational health (NSC 2013).

Evidence from multiple studies evaluating the effects of fatigue on healthcare worker performance indicate that fatigue increases the risk of medical error, compromising patient safety while increasing the risk to the personal safety and wellbeing (The Joint Commission, 2011). Whether it is a motor vehicle accident post-call or a treatment error made while on duty, evidence shows that chronic sleep deprivation leads to errors; residents and physicians are just as vulnerable to the effects of fatigue as the rest of the population (Asch et al, 2017). Efforts to minimize this risk cannot be undertaken by addressing resident duty hours alone, and in their 2013 report the National Steering Committee on Resident Duty Hours recommended that a one-size-fits-all approach to resident duty hours will not be effective or appropriate in Canada (NSC, 2013). Therefore, the shift to **managing fatigue related risk** during residency training is essential to supporting the dual role of learner and care provider.

Acknowledge. Act. Adapt
Fatigue Risk affects us all.

Background

This *FRM Toolkit Resource* is the first national resource for Canadian postgraduate medical education.

It is intended to provide a non-prescriptive framework, designed to assist clinical learning environments, programs and institutions in developing their own local FRM policies and mitigation strategies. The FRM Toolkit seeks to uphold and maintain the highest safety standards for both patients and learners, while ensuring that the management of fatigue risk is a shared responsibility among all those in medical education. It is important to note that the guidelines in this toolkit are not one-size-fits-all and the guidelines should be adapted to suit local resources and contexts.

Causes of Fatigue

▶ PHYSICAL

▶ EMOTIONAL

▶ SOCIAL AND CULTURAL ISSUES

Causes of fatigue are often described in dimensions as fatigue cannot be attributed to a single cause. Below are some of the key physical, emotional, and social/cultural causes of fatigue that a physician may experience.

Physical

▶ Circadian Rhythm

The circadian rhythm is a behavioural, physical and mental functioning cycle that follows the near-24-hour biological clock which uses natural cues, such as daylight, to make us feel awake during the day and sleepy at night (National Institutes of General Medical Sciences, 2017). Acting against the circadian system feels like jet lag. It creates feelings of fatigue, and reduces your ability to perform physical and mental tasks effectively (Fifteen Minute Consultation: Farquhar, 2017).

The effects of fatigue are most apparent when working in the latter half of the night, often in a state of acute sleep deprivation. Physicians fight their body's natural instinct to sleep during the circadian low (Medical and Genetic Differences in the Adverse Impacts of Sleep Loss on performance: Czeister, 2009; Fifteen Minute Consultation: Farquhar, 2017).

▶ Amount and Quality of Sleep

Sleep is necessary to restore mental and physical function (Fifteen-minute consultation: Farquhar, 2017). As a result, a low amount or poor quality of prior sleep can cause feelings of fatigue. If an individual gained less than 5 hours of sleep in the 24 hours before beginning a shift, then they are more likely to be significantly impaired performing common tasks (Managing Fatigue: Dawson and McCulloch, 2005). Sleep loss at this level can lead to 'decreased efficiency, instability, recent memory deficit, difficulty in thinking, depersonalization, and inappropriate humor' (Physician Fatigue: Ramsay, 2000).

▶ Shift Length/Rotation

Long or extended shifts reduce the opportunity to sleep (Strategies Used by Healthcare Practitioners to Manage Fatigue Related Risk: Ferguson et al., 2013). A reduction in shift length, however, manages physical, but not cognitive, fatigue (Managing Fatigue: Dawson and McCulloch, 2005). There is some evidence that the traditional overnight call schedule, in which a physician would complete 15-23 hour shifts every 9-10 days, causes more fatigue than a night float rotation, in which a physician would complete 9 hour shifts for five consecutive nights (Systematic Review: Reed et al., 2010). Similarly rapidly rotating schedules reduce the opportunity to

catch up on sleep, thereby increasing the chance of fatigue (Health consequences of shift work and insufficient sleep: Kecklund and Axelsson, n.d.).

▶ Careless use of Countermeasures

Although fatigue mitigation strategies, such as the use of caffeine or naps, can be beneficial in counteracting the effects of fatigue, their careless use can also increase feelings of fatigue. Whilst caffeine can improve alertness temporarily, its effects can last for up to six hours after digestion (Time to wake up: Hilditch et al., 2016; Fifteen Minute Consultation: Farquhar, 2017). Using caffeine towards the end of a shift will therefore reduce the ability to sleep after work. Similarly, naps are encouraged during shifts as they could improve alertness and responsiveness (Management of Physician Fatigue: Canadian Medical Association, 2014). A longer nap, however, could increase the chance of experiencing sleep inertia when you wake up from a deeper sleep. A physician needs to be alert at a moment's notice and, following a nap, we experience grogginess or 'sleep inertia' (Time to wake up: Hilditch et al., 2016). A physician must take steps to ensure that they do not unintentionally exacerbate feelings of fatigue.

Emotional

Stress syndrome is described as 'common' amongst graduate physicians (Graduate medical training, learning, relationships, and sleep loss: Papp et al., 2006). Stress and fatigue are reciprocal as both can cause and be a consequence of the other. Stress can cause sleep loss and sleep loss may lead to a fatigued physician (Physician Fatigue: Ramsay, 2000). Sleep loss, however, also increases feelings of stress (Physician Fatigue: Ramsay, 2000).

Social and Cultural Issues

Physician culture may exacerbate feelings of fatigue. A study of Anesthetists in the UK showed that some doctors and nurses objected to rest periods during night work and the Canadian Medical Association highlights that fatigue is not a weakness (A national survey of the effects of fatigue: McClelland et al., 2017; management of Physician Fatigue: Canadian Medical Association, 2014). This reveals that fatigue is not always treated seriously by physicians (Strategies Used by

Healthcare Practitioners: Ferguson et al., 2013. Physician culture can increase levels of fatigue by pressuring physicians to work when exhibiting symptoms of sleep deprivation (Health Worker Fatigue: Dubeck, 2014). Dawson et al. describe fatigue-related incidents as a systematic failure to prevent a chain of causal events (Fatigue Proofing: 2011). Without thorough mechanisms in place to recognise and mitigate the effects of fatigue, organizational structure is a major barrier in combating physician fatigue (Strategies used by healthcare practitioners: Ferguson et al., 2013).

Consequences of Fatigue

▶ PHYSICAL

▶ EMOTIONAL

▶ SOCIAL AND CULTURAL

▶ PSYCHOLOGICAL

Physical Consequences

Fatigue impacts a physician's health and wellbeing (Systematic Review: Reed et al., 2010). Kecklund and Axelsson found a relationship between fatigue and an increased chance of occupational accidents, obesity/weight gain, Type 2 diabetes, and coronary artery disease, as well as breast, prostate, and colorectal cancer (Health Consequences of Shift Work: n.d.). Farquhar corroborates these findings, linking fatigue to an increased risk of cardiovascular disease, diabetes and obesity, and reduces the effectiveness of the immune system (Fifteen Minute Consultation: Farquhar, 2017). The Canadian Medical Association highlights the relationship between work-related fatigue and many of these conditions (Management of Physician Fatigue: 2014). Sustained fatigue is therefore not conducive to a healthy lifestyle.

Emotional Consequences

As already demonstrated, the effects of stress and fatigue are reciprocal. A lack of sleep can lead to fatigue which increases feelings of stress (Physician Fatigue: Ramsay, 2000). Stress, however, can lead to a lack of sleep which in turn leads to increased feelings of fatigue (Physician Fatigue: Ramsay, 2000).

Social and Cultural Consequences

A fatigued physician is more likely to get impatient or agitated, have increased irritability, and have difficulty getting along with others (The Myths and Realities of Fatigue: Cirios, 2009; Graduate medical training, learning, relationships, and sleep loss: Papp et al).

In turn, these fatigue-related behavioural changes can negatively affect personal and social relationships, as well as relationships with co-workers.

Psychological Consequences

Fatigued individuals have a reduced ability to recognise specific emotions and report lower levels of empathy than well-rested individuals (Neurobiology of Sleep and Circadian Rhythms: Killgore et al., 2017). This puts a strain not only on social relationships, but can also alter the way a physician interacts with their co-workers and, crucially, their patients.

A fatigued physician has a reduced cognitive function (Fatigue, Risk, and Excellence: National Steering Committee on Resident Duty Hours, 2013). The cognitive impairments that a fatigued individual can be compared to a blood-alcohol level that is over the legal limit to drive after 24 hours of sustained wakefulness (Management of Physician Fatigue: Canadian Medical Association, 2014[1]). Not only does this reduce the ability of a physician to complete common work tasks, but it may also have a detrimental effect on patient safety and occupational health and safety (Physicians' Occupational Health & Safety Roles and Responsibilities: Public Services Health and Safety Association Ontario, 2012). These issues are discussed more fully, on the next page.

Patient Safety

Whilst the relationship between resident duty hours and patient safety is unclear, fatigue is strongly linked to the occurrence of adverse events in medicine (Health Worker Fatigue: Dubeck, 2014). Although a tired doctor is not necessarily an unsafe doctor, the risk of an incident 'increases markedly after eight hours of duty' and at 12 hours it is almost double the risk at 8 hours (Fatigue, Risk, and Excellence: National Steering Committee on Resident Duty Hours, 2013; Management of Physician Fatigue: Canadian Medical Association, 2014). Fatigue therefore increases the risk of errors and incidents in regards to patient care (Managing Fatigue: Dawson and McCulloch, 2005; Physician Fatigue: Ramsay, 2000). Fatigue is revealed as a contributing factor in a significant number of physician errors, including mistakes with regards to medication and laboratory testing (Health Worker Fatigue: Dubeck, 2014). FRM practices are therefore necessary to improve patient safety and to continue to provide the best care possible to the Canadian population.

The Toolkit is intended as a resource for institutions of Canadian medical education and aims to help with the development of local FRM policies and the implementation of mitigation strategies. Specifically, this toolkit will be of use to local implementation committees.

[1] Williamson, A. & Feyer, A. (2000). Moderate Sleep Deprivation Produces Impairments in Cognitive and Motor Performance Equivalent to Legally Prescribed Levels of Alcohol Intoxication. Occupational and Environmental Medicine 57: 649 - 655. 13 Dawson, D. & Reid, K. (1997). Fatigue, Alcohol and Performance Impairment. Nature 388: 235

Occupational Health & Safety

Fatigue impacts occupational health and safety. As a fatigued individual has a reduced capacity to perform tasks of 30 minutes or more (Fatigue and Safety at the Workplace: Government of Alberta, 2016), sleep deprivation therefore negatively impacts a physicians' performance at work (Resident Work Hours: Bhananker and Cullen, 2003; Medical and genetic differences: Czeisler, 2009; Cognitive Benefits of Sleep: Ellenbogen, 2005). A fatigued healthcare worker is more likely to fall asleep at work and suffer personal consequences, such as percutaneous needlestick injuries (The Myths and Realities of Fatigue: Sirios, 2009; Management of Physician Fatigue: Canadian Medical Association, 2014).

Worryingly for those in shift work industries, the impact of 17 and 24 hours of sustained wakefulness on performance deterioration have been compared to that of a blood alcohol level of 0.05% and 0.10% after 24 hours of sustained wakefulness (Management of Physician Fatigue: Canadian Medical Association, 2014). It is important to note that the maximum legal limit for blood alcohol level in Canada is 0.08% to drive (Ontario Ministry of Transportation, 2017; Dubeck, 2014; McClelland et al., 2017) and there have been multiple cases where fatigue has been a contributing factor in serious and fatal driving accidents after a night shift (Health consequences of shift work and insufficient sleep: Kecklund and Axelsson, n.d.; Fifteen Minute Consultation: Farquhar, 2017).

Glossary

Defining Fatigue and associated terms for the Canadian Medical Education Context

Fatigue is multidimensional in both its causes and manifestations, and is influenced by many factors: physiological (e.g. circadian rhythm), psychological (e.g. stress, alertness, sleepiness), behavioural (e.g. pattern of work, sleep habits) and environmental (e.g. work demand).

▶ ...essentially, fatigue is a subjective feeling of physical or mental tiredness that may impact functioning.

(Adapted from RNAO, 2010).

TERM	DEFINITION
Alertness	Levels of sleepiness, which can vary widely from extremely low (ex. sleepy) to very high (ex. wide awake), the state of cognitive and physiological arousal, and responsiveness to environmental/situation conditions. (FRMS Resource Pack: Queensland Health, 2009).
Audit	Summaries of clinical performance (eg, based on review of charting or one-to-one observation of clinical practice) used to increase the target group's awareness of their and/or others' practice (Toolkit: Implementation of Clinical Practice Guidelines: Registered Nurses Association of Ontario, 2002).

TERM	DEFINITION
Fatigue	A subjective feeling of tiredness that is experienced physically and mentally. It ranges from tiredness to exhaustion, creating an unrelenting overall condition that interferes with individuals' physical and cognitive ability to function to their normal capacity. Its experience involves some combination of features: physical (e.g. sleepiness) and psychological (e.g. compassion fatigue, emotional exhaustion) (Adapted from RNAO, 2010).
FRM – for the Medical Education Context	Fatigue risk management is a set of ongoing fatigue prevention and mitigation practices, principles, and procedures integrated throughout all levels of the clinical and academic work environment, and are designed to monitor, ameliorate and manage the effects of fatigue and associated risks for the health and safety of healthcare personnel and the patient population they serve (FRM Task Force 2018).
FRM System (FRMS)	An FRMS is an integrated set of management practices, beliefs and procedures for monitoring and managing the risks posed to health and safety by fatigue. It is based in safety management system theory with an emphasis on risk management (Queensland Health, 2009).
Fatigue Risk Register	The fatigue risk register enables systematic documentation of the findings of the formal fatigue risk scan and the ongoing monitoring of current fatigue risk management activities (Queensland Health, 2009). The register may also house a catalogue of available assessment methods, list fatigue risks particular to the local practice setting, and control measures previously or currently in use.
Fatigue Severity Scale (FSS) of Sleep Disorders	A scale to measure fatigue comprised of nine statements concerning respondent's fatigue, e.g., how fatigue affects motivation, exercise, physical functioning, carrying out duties, interfering with work, family, or social life (Measures of Fatigue: Neuberger, 2003).
FRM Local Working Group (LWG) or FRM Local Officer	A FRM Local Working Group/Officer is a group or an individual responsible for oversight of the process by which fatigue risk is managed and monitored in the clinical practice and learning environment at a specific site (FRMS Resource Pack: Queensland Health, 2009; Transport Canada, 2011).
Karolinska Sleepiness Scale (KSS)	A scale used to measure the subjective level of sleepiness at a particular time during the day. On this scale subjects indicate which level best reflects the psycho-physical sate experienced in the last 10 min. The KSS is a measure of situational sleepiness. It is sensitive to fluctuations. (Karolinska Sleepiness Scale: Akerstedt, 2012).
Mitigation Controls/FRM Strategies	Mechanisms or countermeasures established locally to effectively control or mitigate the risk of a fatigue-related incident.
Nap	Brief sleep episodes taken outside of the major sleep episode. Naps can vary in duration from 5 minutes to 4 hours, with varying restorative benefits depending on duration, time of the day taken, prior wake time and prior sleep (FRMS Resource Pack: Queensland Health, 2009).
Prior Sleep	The amount of sleep obtained prior to a specific time (eg. the start or end of a shift) (FRMS Resource Pack: Queensland Health, 2009).
Prior Wake	The amount of time spent awake prior to a specific period (usually assessed at the start and end of a shift). (FRMS Resource Pack: Queensland Health, 2009).
Risk and Risk Assessment	A risk is the likelihood of injury or illness arising from any exposure to a hazard. Risk assessment is a process to determine the likelihood and impact of injury or illness for those exposed to the hazard (National Code of Practice: Australian Medical Association, 2016).
Sleep Inertia	Sleep inertia is experienced shortly after waking, and presents as generalized grogginess/tendency to fall back asleep, with impaired cognition and motor performance that typically lasts 10-15 minutes (Time to wake up: Hilditch et al., 2016).
Sleepiness	A state of increased motivation to sleep. Difficulty in maintaining the alert state so that if an individual is not kept active and aroused, they will fall asleep (FRMS Resource Pack: Queensland Health, 2009).

FRM Principles

The following guiding principles are intended to support the local development of policies, strategies and procedures for faculties, trainees and institutions.

With the purpose of establishing a foundation for FRM at a national level, the objective of the principles is to ensure that both patient safety and service provider safety are upheld, while remaining committed to exceptional medical education. These principles acknowledge the power differential that exists between trainees, senior clinical staff and the educational institution, and as such, responsibility for fatigue management is allocated accordingly. Implementation of risk management strategies and practices in each individual postgraduate medical education training environment will necessarily reflect the local context and will be designed and adapted to suit site-specific needs.

Future work will establish the pathway for successful implementation of local, flexible strategies and controls, and will elaborate on the development of outcomes-based FRM accreditation standards and indicators. The creation of a FRM Toolbox Resource, of which the FRM Principles are the foundation, will provide a series of non-prescriptive frameworks and an array of available FRM actions and options that will support clinical educators, institutions and programs in the creation of management and mitigation plans for fatigue risk.

Guiding Principles

1 Leaders of both educational institutions and clinical learning environments are responsible for ensuring that FRM is a priority and that healthcare providers and trainees can effectively contribute to the creation of a management plan.

2 Every trainee bears a responsibility to self, to their peers, and to those they provide care for, to manage their own fatigue during training and as they transition into practice.

3 All clinical training facilities must develop and implement an institution-wide FRM policy and also enable trainees and other healthcare providers to effectively contribute.

4 All clinical institutions involved in clinical training must create a just culture learning environment that enables the reporting of fatigue-related incidents.

5 All clinical institutions involved in training must support faculty and trainee development in FRM policies, practices, and procedures.

6 All stakeholders to clinical FRM must collaborate on an evaluative process for Continuous Quality Improvement (CQI) of the local FRM approach, that includes a process for governance, performance evaluation, and review and audit functions.

▶ **EXEMPLARY INDICATOR OF FRM**

Clinical institutions participating in clinical training actively identify, collect, and disseminate good practices and innovative research in FRM to the medical education community.

Acknowledge. Act. Adapt
Fatigue Risk affects us all.

Options for FRM Actions

The following FRM Actions are intended as exemplars of available strategies and options that are linked to each role and principle, and are not exhaustive, mandatory or prescriptive. As each residency education program, institution and training site develops their respective FRM Plan, the established principles and corresponding strategies are intended to guide and support the equitable and balanced allocation of roles and responsibilities for trainees, clinical educators, programs, institutions, hospitals and training sites, employers, and accrediting bodies.

▶ PRINCIPLE 1

ROLES FOR LEADERS:

Leaders of both educational institutions and clinical learning environments are responsible for ensuring that FRM is a priority and that healthcare providers and trainees can effectively contribute to the creation of a management plan.

Leaders includes, but is not limited to; Clinical supervisors/Senior educational staff/Chief of Staff, Most Responsible Physician (MRP), Program Directors, Postgraduate Deans.

OPTIONS FOR LEADERS

Establishment of a local FRM working group or a chief FRM officer

Formal obligation for leaders to report on established FRM practices and training to staff, including trainees, and the organization

▶ PRINCIPLE 2

TRAINEE ROLE: Every trainee bears a responsibility to self, to their peers, and to those they provide care for, to manage their own fatigue during training and as they transition into practice.

OPTIONS FOR TRAINEES

Conduct a fatigue self-assessment prior to/during call	Declare fatigue to supervisors and team
Ensure adequate rest, nutrition are obtained prior to call	All reasonable efforts should be made to avoid shifts in excess of 24 hours
Report fatigue related incidents via established reporting routes	
Employ individual controls/fatigue risk countermeasures while on call (caffeine intake, napping/breaks, task variation, nutrition and hydration)	

▶ PRINCIPLE 3

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CLINICAL TRAINING FACILITY ROLE:

All clinical resident training facilities must develop and implement an institution-wide FRM policy and also enable the trainees and other healthcare providers to effectively contribute.

OPTIONS FOR CLINICAL TRAINING FACILITIES	
Incorporate and offer educational resources and information on fatigue prevention, mitigation and recognition strategies for trainees and healthcare providers	Establish a Taxi Reimbursement/alternative safe commuting program
	Provide a quiet/appropriate place to nap after completing a shift
Integrate/align FRM within existing health and safety policies	Establish clear Handover Protocols

▶ PRINCIPLE 4

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DUTY TO UPHOLD REPORTING PRACTICES AND POLICIES:

All clinical institutions involved in clinical training must create a just culture learning environment that enables the reporting of fatigue-related incidents.

OPTIONS FOR REPORTING PRACTICES
Establish reporting pathways to identify fatigue-related incidents within a just culture and a proactive clinical learning environment
Support declaration of fatigue to team, team double-checking, for both trainees and senior educational and clinical leaders
Ensure policies and procedures are aligned with just culture and professional practice standards, are reviewed regularly and are made available to all participants

▶ PRINCIPLE 5

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SHARED ROLE TO SUPPORT DEPLOYMENT & IMPLEMENTATION: All clinical institutions involved in training must support faculty and trainee development in FRM policies, practices, and procedures.

OPTIONS FOR FACULTY AND TRAINEE DEVELOPMENT	
Offer educational and training workshops and resources	Incorporate physician fatigue content into curriculum for trainees and clinical educators/teachers
Align with OH&S programs/procedures	Incorporate FRM evaluation processes to determine if the system needs are being met
Create faculty development opportunities to support and engage faculty in FRM/mitigation	

▶ PRINCIPLE 6

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SHARED ROLE AND COMMITMENT TO CO-PRODUCE CQI:

All stakeholders to clinical FRM must collaborate on an evaluative process for CQI of the local FRM approach, that includes a process for governance, performance evaluation, and review and audit functions.

OPTIONS FOR CONTINUOUS QUALITY IMPROVEMENT (CQI)

Develop outcomes-based procedures to assess and evaluate policy effectiveness

Ensure evaluation data is captured reliably & regularly

Support collaboration between institutions and respective local health authority to ensure alignment with FRM principles and practices

▶ EXEMPLARY INDICATOR

DUTY TO CONTRIBUTE TO DISSEMINATION OF GOOD PRACTICES:

Clinical institutions participating in clinical training actively identify, collect, and disseminate good practices and innovative research in FRM to the medical education community.

EXEMPLARY INDICATOR FOR FRM: OPTIONS FOR SHARING GOOD PRACTICES
Promote research & innovation on fatigue-related implementation & evaluation strategies to address trainee/physician fatigue
Facilitate partnerships with organizations to conduct FRM related research
Incorporate FRM evaluation processes to determine if the system needs are being met
Share practices aimed at solutions for managing fatigue within the medical education community

Fatigue Risk
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FRM Policy Implementation

This FRM Policy Implementation Guide is intended as a non-prescriptive resource to support the local development of an institutional or program-level policy for the management of fatigue risk in postgraduate medical education.

This guide is intended to be used in conjunction with the FRM Policy Template – a guideline for the development of an FRM policy document, that can be adapted by the institution or program.

FRM Policy Development

The goal of any FRM Policy is to manage and proactively mitigate the fatigue-related risks specific to the clinical learning and practice environment. At its foundation, a policy to manage fatigue during residency training:

▶ Acknowledges that fatigue is a hazard in medical education

▶ Aligns with current organizational health and safety policy practices, including those outlined by the respective hospital site and Provincial Housestaff Organization (PHO)

▶ Aligns with the educational program goals in order to support the development of learner competencies

▶ Ensures the safety and wellbeing of residents, healthcare staff and the patient population they serve

Recommendations for Implementation

The following recommendations aim to ensure that the FRM policy is reflective of your local context and that it aligns with the program or postgraduate office's existing health and safety policies and practices, and can be effectively implemented based on the resources available in your training context.

▶ The following recommendations are provided to support the FRM Policy development process in your local context:

• Ensure that staff and residents have the opportunity to be involved in and regularly contribute to the development of the FRM Policy, at its inception and during periodic review

• Launch a FRM Local Working Group or FRM Officer as a single point of contact in policy development, implementation and for ongoing monitoring and review

• Ensure senior leaders are informed and engaged with the process of developing FRM policies

• Emphasize and articulate at the outset of the policy document that senior staff/leaders are supportive of both developing and effecting FRM policy and procedures

• An institutional or program-level FRM Policy will be most effective when implemented in an integrated fashion

   – The FRM policy can be integrated alongside training/ education programs, the development of audit and compliance protocols or implementation of reporting systems

   – The FRM policy should also reference incident investigation planning and practices, as outlined in the section addressing *Continuous Quality Improvement and Evaluation: Audit and Compliance* on page 52 of the Toolbox

• Develop the policy in alignment with existing health and safety policy practices currently in place in your local institution, and verify that policies do not contradict one another

FRM Policy Template

Approved (Date)	
Review Date	
Revised Date	
Approved By	

Background/ Introduction

Mission statement tailored to local context

This section introduces the rationale for FRM Policy development and implementation, and communicates the shared responsibility for and commitment to managing fatigue from a risk-based approach.

▶ Sample Content

Fatigue is a hazard in medical education that impacts residency training and workplace health and safety, with potential implications for patient safety. Fatigue is an inevitable aspect of 24/7 healthcare service and therefore is it not realistic to eliminate risk but rather to work collectively to mitigate the risk across the system. Successful management of fatigue risk is therefore the shared responsibility among all those who have a role within medical education. Within that shared responsibility, trainees have a key role in managing and reporting their own fatigue to their supervisors, peers and to the healthcare team. To support this, medical education leaders are accountable for ensuring practices are in place that enable and protect every trainee's ability to fulfill their role in the management of fatigue risk.

Objective/Purpose

Tailored to local context

This section address the purpose of the policy, clearly stated and outlining what the policy aims to achieve.

▶ Sample Content

The objective of this policy is to prevent, mitigate and manage the hazard of fatigue during residency training, and to promote health and wellbeing for physicians and for the provision of quality patient care.

Definitions (may be tailored to local context)

TERM	DEFINITION
Clinical Practice & Learning Environment (also, the Clinical Training Site)	Clinical Practice & Learning Environment (also, the Clinical Training Site).
Continuous Quality Improvement (CQI)	Structured process to improve all aspect of care and service continually; ongoing study to improve performance. (Medical Dictionary for the Health Professions and Nursing, 2012). For FRM, CQI will explicitly entail the promotion and sharing of information, and communicating learnings from incidents as they occur (See page 55: *Facilitating FRM Infrastructure: Knowledge Sharing and Best Practices*).
Fatigue	A subjective feeling of tiredness that is experienced physically and mentally. It ranges from tiredness to exhaustion, creating an unrelenting overall condition that interferes with individuals' physical and cognitive ability to function to their normal capacity. Its experience involves some combination of features: physical (e.g. sleepiness) and psychological (e.g. compassion fatigue, emotional exhaustion) (Adapted from RNAO, 2010).
Fatigue Risk Management (FRM)	A set of ongoing fatigue prevention and mitigation practices, principles, and procedures integrated throughout all levels of the clinical and academic work environment, and are designed to monitor, ameliorate and manage the effects of fatigue and associated risks for the health and safety of healthcare personnel and the patient population they serve (FRM Task Force, 2016).
FRM Officer/Local Working Group (LWG)	Group or individual responsible for oversight of the process by which fatigue risk is managed and monitored in the clinical practice and learning environment.

Scope

This section articulates who the policy applies to, and the conditions under which the stakeholders are accountable to the policy.

▶ Sample Content

This policy applies to all postgraduate trainees of (institution name), for the duration of all activities associated with the performance of their trainee duties.

Key Roles & Responsibilities

▶ PERSONAL HEALTH & SAFETY

▶ WORKPLACE/ OCCUPATIONAL HEALTH & SAFETY

▶ See section on Governance, Responsibility & Accountability, page 26 in the Toolbox

This section clearly outlines the respective roles and shared responsibilities for trainees, educators, leaders, clinical training sites/employers and universities/institutions, and the responsibility for alignment with respective PHO service agreements. This section will also describe the responsibility the employer has to trainees, whether the employer is the hospital/clinical training site or the university. To help define the roles, responsibilities within the FRM policy can be described under the following headings:

▶ Personal Health & Safety

- Responsibility of the Program and/or the Clinical Training Site
- Responsibility of the Resident/Trainee

▶ Workplace/Occupational Health & Safety

- Responsibility of the Program and/or the Clinical Training Site
- Responsibility of the Resident/Trainee

Procedure

This section will outline the details of how fatigue will be identified, managed, mitigated and reported on within your organization.

▶ The procedure **may** include details describing:

- Processes for communication

- Practices around service hours and scheduling/rostering

- Practices around safe vehicle travel for clinical or academic purposes
  - Align these practices with existing resident travel policies (where present), that may include post-call travel or long distance travel

- Reporting practices to ensure fatigue is effectively monitored

- Protocols to ensure staff and trainees are educated and trained on the effects of fatigue and how to manage fatigue in their context

Related Resources/ Other Information

Tailored to local context

This section will detail relevant information, links or resources for trainees or staff that may be useful in orienting and educating your team about fatigue, its effects on performance, wellbeing and health overall.

Governance, Responsibility & Accountability

Everyone has a shared responsibility for managing fatigue-related risks and maintaining safety in the clinical practice and training environment.

To ensure a FRM plan or strategy will be prioritized and effective, it is necessary to establish a local governance structure that clearly outlines the roles and responsibilities of key organization leaders, including Hospital Administrators, Decanal Team, Postgraduate Medical Education Offices, Program Directors, and clinical and educational supervisors, as well as learners. An important component of any governance structure is clearly defined mechanisms of accountability.

Accountability for FRM will vary based on locally available resources, personnel and care delivery settings. While autonomy for the establishment of a governance structure that is reflective of the local context rests with each training site, the roles and responsibilities within should be ultimately fortified by a commitment to both learner and patient safety, as outlined in the FRM Foundational Principles.

Recommendations for Allocating Responsibility

Certifying colleges have a responsibility to mandate safety standards and requirements, and conduct audits to ensure compliance. In situations where an organization does not comply with regulations or safety is improperly managed and results in an incident or accident, the organization and its leaders could be held legally liable.

LEARNERS have a responsibility to obtain sufficient sleep and to identify when they have not been able to do so or believe they are at risk of making a fatigue-related error. Learners are responsible for reporting any situation where they observe fatigue-related risks posing a threat to their own or to patient health and safety. Incident or event reporting is to be confidential and for the purposes of maintaining a safe learning environment, therefore residents should feel safe in voicing and reporting any fatigue related risks they observe.

MANAGERS & SUPERVISORS have a responsibility to create a work environment that reduces fatigue-related risks, provide adequate sleep opportunities, and take appropriate action if an employee is not fit for work. Supervisors also have a responsibility to ensure that incident and accident reporting is conducted in a safe and confidential manner, such that learners do not fear reprisal when reporting.

Although each member of these groups has specific roles and responsibilities, to ensure the health and safety of patients, staff, and learners, the successful implementation of an effective FRM plan requires the development of a 'just' safety culture in which fatigue risk management is the norm. An openly communicative working environment, including non-punitive incident reporting and investigations with a focus on continuous quality improvement is a prerequisite to obtaining open feedback about FRM policies and programs and for identifying any fatigue-related incidents, errors, or near misses.

Consideration for accommodation of learners with disabilities should be given, including efforts to ensure that those who have been diagnosed with sleep disorders or conditions that impact sleep are entitled to the same opportunities as those learners without disabilities. The duty to accommodate medical learners with special needs can be managed and evaluated on a case-by-case basis and at the local level and at the discretion of the individual program. Ultimately, any accommodation arrangement should not compromise or interfere with the wellbeing and safety of patients, learners and staff. Consultation and alignment with local PGME policies and regional human rights legislation regarding the duty to accommodate learners with disabilities is an important step in integrating a just and equitable FRM plan.

FRM Roles & Responsibilities

The subsequent section describes a recommended set of responsibilities for each role within the postgraduate medical education system. These are not prescriptive, but do provide a framework on which to base the organization of accountability and governance within the local practice and working environment.

- ▶ CERTIFYING COLLEGES
- ▶ HOSPITAL ADMINISTRATORS
- ▶ DECANAL TEAM
- ▶ CLINICAL EDUCATORS & SUPERVISORS
- ▶ PROGRAM DIRECTORS
- ▶ LEARNERS
- ▶ OVERSIGHT & MONITORING
- ▶ FRM LOCAL WORKING GROUP (LWG) OR OFFICER

▶ Certifying Colleges (RC, CMQ, CFPC)

- Establish education and accreditation standards and requirements
- Evaluate compliance with established FRM policies, procedures and safety training
- Audit non-compliance/evaluate compliance

▶ Hospital Administrators

- Allocate resources to support the implementation of a FRM plan
- Work with the Postgraduate Deans and Program Directors to identify a person or group of people to develop a FRM policy appropriate to the local context
- Ensure the FRM policy complies with national and provincial/territorial policies and health and safety policies
- Support the implementation of the FRM policy
- Ensure medical and clinical staff under their supervision comply with the FRM plan
- Work with schedulers to ensure duty schedules provide sufficient opportunity for rest and recovery between shifts
- Investigate where appropriate, fatigue related accidents/incidents
- Participate in the continuous evaluation, monitoring, and improvement of residency programs and address issues affecting residence program quality

▶ Decanal Team

- Allocate resources to support the implementation of a FRM policy

- Ensure FRM policies and practices meet accreditation standards

- Work with Program Directors to develop a FRM policy appropriate to the local context

- Ensure medical and clinical staff under their supervision comply with the FRM plan

- Ensure FRM measures are appropriate

- Prioritise allocation of resources to reduce highest levels of fatigue risk

- Ensure processes are developed to respond to reports of fatigue-related incidents, errors, and/or behaviours in an appropriate manner

- Participate in the continuous evaluation, monitoring, and improvement of residency programs and address issues affecting residence program quality

▶ Clinical Educators & Supervisors

- Participate in FRM training and education

- Incorporate educational resources and information on fatigue prevention, mitigation, and recognition strategies

- Identify and report fatigue related risks to the FRM Local Working Group (LWG)

- Ensure learners under their supervision comply with the FRM strategy or plan

▶ Clinical Educators & Supervisors (cont'd)

- Advise program directors of barriers preventing the effective management of fatigue-related risks

- Arrive at shift in a state fit to safely conduct duties

- Report when they have not been able to obtain sufficient sleep or believe they are at risk of making a fatigue-related error

- Respond to declarations of fatigue in a manner that upholds patient and learner health and safety

- Respond to reports of fatigue-related incidents, errors, and/or behaviours appropriately and as per program/institution policy responsibly

- Appropriately supervise learners and actively promotes the safety and wellness of patients and learners

- Utilize appropriate Fatigue Risk Mitigation Strategies when Learners experience fatigue and take appropriate action if a Learner is not fit for duty

- Ensure there are effective centralized policies addressing fatigue risk management

- Participate in the continuous evaluation, monitoring, and improvement of residency programs and address issues affecting residence program quality

▶ Program Directors

- Work with Postgraduate Dean to develop a FRM policy and ensure its implementation

- Monitor faculty, staff, and learners to guarantee participation in FRM training and education

- Participate in FRM training of residents and faculty

- Incorporate educational resources and information on fatigue prevention, mitigation, and recognition strategies in program

- Ensure FRM measures are appropriate

- Prioritise allocation of resources to reduce highest levels of fatigue risk

- Monitor compliance with the FRM Policy

- Advise postgraduate deans of barriers preventing the effective management of fatigue-related risks

- Ensure suitable processes are in place to respond to reports of fatigue-related incidents, errors, and/or behaviours in an appropriate manner via the FRM Local Working Group and/ or appropriate risk management committee

- Participate in the continuous evaluation, monitoring, and improvement of residency programs and address issues affecting residence program quality

▶ Learners

- Arrive at shift in a state fit to safely conduct duties

- Use time outside of work to obtain adequate rest and to ensure fitness for work

- Report when they have not been able obtain sufficient sleep or believe they are at risk of making a fatigue-related error

- Collectively identify and report context-specific fatigue related risks to the Fatigue Risk Management Local Working Group

- Individually report specific errors and fatigue-related behaviours or situations that may present a fatigue-related risk

- Complete all training required by the local FRM strategy

- Employ appropriate Fatigue Risk Mitigation Strategies

- Participate in the continuous evaluation, monitoring, and improvement of residency programs and address issues affecting residence program quality

▶ Oversight & Monitoring

Depending on the size and structure of the training context, it may be useful to convene either a Local Working Group or Officer responsible for oversight of the FRM plan in place. This body can also choose to employ a Fatigue Risk Register (described below) as a means of monitoring the fatigue risk particular to the local training site. While this group/individual and the mechanisms by which they operate and monitor fatigue can be designed and adapted to suit the site-specific needs, a description of the role of this group is provided below, along with the key elements that can be included in a Fatigue Risk Register.

▶ FRM Local Working Group (LWG) or Officer

To help implement a FRM plan, a FRM Local Working Group/FRM Officer role can be established to oversee the management of fatigue-related risk specific to the local training context. The LWG or officer plays a central role in establishing a culture in which fatigue risk management is well received and accepted as a normal practice within the workplace. The LWG would regularly assess and improve upon existing FRM policies and practices to ensure procedures remain relevant to the local context and that best practices suitable to the context are in place. This role also functions as a conduit between the staff, learners and administrators in identifying priorities and areas for improvement in the local FRM strategy.

The LWG may be comprised of key leaders who can provide insight into the management and operation of the facilities. The LWG should include, but is not limited to at least one member of each of the following groups:

- The institutional leadership;
- The program leadership;
- Faculty members; and
- Learners

The LWG responsibilities may include:

- Reporting regularly to program directors

- Liaising with the patient safety committee(s) and/ or health and safety officer to ensure policies and procedures align and are consistent

- Designing and implementing site-specific FRM strategies, including conducting the assessment of risks inherent to a particular training context

- Continuously reviewing, monitoring and improving fatigue risk management practices based on developing operational needs and feedback (including collect documentation regarding the frequency and nature of threshold violations, fatigue report forms, and other reports as deemed necessary)

- Conducting investigations into fatigue-related accidents or incidents

- Ensuring that the act of reporting an incident or adverse event by learners or supervisors is protected and handled in a safe and confidential manner

Governance, Responsibility, and Accountability: Key Tasks

1 Obtain high-level commitment across the facility to develop and implement FRM.

2 Establish support and resources to implement a FRM plan.

3 Identify a FRM Governance Officer and/or Local FRM Working Group to oversee the implementation of a plan for FRM, assess the risk of fatigue in the local context, outline the roles and responsibilities of managers, supervisors, and learners, develop FRM policies, and continuously monitor procedures.

ACT

Tools are available to foster change.

⟨👁⟩ SNEAK PEEK

Act
Executive Summary

Support and enable the creation of FRM plans that ensure effective management of fatigue during training and throughout practice; for patients, learners, practitioners and teams.

Managing fatigue signals a turning point for Canadian medical training as we move to join leading countries and best practices in the management of fatigue risk. If we are successful, we will promote the establishment of training environments where fatigue risk is acknowledged, individuals and teams are enabled to recognize the risks and empowered to take action to apply adaptive strategies suited to local contexts. Focusing on fatigue risk management does not imply that long work hours are acceptable; rather, this approach recognizes the risk associated with extended work hours and aims to identify practical approaches to managing the risk.

Recognizing that there are many factors that contribute to fatigue during residency, a comprehensive approach to minimize fatigue and fatigue-related risks should be developed and implemented in residency training in all jurisdictions in Canada. Strategies must be adaptive to specific contexts and specialties. This national tool-box resource of fatigue mitigation strategies and techniques, adaptable in a variety of settings and for a variety of disciplines, has been created to support this change.

Acknowledge. Act. Adapt
Fatigue Risk is actionable
on all levels.

Background

Self-assessment of fatigue impact on performance often underestimates the true impairments experienced, as identified in the work by Dorrian, Lamond and Dawson (2000).

While individuals may be aware that they are indeed fatigued or feeling tired, their ability to accurately assess or predict the impact on increasingly complex tasks diminishes with greater levels of extreme tiredness. Further, as fatigue becomes a chronic pattern during residency training, the ability to assess the degree of sleep-related impairment diminishes, and many incorrectly come to the conclusion that they have acclimated or 'adapted' to a deprived sleep state (Veasey et al, 2002 and Taylor et al, 2016).

Education + Training

▶ OBJECTIVES

▶ FACTORS TO CONSIDER

▶ RECOMMENDATIONS

▶ Education Objectives

At a minimum, fatigue risk education should aim to:

• Promote awareness around the risk of fatigue, for both learners and supervisors/leaders

• Identify the individual and team-based strategies available to manage the risk

▶ Education and Training: Factors to Consider

Prior to implementing training and education approaches, the following considerations may help to identify the most suitable approaches to orienting learners, supervisors and staff to fatigue risk in their practice environment.

• Determine the level of fatigue risk an organization faces

• Determine the level of existing knowledge around fatigue-related risk

– Considerations will vary depending on an organization's size, resources and practice context, and the existing awareness and culture around the risk of fatigue

▶ Recommendations for Training & Education

• Outline a clear description of the duty of all participants to recognize and manage fatigue as risk during their training

• Identifies individual and team-based strategies that enable learners, teams and those in supervisor roles, to recognize fatigue and associated risks in themselves and in others. Include:

– Acknowledgment that fatigue can manifest differently depending on the local working environment and the individual

– Identification of available strategies

– The impact of fatigue, or the fatigue-related risk, may be task or context-dependent

For example, can manifest as attentional barriers when interpreting test results, decreased procedural reaction times or as misunderstanding communication/verbal interactions

• Provide information on how to access and use the institutional or program-level FRM Policy, and how to access resources that will enable both learners and supervisors to manage their own fatigue and to comply with the FRM policy as outlined

What Should be Included in FRM Programs

1 Information about circadian rhythms + sleep science

   • Refer learners to current evidence on relevant sleep research

2 Factors that promote healthy patters of wakefulness and good sleep hygiene

3 Occupational Health and Safety: Individual + Team Level

   • Fatigue recognition and prevention

   • Fatigue contributing factors

   • Implications of fatigue for both trainee and patient safety

FOR EXAMPLE: needle stick injuries, motor vehicle accident involvement

FRM training can be situated in overall resident wellness as demonstrated in Key Competency 4 of the CanMEDS Professional role, where a physician is able to:

- Demonstrate a commitment to physician health and well-being to foster optimal patient care

▶ Enabling Competencies reflecting this role include

- 4.1 Exhibit self-awareness and manage influences on personal well-being and professional performance

- 4.2 Manage personal and professional demands for a sustainable practice throughout the physician life cycle

  – 4.3 Promote a culture that recognizes, supports, and responds effectively to colleagues in need

Approaches to FRM Education and Training

▶ **Primary Level**

Introductory training aimed at the individual management of fatigue

- Orients learners to the processes and procedures within the FRM policy that support the voluntary identification of fatigue or a fatigue-related impairment in themselves or in others (See sections on pages 22-25: *FRM Policy Template & Recommendations*)

▶ **Secondary Level**

Training to familiarize supervisors and staff with policies and FRM planning, targeting the team level

- Enables supervisors to communicate the rationale and importance of an effective FRM strategy, compliance with the policy and how to support learners in declaring and managing individual fatigue

▶ **Tertiary Level**

System level occupational health and safety

- Outlines roles and responsibilities throughout an organization. Aimed at all staff and particularly for supervisors and leaders in medical education and clinical learning environments

- A focus on how to change infrastructure to support FRM - such as delegating certain tasks for time of day when providers are expected to me more rested/alert

▶ Options for Training Delivery Approaches

- Web-based training modules

- Informal "Physician Wellness" Rounds[1]

  – Voluntary and held during protected time,
    e.g. academic half day

  – Promotes a supportive resident-led initiative

- Opportunities confidentially discuss challenges related to residency, wellness and wellbeing, including factors related to fatigue, burnout/ sleep deprivation or excessive work hours – Resident Wellness Office

Individual Fatigue/Sleepiness Scales

TERM	DEFINITION
Karolinska Sleepiness Scale (KSS) and Questionnaire (KSQ) **> See Appendix for a copy of the KSQ**	• Subjective scale • Quick and simple to administer, paper or electronic format, valid and reliable • Limitations: easy to cheat, face validity may be limited, not reliable in reflecting objective performance measures
Fatigue Severity Scale (FSS) of Sleep Disorders **> See Appendix for a copy of the FSS**	• FSS (note that the PDF is widely accessible online, see also _Neuberger_, 2003) • Designed to measure fatigue severity in experience of fatigue in a variety of medical and neurologic disorders • 9 statements addressing how fatigue impacts activities of daily living • Higher scores indicate greater fatigue severity
Managing the Risks of Fatigue in General Practice - For GPs and GP Registrars (Australian Medical Association) **> See 'Fatigue Risk Checklist' in Appendix**	• See _'Fatigue Risk Checklist' in Appendix_ – generic workhour checklist to determine the types of risk factors applicable to residents/physicians based on hours work • See also _'AMA Fatigue Risk Assessment Tool'_ – specific to Australian physicians in practice
If a sleep disorder is suspected, a certified physician may recommend a Multiple Sleep Latency Test (MSLT) to rule out narcolepsy/ idiopathic hypersomnia **(Carskadon and Dement, 1982)**	• Diagnostic test, often utilized in workplace environments • Used to determine sleep disorders where excessive daytime sleepiness is the primary complaint (physiological sleep tendency)

[1] Calder-Sprackman, S., Kumar, T., Sampsel, K., & Gerin-Lajoie, C. (2017). LO42: Ice Cream Rounds: The adaptation and implementation of a peer-support wellness rounds in an emergency medicine residency training program. CJEM, 19(S1), S42-S42. doi:10.1017/cem.2017.104, http://postgrad.med.ubc.ca/2017/01/17/ice-cream-rounds-what-it-is-and-how-to-bring-it-to-your-program/, ALiEM and MEdIC https://www.aliem.com/, https://www.aliem.com/, https://www.cma.ca/En/Pages/cma-physician-health-policy-addresses-wellness-in-the-medical-profession.aspx, http://policybase.cma.ca/dbtw-wpd/Policypdf/PD18-01.pdf

Indicators of Fatigue: Common Symptoms

(Queensland Health, 2009; CCOHS, 2012; Sinha, Singh & Tewari, 2013)

PHYSICAL	MENTAL	EMOTIONAL/PSYCHOSOCIAL
Yawning	Reduced attention span	Irritability, poor temperament
Drooping eyelids	Decreased alertness	Quiet, withdrawn
Eye-rubbing	Poor judgement	Unmotivated
Involuntary nodding of head	Poor communication	Sluggish/lethargic
Involuntary naps/micro sleeps	Near misses/close calls	Giddiness
Poor/reduced motor skills		
Increased susceptibility to illness		

Case Studies

▶ SCENARIO 1
DRIVING HOME/COMMUTING

Phil is 31, married and recently became a father. He is in his 3rd year of his residency training in internal medicine. He drives 45 minutes each way to the hospital and typically completes several 12-hours shifts in a 30 day period.

Recently, Phil drove off the road on his way home from work at 6 a.m. Although this was not the first time he had felt tired, it was the fourth time in the past six months he'd had a driven off the road post-call and this time it frightened him. He stopped his car, and walked around outside in the cold air before he continued home. Although he has been avoiding talking to his supervisor and junior staff about driving home exhausted,

this latest incident was the trigger for Phil to tell his wife. Now that he has a child, he feels more strongly that he has to make some sort of change, because his stories about nearly falling asleep on duty or on the way home from work scared her. Phil thought he could avoid an accident, but now realizes that he could hurt himself or others if he does not make a change.

- How could Phil improve his sleep?

- Who should Phil talk to/inform about these near misses?

- On average how many hours of sleep should you ideally get each night?

- What is the responsibility of Phil's program to help address this serious personal safety issue?

▶ SCENARIO 2
TALKING WITH YOUR TEAM

Maggie is a clinical supervisor for ICU team at a large urban regional healthcare center, and is responsible for overseeing several residents at various stages of their training. She notices one of the senior residents, named Ben, has been routinely nodding off during briefs, and appears unfocused and groggy on the occasions when she does observe him in practice. Of particular concern is that Ben often forgets important patient update details when handing cases over to the oncoming attending. Maggie has observed

that Ben is an excellent physician when he's at the top of his game; however she also knows that the effectiveness of her team and the patient care they deliver becomes compromised when communication isn't clear. Maggie wants to address this with Ben, but knows the whole team is tired and even she herself feels worn out after several long and hectic shifts.

- How can Maggie bring up her concerns with Ben in a positive and constructive manner?

- How can Maggie ensure that she models good self-awareness and effectively manages her influence on her own personal well-being and professional performance?

▶ SCENARIO 3

FOOD/WATER AND CAFFEINE INTAKE

Zainab is a 23 year old resident in her first year, and is finding the transition from medical school to residency challenging. Her demanding schedule and on call hours often leave her feeling drowsy and low-energy, and she has difficulty concentrating when new procedures are being demonstrated. To cope, Zainab has started to drink a large coffee before her shift and will often consume a caffeinated energy drink and a muffin or pastry from the cafe during her break, while attempting to squeeze in a bit of studying. Although she's getting the short-lived energy boost she needs to get through her call shift, Zainab is finding that she feels increasingly irritated and anxious, and has difficulty falling asleep when her shifts are over. Further, she's finding it increasingly difficult to recall details from regular study sessions and during patient handovers.

- What might the impact of sugary energy drinks and foods have on Zainab?

- What effect does caffeine have on water in the body?

- How can Zainab adjust the timing of her caffeine intake to maximize its effectiveness?

- On average, what is the minimum amount of water you should drink every day?

▶ SCENARIO 4

WORKING IN ISOLATION

Jordan is a GP in a remote northern community, providing service for approximately 700 residents, many with complex conditions and with limited access to support and healthcare services. Jordan trained in an urban center but wanted to practice in the north as he comes from a smaller town. He is typically the lone practitioner providing 24 hour on-call care, and often experiences tough working conditions with limited resources and now works with a much smaller team than he'd grown used to during residency. As such, he now has less time to recoup lost hours of sleep and minimal time available for leave. Often, he's responsible for providing emergency care in the early morning hours. The clinic has had high turnover lately and the morale is quite low, owing to the working conditions and long winter months. When he's off duty, Jordan tends to catch up on sleep and reading or watch TV, and not much else. Although he is committed to making his community healthier, Jordan is aware he's an increased risk of stress and extreme fatigue given the intense burden and limited support available to his practice.

- What individual level strategies can Jordan use to manage his fatigue while on-call?

- Are there changes Jordan can make to his habits outside of work that might help him feel more balanced?

- What changes could be made to the overall system that may improve the situation?

Risk Mitigation
Tools and Strategies

Managing the risks associated with fatigue.

Once fatigue-related risks within the training and practice environment are identified, effective control mechanisms can be implemented. There is no single solution suitable for all environments, and individuals and teams may already be employing a broad range of informal habits to manage fatigue. Beginning to document these practices promotes their use such that the strategies can become more effective, improved and implemented broadly. Alongside any identified fatigue-related risks, existing mitigation strategies should also be recorded in a fatigue risk log book or register.

Upon identifying the fatigue-related risks and mitigation strategies in the local context, it will be beneficial to continue to assess the level and impact of fatigue. Regular team discussions about how fatigue impacts your practice will help to ensure that new risks are identified as they emerge. It will also promote a proactive culture in which talking about fatigue is the norm.

Examples of Training Strategies

1 Scheduling less complex or less safety-critical tasks at times of highest fatigue risk.

   • For example, employ a model for critical care task allocation and planning for overnight operational hours, such as the H@N.

2 Training employees on sleep hygiene and strategies to increase alertness.

3 Establishing & communicating clear handover protocols.

4 Advising colleagues (including allied healthcare professionals, such as nursing colleagues) when you are experiencing fatigue that may impair practice so that they can increase their vigilance.

   • For example, colleagues are better enabled to catch near-hits, (or near misses) when they are aware their counterpart(s) may be experiencing a fatigue-related impairment *(Transport Canada, 2008).*

5 Initiating a conversation with the team to determine what fatigue 'looks like' in a particular context, and how it may differ under the following circumstances:

   • Overnight vs. daytime shifts

   • Junior vs senior residents/staff – (who is on the floor/ on call)

   • Rural/remote vs. urban clinical setting

   • Repetitive task fatigue, task complexity

   • Actions expected from the supervisor or program if a resident is experiencing fatigue-related impairment

   • Expectations on what to do if you personally are fatigued and suspect it may be affecting practice or personal safety

Caffeine

Caffeine is a well-known addictive stimulant, and can negatively impact the quality of sleep if not used judiciously. For example, sleep can be affected if enough caffeine is consumed just prior to a planned time of prolonged sleep or if consumed excessively over several hours such that restorative or brief napping cannot be achieved (Royal College of Physicians of London, 2006). Caffeine, **when used strategically and with an understanding of its subjective effects,** can be effective in maintaining or enhancing wakefulness and ensuring alertness when fatigued (Royal College of Physicians of London, 2006).

Commonly Consumed Forms of Caffeine include:

- brewed coffee/iced coffee drinks
- tea
- soft drinks & energy drinks
- chocolate
- caffeine tablets (capsule or pill form)
- some medications intended to relieve headaches

Using Caffeine Strategically
(Transport Canada, 2011)

- Try to avoid caffeine use when you are not tired, as this will increase caffeine tolerance without maximizing the caffeine effects

- Avoid caffeine intake several hours prior to planned bedtime; as a stimulant, it can be disruptive or prevent sound sleep and interfere with proper sleep recovery

- As caffeine consumption produces a diuretic effect, ensure that water intake is increased when consuming caffeine

- Although individual responses and tolerances to caffeine intake can vary, effects in adults typically begin 20-30 mins after ingestion, and are noticeable for between 4 and 6 hours

Awareness of your individual response and tolerance to the effects of caffeine can help you implement strategic caffeine use.

Caffeine, Napping & Sleep Inertia

Sleep inertia is commonly experienced shortly after waking, and presents as generalized grogginess/ tendency to fall back asleep, with impaired cognition and motor performance that typically lasts 10-15 minutes. With intense call schedules and long working hours,

physician training invariably exposes learners to being awakened suddenly, and then expected to make critical decisions. Caffeine can be implemented as a countermeasure to sleep inertia when consumed in small doses (Hilditch, Dorrian and Banks, 2016) and can increase alertness overall when used in combination with short/brief napping (Queensland Health, 2009); **for example, consuming 1 cup (250ml) of brewed coffee (~135mg of caffeine) just prior to a 25-30 min. nap** (Royal College of Physicians of London, 2006).

Sleep Hygiene Tips
(adapted from CCOHS, 2018)

- Go to bed and get up at the same time every day

- Exercise regularly

- Eat at regular intervals; consume a balanced diet of fruits, vegetables, whole grains, healthy fats & protein

- Use your bed primarily just for sleeping (e.g., do not watch television, read or do work in bed)

- If you are not sleepy, do not try to go to bed. Get up and read or do something quiet instead

- Avoid caffeine, tobacco or alcohol – especially before bed time

- With the exception of an on-call pager, silence all other electronic devices/phones

- Ask family members to be respectful if one person is sleeping

- Make the room as dark and quiet as possible. Use heavy, dark curtains, blinds, or a sleeping eye mask. Soundproof the room where possible or use ear plugs

- Most people sleep better when the room is cool. Consider using an air conditioner or fan in the summer months

Fatigue Mitigation Strategies

SAMPLE INDIVIDUAL FATIGUE MITIGATION STRATEGIES

Performance of self-assessment prior to and during a work shift to ensure fitness for duty

Ensure adequate recovery time prior to each shift

Attend and be engaged during fatigue risk management education and training sessions

Judicious use of caffeine

Work break/work break with no pager/phone

Quiet rest

Napping/Sleep

Increased physical activity/light exercise

Ensure adequate hydration and nutrition

Task rotation

Double-checking calculations and instructions

Defer non-urgent cases

Limit overtime hours

Avoid repetitive or monotonous tasks during periods of higher fatigue risk

When possible avoid highly complex tasks during periods of higher fatigue risk

Work in pairs or teams

Declaration of fatigue risk to team

Employ self-assessment checklists for signs and symptoms of fatigue

When necessary, stand down

SAMPLE TEAM-BASED FATIGUE MITIGATION STRATEGIES

Communicate fatigue risk declaration to team

Communicate/document fatigue status in 'fatigue diary' or logbook

Communicate fatigue status on daily team notice board

Work in pairs or teams

Reallocate tasks

Increase team cross-checking

Increase supervision

Use of video conferencing/telemedicine

Base shift schedules on sleep science

Seek second opinion on critical clinical decisions

Ensure fatigued individual avoids acting as primary operator in procedural work whenever feasible

Scheduling less complex or less safety-critical tasks at times of highest fatigue risk, when possible

Ensure fatigued individual has priority access to on-call room/napping facility where available

Access to taxi vouchers or transportation for safe commute

All clinicians, educators, and learners take responsibility for identifying and reporting unsafe conditions, in accordance with professional standards and hospital policy, without fear of reprisal

All clinicians, educators, and learners take responsibility for maintaining optimal personal health and well-being outside of work, including maintaining physical fitness, nutrition, and sleep

Key Elements of a Fatigue Risk Register

A Fatigue Risk Register is a catalogue of available assessment methodologies, fatigue related risks particular to a practice setting, and control measures previously or currently employed. A register may also include an incident log comprised of fatigue-leave reports and incident assessments or accident investigations.

This process of documentation should be confidential and is not intended to be punitive, but rather aims to uphold a shared commitment to the health, safety and overall wellbeing of learners, staff and patients, in addition to ongoing quality improvement. Documentation is therefore an important aspect of assessing the existing risk level particular to a given context, and permits a review of practices and procedures as part of continuous improvement of the local FRM strategy. In order to support the development of a local Fatigue Risk Register, an example of how to document these events is provided below, drawn from an existing resource within the FRM Procedure for the South Australia Ambulance Service.

▶▶ [Download Sample Fatigue Risk Register](#)

System Recommendations
Risk Assessment

Fatigue is a risk for every organization that provides services 24-hour a day. It is a risk for every individual providing care, including learners and faculty.

Assessing Fatigue in the Local Context

Fatigue-related risk can be mitigated and managed by conducting a Fatigue Risk Assessment, a scan of each individual team, unit, and facility to determine fatigue-related risks and identify strategies that can be employed to reduce the hazards posed by fatigue. A fatigue risk scan will help identify fatigue-related risks for individuals and teams, as well as existing and innovative mitigation strategies. Conducting a Fatigue Risk Assessment will also help raise awareness of the hazards posed by fatigue by involving the individual and team.

Who Should Conduct the Fatigue Risk Assessment?

To identify the unique risks for each local context, a Fatigue Risk Assessment should be conducted by a group of people who are most familiar with the local working environment[1], including, but not limited to:

▶ Clinical educators and supervisors

▶ Learners

▶ Faculty physicians and supervisors

▶ Hospital employees

▶ Program Directors

▶ Decanal team, including PGME

▶ The FRM Local Working Group or Officer (LWG)

▶ Risk management experts

▶ Other Key stakeholders

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[1] For more information on the group involved in conducting a Fatigue Risk Assessment, please see Section 2: *Governance, Responsibility & Accountability.*

What is Involved in Conducting a Fatigue Risk Assessment?

Conducting a Fatigue Risk Assessment will better enable fatigue-related risks to be recognized and minimized. It will help outline the necessary steps involved in intervening in circumstances when fatigue-related risk is present.

The information that is collected through the Fatigue Risk Assessment should be documented in a **Fatigue Risk Register,** a catalogue of the assessment methodologies, fatigue related risks, and control measures.

To ensure that new risks and subsequent mitigation strategies are identified, a working group or designated individual can review and record fatigue-related risks and mitigation strategies at regular intervals. This iterative process promotes iterative selection of strategies that are suitable to the training environment.

▶ The goal of any fatigue risk assessment is to identify:

• Which, where, and how many staff are likely to be at risk of becoming fatigued

• When fatigue-related risk is highest

• How often fatigue is likely to occur

• The efficacy of existing strategies, policies and procedures

• Additional steps required to further mitigate risks

To conduct an effective assessment, it is necessary to identify the risks posed to both individuals and teams.

▶ The following questions can help:

- How do we currently manage fatigue-related risk?

- When is our fatigue-related risk greatest (time, day, week, time of year)?

- What steps can we take to mitigate the risks of fatigue? What practices can we feasibly implement?

- When fatigue-related risk is increased, who does it impact first (patients, physicians, both)? How do these impacts manifest (what does it 'look like')?

- What tasks are especially susceptible to fatigue? How does performance change?

- What can we change now to reduce our fatigue-related risks?

- What barriers currently prevent us from adjusting our practices?

Fatigue-related risks will differ for each individual, team, and environment.

▶ The following sources of information may assist in the identification of all current and potential fatigue-related risks:

- Consultation with staff and their representatives

- Shift arrangements, rosters and hours worked, including overtime

- Occupational Health and Safety incident notifications/reports

- Investigation reports citing fatigue

- Industrial issues, complaints or grievances citing fatigue

- Staff and/or patient complaints

- Workplace injury records

- Self-reporting, without punitive consequences

Assessing the Level of Fatigue

There is no distinct one-size-fits-all fatigue management strategy that will accommodate the considerable variation in learner training environments and experiences. FRM strategies must therefore remain adaptive and flexible to ensure that learner and patient safety are optimized. Auditing the level of learner fatigue is one component of the FRM strategy that will enable the identification of work-related fatigue and subsequent risk within a specific context. The regular and systematic audit of workforce fatigue is crucial to the effective functioning of accountability systems and overall quality assurance measures.

Assessment Methods

The first step in risk assessment is to determine a suitable method for identifying the magnitude of the risk that fatigue presents, or the degree that fatigue impacts the local work environment. Local context and available resources will influence the methods selected, however these can be more easily implemented if one individual within a team is trained to conduct assessments. Learners can be involved in this process and champion the use of suitable assessment methods for their team.

Best practices will vary from setting to setting. When developing effective mitigation strategies for the local context, the first step is to consider whether working time arrangements provide adequate opportunities for sleep and recovery.

▶ **Tools currently in use to audit fatigue in 24-hour shiftwork environments:**

- Manual calculations/paper and pencil methods

  – **Manual Fatigue Audit System** (Fatigue Risk Management System for the Canadian Aviation Industry, 2011)

- Bio mathematical modelling software/ automated audit systems[2]

  – **FAST** (Fatigue Avoidance Scheduling Tool)

  – **SAFTE** (Sleep, Activity, Fatigue & Task Effectiveness for Aviation)

- Learners may wish to keep individual sleep-wake diaries – manually or using a digital application

  – **Sleep for Science Sleep-Wake Diary**

  – **The Better Sleep Project Sleep Diary**

- A well-established psychometric scale (See section on page 37, *Recommendations for Education and Training*)

  – Karolinska Sleepiness Scale/Questionnaire (KSS or KSQ) (See *Appendix*)

  – **Fatigue Severity Scale** (FSS)

  – **Fatigue Questionnaire (Neuberger, 2003)**

- Risk Assessment checklists

  – Risk Assessment Checklist and Guide (See *Appendix*)

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[2] note that the listed shift scheduling and assessment software have been developed and used primarily within the fields of transportation and aviation. Further details can be found in Chapter 3 of the FRMS for the Canadian Aviation Industry.

ADAPT

It's our responsibility to make a just culture.

Adapt
Executive Summary

Develop a healthy, conscious and evolving approach to fatigue management as one component of resident wellbeing.

There are concerns that this change will require additional time and resources to implement. While all change requires some investment, this approach centers primarily on a change in thinking and some new behaviours. This toolkit is designed to help residents, programs and leaders get started today, and shares effective, simple strategies that can be easily implemented now. The risk of doing nothing is greater, and the status quo is not acceptable.

We call on all those with a role in medical education to ACKNOWLEDGE, ACT, and ADAPT to manage the risk of fatigue for postgraduate medical education.

– FRM Task Force 2018

Acknowledge. Act. Adapt
Make a culture in which Fatigue Risk Management is the norm.

Auditing the FRM System:
Continuous Quality Improvement & Evaluation

Auditing the FRM strategy over time is a vital component of overall fatigue risk management, and should aim to facilitate continuous improvement of the local FRM practices and procedures.

Internal Audit & Feedback

Maintaining a clear, up-to-date record of FRM implementation procedures, as well as information about incidents or accidents, supports transparent reporting practices and ensures accountability to outside organizations, including regulatory bodies such as Federation of Medical Regulatory Authorities of Canada (FMRAC). Each program is responsible for monitoring and reviewing their respective FRM policies and practices. A methodical and rigorous process for evaluating the FRM system components should be in place to ensure that the local FRM system is functioning effectively and improved as necessary over time. Audits of the FRM system can be conducted separately, or, as a component of the overall safety system evaluations within the clinical learning and practice environment.

When conducting an internal FRM audit, it is useful to consider the following:

- Does the internal audit system assess all the components of the FRM system?

- Are there additional areas that should be included in the audit that could yield valuable insight for the local practice context?

- Have all the relevant stakeholders, including learners, been surveyed or consulted to evaluate the utility and suitability of the system in place?

- What impact has the FRM plan had, if any? How can this be verified?

- Have there been follow up evaluations of the FRM training and education, compliance with the policy, duty schedules and other elements of the FRM plan?

The Role for Quality Assurance
Questions to Support the FRM Plan Audit

▶ Auditing Policy & Governance

- Has a fatigue policy been developed and/or implemented? If so, when was it last reviewed?

- Does the policy clearly articulate individual responsibilities of the learner and employer, Clinical Educator/Supervisor in managing fatigue? Do the governance and accountability relationships align with the goals outlined in the FRM policy? (For a full description of the roles and responsibilities of each group, see *Governance, Responsibility & Accountability*)

- When were the policy and procedures made available to all relevant stakeholders for input and final approval?

- Has the policy also been applied to independent contract/unaffiliated personnel?

▶ Auditing Training & Education

- Does the policy specifically help learners, supervisors and Program Directors/Clinical Directors understand:

  - The importance of managing the fatigue risk in the clinical learning and practice environment, and

  - The responsibility & role for mitigation of fatigue risk within acceptable levels in the workplace

- Have FRM Training and Education practices launched?

  - When will they be regularly reviewed and updated?

  - Is there a post-training evaluation measure in place?

▶ Auditing the Risk Assessment & Mitigation Plan

- Are there incident and accident investigation procedures in place? Is there a confidential, non-punitive reporting system to capture fatigue-related incidents over time?

- Is there an identified audit champion on the team, trained to audit the level of fatigue? Is there a plan to train successive individuals in this role?

- Is there a plan in place to conduct internal audits of the FRM strategy, policy and procedures? If so, how often?

The Role for Continuous Quality Improvement in FRM: QI vs QA

Quality Improvement (QI) has a clear delineation from Quality Assurance (QA), where the latter is demonstrated by compliance with the policies in place, investigating an adverse event and the subsequent observed change in individuals. Quality improvement is about making continual systems-level changes aimed at improving identified outcomes and preventing adverse events (Duke University School of Medicine, 2016). For example, QA for the FRM system would manifest as ensuring system-level monitoring and evaluation practices are in place alongside policies that support trainee and team level mitigation strategies. Whereas Quality Improvement aims to address whether the training offered has actually had an impact on reducing the fatigue-related risk for individuals or teams, and by how much in that specific context.

The risks associated with fatigue will vary based on the practice environment, resource availability, degree of staff changeover, the predominant work culture and shifting demands associated with the clinical learning and practice environment. For the FRM strategy to succeed, it must evolve for improvement. As outlined by the ACOEM (2012), one of the critical features of any FRM system is the continuous improvement of the risk-reduction system via feedback, evaluation and modification. The tracking and sharing of lessons learned from accountability systems is also a critical aspect of effective quality improvement, and permits the aggregation of information (WHO, 2005) about how the FRM system is functioning. To remain adaptive and flexible to the local context, all elements of the FRM strategy in place should be reviewed and revised with consideration for specific areas of quality improvement in light of the changing environment. With the objective of building on existing quality assurance practices, key steps can be implemented to improve the quality of the FRM processes in place.

Additional Tools for Quality Improvement

1 Quality Improvement Primers:
- Quality Improvement Science (HQO, 2013) and,
- Measurement for Quality Improvement (HQO, 2013)

2 PDSA Worksheet (IHI, 2017)

Facilitating
FRM Infrastructure

Knowledge Sharing & Best Practices

Conducting research, developing best practices, and sharing knowledge about fatigue risk management are the preeminent tools to further our understanding about circadian rhythms, the effects of fatigue, and fatigue risk management strategies. It will also promote a culture in which fatigue risk management is the norm. There are countless initiatives individuals, teams, units, and departments can actively engage with to further our comprehension and share knowledge about FRM principles and strategies.

Conference Workshops/ Presentations

Conferences provide an excellent opportunity to learn about innovative research, become familiar with new tools and resources, and become aware of progressive FRM approaches. There are numerous conferences dedicated to fatigue risk management and sleep science, physician and resident health and wellbeing, and medical leadership.

▶ Conferences Dedicated to FRM

- The International Conference on Residency Education (ICRE)
- International Conference on Physician Health (ICPH)
- The Canadian Conference on Medical Education (CCME)
- The Canadian Conference on Physician Leadership
- Canadian Conference on Physician Health
- International Conference on Managing Fatigue
- Canadian Sleep Society National Conference
- SLEEP (American Academy of Sleep Medicine)
- World Congress of Sleep Medicine

Online Training Modules, Workshops, & Presentations

Training and education will help teams recognize the signs and symptoms of fatigue, gain greater awareness about the impacts of fatigue, learn how to incorporate FRM into their daily lives, understand the appropriate responses to fatigue-related incidents, errors, and/or behaviours, and promote a culture of safety.

▶ Topics may include, but are not limited to:

- Developing a fatigue risk management program
- Fatigue countermeasures
- Fatigue self-risk assessment
- Promoting fatigue safety culture
- Recognition strategies
- The effects of fatigue
- Fatigue prevention
- Measuring fatigue and fatigue risk
- Scheduling systems and policies & alternative models of call
- Sleep health
- Mitigation strategies
- Analysis of fatigue-related error and near-misses
- Evaluation of fatigue risk management programs

Resource Development

Resources outlining steps to manage the effects of fatigue, improve safety and wellness, improve effectiveness and productivity will buttress the analysis of fatigue-related risk.

▶ Resources can include, but are not limited to:

- Best practices
- Fatigue risk assessment tools
- Bio-mathematical models
- Scheduling tools, scheduling models and fatigue monitoring technologies

Collaborative Research Projects

The active engagement in evidence-based research will enhance the body of knowledge and best practices on FRM and related issues. Collaborative research within units and between training sites facilitates an integrative approach and interdisciplinary research, resulting in an enriching experience as well as innovative investigations. Collaborative research projects will promote greater awareness and understanding about fatigue-related issues.

Identification and Sharing of Innovative Tools & Practices

Although no single fatigue risk management strategy is likely to be equally successful in every context, strategies can be adapted to best fit individuals, teams, and settings. Sharing strategies, tools, and resources enables the development of effective FRM practices, practices and strategies.

CLEARINGHOUSE OR FORUM for sharing of presentations, publications, and resources.

Forums for Leadership & Discussion Groups

Forums facilitate open, on-going discussions and collaboration about FRM and related issues among industry specialists.

Open forums and discussion groups with clear leadership structures enable industry experts to exchange ideas, share resources, support the collaborative development of best practices, and help keep FRM 'on the radar'. Forums and discussion groups can be established on a temporary basis to complement conferences, or maintained to promote the on-going development of fatigue and fatigue-related issues as they fall within the broader scope of resident wellness initiatives.

For a complete list of references, please visit:

WWW.RESIDENTFATIGUE.CA

Appendix and References

Supporting Information

▶ Using the Karolinska Sleep Questionnaire to identify obstructive sleep apnea syndrome in a sleep clinic population

Anna Westerlund, Lena Brandt, Richard Harlid, Torbjörn Åkerstedt, Ylva Trolle Lagerros

THE KAROLINSKA SLEEP QUESTIONNAIRE FOLLOWS ON THE NEXT PAGES

- Items 9 d, e, and f comprise the apnea/snoring index

- Items 9 m, n, o, p, and q comprise the sleepiness index

- Item 5 was used in combination with the indices

- Items 3 (napping), 9 c, d, e, f, and j were included in the new instrument

Individual Fatigue/Sleepiness Scales

1) How much sleep do you need per day (24-hour period)?	_____ hours _____ minutes
2) To what extent do you consider yourself a morning-type or evening-type of person?	☐ pronounced morning type (alert in the morning, tired in the evening) ☐ to some extent morning type ☐ to some extent evening type ☐ pronounced evening type (tired in the morning, alert in the evening)
3) When do you usually wake up and when do you go to bed?	**Work days:** • Go to bed (put the lights out) at _____ and wake up at _____ . • Time before falling asleep (after putting the lights out)? _____ minutes. • Regular nap from _____ o'clock until _____ o'clock. **Off days:** • Go to bed (put the lights out) at _____ and wake up at _____ . • Time before falling asleep (after putting the lights out)? _____ minutes. • Regular nap from _____ o'clock until _____ o'clock.
4 a) Do you get enough sleep? 4 b) If your sleep is insufficient, why do you think that is?	☐ yes, definitely enough ☐ no, clearly too little ☐ yes, almost enough ☐ no, far from enough ☐ no, slightly too little _____ _____
5) Generally speaking, how is your sleep?	☐ very good ☐ neither good nor poor ☐ very poor ☐ fairly good ☐ fairly poor
6) Apart from your sleep, do you get enough rest?	☐ yes, definitely enough ☐ no, clearly too little ☐ yes, almost enough ☐ no, far from enough ☐ no, slightly too little
7) How often do you get enough rest between your work shifts?	☐ generally between all work shifts ☐ between a few work shifts per year ☐ between a few work shifts per week ☐ never ☐ between a few work shifts per month
8) How often do you get enough rest during periods off work?	☐ generally during all periods off work ☐ a few periods off work per year ☐ most of the periods off work ☐ never ☐ a few periods off work per month

Individual Fatigue/Sleepiness Scales (cont'd)

9) Have you experienced any of the following complaints in the past three months?							
	Never	Rarely A few times (per year)	Sometimes Several times (per month)	Often 1-2 times per week	Mostly 3-4 times per week	Always 5 times or more per week	Do not know
a) Difficulties falling asleep	☐	☐	☐	☐	☐	☐	
b) Difficulties waking up	☐	☐	☐	☐	☐	☐	
c) Repeated awakenings with difficulties going back to sleep	☐	☐	☐	☐	☐	☐	
d) Heavy snoring	☐	☐	☐	☐	☐	☐	☐
e) Gasping for breath during sleep	☐	☐	☐	☐	☐	☐	☐
f) Cessation of breathing during sleep	☐	☐	☐	☐	☐	☐	☐
g) Nightmares	☐	☐	☐	☐	☐	☐	
h) Not feeling refreshed when waking up	☐	☐	☐	☐	☐	☐	
i) Premature awakening	☐	☐	☐	☐	☐	☐	
j) Disturbed/restless sleep	☐	☐	☐	☐	☐	☐	
k) Insufficient amount of sleep	☐	☐	☐	☐	☐	☐	
l) Feeling exhausted when waking up	☐	☐	☐	☐	☐	☐	
m) Sleepiness during work	☐	☐	☐	☐	☐	☐	
n) Sleepiness during leisure time	☐	☐	☐	☐	☐	☐	
o) Unintentional dozing off during work	☐	☐	☐	☐	☐	☐	
p) Unintentional dozing off during leisure time	☐	☐	☐	☐	☐	☐	
q) Having to fight off sleep to stay awake	☐	☐	☐	☐	☐	☐	
r) Mental fatigue during daytime	☐	☐	☐	☐	☐	☐	

Individual Fatigue/Sleepiness Scales (cont'd)

10) How often do you sleep 5 hours or less per day?						
Never	Rarely A few times (per year)	Sometimes Several times (per month)	Often 1-2 times per week	Mostly 3-4 times per week	Always 5 times or more per week	Do not know
☐	☐	☐	☐	☐	☐	

11) How often do you sleep 9 hours or more per day?						
Never	Rarely A few times (per year)	Sometimes Several times (per month)	Often 1-2 times per week	Mostly 3-4 times per week	Always 5 times or more per week	Do not know
☐	☐	☐	☐	☐	☐	

12) To what extent is disturbed sleep a health problem to you?	☐ large problem ☐ rather large problem ☐ neither large nor small problem	☐ rather small problem ☐ very small problem

Fatigue risk checklist – 7 day period

LOWER RISK	SIGNIFICANT RISK	HIGHER RISK
Less than 50 hours worked	50 to 70 hours worked	More than 70 hours worked
No more than 10 consecutive hours in any one period	Up to 14 consecutive hours in any one period	14 or more consecutive hours worked at least twice
Three or more short breaks taken during daily working hours	One or two short breaks during daily working hours	No short breaks during daily working hours
Little or no unscheduled extra work	More than 10 hours extra unscheduled work	More than 20 hours unscheduled extra work
Scheduled on call for less than 3 days in seven days	Scheduled on call for 3 days or more in a 7 day period	Scheduled on call continuously for more than 7 day period
No night work	At least 2 nights of work or extended hours into the night	At least 3 nights of work or extended hours into the night
Minimum 10 hour breaks between work periods and 2 days free of work	Minimum 10 hour breaks between work periods and one day free of work	Less than minimum 10 hour break on at least two work periods and no full day free of work
No changes to work schedule without notice	Changes to work schedule through additional hours and call outs worked	Work schedule changed so much because of additional hours and call outs so as to become unpredictable
Maximum opportunity for sleep to be taken at night, including two full nights of sleep	About two-thirds of sleep able to be taken at night including one full night of sleep	Less than half of sleep able to be taken at night and no opportunity for one full night of sleep

Epworth Sleepiness Scale

Name: _____ Today's date: _____

Your age (Yrs): _____ Your sex (Male = M, Female = F): _____

How likely are you to doze off or fall asleep in the following situations, in contrast to feeling just tired? This refers to your usual way of life in recent times. Even if you haven't done some of these things recently try to work out how they would have affected you.

Use the following scale to choose the **most appropriate number** for each situation:

0 = would never doze
1 = slight chance of dozing
2 = moderate chance of dozing
3 = high chance of dozing

It is important that you answer each question as best you can.

SITUATION	CHANCE OF DOZING (0-3)
a) Sitting and reading	_____
b) Watching TV	_____
c) Sitting, inactive in a public place (e.g. a theatre or a meeting)	_____
d) As a passenger in a car for an hour without a break	_____
e) Lying down to rest in the afternoon when circumstances permit	_____
f) Sitting and talking to someone	_____
g) Sitting quietly after a lunch without alcohol	_____
h) In a car, while stopped for a few minutes in the traffic	_____

THANK YOU FOR YOUR COOPERATION

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> " We have a culture of long working hours, and the impact of fatigue has not been part of our consciousness. "

Christopher P. Landrigan, MD, MPH Professor of Pediatrics, Harvard Medical School. Research Director, Boston Children's Hospital Inpatient Pediatrics Service Director, Sleep and Patient Safety Program, Brigham and Women's Hospital

FRM **GRF**
Fatigue Risk Management
Task Force
Groupe de travail sur la gestion
des risques liés à la fatigue