Fatigue risk management for health and social care

WHITE PAPER

#ciehf

Foreword

Being fatigued has for too long been accepted as the norm by healthcare workers. Something to accept as part of the job, even being taken as an indicator of how hard one is working: if you're not tired at the end of a shift, you're clearly not working hard enough. But this draws a veil over the potentially devastating effect of fatigue. Acutely, it impairs performance and so impacts patient safety. Chronically, it leads to health impacts on healthcare staff. Neither of these is acceptable in any modern workplace. Other high-stakes industries addressed this phenomenon decades ago.

To date, fighting fatigue in healthcare workers has been the preserve of a small group of focused individuals. This document is a product of a collaboration between the Chartered Institute of Ergonomics and Human Factors and interested healthcare workers. It contains practical advice for organisations to move this work to the next level. But the time has passed when we can leave this to the realm of enthusiasts. Serial papers report that the problem is getting worse, not better. The time has come for the healthcare system to acknowledge and address fatigue in its workers. As with aviation, nuclear, rail and road transport, this now has to become embedded in NHS culture and practice and in regulatory activity. Affirmative action has to be built into the system and subject to scrutiny.

Having staff whose fatigue is monitored and managed needs to be the normal expectation, for the good of patients, staff and the system. It needs to become part of the fabric of healthcare; it is not a 'bolt-on' and it needs to be as normal in the system as measuring patients' vital signs. This document is the welcome next step towards that end.

Dr Tim Meek, Consultant Anaesthetist
President-elect, Association of Anaesthetists

Preface

Working as an investigator within healthcare, I became aware of a small group of passionate clinicians who had worked over a few years to raise the profile around the risk of fatigue in staff, a risk which is often under-recognised in both staff and patient safety. Their campaign, 'Fight Fatigue', had provided a platform and excellent resources, but had struggled to reach all corners of healthcare.

Being an investigator of healthcare incidents revealed the complexity of the systems and professional responsibilities. Fatigue typically appears to be perceived as the responsibility of the individual professional alone and was rarely recognised in incident reports or investigations. As a human factors professional, this seemed at odds with other industries and the systems approach, which is well recognised to address risks such as fatigue.

We should never fail to appreciate what simple conversations and the commitment of a small group of people can achieve. A year before the publication of this white paper, I co-ordinated a forum of specialists in human factors and fatigue from both healthcare and other safety-critical industries to discuss the challenge and learn from each other. One outcome from that meeting was the formation of a group to write a position paper on the subject. This group has grown and is now working together to widely communicate their knowledge on fatigue risk management. Most importantly though, we are supporting each other and turning these conversations into actions. This white paper represents the results of those conversations.

The paper benefits from a unique collaboration and combined expertise from healthcare and other safety-critical industries, where approaches to fatigue risk management have varying levels of maturity. The authors share learning from other industries, while acknowledging the particular challenges in healthcare.

In the current climate of the UK health and social care system, staff fatigue is a sensitive issue. The paper is cognisant to this and the challenges that go along with it. It offers pragmatism and a realistic approach to the aspiration of fatigue risk management for health and social care. We share examples of promising early work developing fatigue risk management within healthcare settings. A roadmap is included as a call to action for the development of a systematic and system-based approach to fatigue risk management for health and social care. The aspiration of the paper is to lift the lid on the risk of fatigue for patients and staff, while offering a realistic vision of managing this risk in the current climate.

Dr Laura Pickup
Fellow of the CIEHF

Contents

1 Introduction 6

1.1 Background 7

1.2 The problem with fatigue 9

1.3 Fatigue risk management in other safety-critical industries 10

2 Taking fatigue risk management forward in healthcare 12

2.1 The vision 12

2.2 How to achieve the vision 12

2.3 The roadmap to fatigue risk management in health and social care 15

3 Case studies 16

4 Conclusion 28

5 References 30

6 Annex 1 34

1. Introduction

Fatigue is a perpetual risk in safety-critical industries, particularly those that involve shift work and delivery of a 24-hour service. If that risk is not managed appropriately, it can result in a significant reduction in human performance, with associated impacts on safety.

This white paper makes the case for the management of fatigue as a systemic risk by UK health and social care national bodies and organisations. It is aimed at:

- Health and social care organisation managers and staff.
- Integrated care boards.
- Health boards, trusts and regulators.
- Professional bodies, colleges and groups representative of all health and social care staff.
- Health and social care investigators.
- Research funding bodies.

The aim of this white paper is to present a roadmap for improving fatigue risk management in health and social care to improve both patient safety and the health and wellbeing of individual health workers.

OBJECTIVES OF THIS PAPER:

1. To describe the impacts of fatigue on clinical performance, patient safety and staff safety.
2. To benchmark UK health and social care's approach to fatigue risk management systems compared to other safety-critical industries.
3. To propose pragmatic ways to develop, implement and sustain an effective approach to fatigue risk management in the healthcare environment.

1.1 BACKGROUND

In health and social care, staff fatigue affects patient safety, with evidence of adverse impacts on prescribing, surgery, anaesthesia and mortality rates.[1-8] Fatigue is also detrimental to the personal safety of the staff themselves[3, 9, 10], with known effects on their physical and mental health and wellbeing[1,3,10, 11] as well as on-road risk when driving home after a shift.[9, 12, 13]

Evidence for the link between healthcare staff fatigue and degradations in patient safety is growing, but the scale of the risk and the need for effective management of it remains unacknowledged.[14-16] Reports in healthcare professional publications suggest the focus is on the individual to manage the risk of fatigue[5,10, 17], consistent with findings of a culture within healthcare of fatigue being a 'personal issue', an 'occupational hazard', or a 'weakness'.[18] More recent data collected by the Medical Defence Union show 60% of medical staff reported poor sleep, with 18% of these linking this to errors or near misses.[19] Furthermore, a Royal College of Nursing survey of 20,325 UK nurses indicated 61% were unable to take necessary breaks and suggested that safety of patients and staff is at risk.[17] Meanwhile, the sector's independent safety investigator, the Health Services Safety Investigations Body (HSSIB), has identified that there is limited reporting of staff fatigue as a contributory factor in patient safety incidents and has launched an investigation into the issue.[20]

Fatigue is a human physical condition, so evidence of the risks are also found in health and social care and include degradation in decision-making capabilities, underestimation of risks[21,22] and reduced emotional capability to deal with patients, families and colleagues.[2,3,21-26] These risks are faced by any safety-critical industry that relies on shift work and this includes health and social care, where 12-hour day and night shifts are routinely relied upon with little standardisation on rotating patterns. But while many such industries have formal processes for managing fatigue risks which include fatigue risk management systems (FRMS)[27-29], these processes are less prevalent in health and social care.[30] Nevertheless, fatigue is a human condition and those working in health and social care are no less susceptible to it.

> *"Fatigue Risk Management System (FRMS). A data-driven means of continuously monitoring and managing fatigue-related safety risks, adapted to the context and based upon scientific principles and knowledge as well as operational experience that aims to ensure relevant personnel are performing at adequate levels of alertness."* [28]

There are pockets of increasing recognition about the need for fatigue risk management in health and social care. There are some examples of professional bodies (such as in nursing) starting to focus on individual causes and effects of fatigue, although they provide little guidance on what good fatigue management practices at an organisational level would look like. The Association of Anaesthetists[31] does differentiate between individual and organisational responsibilities for managing fatigue, while the British Medical Association[32] recognises the need to manage the risk at an organisational level. Perhaps the most holistic guidance is from the National Institute for Health and Care Excellence[33], which recommends balancing individual wellbeing with organisational requirements, including the impact of shift work, specifically night work.

However, there is a lack of standardised evidence-based guidance designed for managing the risks of fatigue for all staff groups that work within health and social care settings. This is needed as individual organisations may not have the expertise to support fatigue risk management effectively and efficiently.

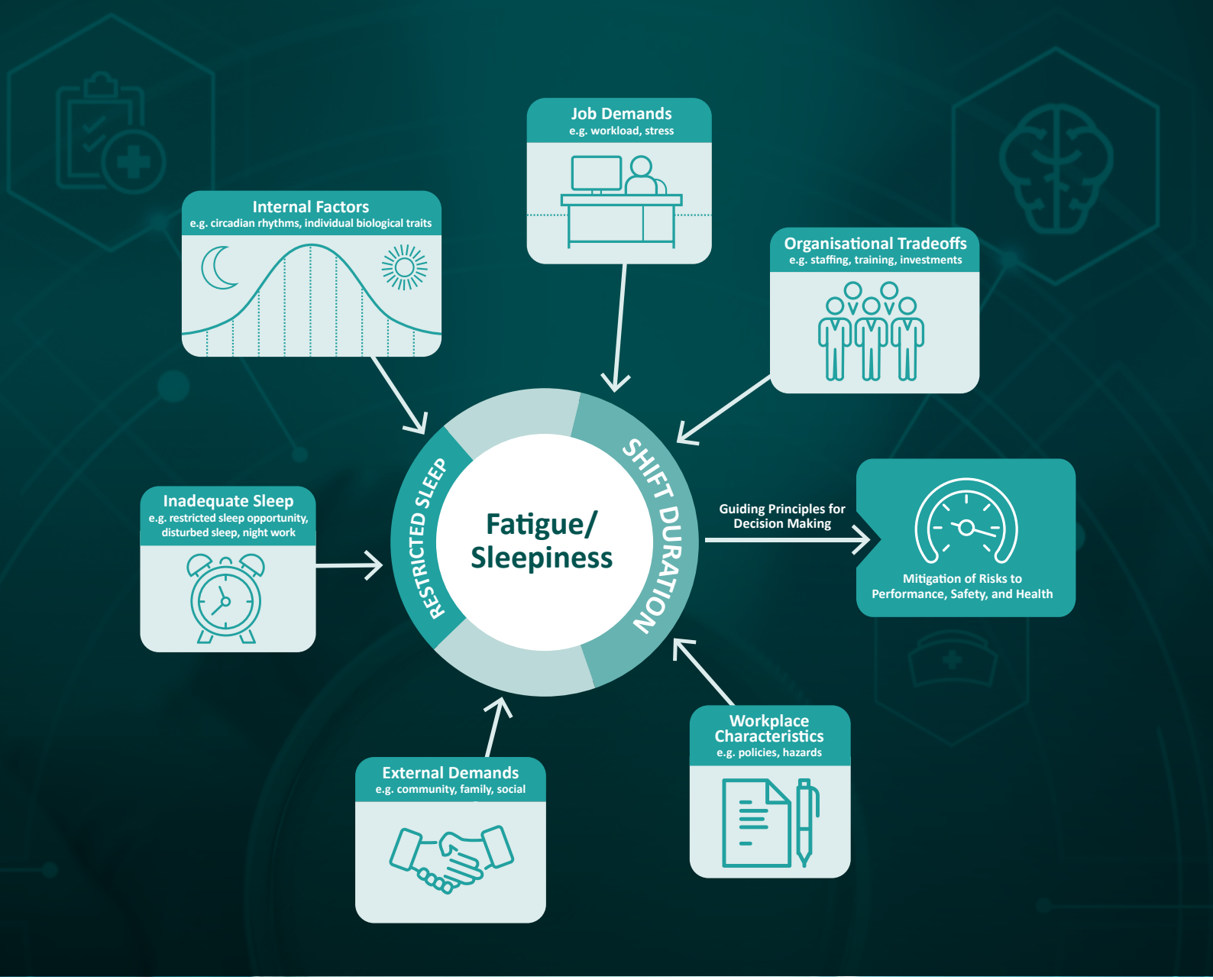
1.2 THE PROBLEM WITH FATIGUE

Fatigue is a consequence of reduced quality and/or quantity of sleep, either through sleep loss or from extended periods of wakefulness.[3] Having less than five hours sleep is known to double the risk of a driving incident.[9] Being awake for around 17 hours has been found to produce impairment on a range of tasks equivalent to that associated with a blood alcohol concentration above the drink-driving limit for most of Europe. Being awake for 24 hours produces impairment worse than that associated with a blood alcohol concentration above the legal limit for driving on the UK's roads.[34, 12] This creates increased risk, not just at work but also for the drive home after a long shift. Fatigue is both transient and cumulative and reducing sleep over successive nights or within rest periods can lower performance significantly during a block of shifts.[6, 35] Shift workers are especially susceptible as they are required to work against their circadian rhythms (the human 'biological clock').

Some of the main effects of fatigue on human performance, staff and patient safety include:

- Degradation in cognitive performance, such as slow response times,increased lapses in attention, reduced ability to switch between tasks and to reliably recall, manipulate and apply information to solve problems.[3]
- Increased risk-taking behaviour, including delays to decision-making and a greater tendency to be impulsive or adopt strategies that prioritise short term gains over longer term success.[21, 22]
- An impact on the emotional state and perceptions of an individual, including negative emotions, depression, stress, anxiety and paranoia.[11]
- Reduced ability to self-regulate, cope and demonstrate empathy towards others, which has implications for team working, communication and patient care.[11]
- Longer-term detrimental effects on the cardiovascular system, endocrine system (e.g., Type II diabetes), central nervous system, ocular system and an increased risk of some cancers (breast, bowel, prostate).

Although fatigue is often seen to be directly associated with working time (i.e. rosters), there are myriad other factors linked to the individual, the job, the organisation, life outside work and the environment that interact with fatigue to create the risk. One of the greatest challenges is to overcome the perception that we must identify fatigue as the factor contributing to patient safety risk. But in complex sociotechnical systems, such as healthcare, there is never a single cause leading to an incident; fatigue is one factor that may interact to affect performance and have an impact upon safety.



1.3 FATIGUE RISK MANAGEMENT IN OTHER SAFETY-CRITICAL INDUSTRIES

In many safety-critical industries, fatigue is considered as any other risk with resources invested in managing that risk. Indeed, it is often a regulatory requirement to address fatigue risk as part of the organisation's safety management system.[28] This may be achieved by implementing a fatigue risk management system (FRMS).

An FRMS seeks to understand, control and then monitor fatigue to mitigate its impact on the performance of safety-critical work. An FRMS is informed by the scientific evidence relating to fatigue. It is a holistic approach, not just based on prescriptive limitations on working time but also incorporating engagement with workers, processes to report and investigate fatigue-related incidents, and a 'just culture' response when workers are fatigued.

Industries such as aviation, defence, rail, oil and gas, and maritime[27-29] have all embarked on journeys to integrate FRMS into their safety management systems, with each at varying stages of maturity on that journey. An FRMS is one option that offers a structured approach to the problem of staff fatigue, but the success and time required for implementation may be influenced by existing culture and organisational arrangements. Five vignettes included within Annex 1 illustrate such experiences and serve to highlight the differences between those industries and health and social care in managing fatigue as a risk. It is worth acknowledging that the development of FRMS approaches in these industries was often in response to a major incident and developed over many years.

2. Taking fatigue risk management forward in healthcare

There is limited evidence, so far, of health and social care in the UK taking a holistic risk management approach to fatigue. In Queensland, Australia, government guidance recommends the implementation of an FRMS into healthcare.[36] There is no equivalent impetus for the UK healthcare service, other than a Parliamentary Note which highlights the risk of shift work for NHS workers and the gap in risk mitigation strategies and regulatory enforcement of existing laws.[37]

To help move this forward, the remainder of this white paper provides a vision and a roadmap for health and social care to align with other safety-critical industries in managing staff fatigue as a systemic risk rather than a risk for just the individual to manage.[27-29] The vision and roadmap have been informed by discussions with representatives from health and social care professional and regulatory bodies, as well as support from subject matter experts from other industries.

2.1 THE VISION

While there is a need to consider the different contexts within health and social care and the variability across work domains and job roles, the long-term vision is for healthcare to develop:

- Increased awareness and transparency of the operational risks currently held by healthcare organisations relating to staff fatigue.
- Guidance on what to consider in the management of fatigue.
- Reporting mechanisms that can capture
- the impact of fatigue on clinical outcomes, organisational performance and safety, staff wellbeing and retention.
- Evidence-based FRMSs embedded as part of wider safety management practices.

2.2 HOW TO ACHIEVE THE VISION

The following table proposes the conditions, activities and responsibilities required at different levels of the system to integrate and embed a fatigue risk management approach. The implementation of these into the different fields of health and social care would require a period of exploratory work to ensure any safety management system reflected the risks specific to each area. By providing a range of suggestions, it is hoped that all individuals, organisations and national bodies can identify an actionable change they can make to improve fatigue risk management in their setting.

Table 1: Suggested principles and activities for a systems approach to fatigue risk management

Individual	
Who	Healthcare staff, supported by health/social care senior leaders, patients and trade unions.
What	Have awareness of signs of fatigue in themselves and colleagues.
	Feel empowered to identify fatigue and to speak up.
	Learn about personal risks relevant to fatigue.
	Express kindness, empathy and shared experiences to increase understanding.
How	Evidence-based education and training on impact of fatigue and its management.
	Colleague awareness – monitor, ask, recognise signs of fatigue.
	Positive role modelling in fatigue management from clinical leaders.
	Destigmatise discussions of fatigue among peers and seniors.
	Psychological safety to report fatigue as contributory to safety events.

Organisational	
Who	NHS trusts and health boards, human resources, occupational health and estates teams, integrated care systems (ICS), trade unions, professional groups, patient safety groups.
What	Acknowledge fatigue as an organisational risk and provide clarity over legal responsibilities.
	Create safe space for fatigue reporting – avoid blame and encourage respectful collaborative enquiry.
	Capture data/evidence to inform about impacts of fatigue on patient safety, staff absence and attrition of staff.
	Acknowledge management of fatigue risk needs to consider staff resources, employment arrangements and social demand.
	Organisational cultures that increase value of staff wellbeing and increase psychological safety to identify/report fatigue.
	Introduce policy for management of fatigue with clarity around lines of accountability and Board level responsibilities.
	Develop approaches to design of fatigue risk management systems that work in different contexts.
	Implement and monitor evidence-based rostering systems and fatigue-informed allocation of work.
	Provide a clear pathway to escalate concerns and get support when there are signs of staff fatigue.
How	Place fatigue on organisation's risk register and factor fatigue into risk management.
	Organisation-wide training and awareness in responsibilities to manage fatigue.
	Organisational investigations to consider fatigue and to ensure appropriate changes are made to everyday practice.
	Positive role modelling in fatigue management from senior leaders.
	Storytelling to enhance understanding of need and impact for staff and patients.
	Contextualising national and local fatigue policies and guidance to local contexts.
	Support presence and use of hydration and nutrition stations.
	Model and communicate culture and mechanisms to protect breaks and power naps for all staff and promote fatigue reporting.
	Provide appropriate, accessible rest facilities that are fit for purpose with support from local estate teams.
	Seek to understand why staff work when fatigued.

National	
Who	The development of a healthcare-wide approach to fatigue risk management and clarification of accountability of risk should be led and supported by national organisations. Potential leads include: DHSC, NHSEI, CQC, HSSIB, Royal Colleges/bodies, NHS Resolution, NHS providers, patient and family representatives.
What	National leadership and role modelling to communicate value and need.
	Acknowledge national responsibility and validate reporting on fatigue.
	Data collection to understand the scale of the risk relevant to fatigue.
	Acknowledge value of staff safety and impact upon patient safety.
	National healthcare investigations to include fatigue.
	Develop guidance on fatigue risk management policies/expectations.
	National structure and framework to identify, evaluate and implement fatigue management.
	Clarity on the role of regulators in this space.
	Establish health economic analysis around the cost of fatigue on patient care and delivery of services.
	Review of working regulations and accountability to include an employer responsibility for employees' fatigue level driving to and from work.
	Acknowledge and address the risks of fatigue in long-term workforce plans.
How	Future reviews of data relevant to the risks associated with fatigue recorded from the system – Learn From Patient Safety Events (LFPSE).[42]
	Embed principles of fatigue management within national policies and guidance.
	Professional college or body-led guidance on fatigue management and inclusion in national curricula.
	Influence policymakers to include physical infrastructure in hospitals to accommodate fatigue management practices.
	Collaboration across national bodies to develop coordinated approach to system-wide fatigue risk management throughout UK health and social care.
	National roadshow or sandbox to communicate future direction of fatigue management.
	Learn from other industries and their pragmatic approach to FRMS development.
	Balance management of risk in context of political pressures or short-term priorities.
	Develop roadmap and support to incentivise implementation for a national approach to fatigue risk management across health and social care.

2.3 THE ROADMAP TO FATIGUE RISK MANAGEMENT IN HEALTH AND SOCIAL CARE

Figure 1 shows a potential roadmap to implement the vision, taking health and social care towards developing system-wide fatigue risk management.

3. Case Studies

Developing a Fatigue Risk Management System (FRMS) for the NHS Ambulance Sector: **CATNAPS Study**

***Professor Kristy Sanderson**, Chair in Applied Health Research, School of Health Sciences, University of East Anglia, and NIHR Applied Research Collaboration East of England, for the CATNAPS team*

Background

Public ambulance services are an important sector of the health system to consider for fatigue management given the nature of care delivery: emergency care in often unpredictable locations, periods of extreme demand and sometimes stressful work, and high-speed use of ambulances and other response vehicles posing a potential risk to staff, patients and other road users. In 2019, the Association for Ambulance Chief Executives (AACE), the industry body for Chief Executives and Board Chairs of public ambulance services, nominated staff fatigue as a priority issue they wanted to try to tackle collaboratively across the UK. They had anecdotal case studies and evidence from two research studies in ambulance trusts, including one done by our team, that fatigue was common, associated with feeling unsafe on scene, and a potential risk to patient safety.

What happened next?

With support from the NIHR Health and Social Care Delivery programme, we were able to start designing a new approach to tackle fatigue and promote better sleep health for staff in ambulance services across the UK, using a mixed-methods approach.

What we did

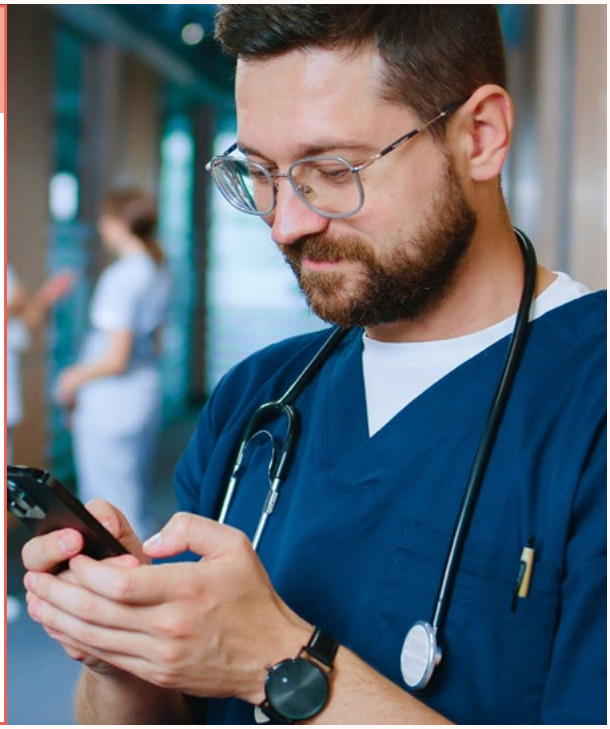
This study was developed, and is being delivered, in partnership with AACE, South East Coast Ambulance Service NHS Foundation Trust, East of England Ambulance Service NHS Trust, Scottish Ambulance Service, East Midlands Ambulance Service, Health and Safety Executive, and the Universities of East Anglia and Hertfordshire. Ambulance service frontline staff and patients have shaped the design and delivery of this study, with an extensive consultation period informing the research proposal. We involved senior managers in ambulance services responsible for working conditions and supporting staff wellbeing, as well as unions and fatigue management experts.

Findings

We are still in the middle of the study but we've already found a great appetite to consider fatigue management from a systems perspective, rather than looking at changes – such as reorganising rosters – in isolation. Best practice from industries with long track records in managing staff fatigue has guided us towards a suite of fatigue prevention and mitigation interventions for ambulance trusts to consider. These include actions for rostering teams, staff wellbeing leads, safety and governance leads, human resources, clinical operations, and staff themselves. Through surveys, workshops and interviews, we have designed an FRMS that presents 20 options for trusts to consider, organised in seven areas of activity: design of working hours; education and training; health and wellbeing; senior management and management support; dynamic fatigue risk assessment; mitigation measures on shift; and accident investigation and near miss reporting. We systematically documented the barriers, and importantly the facilitators, in implementing an FRMS, to help break down the common perception that an FRMS "is just too hard for the NHS."

What next and reflections

We are interviewing frontline staff and patients, riding out with ambulance crews, and sitting in emergency operations centres to capture the real-world challenges and opportunities for implementing the FRMS. In the next phase of implementation, we will be supporting ambulance services to try out the FRMS guidance to ensure it is fit for purpose to use with their staff in each region of the UK. Ultimately, we hope that a nationally coordinated and holistic approach to fatigue management will reduce fatigue levels in staff, help them sleep better, and lead to improved staff and patient safety.




EMERGENCY
AMBULANCE
NHS
Ambulance Service
AMBULANCE

Fatigue Risk Management System at the Newcastle Hospitals NHS Foundation Trust

***Nancy Redfern**, Consultant Anaesthetist, Newcastle Hospitals NHS Foundation Trust, Co-Chair Joint Working Group on Fatigue.*

***Tim White,** Head of Risk, Compliance and Assurance and Chair of the Newcastle Hospitals NHS Foundation Trust Fatigue Risk Management Group*

***Henrietta Dawson**, Guardian of Safe Working Hours and Consultant Anaesthetist, Newcastle Hospitals NHS Foundation Trust*

Background

National work into the impact of fatigue in healthcare commenced in 2016 following the tragic death of an anaesthetic trainee in a road accident driving home tired after a busy night shift. The Association of Anaesthetists established a Joint Fatigue Working Group in 2018 to improve awareness of the dangers of staff fatigue. A Newcastle Hospitals consultant was Co-Chair. She did a lot of national speaking but felt that to be credible we needed to demonstrate we could improve the way we identified and managed staff fatigue in the hospital where she works. In 2018, when we started the work in Newcastle, the organisation regarded fatigue as an individual problem. In some areas of the hospital a 'macho' culture existed and working long hours was seen as a sign of commitment.

What happened next?

Our Guardian of Safe Working Hours, as a key ally, ensured that all medical inductions include information and discussion about fatigue. As more senior staff became aware of our approach, the trust put in place a structure to encourage the development of effective Fatigue Risk Management (FRM) mechanisms. A new FRM Group was established with administrative support provided through the Clinical Governance and Risk Department (CGARD). The group brought together expertise in fatigue, risk, safety, occupational health, estates, incident reporting systems and operational representation to develop our relevant, evidence-based Fatigue Risk Management System (FRMS).

What we did

Fatigue was put on the trust risk register. Data plays a key role in informing our approach and we started to capture fatigue information in our incident reports from April 2023; this has now been extended to investigations. We used a 'bottom-up' co-design method, implementing actions and strategies to manage fatigue that staff suggested themselves. We started this on the labour ward, with a Health Foundation-funded research project. Staff of every grade from each staff group participated. As staff engagement grew, newer practices were suggested and tried out. New FRM strategies were quickly embedded in the labour ward culture because they had been suggested, and therefore owned, by the team. Staff now self-roster and talk about their own fatigue, and work as a team at night to ensure everyone gets a break. We developed facilities for all staff to power nap in a quiet, dark, safe area during their break. Funding was provided through charitable funds for sofa beds. More recently, additional funding has been provided by the hospital charity to widen access to facilities and support a wellbeing initiative for staff.

We developed a ward/departmental level FRM assessment tool that aims to draw out contributory factors, support effective controls and actions, and is being built into our standing compliance and assurance functions. Training local risk assessors about fatigue means that more frontline staff understand and work to mitigate the impacts of staff fatigue.

Findings

Early data indicates reporters who haven't been trained about the impacts of fatigue recognise it as a factor in around 4% of incidents, particularly medication errors and communication difficulties, whereas those with more understanding of its impacts recognise fatigue more frequently. Once we had sufficient data, we presented our FRM strategy to the Trust Clinical Risk Group, Patient Safety Group and the Health and Wellbeing Steering Group, and with their backing the strategy has now been adopted.

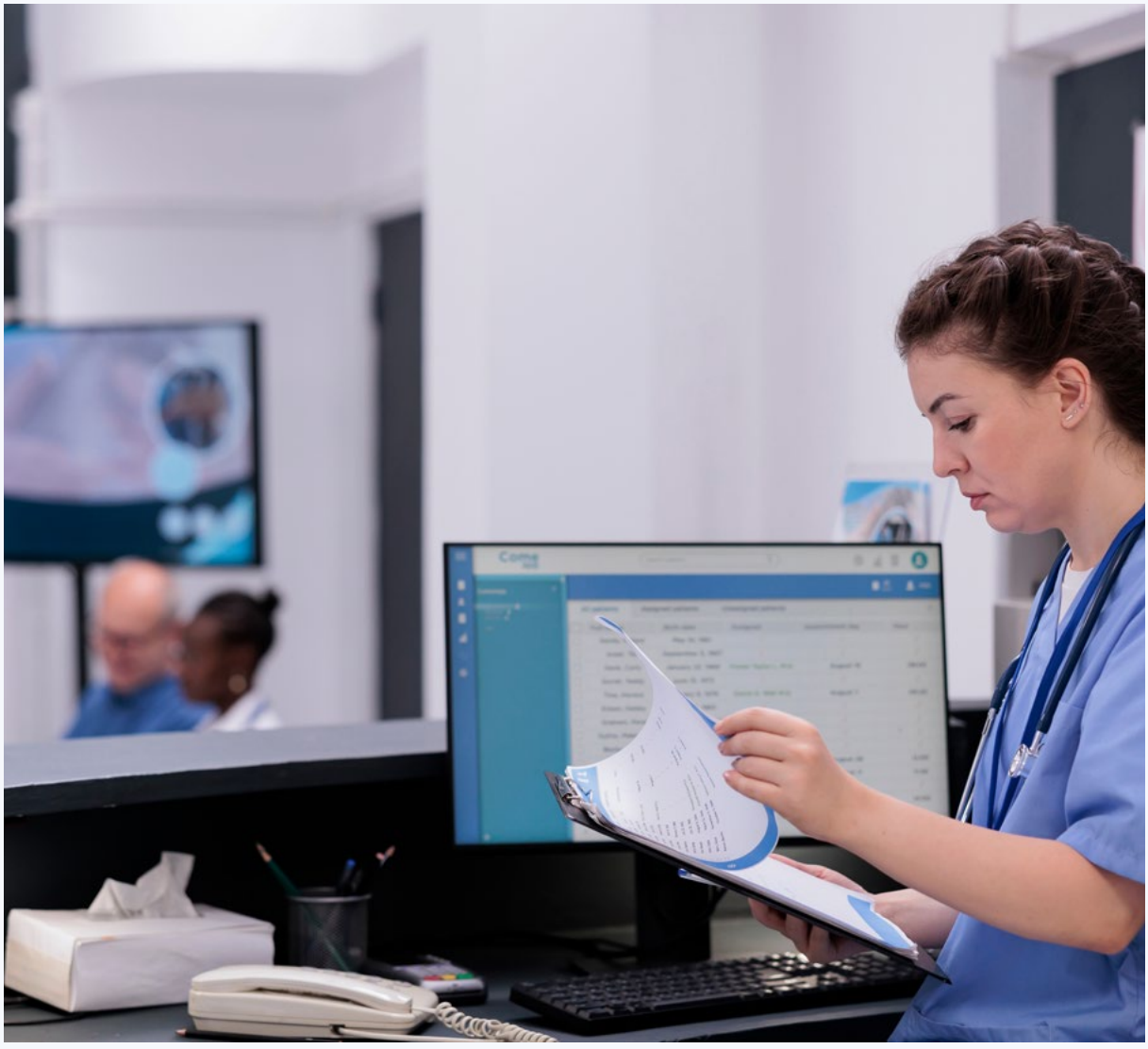
The backing of these senior clinicians, governance and operational managers is vital and has generated support, discussion and ideas to inform our planning and development of the Newcastle FRMS. We have replicated this approach with other multi-professional teams through education and supporting staff to co-design their own approach to fatigue risk management. This is enriched by examples of events, based on situations that have been reported through the Datix system. Over time we are building up a set of strategies that work in different clinical areas, giving a menu of ideas to address problems encountered.

What next and reflections

Changing perceptions has taken time but managers now recognise when clinical errors or poor communication are related to staff tiredness and doctors consider the safety of operating when they have been awake for many hours.

The data quality is starting to mature, and data cleansing mechanisms will allow us to review the risk register entry and refine the scoring, controls and associated actions. We have started to look at intelligence and data from other sources (such as the use of rostering software) when alerts have been raised. Our nurse staffing guidelines now include the management of power naps and raising concerns.

We intend to build into our estates strategy facilities to support FRM both in the current estate, through refurbishment and cost-effective changes, and include facilities in the design of new buildings. We are evaluating what this means for our serious incident reporting, investigation training and how we develop our FRMS alongside the ongoing Trust Patient Safety Incident Response Framework work. This is still a work in progress, but we are confident that we are on the road to an established FRMS.



Fatigue Risk Management in Worcestershire Acute NHS Hospitals

***Sarah Troth**, Advanced Clinical Practitioner-Lead for out-of-hours hospital at night, practitioning team*

Background

A presentation in 2022 from the national co-chair of the Joint Fatigue Working Group triggered the reflection that in the 20 years I had worked night shifts, with the last eight years being permanent nights, no one had spoken to me about managing fatigue. It became apparent just how badly I had managed my own fatigue and the potential implications this had and could continue to have.

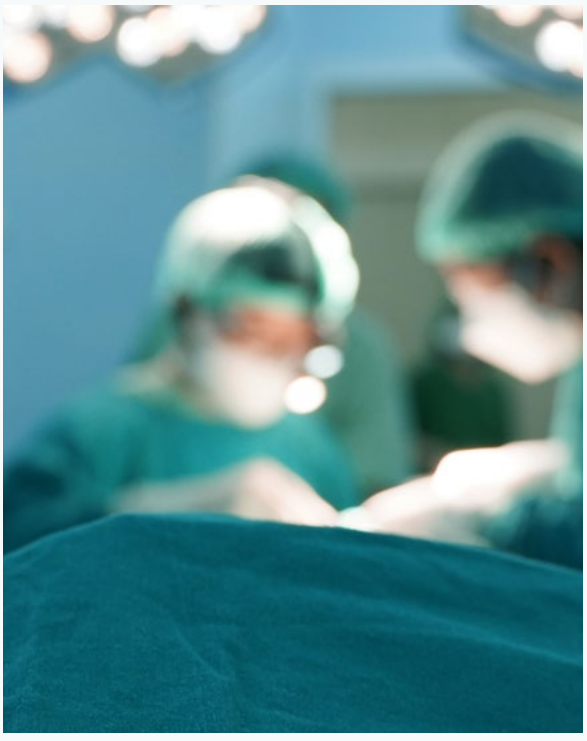
As the lead for the out-of-hours hospital at night team, I took the opportunity to investigate, discuss and reflect on fatigue management strategies utilised by myself and within our permanent night team. The strategies used varied considerably and all felt it was a worthy topic to research with the aim of improving wellbeing.

What we did

The survey went live for one month, with advertisements on trust weekly briefs, screensavers and with the night team reminding staff on their nightly rounds throughout the trust inpatient areas. We had 577 respondents from varying professions: mostly nurses, healthcare assistants, medics and radiographers. Interestingly, only eight of the 577 had ever received any fatigue management education.

What happened next?

Discussions within our own team provoked conversations with ward staff and medics while working night shifts. An opportunity arose to audit fatigue, and fatigue management strategies utilised by patient-facing staff throughout the trust. Our Trust Library conducted a literature review and the research was critiqued with the help of some interested team members. This enabled my development of a survey to be distributed throughout the entire trust. We decided to limit it to patient-facing staff only as we wanted to look at the effects on patient safety.



Findings

Results of the survey clearly showed a chronically fatigued workforce, despite utilisation of the majority of strategies mentioned in research. There were many barriers with issues of time, shift patterns, knowledge of fatigue management, attitudes towards power naps, rest facilities, own medical conditions and environmental factors. Most worryingly, there was evidence of risk to patients with lack of sympathy and empathy, lack of concentration and medication errors. There was a risk to staff with chronic fatigue symptoms such as still feeling tired after resting, feeling tired all the time, irritation with family and microsleeps on shift and while driving home from shift, which also raised a risk to the public.

On analysing the results, I decided to report them on our trust's Datix system, which flagged it as a risk not only to patients and to staff but also to the public. It was accepted onto the trust's risk register and I was then tasked with presenting these findings to various trust boards to provoke discussions around the subject and develop improvements.

What next and reflections

Laboratory staff raised the need for inclusion in future surveys. They highlighted that any errors they made through fatigue could very much impact on patient safety. This was recognised and future surveys would consider this staff group next time.

Our patient safety team has now added fatigue into its discussions when investigating serious incidents and our wellbeing team has factored fatigue into its wellbeing conversations with staff.

We have had fatigue webinars and a fatigue risk management strategy is currently under development to include staff education and fatigue risk tools for managers to highlight the importance of recognition and mitigation.

Fatigue Risk Management at University Hospitals Bristol and Weston

***Laura Pickup**, Head of Human Factors*

***Andy Landon**, Senior Nurse – Safe Staffing and Head of e-rostering*

***Katherine Grant**, Risk Manager – Trust Services*

***Claire Haley**, Workplace Wellbeing Manager – Corporate Workplace Wellbeing Team*

Background

In 2023 I was recruited as a human factors professional to embed human factors within the trust. As part of my scoping work to develop a human factors integration strategy, I considered different aspects of human performance and how the trust currently recognised the impact on patient safety and performance of staff. This highlighted how different departments within the trust may consider the symptoms and signs of fatigue from the individual's perspective but less at an organisational level or in the context of patient safety.

What we did

This group recognised the need for cross-departmental and interprofessional working to enable organisation-wide learning. We organised a workshop and invitations spread the net wide across trust departments that were representative of staff required to work shifts or provide a 24/7 service. The event was attended by approximately 45 staff ranging from senior executives, managers and staff with safety roles.

What happened next?

Discussions with trust professionals in leadership roles, including wellbeing, safety, risk and governance and management of staff work, recognised an absence of a joined up and systematic approach to identify, evaluate and manage the risk of staff fatigue relative to patient safety or operational performance. However, it was acknowledged there may be existing practices that could inform or be further developed to create a systematic approach to recognising the impact and managing the risk of fatigue.

Findings

The workshop shared the scientific evidence around fatigue and presented trust data related to fatigue from occupational health, staff surveys, incident reporting and patient safety investigations. The group confirmed that some data was relevant but could not provide a full picture of the current level of risk fatigue posed to the trust.

Presentations included work completed by a patient safety investigator and a nursing leader that had started to use tools provided as part of the work to embed human factors. These included proactive fatigue risk assessment tools, workload evaluation and standardised questions to obtain evidence following incidents. This illustrated how, on a small scale, findings could reveal the impact of workload and fatigue in these different contexts.

A senior executive presented previous experience of working in other industries that adopted a systematic and co-ordinated approach to manage the risk of fatigue. This highlighted an organisational approach to recognising and managing the risk of fatigue that requires the design of work and break patterns, acknowledging that one size may not fit all but opening the conversation to consider what this could look like at the trust.

An activity completed within the workshop asked participants to map out the data, processes and risk mitigation approaches currently in place across the trust, what could pragmatically be achieved with limited to no cost and what the trust should aspire to achieve in a fatigue risk management strategy.

What next and reflections

The output from the workshop has informed a paper to propose the development of a trust approach to establish processes that could support a predictive, proactive and reactive approach to managing fatigue. An objective has been added to the trust wellbeing plan to develop this systemic approach.

Currently work continues to:

- review shift patterns, durations and rostering practices.
- use existing technical systems to support rostering practices informed by scientific evidence.
- review data to support benchmarking the risk of fatigue.
- implement fatigue questions within occupational health consultations.
- provide teaching around fatigue.
- standardise fatigue questions to patient safety incident investigations.

The workshop stressed the need for a pragmatic approach to the management of the risk of fatigue, recognising the current context of workforce and financial constraints. This work is in the early stages, but feedback indicates an appetite to move this work forward acknowledging that one size will not fit all, and fatigue risk management will need to reflect different roles and organisational departments.

4. Conclusion

This white paper provides a foundation for national health and social care bodies to recognise the risk that fatigue poses to safe and efficient healthcare services and advocates a systemic approach to managing these risks. The scientific evidence is clear: fatigue in healthcare presents a real risk to staff and patient safety, bringing with it reputational risks for healthcare organisations.

But the risks can be managed by adopting holistic approaches that take a sociotechnical systems perspective on the problem. Health and social care lag behind other safety-critical industries in the management of fatigue but can learn from the successful implementation of fatigue risk management systems in these industries. The journey will be long and challenging, especially given the relentless pressures on staffing in health and social care, but that does not mean we should avoid it; if staff attrition in the NHS continues, the risks will increase as limited resources are stretched further, compromising rest and recovery for those staff.

With the publication of the much-anticipated NHS Long Term Workforce Plan[38], there is renewed momentum to address some of the risks associated with fatigue and an opportunity to improve management of staff fatigue.

Effective implementation of a holistic and systemic approach to fatigue risk management in health and social care will require an understanding of the specific risks faced by the sector. The overall approach should support all employees required to deliver work within services which may involve working long hours, shifts, those involved in emergency response teams or needing to be available 24/7. It will require a pragmatic approach, combining top-down leadership from senior management with bottom-up buy-in including consultation with representative health and social care roles as well as patient and public engagement. This white paper provides a roadmap to put health and social care on a path to developing fatigue risk management systems fit for purpose across the whole sector.

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6. Annex 1

Civil aviation

The context in which aircrew work involves irregular patterns of duties throughout the day and night, often crossing time zones. They work in a fast-paced and dynamic operational environment where their duties often get changed at short notice. Crew need to be able to recognise, diagnose and manage normal, emergency and novel situations as they arise – often at 500 miles per hour.

Aircrew fatigue has long been recognised as a risk to flight safety. In 1950, the International Civil Aviation Organisation (ICAO) introduced a requirement for airlines to establish limitations on flight times such that the safety of the aircraft was not endangered by crew fatigue. Since then, more detailed prescriptive regulations have been developed and their effectiveness continues to be assessed.

Prescriptive generic limitations provide an informed framework of boundaries that can be too permissive or too restrictive, depending on the operational context. Compliance with the prescriptive limit became the measure rather than performance of the requirements to manage fatigue in the operational context.

There have been numerous accidents and incidents where aircrew (and engineer) fatigue has been cited as contributing to the incident. One significant example is that of American International Airways (AIA) Flight 808 on 18 August 1993. The duty was legal, and the crew accepted it. The investigation revealed all the crew were carrying a large sleep debt from their previous duties as well as long periods of wakefulness on the day of the accident. It also highlighted that the crew was concerned they may lose their jobs if they refused the duty. This accident is significant because it was the first time that the U.S. National Transportation Safety Board cited fatigue as one of the probable causes. Before this, fatigue was not considered within the investigation if the crew had achieved the legal minimum rest before the flight. The AIA 808 report changed the view of fatigue within aviation accidents and how it was to be considered within investigations. Today, regardless of the legal prescriptive limitations, fatigue and fatigue-related behaviours are a standard part of all accident investigations.

The early 2000s saw the introduction of aircraft that could fly for 24 hours, and this created a requirement for long-haul flights of more than 16 hours. This needed a new approach and a multi-stakeholder working group was established to consider how crew fatigue on these flights could be managed. The FRMS approach was developed, in conjunction with regulatory limitations, to support aircrew and to enable these specific flights to be conducted. FRMS techniques were then recognised as supporting contextual fatigue management for all operations and this approach was taken into international standards. ICAO's manual for fatigue management[i] provides the framework for FRMS and prescriptive approaches.

Fatigue management is seen as a tripartite process. Aviation has detailed regulations and guidance. Effective fatigue management happens within the operational environment so feedback on the effectiveness of fatigue mitigations laid down in regulations is needed. This needs crew members and airlines to engage with the system and to focus on safety as the outcome. Fatigue management may constrain both the organisation and the individual. It can be seen as industrial and individual, instead of a collaborative way to enable the organisation and support the individual. Effective fatigue risk management must be underpinned by scientific principles, translated into operational practice within the organisational context.

Military aviation

The Military Aviation Authority (MAA) was formed in 2010 in response to the recommendations of Justice Haddon-Cave in the Nimrod Review[II], which called for a radical overhaul of military airworthiness regulation. Part of (yet operating independently to) the Ministry of Defence, it is the single regulatory authority responsible for regulating all aspects of air safety across defence.

MAA Regulatory Articles govern fatigue for aircrew[III] and Air Traffic Controllers (ATC).[IV] The regulatory articles closely follow regulation and guidance from the UK Civil Aviation Authority (CAA).[V, VI] For maintainers and supporting functions, work patterns are generally based on the principles of the UK Working Time Directive[VII] as a minimum, although it is worth noting there are exemptions in this regulation for the UK Armed Forces.

The FRMS structure follows the ICAO Manual for the Oversight of Fatigue Management Approaches[I], employing the four components below:

- FRMS policy and documentation
- Fatigue risk assessment
- FRMS assurance
- FRMS promotion

The FRMS uses scientific principles applied to the operating context, placing responsibilities on the operating organisation's duty holder, line managers and individuals to achieve engagement at all levels throughout the organisation. The success of the FRMS in military aviation is considered to be based on three prerequisites:

Engaged safety culture

The successful implementation of FRMS is largely dependent on the cultural readiness of the organisation to embrace an engaged safety culture. Military aviation has a mature and engaged air safety culture, moving beyond the mandated minimum to become an integral part of daily business. This culture is formed through the adoption and maintenance of a safety-focused mindset, evidenced by the resultant behaviour patterns of the workforce. The engaged air safety culture allows swift identification of new or emerging hazards and manages the risk appropriately with a minimum of organisational or workforce resistance.

Training

Human factors and error management training with subsequent two-yearly continuation training is mandatory for all personnel involved in defence aviation. The common level of understanding at all levels of the risks, causes and symptoms of fatigue underpins and supports the continued effective operation of the FRMS.

Reporting and investigation

An effective reporting system is required to provide a method to monitor and maintain the effectiveness of an FRMS. Military aviation uses an Air Safety Information Management System (ASIMS) to capture all aviation-related incidents, accidents and hazard observations. Data can be sifted to focus on particular topics of interest and to monitor trends. Each occurrence is investigated to identify mitigations and/or solutions. An effective reporting system, underpinned by the other elements of an engaged air safety culture, provides the feedback loop for the FRMS facilitating effective risk management.

Military aviation employs a holistic approach to fatigue management, using prescriptive and performance-based measures to deliver FRMS as part of wider safety management systems. These systems are underpinned by an engaged air safety culture, without which effective risk management would be unnecessarily difficult.

Annex 1

Rail

On 12 December 1988, 35 people died and nearly 500 were injured when a train from Poole to London Waterloo crashed into the back of another stationary train near Clapham Junction. The stationary train should have been protected by a red signal behind it, but the driver of the Poole train saw green signals all the way, so was not aware of a need to slow down and stop. The failure of the signalling system resulted from the actions of a severely fatigued technician who had been working on the signal wiring.

The Clapham Junction disaster was a watershed in fatigue risk management for the UK rail industry. The inquiry into the accident, led by Anthony Hidden QC, found that a significant proportion of the signalling technicians involved had been working without a break for 13 weeks before the accident. The inquiry report made recommendations to change the way hours of work and overtime were managed and monitored.

These recommendations were translated into what became known as the 'Hidden limits', which included such rules as no more than 72 hours' work per week, and no more than 13 duties in 14 days. These limits were not based on good fatigue management practice but were seen as what was operationally achievable at the time – given such extreme practices as seen at Clapham Junction. Rostering up to the Hidden limits can still be fatiguing.

Since Clapham, the UK rail industry has moved forward with its fatigue risk management approach. It is a requirement under the Railways and Other Guided Transport Systems (Safety) Regulations (ROGS) 2006 that safety-critical work is not carried out where the worker is so fatigued that health and safety could be significantly affected. The UK rail regulator, the Office of Rail and Road (ORR), offers comprehensive guidance on managing rail staff fatigue, promoting a more mature fatigue risk management approach based not just on working hours, but also on fatigue reporting, investigation and training.

Nevertheless, rail is a 24/7 industry and so fatigue continues to cause concern. In addition, efforts to mitigate fatigue through changes in rostering practices are not always consistent with workers' preferences for maintaining work-life balance. The effects of fatigue can result in incidents involving train drivers [VIII], signallers [IX] and track workers [X]. In March 2020, ORR successfully prosecuted Renown Consultants Limited for failing to manage worker fatigue. This was a landmark case following the tragic deaths of two mobile rail maintenance staff driving home after an overnight rail welding job. The driver did not appear to have had any significant sleep for more than 24 hours before their vehicle collided with one parked in a layby. While the UK rail industry has come a long way since Clapham Junction in managing fatigue, there is still much work to be done.

Gas distribution

The gas distribution industry involves operating and maintaining an extensive network of pipelines and infrastructure for the safe delivery of natural gas to consumers. The nature of the work in this industry, which often includes round-the-clock operations and extended shifts, poses significant fatigue risks to workers.

Examples of fatigue contributing to incidents associated with the Gas Distribution Networks (GDNs) are not readily available. However, Health and Safety Executive (HSE) inspections have identified occurrences of engineers working up to 22 hours in one shift and working over 14 days without a rest day.

The HSE has undertaken fatigue risk management inspections with the GDNs and outlined standards for managing fatigue risks, including limitations on working hours, mandatory rest periods, and shift rotation policies. These standards provide a framework for the GDNs to develop their FRMS and ensure compliance. Currently the majority of GDNs are adopting control measures such as dynamic fatigue risk assessments, providing fatigue management training, and using technology solutions such as live working hour applications and scheduling software to optimise shift patterns and minimise fatigue risks.

Implementing effective fatigue risk management in GDNs comes with its share of challenges. Some of these challenges include:

- Emergency response demand: The need to balance emergency and routine work demands; the seasonal impact of winter creates greater emergency calls suggesting a need for different staffing and shift patterns to reflect this demand.
- Workforce management: Managing fatigue risks requires balancing variability in operational demands (including emergency response) with employee rest periods; ensuring adequate staffing levels, proper shift scheduling and fatigue awareness training for employees can be a complex undertaking.
- Cultural shift: Implementing an FRMS requires a cultural shift within an organisation, promoting a proactive approach to managing fatigue and prioritising employee wellbeing and safety. Changing entrenched attitudes and practices can be a significant challenge, especially as reducing staff members' ability to work overtime can lead to a reduction in salary.
- Industry guidance: While fatigue risk management guidance is available, it does not consider some of the solutions the GDNs have proposed including dynamic fatigue risk assessments.

The recognition of the impact of fatigue on human performance and safety by the GDNs has led to the development and implementation of FRMS in the GDNs. Each is making various degrees of progress and there appears to be a broadly consistent approach to addressing the issue; in part this can be attributed to the GDNs holding joint discussions on this topic.

Maritime

Fatigue is so endemic in the shipping industry that the International Maritime Organization regards it as a significant hazard due to it affecting the ability to carry out all aspects of seafarers roles, regardless of skill, knowledge and training.[XI] Commercial shipping can have low levels of crewing, meaning that long working hours can be normal, particularly in poor weather where the safety of the vessel is reliant on constant vigilance and activity by the crew.

The shipping industry tends to rely on International Labour Organisation rules outlined in the Maritime Labour Convention (2006) that legislate a maximum of 77 working hours in seven days, with more mature companies adopting FRMS principles.

There are a number of studies into fatigue in the maritime industry including by the MAIB[XII] and World Maritime University (WMU).[XIII] WMU reported widespread malpractices in recording hours of work and rest, limited relevance of the international regulatory framework, resistance from shipowner organisations, and ineffective determination of safe crew levels onboard. Work by international industry groups has linked low levels of staffing to commercial pressures.

International and national regulations increasingly reflect the need for a comprehensive and holistic approach in the mitigation and management of fatigue as recommended by the IMO. Seafarer organisations, trade bodies and safety organisations continue to lobby for further changes to international regulations and changes to industry practice, including the adoption of FRMS.

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