

# Improving support for staff at night: Fighting Fatigue in staff

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*Co-chair* Joint Association of Anaesthetists, Royal College of Anaesthetists and faculty of Intensive Care Medicine Fatigue Working Party &

*Consultant Anaesthetist* Newcastle upon Tyne NHS Foundation Trust

# Fighting fatigue in staff

- changing attitudes across the NHS to ensure everyone understands the risks of fatigue and how to mitigate against them

Review sleep physiology

How fatigue affects performance and wellbeing

- practical approaches to reduce fatigue and ensure staff take breaks
- improving junior doctor support at night
- the challenges of Covid-19

What might change attitudes?

# Fatigue – Identifying the issue



Fatigue and Anaesthetists

Working the night shift:  
preparation, survival and  
recovery

A guide for junior doctors

BMA Fatigue and  
Facilities charter

BMA NHS Employers  
GOOD ROSTERING GUIDE

to meet increasing demands in an  
; working more intense hours,  
dealing with inadequate rest  
for staff and our patients.  
steps that can be taken to  
fatigue, so we can safely,  
re for our patients.

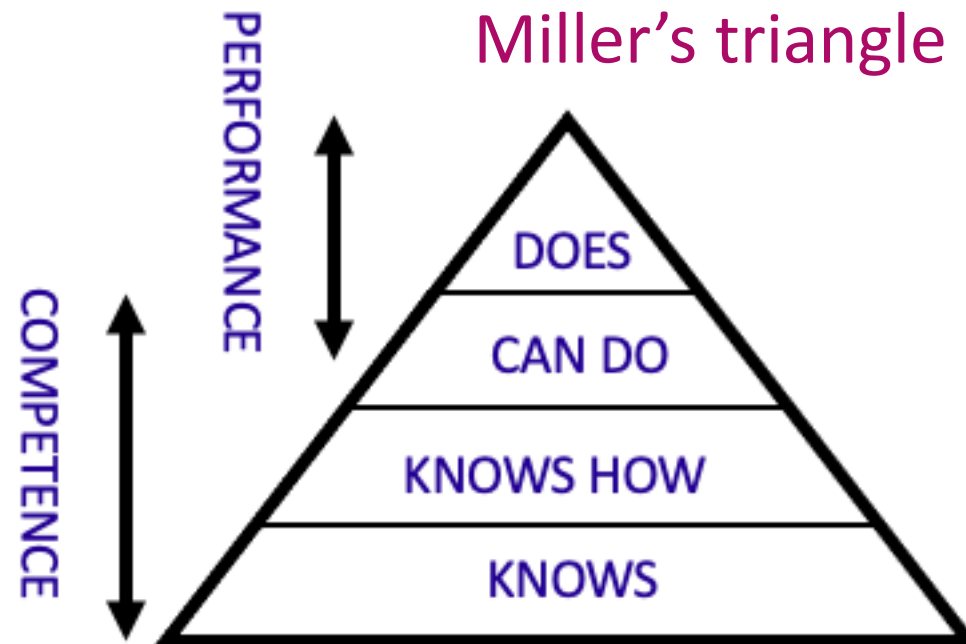


A shift in the right direction

RCN guidance on the occupational health and safety of shift  
work in the nursing workforce



Miller's triangle



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Association  
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# Why are we talking about fatigue?

NEWS

## Tribute paid to 'talented' doctor who died in Stanningley Bypass crash



## Hospital nurse and 'amazing' mum died in car crash after 12-hour night shift



## Exhausted doctor killed driving home from night shift when he 'fell asleep at the wheel'

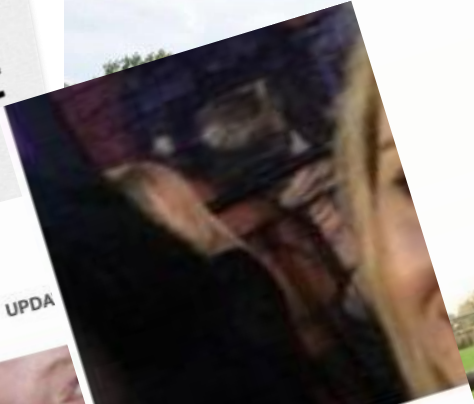
Dr Ronak Patel, 33, tried to ...  
to his wife Helen, 33, on his ...  
phone when he ploughed in



BY SAM WEBB  
11:20, 12 JUL 2016 | UPDATED 12:51, 12 J



BY STEPHEN STEWART  
00:00, 16 OCT 2011 | UPDA



NEWSROOM / 23 hou  
**Second nurse  
their way ho**

NEWS

## Worked to death - exhausted young doctor veers off road and dies after gruelling nightshift

A YOUNG doctor's car crash ...  
blamed on ...  
Scotland's

Dr Alex Fletcher, ...  
car crash near hi ...  
October 26 (Ima



# Fatigue – the facts

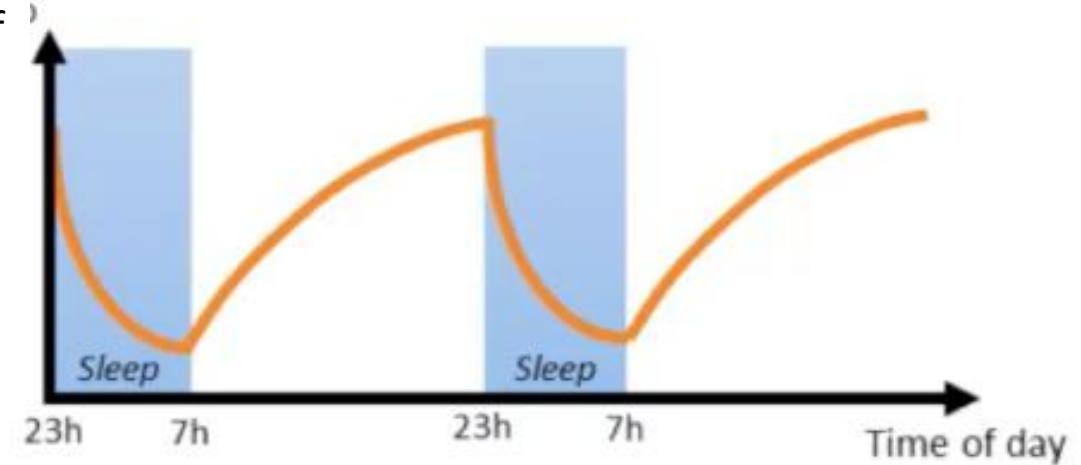
- Most adults require 8 hrs restorative sleep per night
- **Sleep debt** after 2 or more nights of restricted sleep
- Takes at least 2 nights to recover from sleep debt
- **Cognitive function impaired** after 16-18 hours wakefulness
- **Dangerous driving** - 20 hours wakefulness and circadian low point - performance as bad as when blood alcohol over UK limit – illegal to drive when tired
- Fatigue induces spontaneous, unrecognised uncontrolled '**sleep lapses**' or '**microsleeps**'
- Ability to recover from sleep deprivation gets **worse with age**

# Processes affecting sleep and alertness

Process S  
homeoStatic



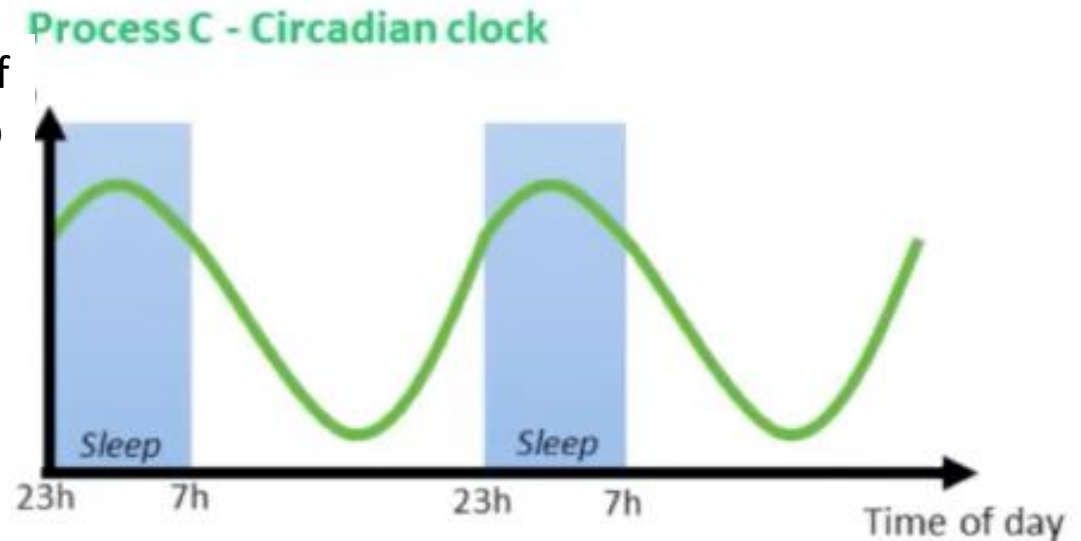
Probability of falling asleep



Process C  
circadian

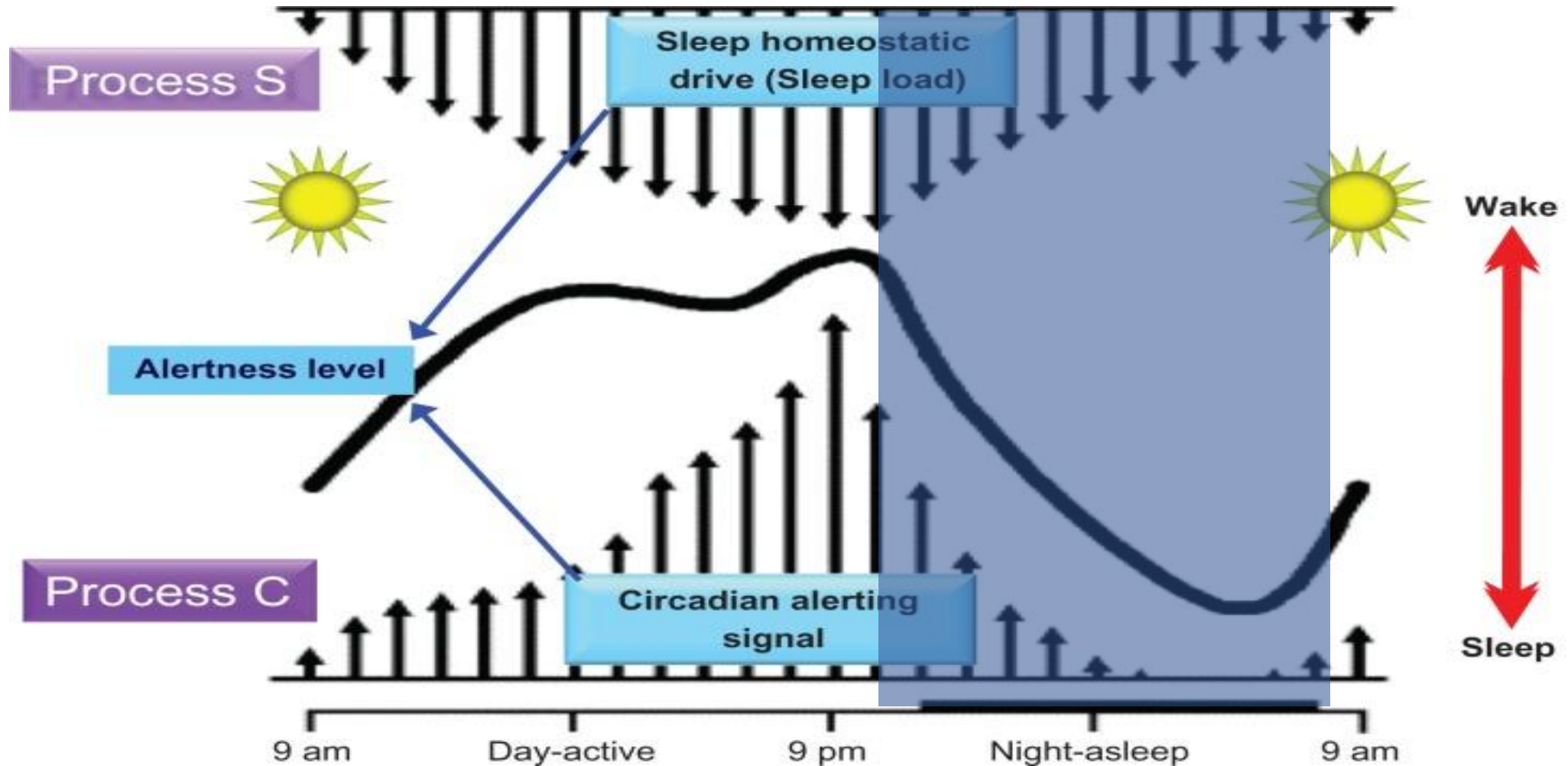


Probability of falling asleep

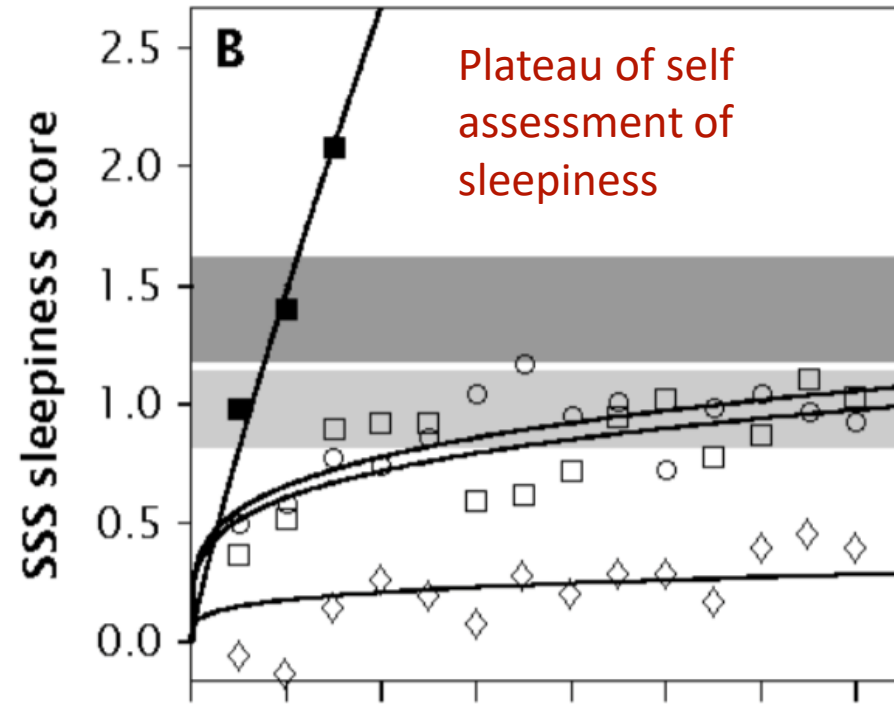
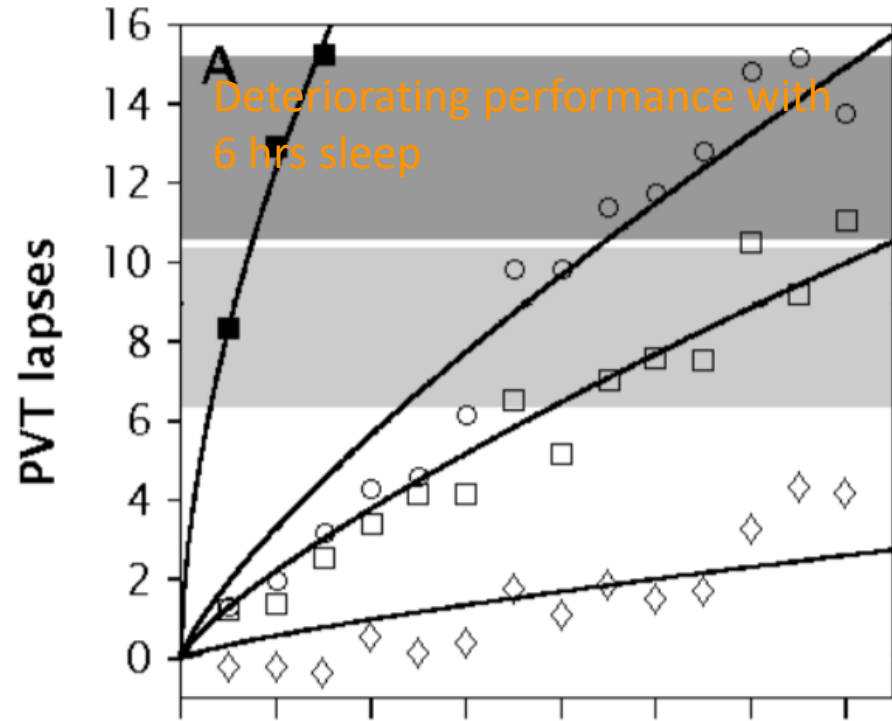




# Normal sleep, wake and alertness



# Self assessment and sleep deprivation



# The power of a nap

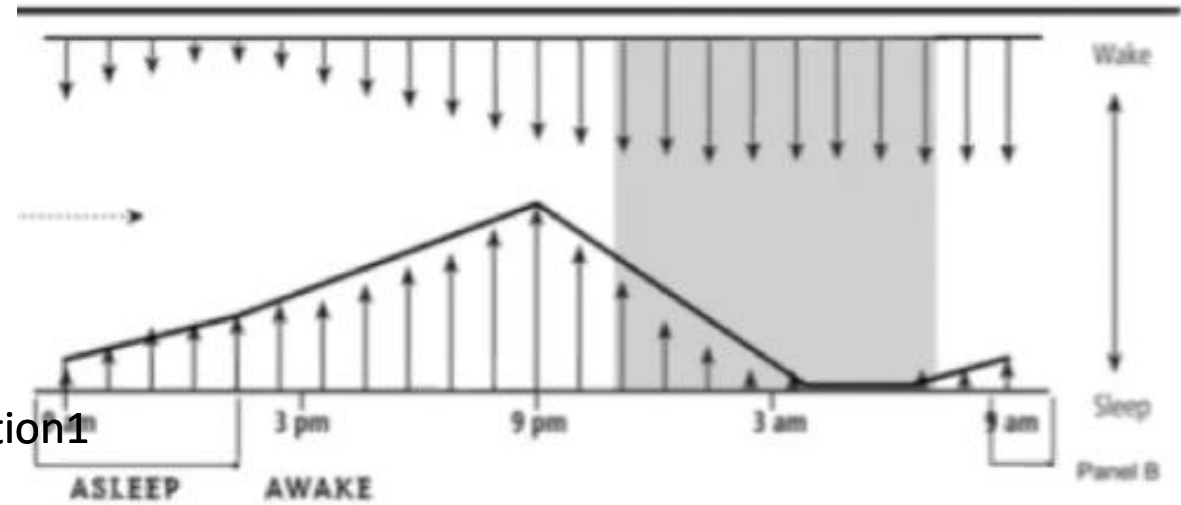
## Night shift without a nap

Homeostatic sleep pressure

Wake propensity

Circadian Alerting signal

Presentation 1

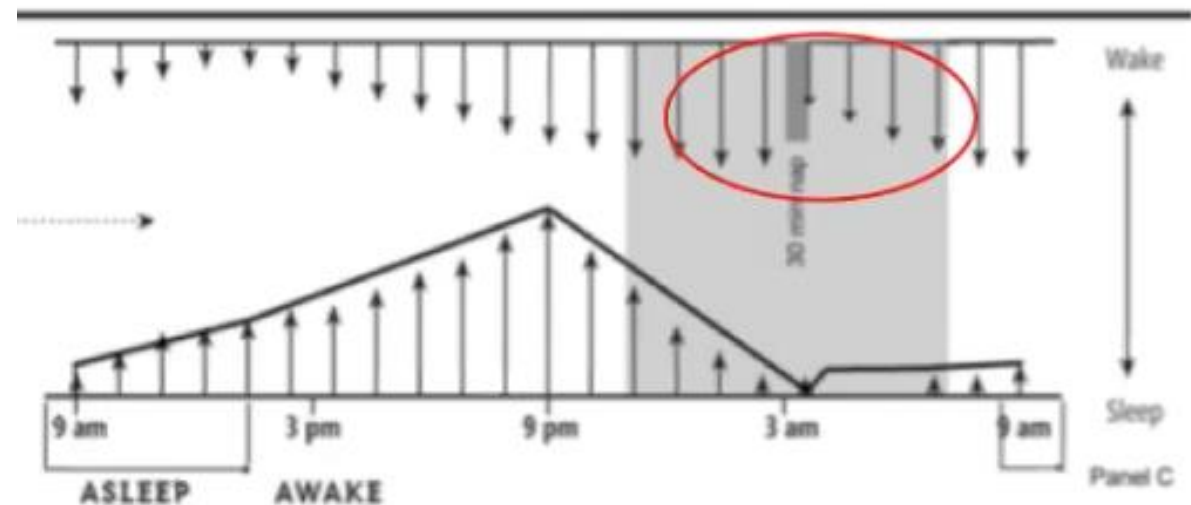


## Night shift with a nap

Homeostatic sleep pressure

Wake propensity

Circadian Alerting signal



Ceri Sutherland

# Adverse effects

## Patients



Empathy  
Logical reasoning  
Vigilance  
Intellectual flexibility  
Mood  
Ability to learn &  
retain information

#FightFatigue

## Self

Accidents / incidents  
Diabetes  
Hypertension & ? MI  
TIA / CVA  
Some types of cancer  
Peptic ulceration

# Fighting fatigue in staff

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Review sleep physiology

How fatigue affects performance and wellbeing

- practical approaches to reduce fatigue and ensure staff take breaks
- improving junior doctor support at night
- the challenges of Covid-19

What might change attitudes?



# Working well at night

## During nights

- Keep well hydrated; eat healthy snacks  
Calories on nights do count!
- Breaks are essential – work as a team to cover each other
- 15-20 min naps are ideal  
Longer naps can result in sleep inertia
- Be vigilant for the 0400h dip
  - Be aware of the effects of fatigue on decision making

## WORKING WELL AT NIGHT

### Before nights

- Make sure you usually have a good sleep routine.
- Get extra sleep before your shift. An afternoon nap is ideal as it reduces the length of time you have been continuously awake. A lie-in is an alternative.
- Plan how you will get home. Is there an option other than driving?
- Will you need to rest before driving home?



### During nights

- Keep well hydrated and eat healthy snacks. Calories on nights DO count; they contribute to the adverse health effects of night working.
- Maximise exposure to bright lights in non-clinical areas.
- Breaks are essential: work as a team to cover each other for these.
- A 15-20 min nap can significantly improve alertness.
- Longer naps may result in sleep inertia.
- Be vigilant for the 04:00 dip: your lowest physiological point.
- Work as a team to check calculations and be aware of the effects of fatigue on decision making.
- If you can, a consistent routine during shifts can help.



### Between nights

- If you are too tired to drive, have a short nap before leaving work.
- Have a snack before sleeping so you don't wake up hungry.
- Go to bed as soon as possible to maximise the amount of sleep you will get.
- Do not plan deliveries or daytime activities for the days between night shifts. Warn your housemates that you need to sleep.




### Recovery after nights

- Have a short sleep in the morning and then get up.
- Aim to go to bed at your usual time; avoid a long lie in the next day.
- You'll need at least 2 normal nights sleep to reset your sleep routine.



References  
Royal College of Physicians of London. Working the nightshift: preparation, survival and recovery. A guide for junior doctors. 2006 ISBN 1 86016 259 2  
M Faruqi. Fifteen-minute consultation on problems in the healthy paediatrician: managing the effects of shift work on your health. Arch Dis Child Educ Pract Ed 2016; 116

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[www.aagbi.org/fatigue](http://www.aagbi.org/fatigue)



# Working well at night

- **Between nights**
- If you are too tired NAP before leaving work, or get a taxi home
- Have a snack before you go to sleep
- Avoid screens & bright light - ? Sunglasses
- Go to bed as soon as possible
- 8 hours' sleep – quiet dark room
  - ?blackout blinds/eye masks
- Relax - ? Note pad
- Do not plan deliveries / daytime activities
- If you wake up, have a warm drink and go back to bed – maximise sleep time



**SLEEP**


- Do they feel **SLEEPY**?
- Has it been a **LONG** shift?\*
- Are they relying on caffeine or **ENERGY** drinks to stay awake?
- Do they need a **POWER** nap?
- Do they look **TIRED**? Are they finding it hard to concentrate?


**If the answer to any of these is "YES" Take Action! Don't let them NOD off!**


**NOD**

- NAP** before driving home; miss rush hour & feel more alert.
- Are there **OTHER** ways to get home than driving? Train, taxi, bus, tram, walk, get a lift?
- DRIVING** when tired is **DANGEROUS!**

\*Remember to EXCEPTION REPORT in England, if the work schedule has been breached.  
Produced by the Association of Anaesthetists Trainees Committee and the Fatigue Working Group 2017

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Association of Anaesthetists is the brand name used to refer to both the Association of Anaesthetists of Great Britain & Ireland and its related charity, AAIBI Foundation (England & Wales no. 200715 and in Scotland no. SC04095).

[www.aagbi.org/fatigue](http://www.aagbi.org/fatigue)

# Greatest risk

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Significant sleep  
loss in combination  
with circadian  
rhythm disturbance



4 or more  
night shifts  
in a row



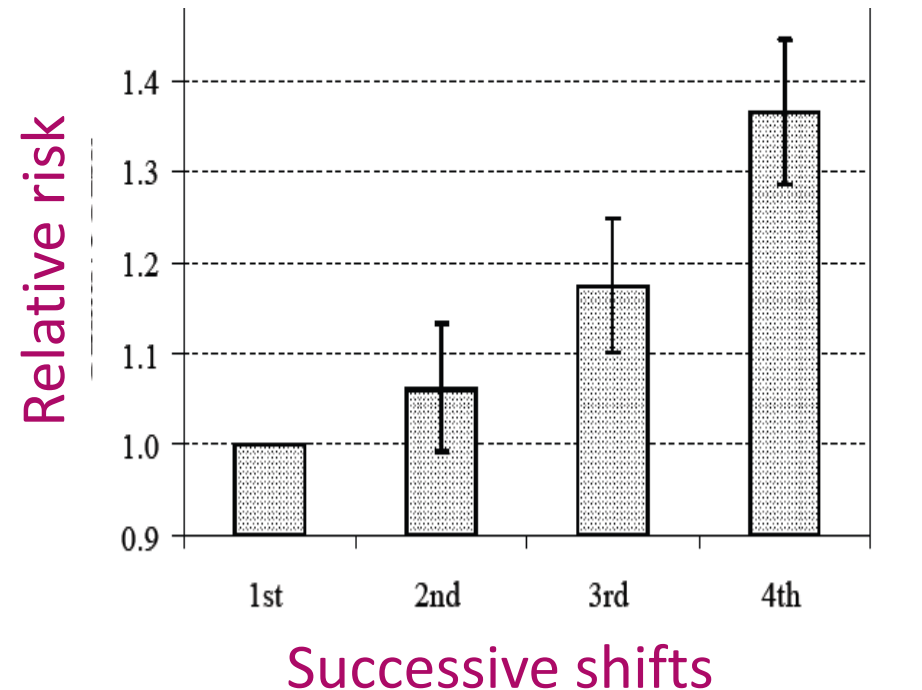
Long day shift  
followed by a night  
on call and being in  
and working





# Relative Risk trend - Successive night shifts

The more shifts that are worked consecutively, the greater the relative risk compared to the first shift worked.



# Health & Safety Executive [HSE] risk index

- used extensively in industry
- originally developed for rail workers
- features prominently in air-accident investigations

**Open access** **Research**

## BMJ Open Can a tool developed for industry be used to assess fatigue risk in medical rotas? A pilot study of foundation doctors' rotas in a tertiary centre

Elsbeth Cumber,<sup>1</sup> Paul Robert Greig<sup>2</sup>

**To cite:** Cumber E, Greig PR. Can a tool developed for industry be used to assess fatigue risk in medical rotas? A pilot study of foundation doctors' rotas in a tertiary centre. *BMJ Open* 2019;9:e023470. doi:10.1136/bmjopen-2018-023470

► Prepublication history for this paper is available online. To view these files, please visit the journal online (<http://dx.doi.org/10.1136/bmjopen-2018-023470>).

Received 19 April 2018  
Revised 18 December 2018  
Accepted 8 January 2019

**ABSTRACT**

**Objectives** To determine the feasibility and ease of using a pre-existing health and safety executive fatigue risk calculator to assess doctors' rotas.

**Design** Observational.

**Setting** A large tertiary-referral teaching hospital in the UK.

**Participants** 95 anonymised foundation years 1 and 2 rotas in General Medicine, General Surgery and Emergency Medicine covering a 4-month period. All rotas provided by rota coordinators were included and assessed.

**Interventions** Rotas were assessed for two indices: relative risk of fatigue-related errors compared with a '2-day, two-night, four-off' shift pattern and percentage chance of a high score on a standardised sleepiness scale.

**Primary and secondary outcome measures** Fatigue index (percentage chance of a high score on a standardised sleepiness scale) and risk index (relative risk of fatigue-related errors compared with a '2-day, two-night, four-off' shift pattern) of all shifts on all rotas.

**Results** Nearly half of all shifts demonstrated increased risk of fatigue-related errors and increased probability

**Strengths and limitations of this study**

- Use of objective risk calculations offer new insights into fatigue management.
- This study uses a large sample size, covering different medical and surgical specialities.
- Fatigue risk indices are based on some assumptions on work intensity which, although plausible, are not based on prospectively gathered data.
- Health and safety executive risk calculator is based on work done in industrial settings rather than on healthcare staff.

workload (mental and/or physical activity) that can impair a crew member's alertness and ability to safely operate ... or perform safety related duties'.<sup>1</sup>

This definition was originally written for the aviation industry, and in most safety crit

Cumber E, Greig PR. Can a tool developed for industry be used to assess fatigue risk in medical rotas? A pilot study of foundation doctors' rotas in a tertiary centre. *BMJ Open* 2019;9:e023470. doi:10.1136/bmjopen-2018-023470



# Risk of fatigue/sleepiness

**Table 3** Summary of fatigue risks, analysed by specialty

	Shift risk >10% sleepiness		Max risk	Min risk
	n	%		
Emergency medicine	335	57.66	57.78	4.79
General medicine (FY1)	905	49.29	70.09	4.22
General medicine (FY2)	645	53.44	66.76	3.17
General surgery (FY1)	953	58.47	63.35	3.90
General surgery (FY2)	915	62.76	63.43	4.56
Total	3753	55.91	70.09	3.17

Risk of being at 'extremely sleepy/fighting sleep' on the Karolinska Sleepiness Scale during a shift – the Level of fatigue where performance is known to be impaired

Cumber E, Greig PR. Can a tool developed for industry be used to assess fatigue risk in medical rotas? A pilot study of foundation doctors' rotas in a tertiary centre. *BMJ Open* 2019;9:e023470. doi:10.1136/bmjopen-2018-023470



# Relative risk of fatigue-related errors

**Table 2** Summary of relative risk, analysed by specialty

	<b>Shifts risk &gt;1</b>		<b>Max risk</b>	<b>Min risk</b>
	<b>n</b>	<b>%</b>		
Emergency medicine	228	39.24	1.63	0.82
General medicine (FY1)	920	50.11	1.60	0.75
General medicine (FY2)	698	57.83	1.86	0.74
General surgery (FY1)	771	47.30	1.77	0.79
General surgery (FY2)	712	48.83	1.59	0.78
<b>Total</b>	<b>3329</b>	<b>49.60</b>	<b>1.86</b>	<b>0.74</b>

Cumber E, Greig PR. Can a tool developed for industry be used to assess fatigue risk in medical rotas? A pilot study of foundation doctors' rotas in a tertiary centre. *BMJ Open* 2019;9:e023470. doi:10.1136/bmjopen-2018-023470



# Fatigue – Looking for remedies

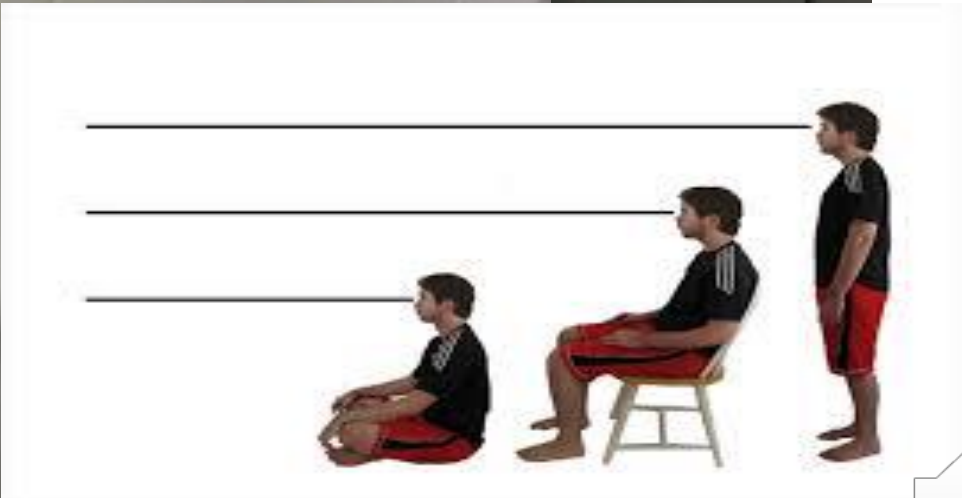
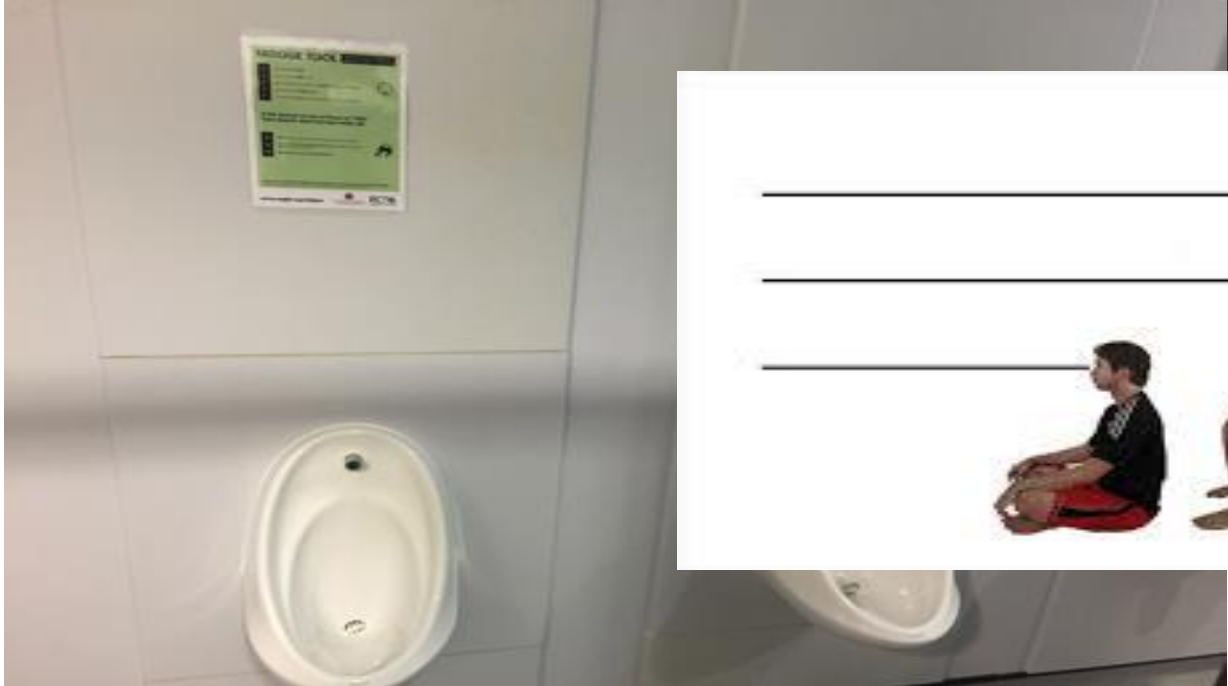
- Education – survey, teaching resources & posters
- Rest facilities
  - rest facility standard
  - audit tools
- Fatigue assessment tools
  - Diaries/fitbit & app
- Culture change
  - joint statement
  - GMC trainee survey

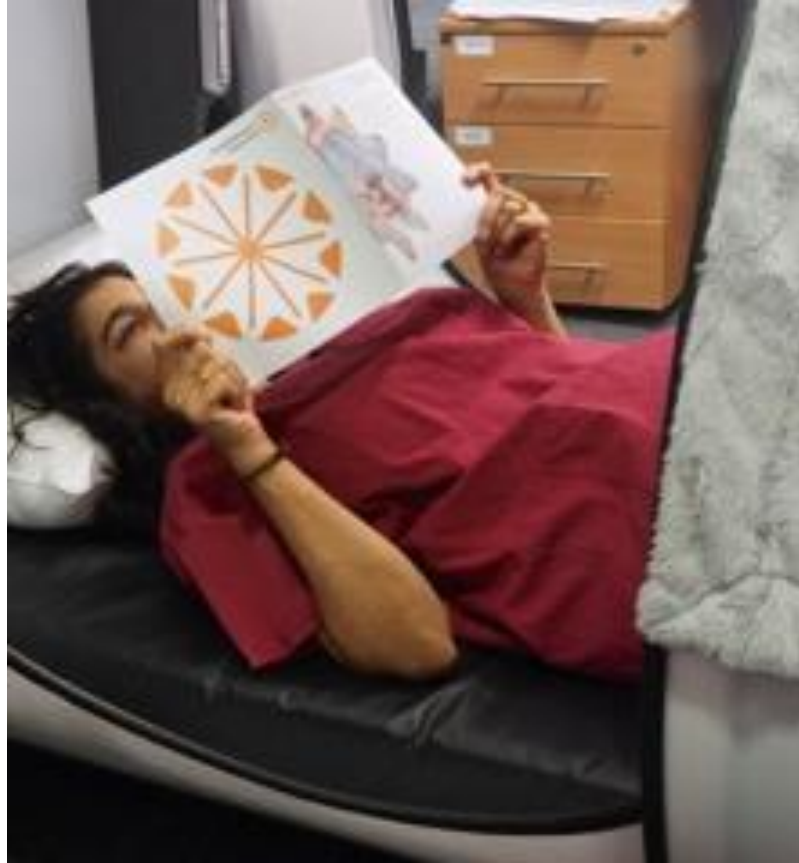
#FightFatigue



Nancy Redfern

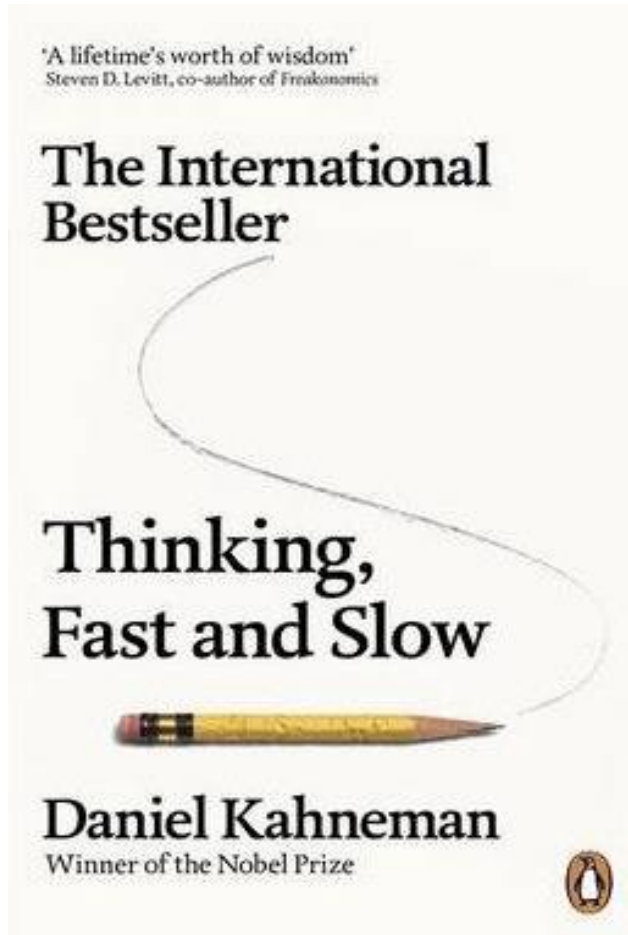
# Factsheets & Handover Tools





# Ideas for rest facilities

# Why do people drive when they are critically tired



## Brain works in 2 ways

- 'system 1' or automatic
  - quick,
  - little effort
  - no voluntary control
- 'system 2' or analytical
  - requires attention and effort
  - 'lazy' – only used when needed





# Priming

- Not under conscious control
- Words prime thoughts
- Thoughts /ideas influence action
- What is said to us affects the actions we take
- Can use this to encourage appropriate behaviours
  - ‘Have you had a power nap?’



*Suddenly alerted to being on the rumble strip and not sure how I'd got to that part of the motorway. I must have been asleep! Very scary. However no rooms to in sleep after shifts.*

# Fatigue Management

## Individuals

Naps  
Caffeine  
Good sleep habits  
Light therapy  
Healthy sleep

## Team & organisation

### Predictive

- Fatigue risk in staff
- Rotas

### Proactive

- Alertness tool
- Power naps
- Rest facilities
- Education
- Policy

### Reactive

- Adverse occurrence protocol
- Post shift facilities
- Priming
- Datix



# Fatigue Risk Management Strategy on the Labour Ward



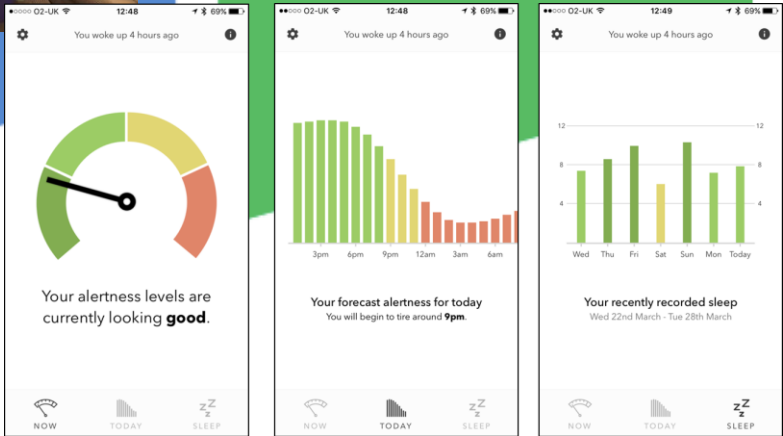
Predictive

Proactive

Reactive

- Alertness consideration
- Power naps & facilities
- Education

- Adverse occurrence tool
- Taxidermy



*'I do like the sleep app ... on nights shift it says how much more likely you are to have an accident. I now make sure I have a good rest before night shift.'*

*Very helpful project (Midwife)*

**'Amazing Piece of work – fully supportive'**

Head of Obstetrics

Nancy Redfern



# Fatigue – resources

## A RESTED HEALTHCARE PROFESSIONAL IS SAFER



- 1 Arrange cover of your duties
- 2 Consider a caffeinated drink before you rest
- 3 Find a quiet, dark room to lie down in
- 4 Set your alarm
- 5 Close your eyes
- 6 Just rest...\*

\* even if you can't sleep, resting is still beneficial



“The perfect nap: sleeping is a mix of art and science.”

*The Wall Street Journal. September 2013*

### 10 - 20 MIN NAP (IDEAL)

Early stages of non-rapid eye movement sleep. This is optimal to improve mental alertness and ensure you wake up feeling sharper.

### 30 - 40 MIN NAP

Restorative **BUT may result in sleep inertia (feeling groggy and slowed-down) upon waking** before improved mental alertness is apparent.

### 60 MIN NAP

Recall of facts and faces improves. It includes the deepest type of sleep **BUT you may feel groggy when you wake up.**

### 90 MIN NAP

This constitutes a full sleep cycle. Your memory will be greatly improved and you'll avoid feeling groggy **BUT it may impair your sleep post-shift.**

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[www.anaesthetists.org/fatigue](https://www.anaesthetists.org/fatigue)



# Person Based & Systems Based Human Factors

2 elements;

1. **person based** set of non-technical skills that underpin safe human performance

- communication,
- situational awareness
- decision-making
- leadership

2. **systems based** Identification of risk within a system and the development of interventions and strategies to eliminate, reduce or mitigate risk.



# Impact on F1 doctors of night shift fatigue

F1 doctors identify night shift fatigue as a contributor to:

Needle stick injuries  
Prescribing errors

Giving penicillin to a patient with a penicillin allergy  
Lack of empathy  
Leaving a patient unattended  
Leaving a patient with a leaking cannula  
Leaving miscarriage

- Current approaches are retrospective: the main problem with the current system is that we harm a patient
- key principles to learn from other industries that the health sector must incorporate in order to prevent harm
  - be proactive
  - seek out the problem/error to manifest itself, eliminate or control it before it results in harm

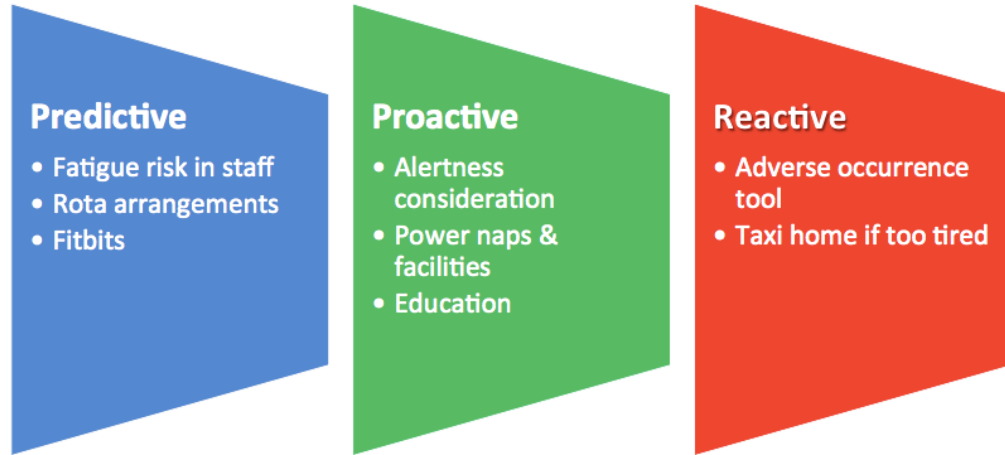
Spurgeon P, Flanagan H, Cooke M, Sujun M, Cross S and Rose Jarvis R  
Creating safer health systems: Lessons from other sectors and  
an account of an application in the Safer Clinical Systems programme



*System is safe until it's proven not to be  
Individual often blamed – really it's a systems problem*

# Changing attitudes

## Fatigue Risk Management Systems



### GMC 2017

'if the GMC collects data that says a doctor isn't coping, will that be used against them in the future?'

*We can't put it on the risk register; if we did, we'd have to do something about it*

CD & lead nurse

### GMC trainer & trainee survey 2019

- Rest facilities are available to me free of charge when working on-call, out of hours.
- In my current post, there is a mechanism for me to travel safely to and from work when working out-of-hours or long shifts.

# Key recommendation two

# Caring for Doctors

GMC Nov 2019

## Work conditions

## Caring for

To introduce UK-wide minimum standards for health...

- All healthcare employers should ensure access to nutritious food and sleep, access to rest facilities to support the BMA's Fatigue Guidelines.
- The lead professional body should ensure co-ordination of facilities to support the BMA's Fatigue Guidelines.
- Systems responsible for implementation should check that employers have implemented measures in all working environments.
- The GMC should work with partners via the insights and data obtained through their NTS to monitor and support implementation. Where issues are identified, the GMC should work with postgraduate deans, medical royal colleges and employers to ensure they are promptly and fairly addressed.

Places and time  
to rest and sleep  
& nutritious food





# Standards for Rest Facilities

What is available

## During a shift

### Green

Quiet, dark, private room with bed

### Amber

Private area with reclining chair, pull-out mattress or sofa

### Red

No or communal facilities

## After a shift

### Green

Quiet, dark private room with bed and bathroom facilities available for full duration of time between shifts

### Amber

Available for limited duration, poor quality facilities

### Red

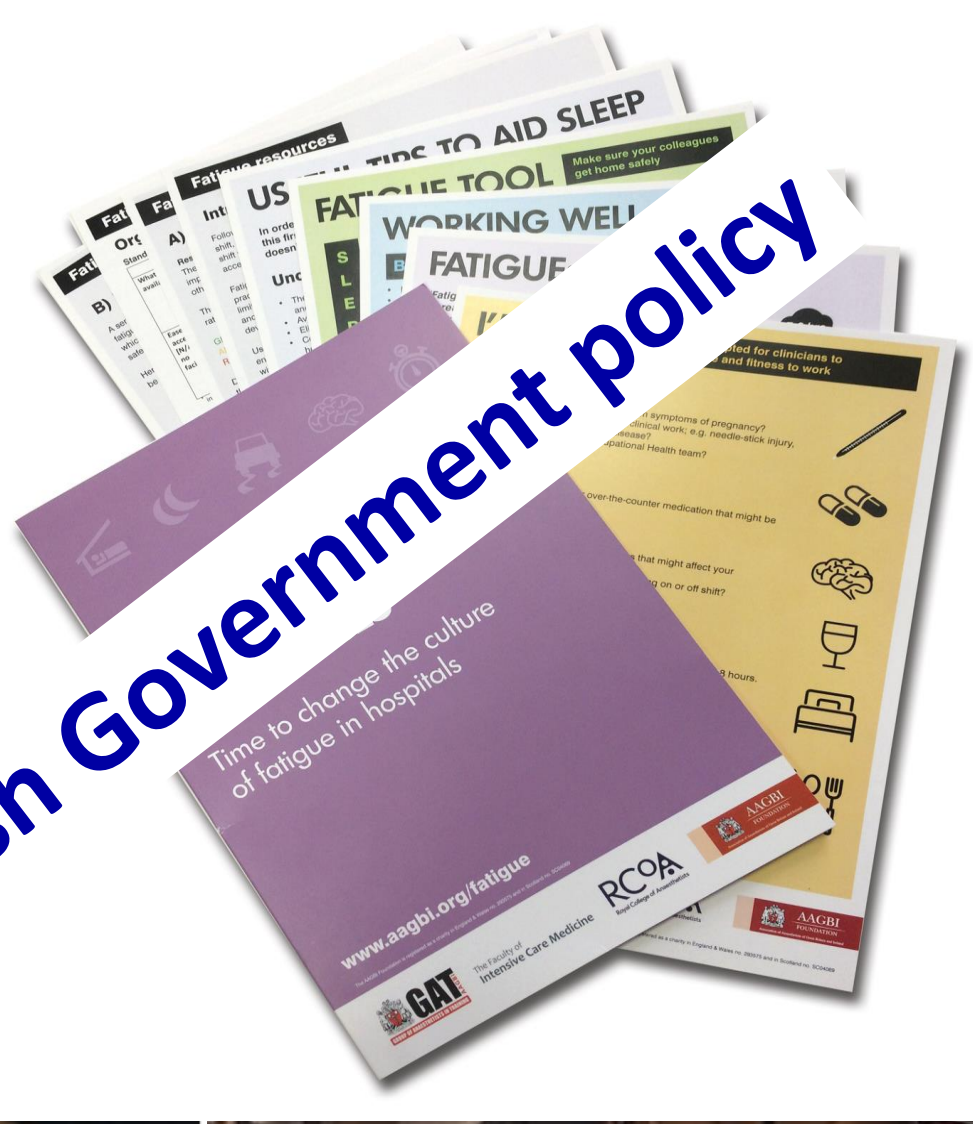
No facilities



#FightFatigue



# Scottish Government policy



# Fatigue – COVID-19

Google Scholar – *sleep disturbance healthcare workers covid-19* - 22,600 results (**0.18** sec)

The screenshot shows a search result for a clinical study. The title is "The anxiety levels, quality of sleep and life and problem-solving skills in healthcare workers employed in COVID-19 services". The authors listed are Sevda Korkmaz, Aslı Kazgan, Sevler Çekiç, Ayşe Sağmak Tartar, Hale Nur Balcı, and Murad Atmaca. The study is published in the Journal of Clinical Neuroscience, Volume 80, October 2020, Pages 131-136. The authors' affiliations are listed as follows: <sup>a</sup> Department of Psychiatry, Fırat University, Faculty of Medicine, Elazığ, Turkey; <sup>b</sup> Department of Psychiatry, Siverek State Hospital, Siverek, Turkey; <sup>c</sup> Department of Psychiatry, Tunceli State Hospital, Tunceli, Turkey; <sup>d</sup> Department of Infectious Diseases and Clinical Microbiology, Fırat University, Faculty of Medicine, Elazığ, Turkey. The image also includes a logo for the Association of Anaesthetists and a "Check for updates" button.

Original Article  
Journal of Clinical Neuroscience  
Volume 80, October 2020, Pages 131-136

Journal of Clinical Neuroscience  
Volume 80, October 2020, Pages 131-136

Check for updates

Clinical study

**Optimizing** The anxiety levels, quality of sleep and life and problem-solving skills in healthcare workers employed in COVID-19 services

Mandee Mamta

Sevda Korkmaz <sup>a</sup>, Aslı Kazgan <sup>b</sup>, Sevler Çekiç <sup>c</sup>, Ayşe Sağmak Tartar <sup>d</sup>, Hale Nur Balcı <sup>a</sup>, Murad Atmaca <sup>a</sup>

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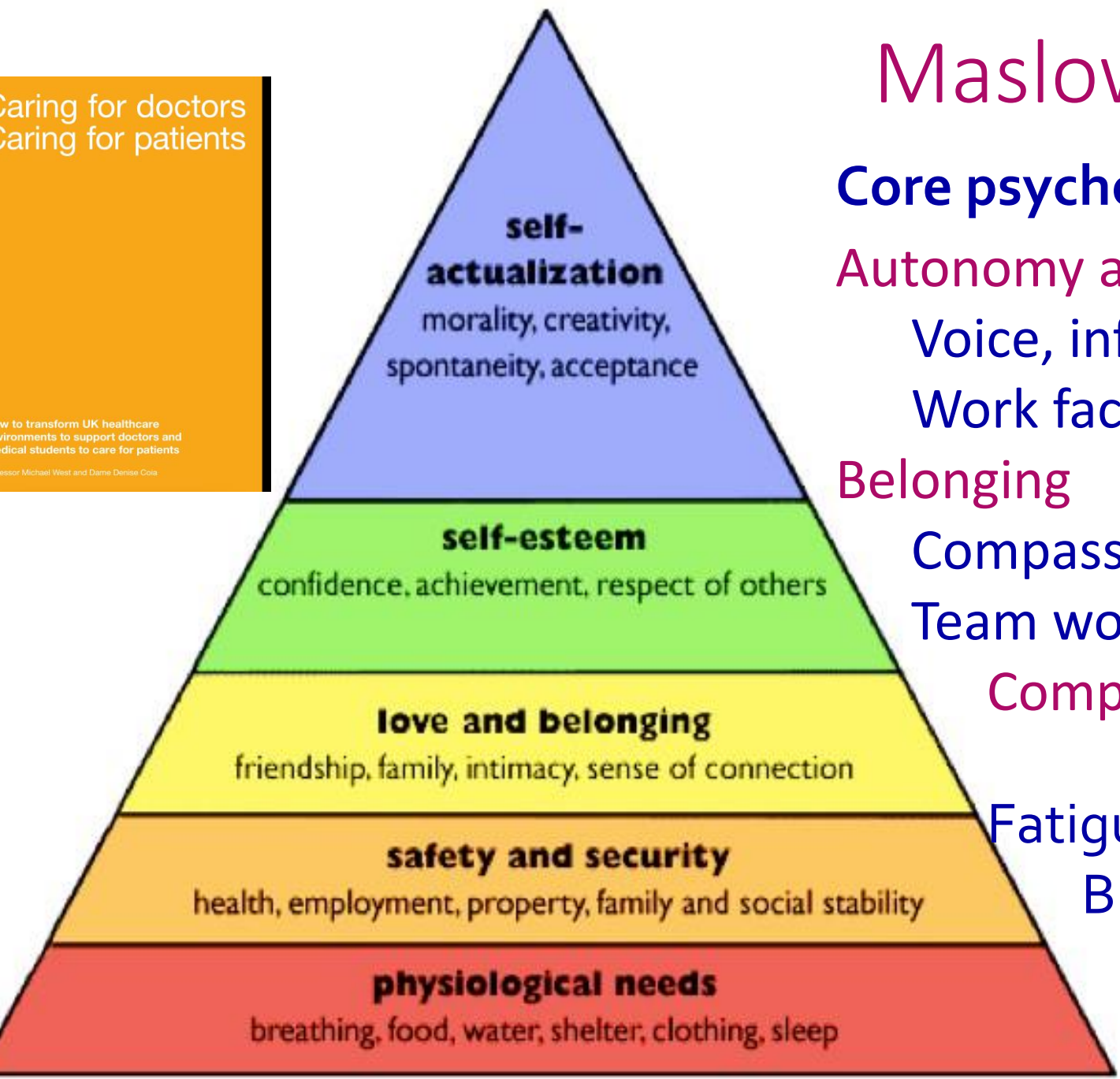
ía Arias



Caring for doctors  
Caring for patients

How to transform UK healthcare environments to support doctors and medical students to care for patients

Professor Michael West and Dame Denise Coia



# Maslow's hierarchy of needs

## Core psychological needs

### Autonomy and Control

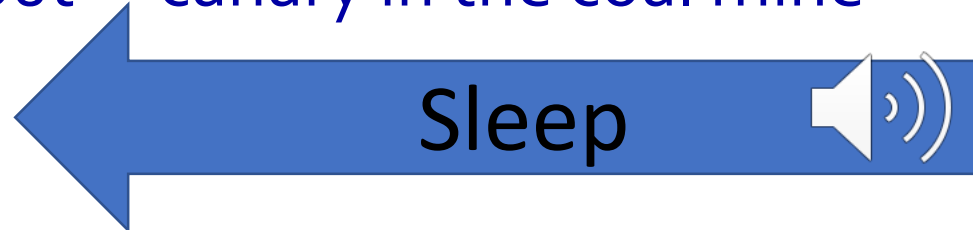
- Voice, influence and fairness
- Work facilities, schedules and rotas

### Belonging

- Compassionate/Collective Leadership
- Team working & Culture

### Competence Workload

- Fatigue and burnout – related but distinct
- Burnout – 'canary in the coal mine'



# Implementing change

- hospital rota-writers and senior night staff should be trained in in fatigue management
- Each team should develop strategies for fatigue management
- Senior managers should encourage power naps & provide quiet dark safe places to rest
- Fatigue levels and plans for rest should be discussed at handovers
- Perception of fatigue level should be formally assessed
- Effort should be made to limit activity out of hours
- Fatigue risk management should be on the risk register – datix
- Staff wellbeing should address good fatigue management – Covid-19



# Improving support for staff at night: Fighting Fatigue in staff

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#FightFatigue



# #FightFatigue



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Elena Florbett



Nancy Redfern



Mike Farquhar



Karin Poppenthal



Jeremy Downes



Andrew Klein



Russell Ampofo



Jaldeep Pandit



JP Lomas



Nicola Hoard



Rorqua McCrossan



Katherine Ferguson



Laura McDuffell



Daniel Wierland



Nicola Watson



Stephanie Adlington





