

Managing Fatigue as part of a safety culture

Nancy Redfern

Consultant Anaesthetist, Newcastle
Co-chair Joint fatigue working group
Association of Anaesthetists RCoA &
FICM



nancyredfern@hotmail.co.uk:
@nancy_redfern

David Dawson

Consultant Anaesthetist & Sleep
Physician
Bradford Teaching Hospitals NHS
Foundation Trust

dawson@dd99.com



Why are we talking about fatigue?

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

Dr Ronak Patel, 33, tried to get to his wife Helen, 33, on his phone when he ploughed into a tree.



BY SAM WEBB
11:20, 12 JUL 2016

UPDATED 12:51, 12 JUL 2016



BY STEPHEN STEWART
00:00, 16 OCT 2011

UPDA



NEWSROOM / 23 hours
Second nurse killed in crash
their way home

NEWS

Worked to death - exhausted young nurse killed after veers off road and crashes
after gruelling night shift

...A YOUNG doctor...
...blame...



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

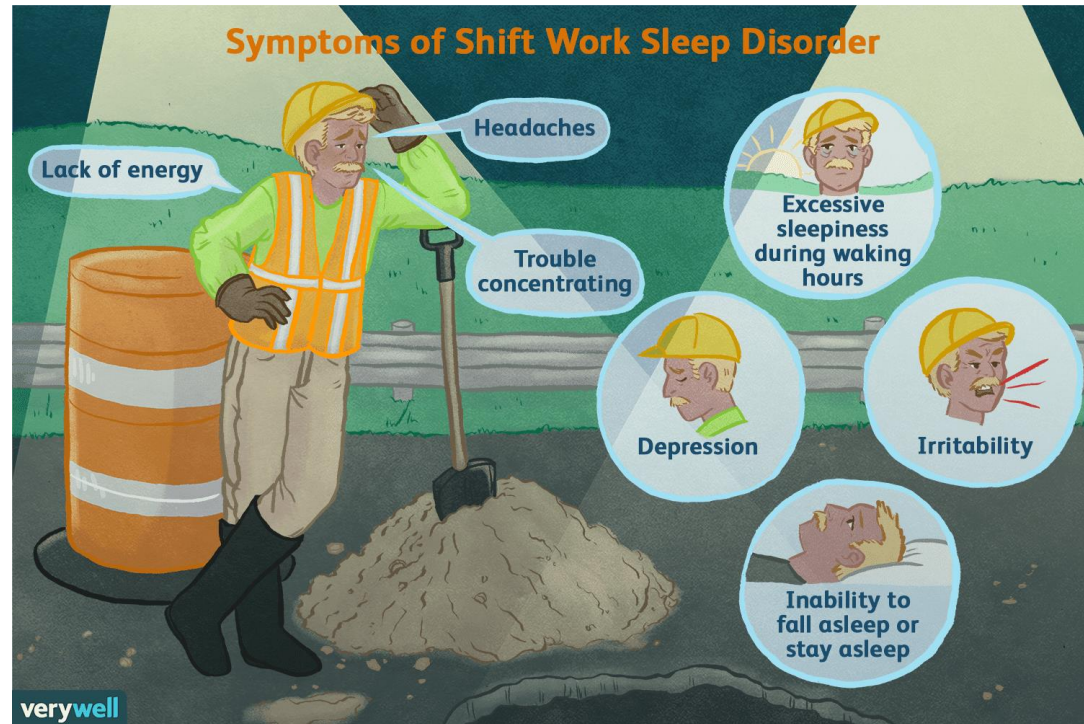


Fatigue in trainee & consultant Anaesthetists

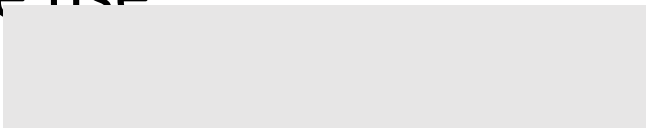
	Trainees	Consultants	Nurses/Mws
Car accident or near miss post nights	57%	45%	45%
Commute for >30mins each way	60%		73%
Commute by car or motorbike	75%	79%	78%
Too tired to drive	84%	60%	49%
Access to on-shift rest facilities	64%	34%	
Fatigue adversely affects			
Physical health	73%	52%	
Psychological wellbeing	71%	63%	
Personal relationships/family	68%	72%	

Shift work sleep disorder

Shift work sleep disorder (SWSD) is a circadian rhythm sleep disorder that can affect people who work non traditional hours. It causes issues with falling asleep, staying asleep and sleepiness at unwanted times. It's treatable with lifestyle changes, light therapy and/or medication.

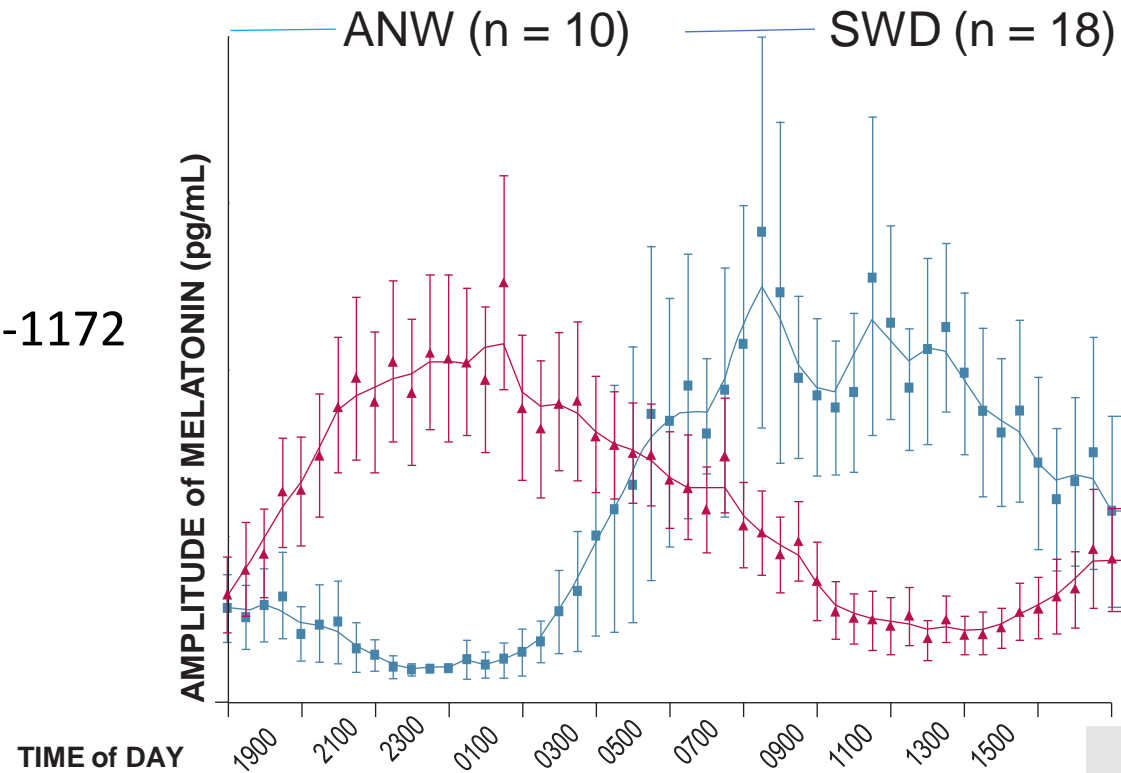


DIAGNOSTIC CRITERIA FOR SHIFT WORK SLEEP DISORDER

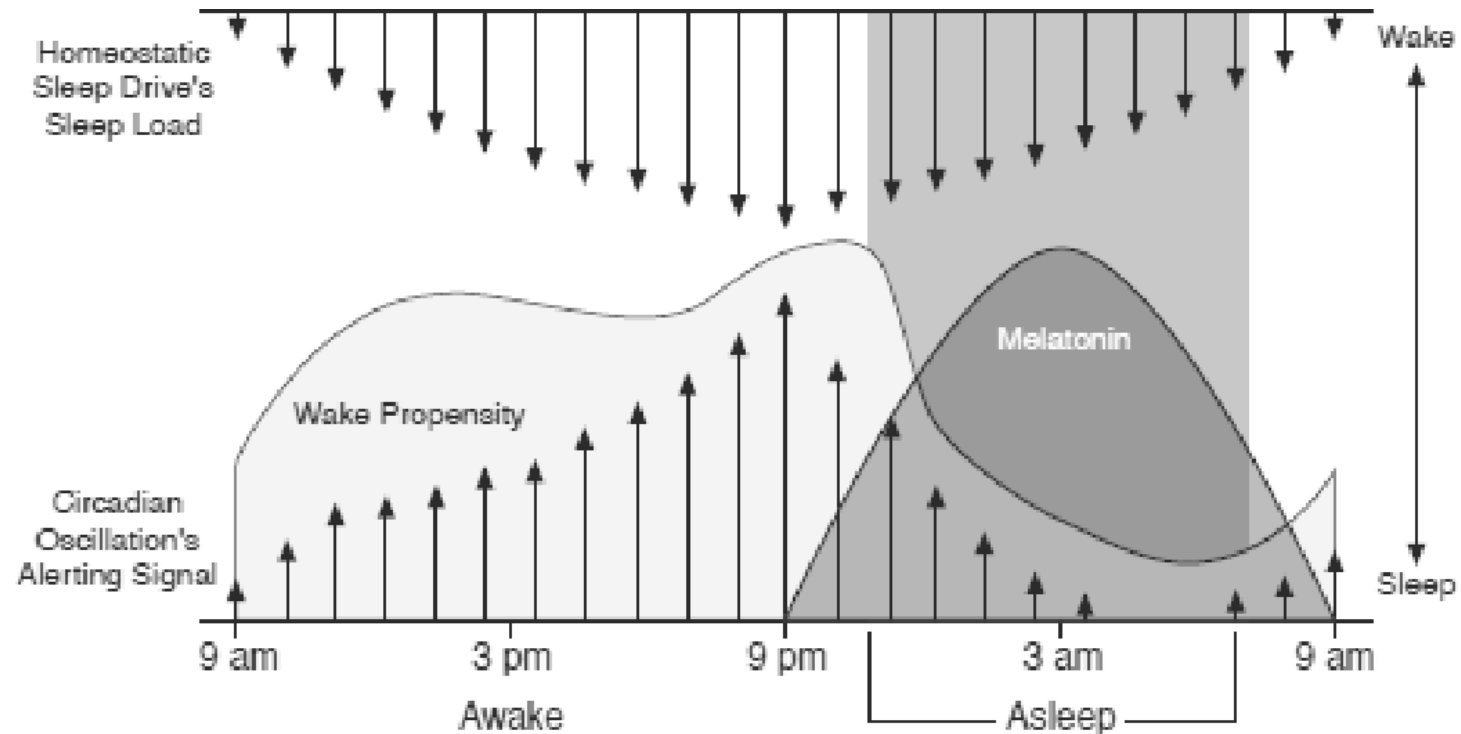
- Insomnia and/or excessive sleepiness is present and temporally associated with a work schedule that regularly overlaps the usual time for sleep
 - Symptoms are associated with the shift work schedule of duration more than 1 month
 - Sleep log or actigraphy monitoring for 7 days demonstrates circadian and sleep-time misalignment
 - Symptoms are not better explained by another medical, neurological, or mental disorder, medication use or substance use
- 

MELATONIN PROFILES IN SHIFT WORKERS WITH AND WITHOUT SHIFT WORK SLEEP DISORDER

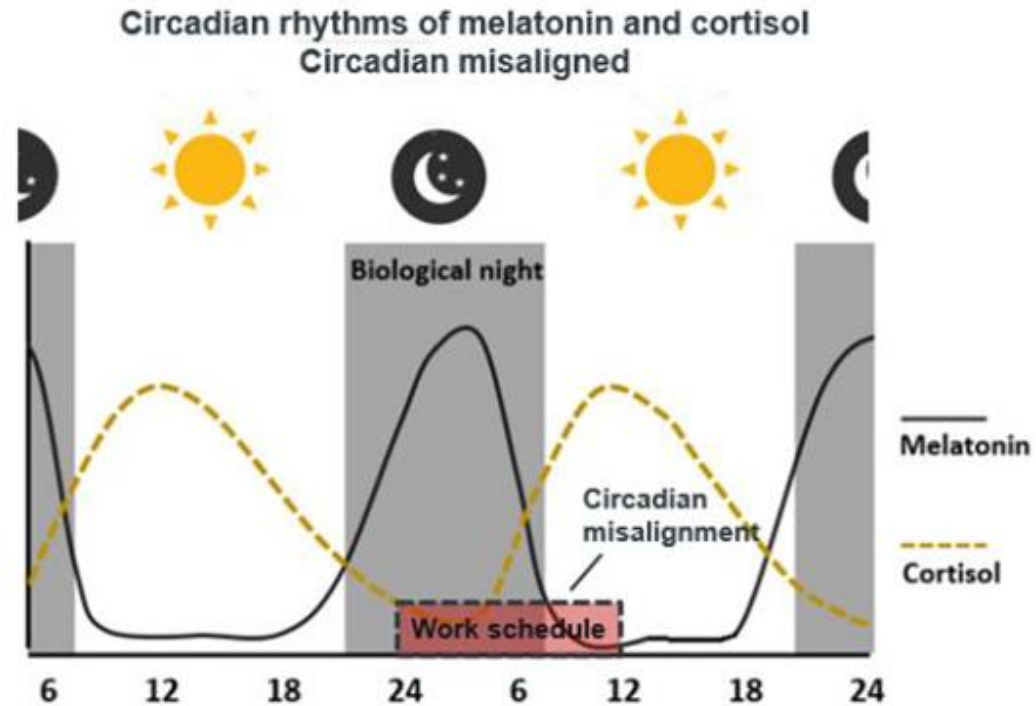
CHEST 2017; 151(5):1156-1172



THE TWO PROCESS MODEL

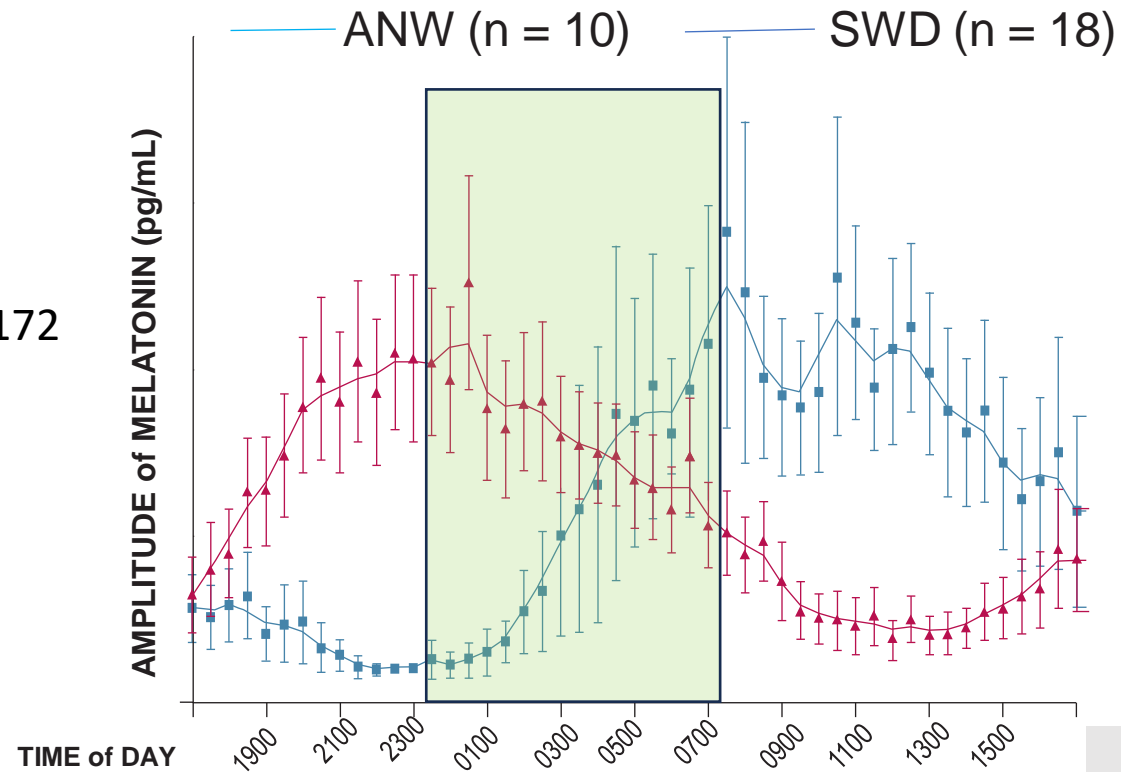


CIRCADIAN MISALIGNMENT



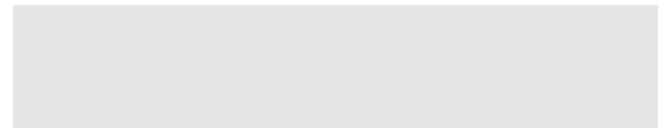
MELATONIN PROFILES IN SHIFT WORKERS WITH AND WITHOUT SHIFT WORK SLEEP DISORDER

CHEST 2017; 151(5):1156-1172




Shift work sleep disorder

- 20% population are not able to adjust their circadian rhythm
- 30 minute nap before shift
- Bright light therapy before shift
- Melatonin in the morning
- Change job



What's the problem?

Patients



Empathy
Logical reasoning
Vigilance
Flexibility
Psychomotor skills
Ability to learn & retain
information
Mood

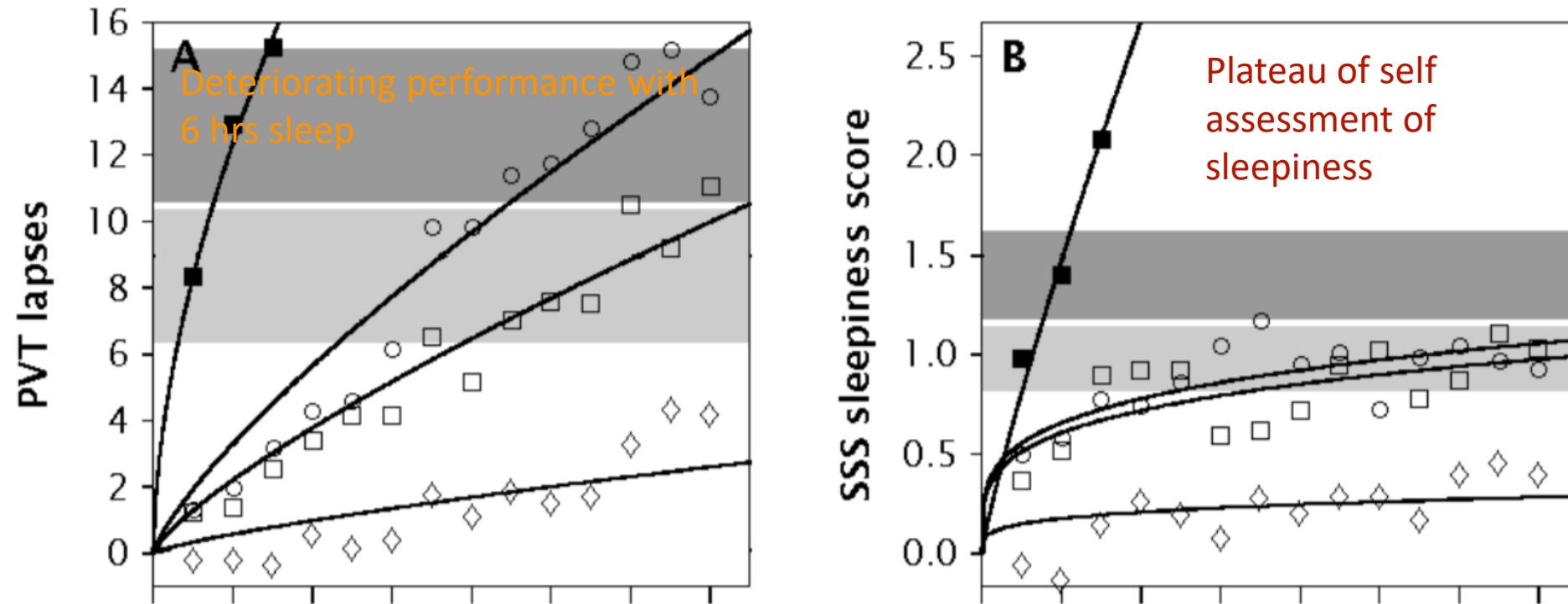
Adverse effects

Self

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

#FightFatigue

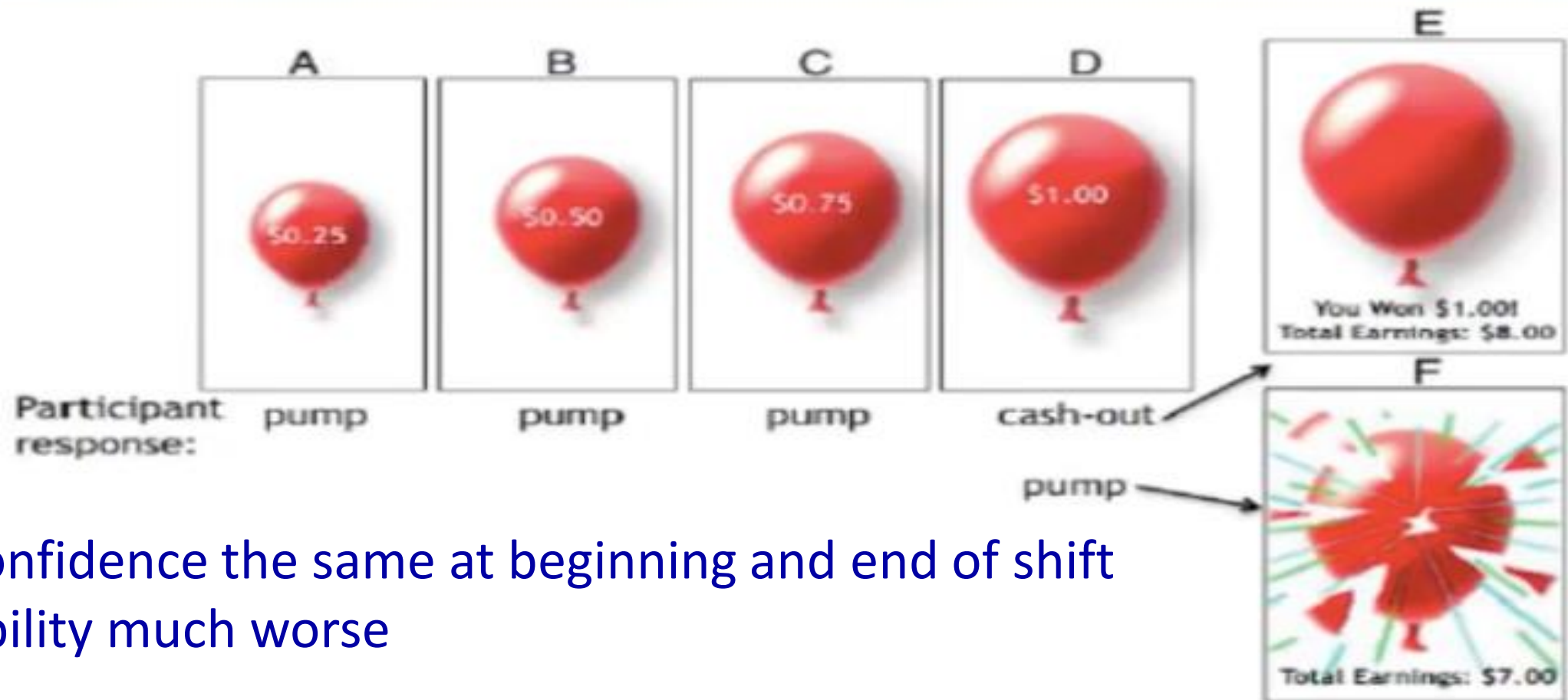
Self assessment and sleep deprivation



How does sleep deprivation during night shifts affect junior doctors' cognitive performance? A pilot study.

Maria Vittoria Capanna¹, Dr Ruihua Hou¹, Dr Matt Gamer², Dr Catherine Hill^{1,3}

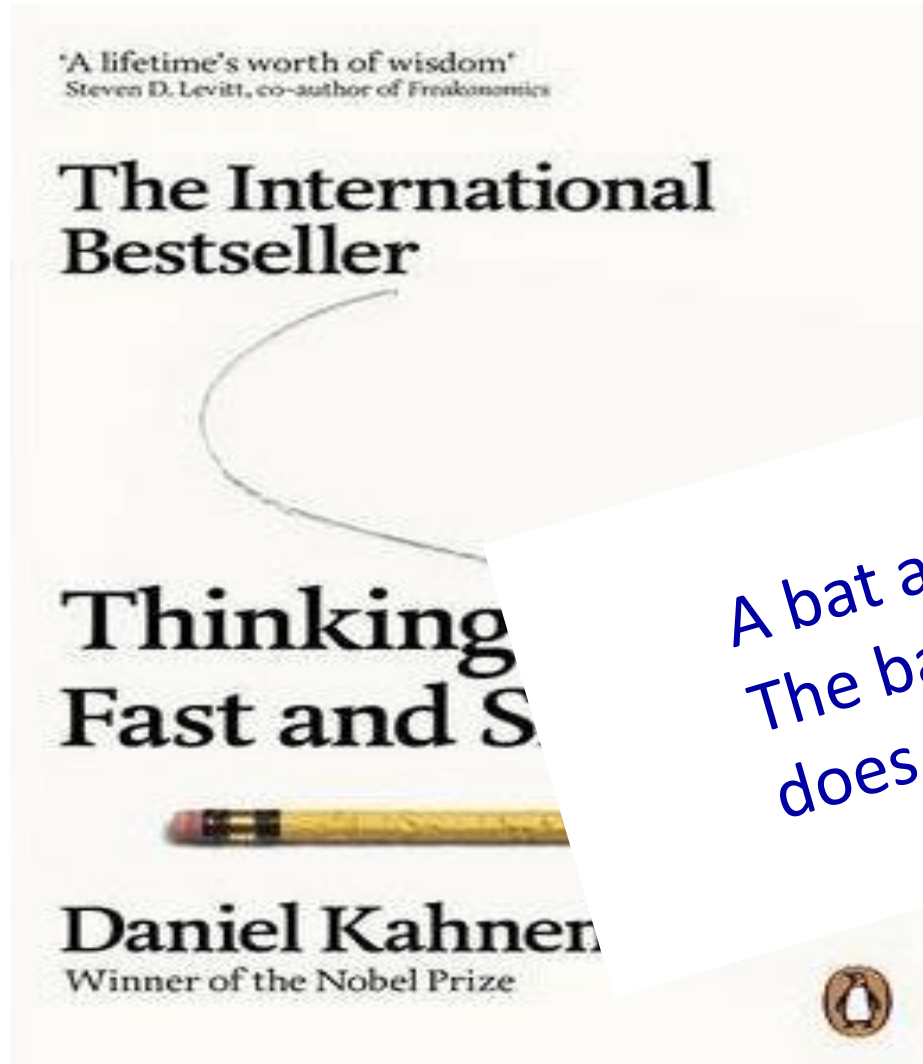
¹Faculty of Medicine, ²Department of Psychology, University of Southampton and ³Southampton Children's Hospital UK.



Confidence the same at beginning and end of shift
Ability much worse

Thinking fast & Slow

Daniel Kahneman



Brain works in 2 ways

- 'system 1' or automatic
 - quick

A bat and ball cost £1.10 in total.
The bat costs £1 more than the ball. How much
does the ball cost?

System 2: slow and effort
, – only used when needed

Greatest risk



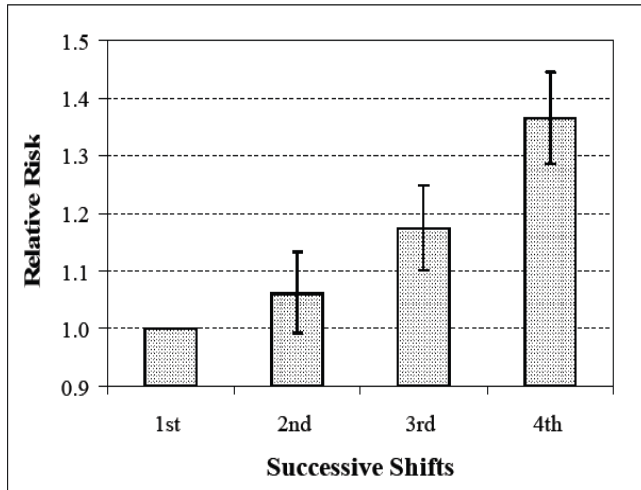
Significant sleep
loss in combination
with circadian
rhythm disturbance

4 or more night
shifts in a row



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

**Example of a relative risk trend –
successive night shifts**



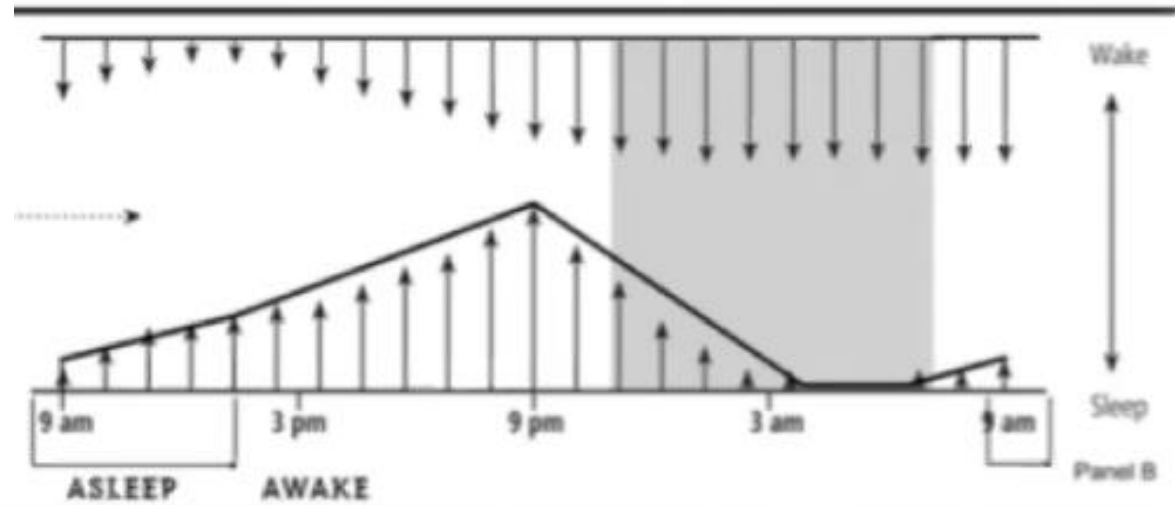
The power of a nap

Night shift without a nap

Homeostatic
sleep pressure

Wake propensity

Circadian
Alerting signal

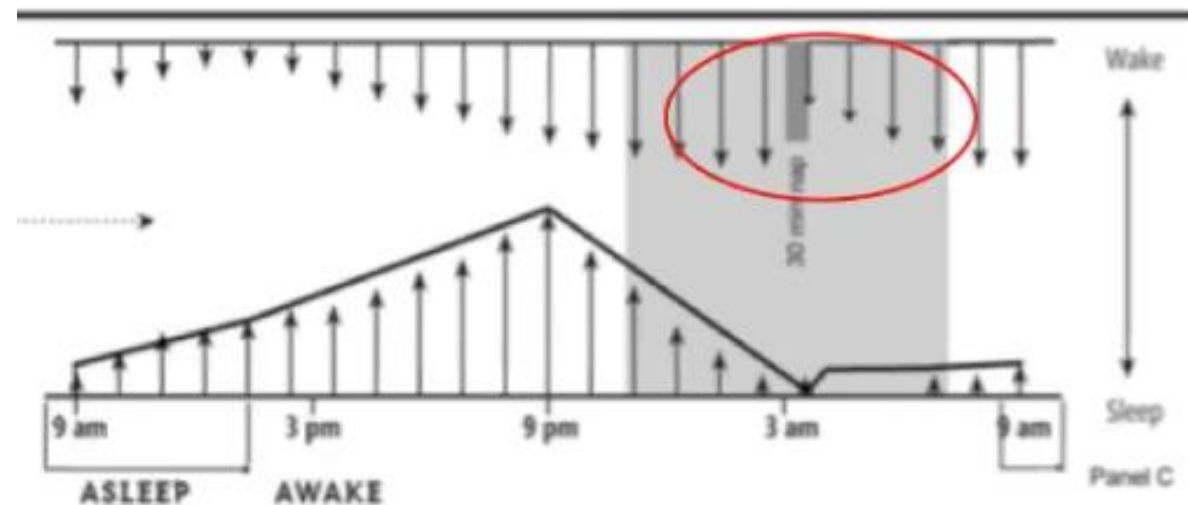


Night shift with a nap

Homeostatic
sleep pressure

Wake propensity

Circadian
Alerting signal



Ceri Sutherland

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.

The #FightFatigue campaign

To change the culture around fatigue of both
individuals and organisations



#FightFatigue

Fatigue resources

Organisational responsibilities

Standards for rest facilities

What is available	During a shift	After a shift
Green	Shift, dusk, private room with bed	Green
Yellow	Private area with reclining chair, pillow, mat or sofa bed	Yellow
Red	No or commercial facilities	Red
Green	Adequate number of immediately available rooms	Green
Yellow	Adequate number of rooms available within 15 mins of request	Yellow
Red	Restricted access or limited availability	Red
	including location appropriate for level of personal clinical exposure	

Ratings for rest culture

Rating	Positive institutional attitude towards rest; fairer assessments and introduction to rest facilities included in induction	Negative institutional attitude towards rest; fairer assessments and introduction to rest facilities included in induction
Green	Green	Red
Yellow	Yellow	Yellow
Red	Red	Red

Individual responsibilities

Knowledge	At work	At home
Behaviour	<ul style="list-style-type: none"> Understand national guidelines on fatigue Be aware of the location of rest facilities and how to access them Where possible, use breaks as night shifts to nap Communicate colleagues' fatigue during the shift Share resources and enable colleagues to do the same Establish and enable a positive personal attitude 	<ul style="list-style-type: none"> Understand good sleep hygiene Understand need to manage shift work
Attitudes	<ul style="list-style-type: none"> Take a positive attitude towards rest Act as a role model by supporting colleagues to rest as work Attend and engage with education sessions on fatigue 	<ul style="list-style-type: none"> Practice good sleep hygiene Use time off before a night shift or on-call duty responsibility to prepare for work Use time on when a night shift or on-call duty responsibility to rest and recover Demonstrate a positive personal attitude towards rest Be mindful of fatigue if taking on additional home work

Association of Anaesthetists

The Faculty of Intensive Care Medicine

WORK Before n

Make sure you are up to date with your CPD




FATIGUE: THE FACTS

"Fatigue is the subjective feeling of the need to sleep, an increased physiological drive to fall asleep and a state of decreased alertness."¹

- 1 Restorative sleep**
Most adults require 7-8 hours of uninterrupted restorative sleep per night.
- 2 Sleep debt**
A sleep debt occurs after restricted sleep for 2 or more nights.
- 3 Sleep restriction**
Moderate sleep restriction to 6 hours per night for 2 weeks impairs performance equivalent to one night of complete sleep deprivation.
- 4 Wakefulness**
Cognitive function is impaired after 16-18 hours of wakefulness.
- 5 Dangerous driving**
20 hours of wakefulness can cause impaired performance equivalent to being over the UK legal driving limit for alcohol.
- 6 Age**
Sleep patterns are altered and the ability to recover from lack of sleep is reduced by age.
- 7 Microsleeps**
Fatigue induces sleep lapses or microsleeps, which are spontaneous, uncontrolled and often go unrecognised.
- 8 Recovery**
2 consecutive nights of restorative sleep are needed to recover from sleep loss.

The AAGBI guideline Fatigue and Anaesthesia 2014 includes information about good practice for individuals and departments about how they can mitigate the effects of fatigue.²

PRESSURE
¹ Association of Anaesthetists of Great Britain and Ireland. Fatigue and Anaesthesia 2014. London: AAGBI; 2014. ISBN 978-0-955355-00-0

 Association of Anaesthetists

The Faculty of Intensive Medicine

RCOA

USEFUL TIPS TO AID SLEEP

In order for sleep to occur there needs to be deep relaxation. Focus on this first. Deep relaxation is very restorative. Sleep should follow; but if it doesn't, don't worry. Here are some tips that might help improve your sleep.

Unchallenge your brain

- The absence of light stimulates melatonin release; invest in an eye mask and blackout blinds or curtains.
- Use any electronic devices for 30-60 min before bed.
- Avoidance of caffeine around with bedtime.
- Consider listening to a podcast or hypnosis audio on a gentle volume to help you fall asleep.

Have a hot bath

- The drop in temperature the body undergoes after a hot bath or shower aids the onset of sleep.
- Bath soaks encourage peripheral vasodilation and can help optimise body temperature. Keep your room cool and your bed warm.

Sleep in a way that works for you

Believe the resilience of artificial light, natural sleep was in two distinct phases, with a break of several hours in between. Not everyone manages to sleep for a solid 8 hours; it's what a night job does to most.

Be prepared

Here are some suggestions to help reduce anxiety and cognitive load:

- Facilitating relaxation.
- Curtain relaxation.
- Overhead a yoga nidra or meditation audiotape as you try.
- Write a to do list rather than mentally thinking of one as you try to sleep.
- Accept help with tasks you can delegate.

Stress

- Are there work or life performance?
- Do you need to spend?
- Does the team need to?

Alcohol

- Could there still be alcohol in your system?
- Consider your consumption!

Fatigue

- How much sleep per night.
- More nights.
- Needs implies need deprivation.
- Wellness.
- Once alcohol.
- Lack of sleep in.

Association of Anaesthetists
The Faculty of Intensive Care Medicine

I'M SAFE

Illness

- Have you been unwell or suffering from symptoms of pregnancy?
- Has your health been put at risk by clinical work, e.g. needle-stick injury, or risk of exposure to infectious disease?
- Do you need to talk to the Occupational Health team?

Medication

- Are you taking prescribed or over-the-counter medication that might be affecting you?

Stress

- Are there work or non-work related factors that might affect your performance?
- Do you need to speak to someone before going on or off shift?
- Does the team need to discuss/ give feedback?

Alcohol

- Could there still be alcohol in your system?
- Consider your consumption in the last 24 hours, not just the last 8 hours

Fatigue

- Have you had restricted sleep* in the last 2 weeks?
- Do you have a sleep diary?
- Have you had trouble sleeping consistently or keeping your eyes open?
- Would a short sleep make you safer?
- *Short sleep fatigue: the first power to rest extension about three

Eating

- Have you had something to eat or drink? Do you need to?

Association of Anaesthetists

The Faculty of Intensive Care Medicine

RCOA
knowledge of Anaesthetists

www.anaesthetists.org/fatigue

Please appreciate a regular bus

If you are in any doubt as to when fatigue has started, please contact the Trust's recommendation

Association of Anaesthetists

Feeling more alert. Driving? Train, too.

A RESTED DOCTOR IS SAFER

- 1 Arrange sleep cover
- 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

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 focus 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-nap.

"The perfect nap: sleeping is a mix of art and science."
— The New York Times, January, September 2015



ON-SHIFT REST FACILITIES

The on-shift rest facilities available are:

Location, keys, details of access codes:

Upkeep of the facilities is the responsibility of:

Please appraise both your own fatigue levels and those of your colleagues on a regular basis.

If you are in any doubt as to your ability to drive home, please do NOT take the risk with your life and that of others. Remember that driving when fatigued has similar physiological/legal consequences to drinking when drunk.

POST-SHIFT REST FACILITIES

The post-shift rest facilities available are:

Instructions for access, time limits for use:

Upkeep of the facilities is the responsibility of:

The Trust's recommended taxi number is:

Association of Anaesthetists
The Faculty of Intensive Care Medicine
RCoA Royal College of Anaesthetists

www.aanaesthetists.org/intjgue

RCOA
Royal College of Anaesthetists

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 tea-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. Calorise on nights DO count; they contribute to the adverse health effects of night working.
- Breakfasts are essential. Eat a meal to cover each other for these.
- A 15-20 min nap can significantly improve alertness.
- Longer naps may lead to sleep inertia.
- Be vigilant for the 04:00 drop: your lowest physiological point.
- Work as a team to check observations and be aware of the 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 nights.
- Use your housemates that you need to sleep.

Recovery after nights

- Have a short sleep in the morning and then get up.
- Don't go to bed at your usual time; avoid a long lie in the morning.
- You'll need at least 2 normal nights sleep to reset your sleep.

Association of Anaesthetists

The Faculty of Intensive Care Medicine

The Faculty of Intensive Care

FATIGUE TOOL

SLEPT

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 feel **TIRE**D? 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 then driving? Train, taxi, bus, train, 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 Training Committee and the Fatigue Working Group 2017

Association of Anaesthetists
The Faculty of Intensive Care Medicine

RCOA
Royal College of Anaesthetists
www.anaesthetists.org/fatigue

Fatigue

Have you had trouble sleeping* in the last 2 weeks?
Have you had a sleep disorder?
Would a short sleep make you suffer?
Please see Fatigue: the facts poster for more information about these.

Eating

Have you had something to eat or drink? Do you need it?

Association of Anaesthetists
The Faculty of Intensive Care Medicine
www.anaesthetists.org/fatigue

<https://anaesthetists.org/Home/Wellbeing-support/Fatigue/-Fight-Fatigue-download-our-information-packs>



Standards for rest facilities

During a shift	After a shift
Quiet, dark, private room with bed	Quiet, dark, private room including bed and bathroom facilities available for full duration of time between shifts
Private area with reclining chair, pull out mattress or sofa	Available for limited duration, poor quality facilities
No or communal rest facilities	No facilities

Fatigue Management

Individuals

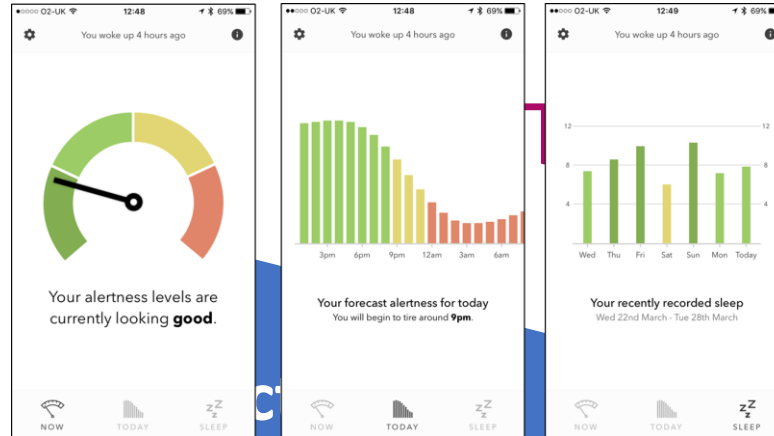
Naps

Caffeine

Good sleep habits

Light therapy

Healthy sleep



- Fatigue risk in staff
- Rotas



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

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

'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)

Our experience

Potential actions

- Power naps
- Discuss tiredness at ward rounds/team briefings
- Self-rostering
- Change medication timing [1 am & 7 am]
- Minimising nighttime work
- Double checking during circadian nadir
- Involving patients

Information & facilities

- Education
- Rest facilities



Our experience

Information & facilities

- Education
- Rest facilities

Organisational culture

- Standards
- Expectations/
Standard processes
- Data collection
- Reporting systems
- Sanctions

Potential actions

- Power naps
- Discuss tiredness at ward rounds/team briefings
- Self-rostering
- Change medication timing [1 am & 7 am]
- Minimising work done overnight
- Double checking during circadian nadir
- Involving patients

Changing the culture



Staff Fatigue Incidents

Fatigue Incidents by Incident Date



Date

Date

01/04/2022

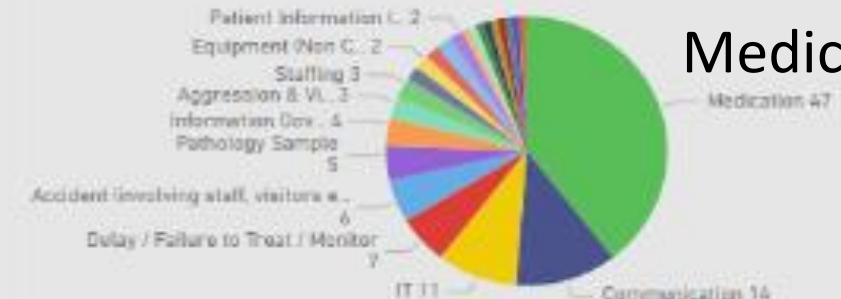
31/03/2024



Fatigue Incidents by Clinical Board / Directorate



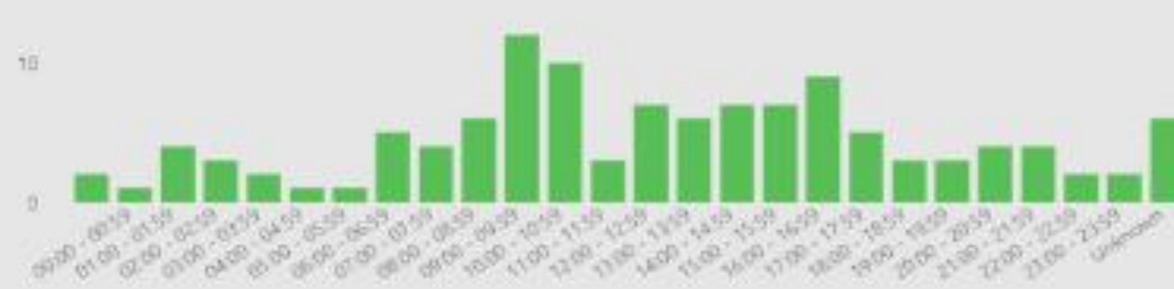
Fatigue Incidents by Category



Medication 47

Communication 14

Fatigue Incidents by Time band



Fatigue Incidents by Severity



National perspective

HSIB March 2023

0 -1 year

Fatigue data collection to understand link to patient safety, scale of risk and economic impact

Add to all health and social care risk registers

National leadership around fatigue risk management and awareness

Increase knowledge of FRMS from healthcare research and other industries

Recognise through NHS workforce plan

1-5 years

Embed evidence based fatigue knowledge within local and national policies and guidelines

Increase maturity of fatigue data reporting and culture to investigate or raise fatigue as an issue

Extend current healthcare research and implementation of FRMS

Clarify lines of accountability and responsibilities for risk

Fund small seed projects to manage fatigue and communicate impact on staff to wider community

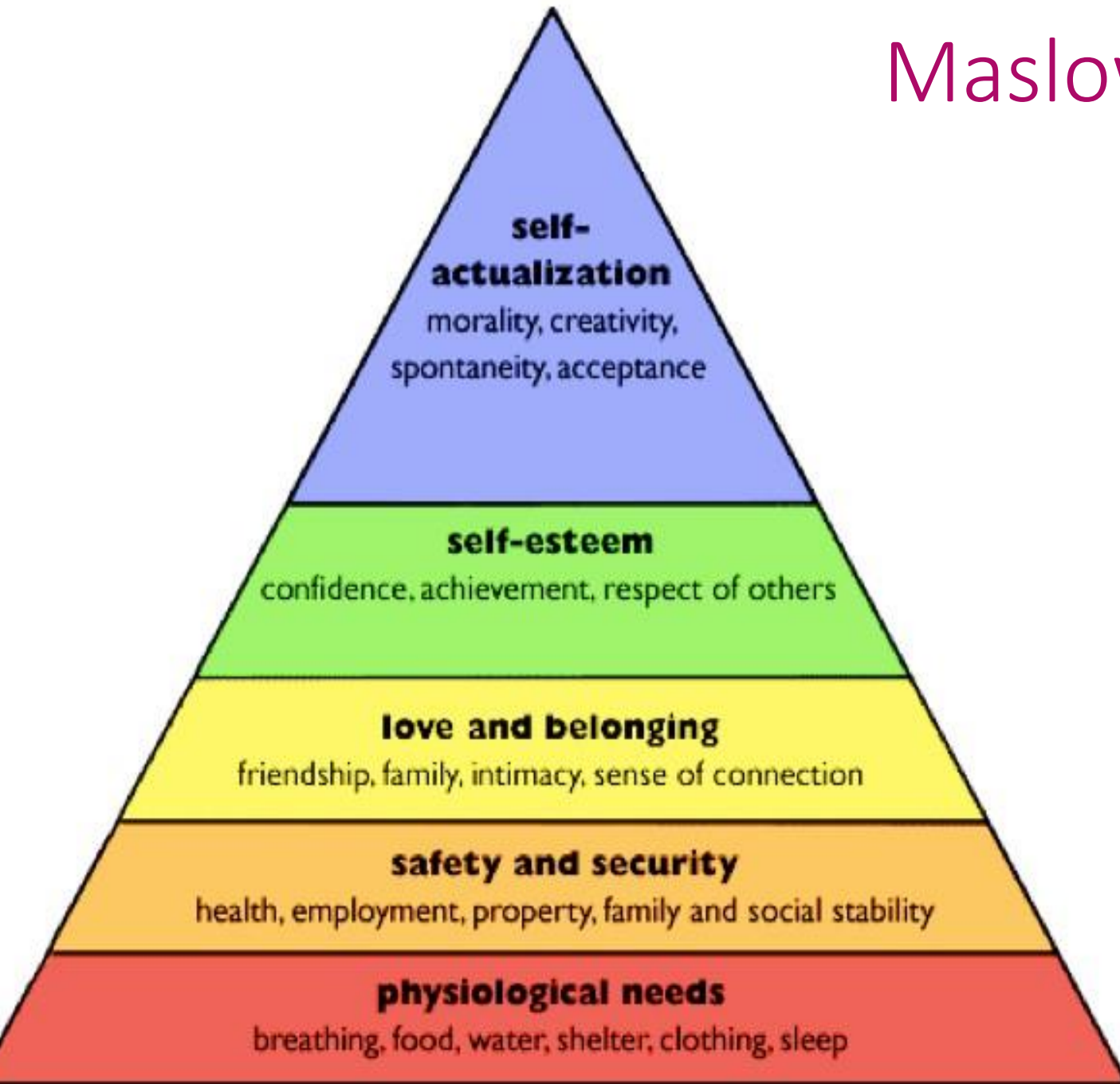
#FightFatigue



Scottish Government policy



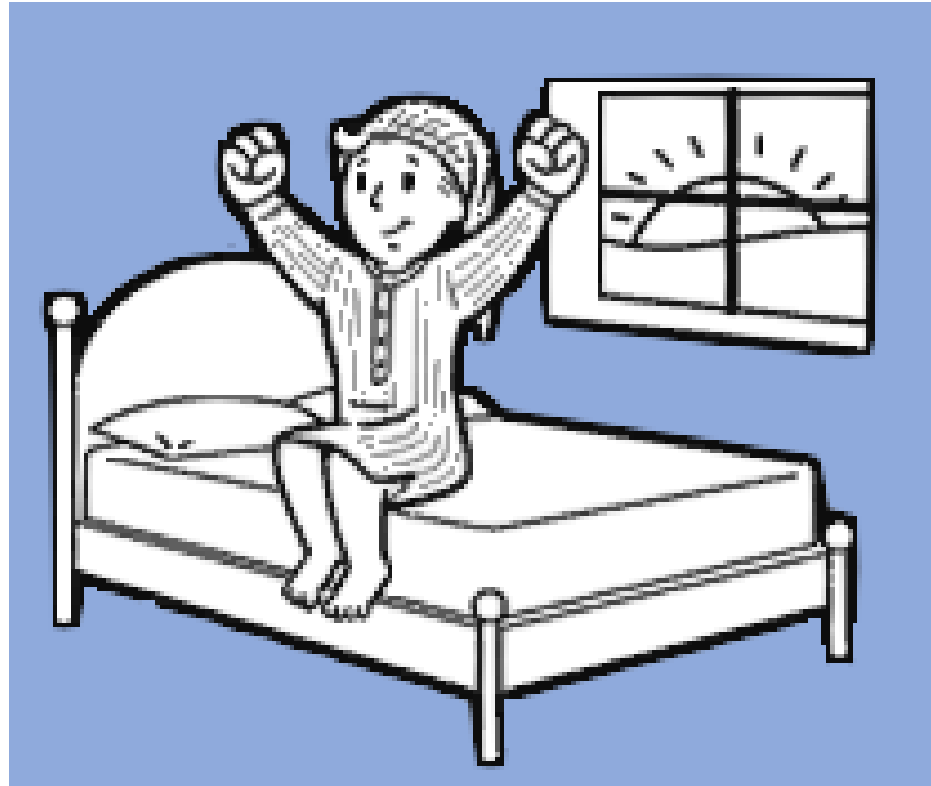
Maslow's hierarchy of needs







Questions



Types of fatigue



Sleep deprivation
Sleep restriction



Decision fatigue
Excessive workload

Quantity / Quality

Shift patterns / on-call
working

“deteriorating quality of decisions after a long period of decision making”

At the end of a clinic

GPs more likely to prescribe antibiotics

Orthopaedic surgeons 33% less likely to schedule patients for surgery

Nurses less likely to refer a patient to another professional

What can we do? Power naps



- Studies done on pilots show that short **naps** overnight **prevent microsleeps** (Graeber et al, Cockpit napping, ICAO journal, 1990)
- Routinely practiced by air crew on long haul flights – nap schedule
- Short nap – 20 mins (but need 15 mins to fall asleep)
- Longer naps may result in sleep inertia
- If taken in the early part of the night – most effective at preventing microsleeps in later part of night [Dinges & Rosekind evidence from pilots]
- Caffeinated naps – caffeine will be taking effect as you wake from the nap
- Do not prevent the effects of sleep deprivation on emotional stability, complex reasoning, decision-making or learning