Notes for the Shift Worker

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Do genetics determine "larks" or "owls"? Practical implications for shiftworkers

A recent study, published in the journal *Sleep*, conducted by UK and Dutch researchers suggests a genetic difference may be responsible for determining whether we are "larks" or "owls".

Larks go to bed and get up early.

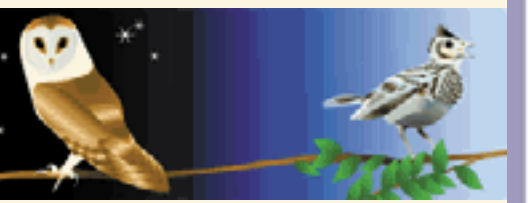
Owls go to bed late and find it hard to rise before midday.

The study involved nearly 500 people who had completed questionnaires about their sleep patterns identifying themselves as owls, larks or intermediate sleepers.

Researchers took samples from the cheeks of each of these people and analysed their DNA and compared the results from the DNA tests to those from the questionnaires.

The lead author of the study noted that the preference for sleeping late or retiring early is a complex behavioural trait that is governed by more than a single gene, in fact there are at least ten "clock genes" found in humans.

While the prospect of genetic manipulation may be potentially possible (if controversial) it is more likely that the findings of the genetic studies may be applied to advise people on whether they should be doing shiftwork or how they can best adjust their behaviour and make lifestyle choices.



Circadian rhythm and disease

The study of how the time of day affects the body's functions, termed 'chronobiology', is attracting increasing interest.

Doctors have long sensed that many diseases actually do get worse at night and science has begun to confirm this impression.

For people with asthma, medication taken in the afternoon or evening will often control the disease better than the same pills taken in the morning. Afternoon ingestion means that the drugs will peak in the bloodstream at night, when they are needed the most.

The study of circadian patterns of disease is in its infancy and not yet incorporated into medical practice with most doctors and pharmacologists unaware of these patterns. For some medical conditions researchers have yet to make much sense of the cycles they uncover.

Experts suggest that even if the daily cycles of many diseases are not yet fully understood patients should keep track of their own daily patterns in the hope that their treatments can be customised accordingly.

It is possible to envision a day when hospitals will be attuned to circadian cycles of disease. For example, asthma testing would take place in the middle of the night for the most telling results and stress tests for heart disease would be conducted first thing in the morning.

Cardiac patients would have life threatening clots in their coronary arteries dissolved in the late afternoon when the body's clotting system is at its weakest.

All medications would be dispensed in sync with the diseases they fight.

Restricting intern working hours reduces medical errors

In a pioneering experiment Harvard researchers have found that limiting work periods to a maximum of 24 hours and restricting work weeks to 80 hours resulted in significantly fewer patient medical errors than for interns who worked longer, more traditional shifts and weeks with more work hours.

Hardly ground-breaking research, however, Brigham and Worker's Hospital in Boston have implemented a new policy based on this research that regulates the shifts of first year interns by restricting:

- work to 80 hours per week
- shifts to 24 hours or less
- assignments so that after 18 hours of continuous work they cannot write orders for patient case activities.

With Australian research demonstrating that a person awake 17 hours or longer has a sleep deprivation equivalent to a 0.05 blood-alcohol level one can only speculate how many more patients might be spared medical errors if the new regulations limited interns to 12 hours on shift and a maximum of 60 hours per week.

Drivers warned about the dangers of driving tired

The stark dangers of driving tired were highlighted in new research recently published by the UK Department of Transport.

The research on selected motorways and trunk roads shows that:

- 17% of road crashes resulting in injury or death were sleep related;
- 85% of drivers causing sleep related crashes were men;
- 67% of sleep related crashes were caused by car drivers and 32% were caused by drivers of goods vehicles;
- While road crashes occur mostly on Fridays, these sleep related crashes occurred least on Fridays and mostly on Mondays.

The findings coincide with a new phase of advertising alerting drivers to the dangers of 'microsleeps'. Microsleeps are potentially fatal dozes which last between two and 30 seconds and normally occur when people are tired but trying to stay awake.

To avoid the dangers of driving tired, the DoT recommends:

- On long journeys, plan your trip to include a 15-minute break every two hours;
- Stopping in a safe place (not the side of the freeway) and drinking two cups of coffee or a high caffeine drink, followed by a 15 minute nap (before the caffeine kicks in) is an effective way of combating tiredness. It will make very little difference to your journey time;
- Don't start your journey tired. Be aware of the risks if you get up unusually early to start your trip, or have a long drive back at the end of your holiday;
- If you're feeling sleepy, opening the window for cold air or turning up the radio are of very limited benefit and sufficient only while trying to find a safe place for a break.

Too little sleep is not working

A UK report which says that adults now get an average of 90 minutes less sleep than they used to says that the consequences are problems ranging from irritable behaviour and inefficiency at work to ill health, road accidents and even divorce.

The report says Britain is the overwork capital of Europe to the detriment of both health and productivity.

Disrupted sleep causes worker 'burn out'

Research conducted by Sweden's Karolinska Institute indicates that worker 'burn out' is triggered by a drastic resetting of sleep patterns rather than high levels of stress.

The main symptoms of burn out are considered to be long-term excessive fatigue and cognitive impairment.

The author, Torbjorn Akenstedt, a recognised authority in the field, commented that people can function quite well on high levels of stress - it's only when sleep is disrupted that you get burn out.

The research as yet unpublished was presented at a sleep symposium in Sydney in November.

Fatigue may have caused bus accident which claimed 14 lives

In October a tour bus flipped over in Memphis at 5:00 am, some eight and one half hours after leaving Chicago, killing fourteen passengers.

A National Transporation Safety Board investigation is under way. Fatigue, which leads to slower reaction time, reduced vigilance and memory loss, is thought to be responsible.

Sleep quantity and obesity

In a study conducted by Columbia University using information on about 18,000 adults participating in a federal survey throughout the 1980's it is reported that subjects between the ages of 32 and 59, who slept four hours or less per night were 73% more likely to be obese than those who slept between 7 and 9 hours per night.

The findings add further support for the importance of adequate, quality sleep.

Comprehensive program at Albany

A comprehensive training program for the Southern Aboriginal Corporation which comprised MARCSTA's General Safety Induction, the bridging program for the Transport and Distribution Training Unit - *Follow Occupational Health and Safety Procedures* and the Managing a Shiftwork Lifestyle course was conducted in Albany in late October.

The training, over two consecutive days, was delivered by the Bunbury based MARCSTA provider Ralph Keegan of Frontline Safety and Training.

Further copies of these notes can be obtained from MARCSTA (08) 9355 1400.
Various extracts from Circadian Technologies of the USA 24/7 Workforce Organisation monthly newsletter and quarterly Working Nights are made available with their permission.

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