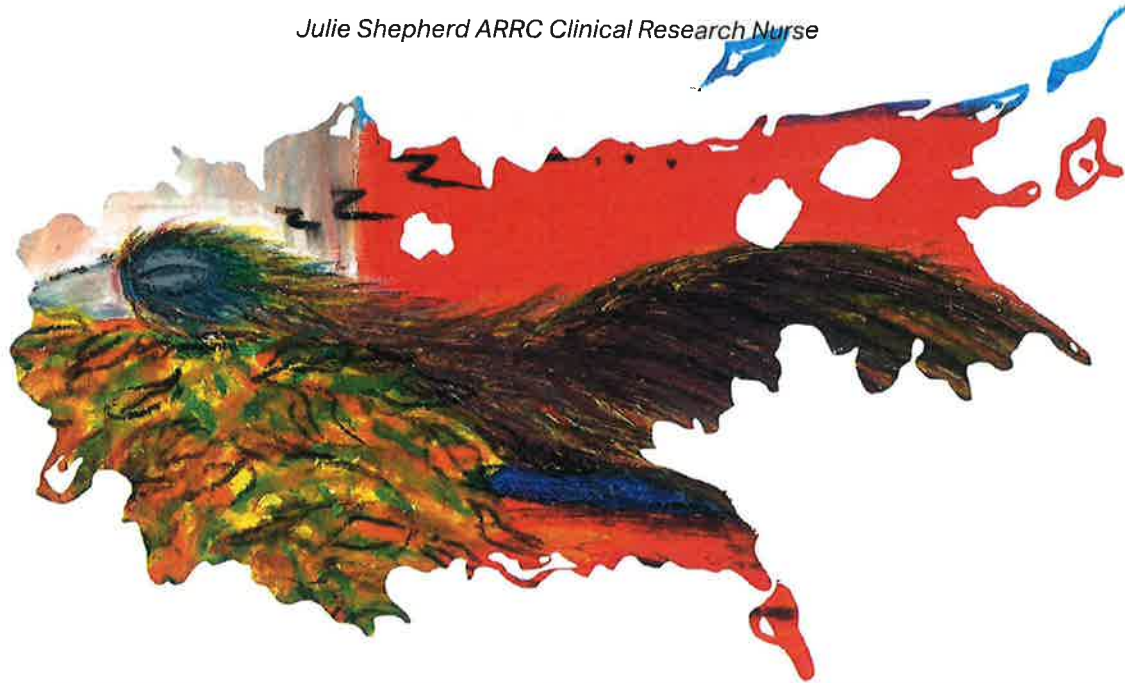


SLEEP

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The importance of sleep to overall well-being, vitality and the ability to function effectively cannot be exaggerated.

Sleep is vital for healthy brain functioning; emotional well-being; physical health, and for the ability to function effectively and safely during the day.

To maximise longer and better sleep we need to understand the how and why of our individual sleep needs and to develop strategies that assist in the process.

Sleep quality, patterns and cycles are affected by many internal and external factors including:

- **AGE:** With age the amount of sleep we need and our sleep patterns change;
- **RHYTHM:** our internal body clock and its circadian rhythm and external factors such as changes in seasons, international jet travel;
- **HORMONE** production and cycles;
- **ENVIRONMENTAL** cues such as eating, lights, noise, activity;
- **LIFESTYLE:** caffeine, alcohol, drugs, culture, work and social habits;
- **WELLBEING:** mental and physical status and illness;
- **SLEEP:** the type and amount of sleep we have recently had (American Academy of Sleep Medicine,) (Division of Sleep Medicine, Harvard Medical School, 2018).

PATTERNS OF SLEEP

Human beings are diurnal by nature. The sleep/wake cycle is governed by the body's biological clock - the suprachiasmatic nucleus (SCN) located in the hypothalamus of the brain. The SCN are a micro group of small neurons that individually exhibit a 24 hour rhythm on a sub-cellular level but act synchronously to signal other parts of the brain in the regulation of the sleep-wake cycle, homeostasis, hormone production etc. Receiving light signals directly from the eye via the optic nerve the SCN produces an alerting signal that offsets the sleep drive and vice versa, promotes and maintains sleep by turning off the alerting signal.

There is some debate that the modern concept of single block (monophasic) sleep may have evolved in response to changed environmental and socio economic conditions such as electric household lighting becoming widespread and the shift from an agrarian to an industrialised, mechanised economy with associated changed work practices. Historical references indicate that patterns of sleep could have been bimodal (biphasic). A sleep pattern where after darkness individuals would sleep for a number of hours; wake and engage in activity that required minimal to no light then sleep again until day break. In some countries there continues to be varying sleep patterns e.g. high daytime temperatures making outside work difficult and/or a cultural practice of an afternoon sleep (nap or siesta) then a later commencement of night time sleep. Polyphasic sleep patterns can also be a response to age changes; sleep deprivation; circadian rhythm disorders, illness and in response to work requirements such as

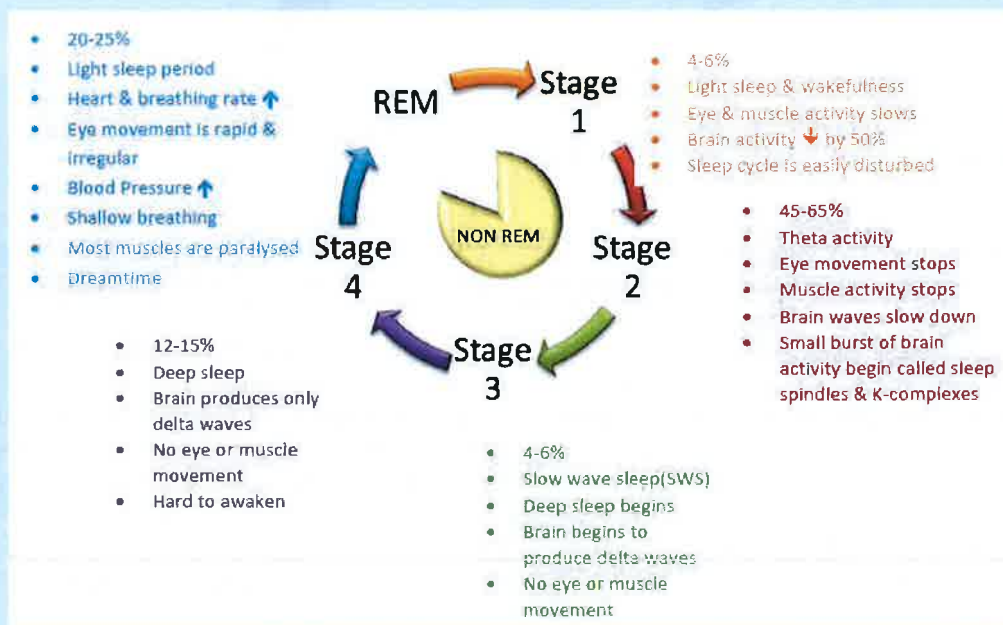
shift workers and armed forces personnel.

There are recommended guidelines for the amount of sleep required per day to maintain and promote good physiological and psychological health.

Age	Recommended Amount of Sleep
Infants aged 4-12 months	12-16 hours a day (including naps)
Children aged 1-2 years	11-14 hours a day (including naps)
Children aged 3-5 years	10-13 hours a day (including naps)
Children aged 6-12 years	9-12 hours a day
Teens aged 13-18 years	8-10 hours a day
Adults aged 18 years or older	7-8 hours a day

(Division of Sleep Medicine, Harvard Medical School, 2018) (Psychologist World, n.d.)

SLEEP CYCLE



Sleep is characterized by two distinct states, non-REM sleep and REM sleep that alternate in 90 to 110 minute cycles. A monophasic sleep pattern has 4-5 cycles throughout the night. During each of these cycles our brain electrical activity changes as we flow through the different stages of sleep which, interestingly, are not sequential. Typically it goes - Stages 1, 2, 3, 4, 5, 3 then returns to Stage 2.

Non-REM

- Stage One: can be around 7 minutes in length and is characterised by Alpha and Theta electrical activity with periods of dreaminess. It is

this state that those who practice meditation and deep prayer often experience. It is during Stage One that you may experience the feeling of falling followed by sudden muscle contractions. These intense sensations are called hypnagogic hallucinations and can include things like hearing your name called or telephone ringing.

- Stage Two: lasting around 20 minutes the brain activity produces very short periods of rapid rhythmic brain activity. Body temperature starts to drop and heart rate slow.
- Stage Three: a transitional phase where deep slow Delta waves start

to emerge as you move from light to deep sleep occurs.

- Stage Four: around 30 minutes of deep sleep characterised by Delta waves. It is typically at the end of Stage Four that sleep walking and bed wetting occur.

REM

- Stage Five: Paradoxical or REM sleep generally occurs 90 minutes after we fall asleep and lasts, initially, only a short time, but in each cycle becomes longer. Called paradoxical as it is characterised by increased brain and eye activity plus faster respirations but with voluntary muscle paralysis. This is a protective mechanism to stop you hurting yourself from trying to jump out of bed or run while you are dreaming.

SOME GENERAL GUIDELINES FOR MAINTAINING GOOD SLEEP HYGIENE

Stick to a Routine – Try to:

- Maintain a regular schedule during the day with a similar bed and waking time.
- Resist the urge to sleep or nap during the day even if you haven't felt that you slept well during the night.
- If you really need to nap try to do it only once and before 3 pm.
- Set up a bedtime routine and try to do it for 30 minutes before going to sleep eg reading, no computer, TV or screen time.

Diet

- Stop drinking stimulant drinks e.g. coffee, tea, alcohol, altogether or at least six hours before bed time.
- Don't eat a large meal immediately before going to bed, if you are diabetic or need a snack before bed try to make it a light one.
- Limit your fluid intake for at least two hours before



you go to bed to reduce the need to urinate during the night. If you are on diuretics take these before 5 pm.

Environment

- Make your bedroom/ sleeping environment as comfortable and non-stimulating as possible – no TVs or computers.
- If you do have OSA make sure you work with your sleep therapist to have the best fitting mask as possible and the quietest machine. Remember regular maintenance and cleaning of your mask, filters and humidifier will not only prolong their life but make them more effective.

Still have Trouble Sleeping

- If you haven't fallen asleep after 15 minutes don't lie there and stress yourself, just get up and do something quiet until you feel sleepy enough to try to go sleep.
- Discuss your concerns with your physician and therapists and see if there is a need for a review of your condition and treatment regime.

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