

The necessity for quality sleep of sufficient duration is evident to each of us each day of our lives. The importance of this cannot be overstated and should be a priority.

The following notes have been developed and circulated by Australasian Sleep Association and, with some of my adjustments, do warrant due consideration.

#### Some quick facts

A) From Deloitte Access Economics. Asleep on the job: costs of inadequate sleep in Australia. Canberra 2017. <https://www.sleephealthfoundation.org.au/public-information/special-reports/asleep-on-the-job.html>

- **39.8% Australian adults experience some form of inadequate sleep** – approx 7.4 million
- In addition to tiredness, this is associated with cardiovascular disease, obesity, depression, metabolic dysregulation, cognitive impairment, increased risk of accidents on the road, at home and in the workplace, disharmony at home and in the workplace, reduced work productivity with presenteeism and absenteeism, some cancers and poor school performance in children.
- It affects Australians of all ages, with inadequate sleep affecting learning and decision-making, as well as increasing the risk of physical and mental illness.
- This resulted in **3,017 deaths in 2016-7**
- One Australian will die every day (394/year) from falling asleep at the wheel of a vehicle or from workplace accidents due to lack of sleep.
- The rest die from complications of associated medical conditions, particularly cardiovascular disease and diabetes.

#### Financial cost of poor sleep in 2016-17: \$26.2 billion

- Health system costs \$1.8 billion
- Productivity losses \$17.9 billion (\$2,418/person with inadequate sleep)
- Informal care costs \$0.6 billion (\$82/person with inadequate sleep)
- Other financial costs, including deadweight losses, \$5.9 billion (\$802/person with inadequate sleep)
- Poor sleep reduces healthy life.
- The WHO metric of Disability Adjusted Life Year (DALY) measures the impact of morbidity as the proportion of full health lost due to a condition X its duration, and the impact of mortality as the years of life lost due to premature death (YLLs).
- The Australian Government has an official estimate of the value of a statistical life year lost (VSLY).
- Together, these allow a dollar value to be put on the loss of wellbeing from inadequate sleep

It is estimated that there will be almost ¼ million DALYs (228,162) incurred in Australia in 2016-17 due to inadequate sleep, representing **\$40.1 billion in lost wellbeing**.

- **The total cost of inadequate sleep in Australia was estimated to be \$66.3 billion** in 2016-17, comprising \$26.2 billion in financial costs and \$40.1 billion in the loss of wellbeing. This equates to approximately \$8,968 per person affected in both financial and wellbeing costs.

Chart i: Components of financial costs due to inadequate sleep in Australia, 2016-17

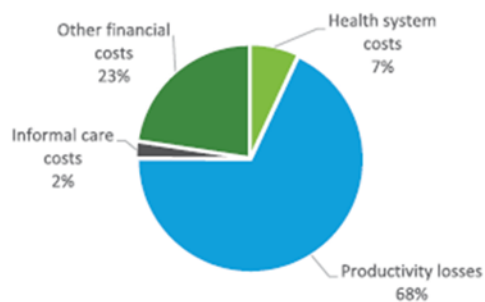
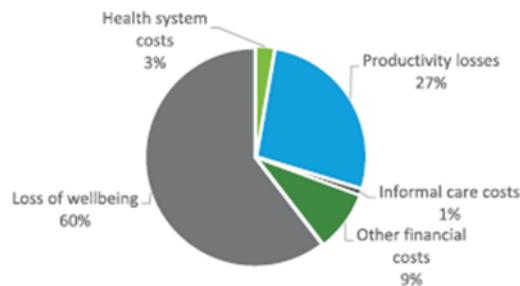


Chart ii: Components of total costs due to inadequate sleep in Australia, 2016-17



## B) Shift work and Alertness

Changes to shift work should include facilitating and optimising:

- a) circadian adaptation in permanent shift workers, for example through appropriately timed exposure to light-dark
- b) restorative sleep when sleep is required
- c) sustained alertness when working
- d) shift schedules that minimise disruption to the circadian and sleep wake systems.

- As lack of sleep causes a large proportion of motor vehicle accidents (MVAs), estimated to be 23% of the total (VicRoads data), police departments should devote as much attention to tired and fatigued drivers as they do to speeding and inebriated drivers. Just as there are rules forbidding driving at high speed or after consuming an excessive amount of alcohol, there may be a case for restrictions on driving where the driver has had less than a set minimum number of sleep hours in the past 24 hours.
- It is known that driving capability after 17 hours of wakefulness is similar to that with a blood alcohol content of 0.05.
- Use of blue light screens after dark has been shown to reduce alertness the following day (Chang et al, 2015) and software that reduces light intensity and filters short wavelengths of computer screens after dark is often free. Therefore government agencies should set an example by providing such software to their employees (Chang et al, 2015).
- Public education about drowsy driving should focus on the impact of such behaviour on other road users.
- While poor sleep behaviour in many cases is an individual choice and thus not suitable for prescriptive action, behavioural economics has shown that carefully worded education campaigns can be both minimal cost and highly effective. Resultant gains in productivity and thus taxation revenue and savings in health system costs could offset any expenditure outlays.
- Ultimately, the responsibility for reduction in fatigue must be shared between government, industry, the workforce, the public and the scientific community.
- Hafner et al (2016) recommended educating people and raising awareness of the benefits of sleep, as well as supporting further research and monitoring in the area of sleep in order to establish evidence bases for potential regulation, practice and policy regarding fatigue, sleep and accident risk.
- **A strong case exists for implementing public preventative health measures to promote healthy sleep, as has been done in other areas involving lifestyle choice, such as smoking cessation, alcohol moderation, diet and exercise.**

Sleep is a fundamental biological need which is essential for recuperation, memory consolidation, performance, learning and emotional well-being. Inadequate sleep and untreated sleep disorders is a large, expensive and under-appreciated Australian public health problem. Recent surveys demonstrate that four out of 10 Australian adults report insufficient sleep on a daily or several-days-a-week basis.<sup>1</sup>

The problem is growing, and younger adults are disproportionately affected. While some of the problem can be explained by clinical sleep disorders and other health issues, much appears to be due to work pressures or life-style choices that restrict sleep to create more time for work, family, social and social media pursuits.

The consequences are far-reaching and expensive: sleep-impaired individuals have impaired alertness, think less quickly and accurately, are less vigilant and are more irritable than when sufficiently rested.<sup>2</sup> Over time, health and longevity suffer: virtually every aspect of our physiology is impacted by sleep disorders and inadequate sleep, including cardiovascular and immune functions. Poor sleep increases the risk of mental health problems, notably depression, while sleep disorders such as insomnia and obstructive sleep apnea increase the risk of depression, emotional dysregulation, dementia and cognitive impairment.

In addition to the health and social impacts of sleep loss, productivity and safety at work and on the road suffer because of it.<sup>3</sup> Children are especially vulnerable to sleep loss, with most adolescents not meeting their sleep need on school nights.<sup>4</sup> Furthermore, children who have on average three hours of screen time per day are more likely to have higher rates of poor sleep and poorer educational outcomes than children who spend less time in front of screens.<sup>5</sup> Poor sleep at any point across the lifespan increases the risk of mental health problems, notably depression.<sup>6,7</sup>

A recent analysis of the economic cost of inadequate sleep in Australia reports that in 2016-17 financial year poor sleep caused \$26.2 billion in financial costs and a further \$40.1 billion in non-financial (loss of well-being) costs.<sup>3</sup> The financial costs are predominantly due to lost productivity and to accidents.

Given the high and growing prevalence of the problem, its substantial communal illness and injury burden and its high associated financial and societal costs, the problem of unrecognised and untreated sleep disorders and inadequate sleep urgently requires focused attention through public education and other initiatives to address it. In particular, a well-funded, concerted public education campaign is needed to highlight the issue and provide advice to the community regarding healthy sleep practices and common sleep problems, complemented by initiatives to better equip the general practitioner and allied health professional workforce to deal with the specific sleep disorders that present to them.

#### References:

1. Adams RJ, Appleton SL, Taylor AW et al. Sleep health of Australian adults in 2016: results of the 2016 Sleep Health Foundation national survey. *Sleep Health* 2017;3:35-42.
2. Joint Commission. Healthcare worker fatigue and patient safety. The Joint Commission Sentinel Event Alert 48. 2011.
3. Deloitte Access Economics. Asleep on the job: costs of inadequate sleep in Australia. Canberra 2017. Available at: <https://www.sleephealthfoundation.org.au/public-information/special-reports/asleep-on-the-job.html>
4. Bei, B., Allen, N. B., Nicholas, C. L., Dudgeon, P., Murray, G., & Trinder, J. (2014). Actigraphy-assessed sleep during school and vacation periods: A naturalistic study of restricted and extended sleep opportunities in adolescents. *Journal of sleep research*, 23(1), 107-117
5. Australian Institute of Health and Welfare (2011). Young Australians: their health and well-being 2011, Catalogue number PHE 140, AIHW, Canberra
6. Shochat, T., Cohen-Zion, M., & Tzischinsky, O. (2014). Functional consequences of inadequate sleep in adolescents: A systematic review. *Sleep Medicine Reviews*, 18(1), 75-87
7. Baglioni, C., Battagliese, G., Feige, B., Spiegelhalder, K., Nissen, C., Voderholzer, U., ... & Riemann, D. (2011). Insomnia as a predictor of depression: A meta-analytic evaluation of longitudinal epidemiological studies. *Journal of Affective Disorders*, 135(1), 10-19.

Improving sleep health in Australia requires a major preventative health intervention equivalent to those that tackled our high smoking rates or reduced our skin cancer rates through changing behaviours. There is ample evidence that sleep is equally as important for health as good nutrition and regular exercise.

There is an urgent need for the development of a comprehensive sleep health promotion campaign, rolled out across Australia. The aim will be to improve sleep health through influencing behaviour change and to increase awareness of sleep disorders and sleep-related conditions. The campaign will be informed by current best practices in behaviour change to maximise the motivational components and will learn from other successful Australian health campaigns such as “Quit” and “Slip, Slop, Slap”.

It will provide information to ensure Australians can better manage their sleep health and the sleep health of their children and will include resources to:

- provide delivery of strong sleep health messages through media outlets that reach metropolitan, rural and remote areas of Australia.
- educate primary and secondary school students and their parents about the role of sleep in enhancing memory, mood and learning and improve management of their personal sleep habits to maximise mental health and performance.
- inform employers and employees in the workforce about sleep health strategies that will improve their workplace safety and health, and reduce absenteeism and presenteeism.
- increase sleep-related understandings of older Australians and their carers, about cognitive and behavioural changes that can help improve their sleep, reduce dependence on sleep-inducing medication and improve their mental wellbeing, including decreasing the impact and rate of progression of cognitive impairment and dementia.

Our understanding of the importance of diagnosing and treating sleep disorders and poor and inadequate sleep has increased exponentially over the past three decades. Training for sleep physicians has developed in parallel over this time and we now have a highly skilled but small sleep physician workforce. However, sleep health training for primary health care professional (GPs and nurses) and allied and community health (dentists, psychologists, nurses) has lagged behind.

The development and delivery of accessible educational tools for GPs, dentists, psychologists, and nurses will both reduce costs and improve healthcare delivery to a greater number of patients, including those in rural and remote areas. A co-ordinated, multidisciplinary approach will facilitate achievement of these objectives.

The urgent need for GP education is underlined by the introduction of new Medicare item numbers for sleep studies in November 2018, which will require GPs (particularly those who wish to order sleep studies) to have a better understanding of OSA diagnosis, sleep study interpretation and treatment options. Urgent action must be taken to:

- Develop and deliver educational programmes for GPs, dentists, psychologists and nurses.
- Delivery method to be suitable for metropolitan, rural and remote settings.

### **The Following Aspects of Australasian Sleep Association proposals for solutions warrant consideration:**

1. There is an urgent need for the development of a **comprehensive sleep health promotion campaign**, rolled out across Australia. The aim will be to improve sleep health through influencing behaviour change and to increase awareness of sleep-related conditions. The campaign will be informed by current best practices in behaviour change to maximise the motivational components and will learn from other successful Australian health campaigns such as “Quit” and “Slip, Slop, Slap”.

It will provide information to ensure Australians can better manage their sleep health and the sleep health of their children and should include resources to:

- provide delivery of strong sleep health messages through media outlets that reach metropolitan, rural and remote areas of Australia
- educate primary, secondary students and their parents about the role of sleep in enhancing memory, mood and learning and improve management of their personal sleep habits to maximise mental health and performance

- inform people in the workforce about sleep health strategies that will improve their workplace safety and health, and reduce absenteeism and presenteeism
- increase sleep-related understandings of older Australians, and their carers, about cognitive and behavioural changes that can help improve their sleep, reduce dependence on sleep-inducing medication and improve their mental wellbeing, including decreasing the impact and rate of progression of dementia

## **2. A National School Education Program on Sleep Health.**

Poor sleep and daytime sleepiness have repeatedly been associated with reduced school performance and specifically with inattention, poor memory, behaviour problems, low mood, irritability, emotional instability, low self-esteem and hyperactivity in school aged children.

## **3. An education and training program for primary healthcare providers**

With the raised awareness of the importance of good sleep, there will be a great demand for healthcare professionals to manage sleep disorders and assist with improving sleep behaviours. It is neither appropriate or feasible for sleep physicians to manage this, rather there will need to be a training program to upskill primary healthcare providers - in particular, general practitioners, psychologists, nurses, pharmacists and dentists.

## **4. Guidelines for improving safety and productivity in the workplace**

To assist with workplace awareness and management of inadequate and poor sleep, guidelines should be developed to inform improved rostering practices and work environments, with particular attention to shift work, those with long work requirements and the transport industry. Workers also require a greater understanding of how to optimise their sleep and thus alertness during their time away from the workplace.

## **5. Targeted Call for Research**

Translational, clinical and basic science research are all needed to develop strategies to improve sleep health and the management of sleep disorders in Australia and worldwide.