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**Submission to the Productivity Commissions' Mental Health Inquiry:
On behalf of the Australasian Sleep Association's Behavioural Management
of Sleep Disorders Subcommittee**

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Executive Summary

- Sleep disturbance (e.g., insomnia) is common (approx. 30% of adult population) and has a well-established, large, negative impact on mental health, and mental health disorder trajectories.
- Sleep disturbance is a risk factor for mental health issues such as depression, anxiety, and suicide; which improve when sleep improves.
- The economic cost of effective treatment for mental disorders by highly trained professionals is less than the cost of not treating, and preventative sleep health measures are an important next step to further alleviate this burden.
- Sleep health is not routinely promoted by GPs, schools and workplaces in the general population, despite negative consequences across the lifespan.
- Sleep disturbance often responds well to psychological treatments. For example, Cognitive Behavioural Therapy (CBT) is the recommended first line treatment for Insomnia and this has been shown to improve mental health and treatment outcomes for psychological disorders such as major depression and anxiety disorders.
- The first line treatment for insomnia, the most common sleep disorders Cognitive Behaviour Therapy (CBT-I). However, in Australia, less than 5% of patients presenting to their GP with insomnia symptoms will receive this treatment.
- Treating sleep disorders such as insomnia offers great promise for providing a solid return on investment for the Australian government.
- Routine education about sleep health and referral for and access to evidence-based sleep interventions is a priority in improving mental health of the Australian community.

Key Recommendations

- 1. Increase access to evidence-based treatments for sleep disturbances, such as Cognitive Behavioural Therapy for Insomnia (CBT-I), as a way to reduce risk of mental health conditions and to improve outcomes for those currently experiencing mental health conditions with sleep disturbances:**
 - a. Treatment of sleep disturbance can act as an early intervention/prevention to reduce the risk of developing a mental health condition
 - b. Treatment of sleep disturbance in addition to mental health treatments can reduce the severity and duration of episodes, and also reduce the risk of relapse
 - c. Universal access for families to good sleep advice for children
 - d. Sleep education in schools for early prevention/intervention
 - e. Sleep education for the ageing population who are at increased risk of the development on insomnia
- 2. Official sleep education/training programs for all health professionals are needed**
 - a. Teaching our future medical and psychological workforce how to screen, diagnose and assess sleep disturbances may reduce the burden that mental health conditions on economic and social participation.
 - b. Collaboration between professional healthcare training bodies such as Australian Psychological Accreditation Council and the Australian Medical Association alongside professional sleep bodies such as the Australasian Sleep Association and Sleep Health Foundation is a recommended first step in implementing sleep education training guidelines and the role out of sleep education programs.
- 3. Conduct further research on sleep inadequacy in homeless youth and adults in Australia, and impact upon mental health**
- 4. Increase access to safe and affordable housing for many reasons – but also to facilitate sleep.**
 - a. In indigenous populations, overcrowded and chaotic households disrupt sleep
 - b. Culturally sensitive approaches to sleep health should be prioritised
- 5. Integration of evidence-based sleep health education would add value to existing health programs and school curriculum programs.**

Examine the effect of supporting mental health on economic and social participation, productivity and the Australian economy

Inadequate sleep and the impact upon mental health

Inadequate sleep can impact upon every aspect of human functioning – from physical and mental health, to social lives, work and study. This is why sleep is the third pillar of health alongside diet and exercise. Inadequate sleep is sleep that is not of sufficient quality or quantity leading to daytime impairments such as sleepiness or fatigue. Inadequate sleep may be due to lifestyle factors (e.g., shiftwork, social, study and family commitments; technology use), or may be due to the presence of sleep-wake disorders. This inadequate sleep has a huge impact on productivity and the Australian economy (Adams et al., 2017). The costs associated with inadequate sleep are significant, with the estimated combined financial and nonfinancial (loss of wellbeing) costs of inadequate sleep to the economy for 2016-2017 was \$AU 66.3 billion (Deloitte Access Economics, 2017; Hillman & Lack, 2013; Hillman et al., 2018). These significant costs arise from productivity losses (e.g. workplace absenteeism, presenteeism and early retirement), workplace accidents and high healthcare costs.

The Diagnostic and Statistical Manual of Mental Disorders – 5th Edition (DSM 5) outlines 10 sleep-wake disorders. These mental health sleep diagnoses may be independent conditions, or comorbid with another mental or physical health condition (American Psychiatric Association, 2013). Symptoms associated with sleep-wake disorders typically include sleep-wake complaints (dissatisfaction with the quality, quantity and timing of sleep). Importantly, symptoms of sleep disorders are not confined to night-time hours – a sequelae of daytime symptoms, including fatigue, sleepiness, difficulty with cognitive functions and mental health, can cause significant distress and impairment in a persons' work, social and educational activities (American Psychiatric Association, 2013). The symptoms of untreated sleep-wake disorders can therefore significantly impact upon a persons' mental health and ultimately their productivity. The most prevalent of these sleep disorders is Insomnia, with 6-10% of adults worldwide meeting diagnostic criteria for Insomnia Disorder (Mai & Buysse, 2008; Ohayon, 2002) with similar prevalence rates in Australia (Hillman & Lack, 2013).

Until recently, sleep-wake disorders were commonly thought of as secondary to mental health conditions. However, research demonstrates a more complex, usually bidirectional relationship, between sleep disturbances and mental health problems. Sleep disorders not only increase the risk of developing a mental health condition, but often accompany mood disorders such as depression and bipolar disorder, anxiety disorders, post-traumatic stress disorder, and psychotic disorders, compromising management of the individual's mental health condition (American Psychiatric Association, 2013). Difficulty sleeping can cause an individual to feel tired and lethargic during the day, and experience more challenges regulating their mood or anxiety. Low mood and increased anxiety make it more challenging for someone to fall and stay asleep at night, and lead to a vicious cycle of poor sleep and difficulties with daytime functioning and mental health. Sleep disturbance not only increases the risk of developing a mental health condition but negatively adds to the challenge of managing the condition.

- **Insomnia disorder in particular, is a significant predictor of mental health conditions such as depression.** Insomnia disorder includes difficulty falling asleep, staying asleep or waking too early, resulting in significant difficulties with social, education or occupational functioning and causes considerable distress. People with insomnia are 2.6 times more likely to develop a mental disorder than those without insomnia (Hertenstein et al., 2019). Insomnia symptoms are common in Australia with an estimated 13-33% of the Australian adult population reporting difficulty falling or staying asleep at times (Bartlett, Marshall,

Williams, & Grunstein, 2008; Lack, Miller, & Turner, 1988). A recent Australian study found that young women are at high risk of developing both depression and anxiety if they have a sleep disturbance in their early 20s (Jackson, Sztendur, Diamond, Byles, & Bruck, 2014). In particular, insomnia has been found to be a significant predictor of developing depression, with an odds ratio of 2.83 (Hertenstein et al., 2019), meaning that if you have insomnia, you are 2.83 times more likely to develop depression than someone without insomnia. In addition, a large prospective population based study (n=24715) in Norway found a bi-directional relationship between insomnia and depression, with insomnia predicting future depression onset (OR of 6.2) but also depression predicting the future development of insomnia (OR of 6.7) (Sivertsen et al., 2012).

Insomnia is a risk factor for the development of mental health conditions, in particular depression, and the relationship is bidirectional.

- **Sleep disturbance complicates depression and is associated with poorer health outcomes.**

The rate of sleep disturbance is very high in depression, with up to 90% of people with depression reporting a sleep or circadian rhythm disturbance (Cunningham & Shapiro, 2018; Franzen & Buysse, 2008). Individuals with sleep problems and depression report worse symptoms than good sleepers, and also have higher drop-out rates in treatment, lower remission rates, a less stable treatment response and longer depressive episodes (Manber et al., 2008; Staner, 2010). If the sleep disturbance is not addressed even after the improvement of depression, there is a higher risk of relapse. (Franzen & Buysse, 2008; Perlis, Giles, Buysse, Tu, & Kupfer, 1997).

Sleep disturbances can exacerbate depression and increase the risk of future episodes of depression

- **Poor sleep is a risk factor in suicide.** Suicidal ideation is higher in individuals with depression and sleep disturbance, with an increased risk of suicide attempt and suicide, ranging from 1.95 to a relative risk of 2.95 (Becker, Dvorsky, Holdaway, & Luebke, 2018; Cukrowicz et al., 2006; Ferentinos et al., 2016; Pigeon, Piquart, & Conner, 2012). There is a significant and independent association between suicide risk and sleep disturbances such as insomnia. In a recent systematic review, sleep disturbance was associated with higher levels of impulsivity and an increased risk of unplanned suicidal behaviour (Porrás-Segovia et al., 2019).

Routinely assessing sleep disturbances and effectively managing it as a routine part of mental health assessments and treatments is crucial in overall health care.

- **Children and Adolescents.** Children with sleep issues present with similar behavioural and mental health issues which impact on their health, mental health and learning and negatively affect their carers own sleep and mental health. Behavioural sleep interventions are effective in a significant proportion of children with disturbed sleep. Many children with disabilities will also present with sleep difficulties (up to 80%) further creating complex effects for family and carers' own sleep and mental health. In indigenous children, overcrowded and chaotic households disrupt sleep and are related to negative behavioural and academic outcomes (Attard, Clarkson, & Blunden, 2017; Blunden & Chervin, 2010)

Adolescents are also a group who are particularly susceptible to sleep wake disorders, particularly Delayed Sleep Phase Disorder (DSPD). Sleep onset is delayed compared to pre-

pubescence, making it difficult for adolescents to gain adequate sleep, as they must get up for school. Given the known relationship between sleep and mood disorders, particularly anxiety and depression, it is important to note that adolescents have both an increased incidence of mood disorders and an increased incidence of sleep disorders. Importantly it is also an age group with a high risk of suicide ideation. Similar to adults noted above, these three factors are no doubt related, as in adults there is a strong bidirectional relationship between untreated insomnia and untreated depression (Sivertsen et al., 2012).

The high prevalence of sleep and mental health disorders in children and adolescents, and negative flow on affects to care givers calls for early treatment of sleep and mental health condition.

- **Older adults.** Aging is associated with the natural changes in sleep architecture, with a tendency towards lighter sleep with more awakenings (Scullin, 2017). Due to these age related changes in sleep, the prevalence rate of insomnia is higher for older adults than younger adults, with as many as 50% of older adults reporting difficulties with falling or staying asleep (Patel, Steinberg, & Patel, 2018). Older adults can experience exacerbated worry about sleep which can predispose to the development of insomnia. Education about the fact that sleep need declines in healthy aging and brief awakenings out of the periodic light sleep normally occurring across the sleep period should be considered normal can help prevent the development of insomnia. In addition, CBT-I interventions are effective for the treatment of insomnia in older adults. CBT-I is recommended as first-line treatment for insomnia over sleeping medication in older adults, in particular because sleeping medications can lead to tolerance, dependence, residual daytime sleepiness, cognitive impairment, and an increased risk of falls (Patel et al., 2018).

Evidence Based Treatment for sleep problems can improve mental health outcomes

Effective treatments exist for sleep disturbance that can improve mental health outcomes.

The recommended first line psychological treatment for insomnia, called Cognitive Behavioural Therapy for Insomnia (CBT-I), is as effective as antidepressant medication for treating depression in people experiencing both insomnia and depression, without the side effects of medication (Cunningham & Shapiro, 2018). Cognitive Behavioural Therapy for Insomnia (CBT-I) is a multi-strategy psychological intervention for insomnia with good odds of success – between 70-80% of adult patients who receive CBT-I treatment experience significant improvements in their sleep (Anderson, 2018). CBT-I is also effective for treating insomnia that co-occurs with other mental and physical health conditions such as depression and chronic pain (Geiger-Brown et al., 2015; Wu, Appleman, Salazar, & Ong, 2015). CBT-I is recommended as the first line treatment for insomnia, over prescription sleep medications, by the American College of Physicians (Qaseem, Kansagara, Forcica, Cooke, & Denberg, 2016), the European guidelines for the diagnosis and treatment of insomnia (Riemann et al., 2017) and the Australasian Sleep Association (Ree, Junge, & Cunningham, 2017).

CBT-I is more than sleep hygiene information – it encompasses a range of evidence-based strategies to help people with insomnia to improve sleep quality and quantity, reduce cognitive and physiological hyperarousal, improve daytime impairments related to insomnia and reduce sleep-related anxiety and maladaptive thinking about sleep and insomnia (Ree et al., 2017). CBT-I is a multi-component therapy which include sleep restriction therapy, stimulus control therapy, cognitive therapy, relaxation training and sleep hygiene information. These different components may be used dependent on the type of insomnia presenting and associated maladaptive beliefs. The specific phenotype of insomnia indicates which components of CBT-I should be emphasised in

treatment for an individual. Therefore, CBT-I provides an incredibly effective treatment for Australians of all ages experiencing insomnia with or without comorbid mental health conditions. CBT-I can also enhance mental health outcomes with evidence supporting both face to face therapies and therapies delivered online. The latter has the capacity to reach into rural and remote Australia. A large sample of university students experiencing insomnia were found to have a significant improvement in insomnia, paranoia and hallucinations, after receiving a 10 week online CBT-I intervention. In addition, CBT-I has been found to enhance outcomes for depression when provided in addition to anti-depressant treatment (Manber et al., 2008). A large study of an online CBT-I intervention in Australian adults experiencing both insomnia and depression symptoms (but did not meet criteria for major depressive disorder) found that the online sleep intervention significantly improved depression symptoms up to 6 months post treatment than the control condition (Christensen et al., 2016). Lastly, increased screening of sleep disturbances should be incorporated into routine suicide risk assessment, and sleep disturbance treatments such as CBT-I may offer a way to modify risk factors for suicide, although more research is required in this area (Porrás-Segovia et al., 2019). Therefore, there is a strong case to improve screening of sleep disturbance and access to evidence-based sleep treatments such as CBT-I, to support mental health and improve outcomes on social and economic participation. Similarly, in adolescents, screening for sleep disturbance and targeting these students with relevant interventions at school has resulted in improved sleep and performance outcomes thus also providing a similarly strong case for screening of sleep disturbance in schools (Bei et al., 2013; Blake et al., 2017).

Potential benefits of treating sleep disturbances on economic and social participation

The consequences of inadequate sleep, alone or with comorbid mental health diagnoses, impact on economic and social participation. Sleep disturbances can reduce workplace productivity, and also increase workplace absenteeism, making it difficult for some individuals to maintain employment. Adolescents are at risk of missing school and having poorer academic outcomes. Indigenous students have worse school attendance exacerbating poor educational outcomes. Furthermore, when sleep is improved, negative outcomes were reduced (Owens, Belon, & Moss, 2010). In addition, individuals with insomnia increase their utilisation of the healthcare system. *The cost of inadequate sleep in Australia is high, totalling \$66 billion in financial and reduced wellbeing costs, with financial costs alone equivalent to 1.55 % of gross domestic product and the estimated nonfinancial costs equivalent to 4.6 per cent of the total Australian burden of disease cost for the year* (Deloitte Access Economics, 2017; Hillman et al., 2018).

- **Improving sleep is a cost-effective way and a modifiable factor to reduce the financial burden of mental health conditions.** A RAND corporation study outlined that even small changes to sleep duration could have a significant impact on the economy (RAND Cooperation, 2015). Their research indicated that \$US226.4 billion could be added to the U.S. economy if individuals were able to increase their sleep duration from six to seven hours. Therefore, big gains in productivity and reduced workplace absenteeism can be made from small improvements in sleep.
- **Treating insomnia has a good return on investment.** In the U.S. the cost of insomnia alone on the economy is estimated to be between \$US28.1 to \$US216.6 billion, from both direct (e.g. treatment costs) and indirect costs (e.g. loss of productivity) (Wickwire, Shaya, & Scharf, 2016). A recent review found that treating insomnia (both occurring on its own and with comorbid mental health conditions) overall was more cost-effective than not treating it, with savings from reduced health care utilization costs and improve health related quality of life within accepted ranges of cost-effectiveness (i.e., <\$50,000 USD per quality-adjusted life

year (QALY; accounts for both time and quality of time in a specific state), even when excluding reductions in indirect costs (Wickwire et al., 2016). *Importantly, the costs of treatment were typically recouped within a short time period of 6-12 months.*

- **Cognitive behavioural therapy for insomnia appears to be cost-effective for patients with comorbid depression and insomnia.** Watanabe et al. (2015) found that adding CBT-I to treatment as usual for depression showed an approximately a 95% chance of being cost-effective. Cost effectiveness was demonstrated by gaining one more quality-adjusted life year (QALY) when a decision-maker is willing to pay for \$US60 000 USD for treatment, and around 90% chance for being cost effective when the decision maker was willing to pay for \$US40 000 for treatment. This was shown to be cost effective as one QALY is often valued at 50 000–70 000 USD.
- **Improving access to psychological therapies for sleep disorders in Australia.** The U.K. National Health Service (NHS) recognised many years ago that in general, the cost of evidence-based treatment of mental health disorders by highly trained professionals is less than the cost of not treating them (Layard & Clark, 2014). This led to the development of the Improving Access to Psychological Therapies (NHS, 2018). Australia has a similarly aimed to increase access to evidence-based treatment for mental health disorders, including sleep disorders, through the Better Access Initiative (Australian Government, 2017). However, in many parts of Australia there is limited knowledge that patients can access effective psychological therapy for sleep disorders amongst both general practitioners and consumers. In fact, recent Australian research has shown that only 1% of patient encounters in general practice for insomnia received an onward referral to a psychologist, sleep clinic or counselling for additional insomnia management (Miller et al., 2017)
Australia could improve knowledge and referral pathways for psychological treatment pathways for insomnia amongst general practitioners and consumers. It could draw on the IAPT model to improving access to psychological therapies including the treatment of sleep disorders.

Recommendations

- ***Increase access to evidence-based treatments for sleep disturbances, such as CBT-I, as a way to reduce risk of mental health conditions and to improve outcomes for those currently experiencing mental health conditions with sleep disturbances:***
 - Treatment of sleep disturbance can act as an early intervention/prevention to reduce the risk of developing a mental health condition.
 - Treatment of sleep disturbance in addition to mental health treatments can reduce the severity and duration of episodes, and also reduce the risk of relapse.
 - Improve referral pathways to the Better Access Initiative for the treatment of sleep disorders and investigate the utility of a model such as Improving Access to Psychological Therapies (IAPT) in Australia and address treatment for sleep disturbances within this model.
 - Universal access for families to good sleep advice early on for children.
 - Provide sleep education in schools.

- Provide sleep education in the older community to help prevent the development of insomnia and sleeping medication dependence in an aging population.

Addressing the terms of reference

Examine how sectors beyond health, including education, employment, social services, housing and justice, can contribute to improving mental health and economic participation and productivity

Education to introduce and increase education in sleep disorders for our future mental health workforce

Across the board, health professionals involved in mental health assessment and treatment receive minimal training in assessing and managing sleep problems (Blunden et al., 2004; Meltzer, Phillips, & Mindell, 2009; Mindell et al., 2011; Moline & Zendell, 1993). Health professionals must have a working knowledge of the signs and symptoms of a range of sleep disorders, since they may contribute to the development and maintenance of mental health conditions. Increased education in assessing and managing sleep disturbances is therefore vital for all healthcare professionals to improve mental health, economic participation and productivity. University training programs, in particular medical and psychology programs have a significant role to play in increasing our future healthcare workforce skills in assessing and managing sleep disturbances.

- **Doctors:** Up to one third of patients seen in the primary care setting experience occasional difficulties in sleeping, and up to 10 percent of patients have chronic sleep problems. Although insomnia is rarely the chief reason for an office visit, its detection may be enhanced by incorporating sleep-related questions into the general review of patient systems. (National Institutes of Health, 1999). In addition, despite the fact that sleep disorders are commonly seen in primary care, there is limited training in sleep and sleep disorders during undergraduate medical training programs. This must impact on the delivery of evidence-based practice for sleep disorders. A worldwide study of medical training programs including Australia found an average of only 2.5 hours of sleep education provided to our future doctors (Mindell et al., 2011).
In Australia, general practitioners (GPs) are the primary medical point of contact for people experiencing mental health and sleep disturbances; however, research suggests that their diagnosis, treatment and referral practices for sleep disturbances are suboptimal. Recent Australian data reveals that the GPs prescribed pharmacotherapy to 90% of insomnia presentations, despite this being against current evidence-based practice recommendations (Miller et al., 2017). Pharmacotherapy for insomnia only provides temporary relief from insomnia symptoms, not an effective long term management option (Jacobs, Pace-Schott, Stickgold, & Otto, 2004). This data reveals medical schools need to provide more training in assessing and managing sleep disturbances for general practitioners. Simple consistent messages and behavioural training for nursing and general practice would be of benefit.
- **Psychologists:** Psychologists are mental health practitioners who also receive limited education during their postgraduate psychology training in and treating sleep disturbances. Given the bidirectional relationship between sleep and mental health, it is essential for psychologists to have strong skills in assessing and managing sleep disturbances. However, a survey of directors of graduate clinical psychology training programs in the U.S. found that only 6% of programs offered a formal course in sleep and 41% of programs offered no training in sleep disorders whatsoever (Meltzer et al., 2009). This study is currently being

replicated in Australia to investigate sleep education and training in postgraduate psychology programs (e.g. Masters and Doctoral programs) (Hailey Meaklim, personal communication). Australian Psychology Accreditation Council (APAC) guidelines currently do not specify any training requirements in sleep disorders for postgraduate psychology training programs (effective 1 January 2019) and so the level of sleep education for trainee psychologists in Australia is expected to be similar to the U.S. Therefore, there appears to be a clear deficiency in the training provided to our front-line mental health workforce.

- **Sleep education in schools:** Prevalence of sleep problems range from 10-45% in prepubescent children and 11-30% of adolescents. Children with poor sleep are more likely to have sleep disorders as an adult. School based sleep education programs are an effective method to provide sleep information to a large number of children and adolescents and further target those with existing sleep problems. Australian researchers are leaders in the field of school based sleep education programs, with 30% of worldwide sleep education studies undertaken in Australia (Blunden & Rigney, 2015). The consensus from the sleep education literature is that this has the potential to significantly and positively improve sleep, mental health, quality of life and performance. However, “one-off” sleep education awareness content in schools are not deemed sufficient. Systematic and consistent messages must be disseminated from entry into the school system until the exit and must include teacher and parent communities.

Recommendations

- Development and implementation of official training programs for health professionals
- Collaboration between professional healthcare training bodies such as APAC and the Australian Medical Association alongside professional sleep bodies such as the Australasian Sleep Association and Sleep Health Foundation is a recommended first step in implementing sleep education training guidelines. Teaching our future medical and psychological workforce how to screen diagnose and assess sleep disturbances may reduce the burden that mental health conditions on economic and social participation.
- Systematic and consistent sleep education must be integrated in the school curriculum.

Access to safe and secure housing for adequate sleep

Access to safe and secure housing is essential for getting adequate sleep. International research suggests that homeless adults do not get adequate sleep. In a sample of 513 homeless adults, sleep problems were prevalent with homeless adults experience 13.0 (± 11.4) days of inadequate sleep during the preceding month (Reitzel et al., 2017). In addition, inadequate sleep in homeless adults is linked to poorer subjective ratings of both mental and physical health (Chang et al., 2015; Reitzel et al., 2017).

There is limited research about sleep inadequacy in homeless adults and youth in Australia, but it is likely to play a role in worsening both physical and mental health in this group, and impact upon someone being able to engage in activities to improve their economic and social participation. This also applies to children who need to be able to feel safe and secure to be able to sleep so crowding, noise and safety can be particularly problematic. In indigenous children, overcrowded and chaotic households disrupt sleep and are related to negative behavioural and academic outcomes (Attard et al., 2017). Current literature indicates that Indigenous children are 5.6 times more likely to be living in overcrowded houses than non-Indigenous people. In rural and remote areas overcrowding is 18.8

times more likely for Indigenous people than for non-Indigenous people (Atkinson, Habibis, Easthope, & Goss, 2007). Indeed, overcrowding has been associated with poor sleep (Waters 2001).

Recommendations:

- Conduct further research on sleep inadequacy in homeless youth and adults in Australia, and impact upon mental health
- Increase access to safe and affordable housing to address issues with overcrowding, especially in rural and remote areas

Summary

Adequate sleep is vital for the mental health and wellbeing of all Australians. Providing increased access to evidenced based treatment for sleep disorders, such as insomnia offers great promise for providing a solid return on investment for the Australian government. In addition, providing increased sleep education and training for all Australian healthcare professionals will be vital to ensure the demand for sleep health treatment is able to be met. Routine education about sleep health and referral for and access to evidence-based sleep interventions is a priority in improving mental health of the Australian community.

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