SASA position statement on acceptable work hours for anaesthesiologists. Revised, proposed final draft.

Definitions and scope:
1. This position statement was compiled in response to concerns raised about the working conditions of junior doctors and trainees practicing anaesthesia in state hospital settings. It is accepted that other issues are also relevant, including age, experience, level of training, supervision, complexity of surgery and the need to allow for conditions conducive to study in tertiary settings while providing a cost-effective sustainable medical service appropriate to a developing country.
2. The primary concern is patient safety. Thereafter, physician well-being is considered.
3. These recommendations refer to routinely rostered duty hours that are performed at the place of work, whether on standby or on actual procedures. Standby hours from home are not specifically considered.
4. Guidelines are available for the US, Ireland and the UK, Europe and Australia.
5. Fatigue is defined as: “inability or unwillingness to continue effective performance of a mental or physical task” and is a summary descriptor for the varied effects and labels used to describe the cognitive, behavioral, and physiologic outcomes of sleep loss and circadian disruption.
6. “Vigilance” is comprised of alertness, selection of information and conscious effort.

The effects of fatigue:
1. The impact of fatigue on performance has been investigated extensively among pilots and medical personnel. Complex memory, decision-making and alertness and attention are especially vulnerable to the effects of fatigue. Cognitive function deteriorates by 25% from baseline after 24 hours of wakefulness.
2. Known performance effects include reduced attention and vigilance with attention lapses, impaired memory and decision-making, slowed cognitive throughput, prolonged reaction time with lowered optimal responding, lapses in attention to detail, errors of omission, compromised problem solving, reduced motivation and disrupted communications.
3. Fatigue-related depression and anger result in detachment and a lack of compassion for patients.
4. There is increased risk for the occurrence of errors, critical incidents, and accidents. However, it should be noted that no study has proved that fatigue on the part of health care personnel causes errors that systematically harm patients. While individual allegations exist, they are still considered isolated incidents.
5. Fatigued workers can perform normally for short durations of attention if sufficiently motivated, but have a tendency to slow down work processes to maintain accuracy, leading to decreased productivity, known as the speed-accuracy trade-off.
6. Numerous anaesthetic specific skills have been shown to deteriorate as fatigue progresses. These include dural puncture, ECG interpretation and mathematical calculation, intubation, needle stick injuries, Syringe swap/wrong drug, overdosage and underdosage.4

7. Compared to the impairments associated with ethanol ingestion, performance on a hand–eye tracking task declined such that the impairment was equivalent to a blood alcohol level of 0.05% after 17 hours of wakefulness.20 This level of impairment in a driving test could be shown after just 3 hours of additional wakefulness.19 At 24 hours of sustained wakefulness, the impairment in psychomotor function was equivalent to a blood alcohol concentration of 0.1%. The legal blood alcohol limit for operating a motor vehicle in South Africa is 0.05%.

8. It is important to note that objective impairment occurs long before subjective awareness of fatigue. Self-regulating work- and rest periods is highly unreliable.

**Prevention and correction strategies**

1. On average, the adult human requirement for sleep appears to be greater than 8 h (8 h:14 min) per 24 hour period30, or 7 h:30 min according to other authorities.31

2. Loss of sleep is cumulative.28,32 Failure to address this sleep debt contributes to earlier fatigue on subsequent rotation duties.13,28 It takes two consecutive nights of optimal sleep at the correct time to recover from significant sleep loss.4

3. There is a reduced tolerance to night shift work with increasing age (manifesting as prolonged recovery times), and this needs to be taken into consideration by the call roster set-up.4,7,33,34

4. Work schedules longer than 12.5 hours contribute significantly to a risk of decreased vigilance, occupational injury, or a medical error.27

5. Anaesthetic duties often does not allow for normal intake of food and liquid. Unrecognised hypovolaemia and hypoglycaemia contributes to fatigue.4

6. The Basic Conditions of Employment Act 75 of 1997 (BCEA) gives clear conditions for acceptable work hours. However even junior medical personnel are exempt from this protection on the basis of their income in excess of R115 572 per annum. There is a view that financial reward adequately compensates workers for adverse working conditions, presumably since higher income implies seniority and choice. Neither of these apply to junior medical personnel. From both the patient safety and physician wellbeing perspectives, financial compensation of individuals cannot be supported as a corrective strategy. Providing funding for increased staff levels would be more appropriate.35

7. Suggested corrective strategies include:7

7.1. Limited work hours in conjunction with improved handover strategies.9,36

7.2. Fatigue alleviation routines11,37,38

7.3. Equipment checking discipline11,25,39

7.4. More manpower11

7.5. Improved work environment11,28

7.6. Reduction of unnecessary after-hours work.1

8. Fatigue alleviation strategies of benefit include:

8.1. Day sleeps before a night shift40

8.2. Naps of at least 40 minutes when feeling excessive fatigued and before driving home.9,30,37,41

8.3. Caffeine consumption improve alertness, but impair rest and nap breaks.9,42
Potent medications such as amphetamines to maintain alertness is not sanctioned for clinicians because of the associated risks. Modafinil is a nonamphetamine drug approved for the treatment of narcolepsy which is being investigated.\textsuperscript{9}

8.4. Improved structuring of call and shift rosters\textsuperscript{30}
8.5. Possibly bright light at the workplace.\textsuperscript{28,42-46}

9. Employers must provide facilities to cater for naps and rest. This should also provide for a place to rest before driving home after a shift should it be required, as there is a proven increase (odds ratio 2.3) in the incidence of motor vehicle accidents after a night shift.\textsuperscript{1,3,15,16}

**Recommendation:**
These recommendations pertain to call duty hours that are performed at the place of work.

Given the limited information available, and drawing from guidelines in other industries where vigilance with rapid and accurate reaction is of primary importance, continuous on call duty of less than 12.5 hours is suggested, more than 17 hours is to be discouraged, and excess of 24 hours to be condemned. Consecutive duties should allow for adequate rest period in proportion to the hours worked between them.

We acknowledge that these recommendations are frequently disregarded in the interest of patient care. The following quote from the ASA guidelines guide practice regardless of the duty hours: “Anaesthetists have a duty of care, wherever possible, to not provide out of hours emergency services for procedures that they do not routinely perform, do not feel clinically competent to perform or do not have clinical privileges to perform. An anaesthetist must ensure that at no time, as a result of his or her on call roster commitment, do they undertake clinical duties if physical or mental fatigue, stress or ill health, alone or in combination, might interfere with safe patient care.”\textsuperscript{2}

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