

To sleep, perchance to dream: continuity of care, handover and sleep in the intensive care unit

Stephen Warrillow

Prioritising the competing demands of service delivery, supervision and education, and personal–professional life balance continues to be a major challenge in the administration of acute care. Rostering, work hours, supervision, and clinical handover are likely to be some of the most contentious planning concerns for any unit, often surpassing issues pertaining to aspects of clinical practice. That these matters frequently incite strongly emotive responses when discussed probably says much about the pervasive influence of medical culture, history and deep-seated beliefs held by doctors regarding their professional self-concept.

The cardinal task of postgraduate intensive care training programs is to develop competent clinicians who are well prepared for independent practice. Although education and training remain an important focus, the early years of medical practice fundamentally differ from the undergraduate period. Unlike medical students, junior doctors are crucial to the provision of clinical care, especially during unsociable hours when they are usually the only clinicians on site. Despite emerging concerns that this practice may contribute to adverse events,¹ rostering mainly junior staff after-hours continues for a range of reasons. These include financial considerations (junior staff are cheaper to employ), hierarchical staffing structures (senior clinicians are generally reluctant to work night shifts), and the need to grant graduated autonomy to doctors-in-training so they can mature into independent practitioners.

Progressive reductions in junior doctor working hours are likely to continue, and even the most curmudgeonly senior consultant is nowadays unlikely to agree with the once widespread belief that the “crucible” effect of extremely lengthy periods of continuous clinical duty is necessary to develop endurance and obtain sufficient experience. Doubtless, much was learned during such long shifts and junior doctors toughened up quickly with such extensive clinical exposure. Many senior specialists recall with pride their ability to endure what would now be considered unacceptably long shifts, often with no sleep and minimal senior supervision. Some will also revere the memories of camaraderie that was shared with colleagues and senior mentors of the time. However, most will also acknowledge the considerable toll and adverse impact on their personal life and relationships. The imperative to limit excessively demanding rosters is best justified by simple humanity — it is not acceptable to subject doctors-in-training to such burdensome rosters that misery is likely to ensue for many. Whether reduced working hours will necessitate an extension of the overall period of intensive care training to provide sufficient clinical exposure remains to be seen, and may prove a contentious issue in years to come.

Other reasons to promote “safer working hours” include the appealing notion that doctors who are less fatigued will

make fewer mistakes, thus improving patient safety. Excessive tiredness is clearly associated with reduced psychomotor performance,² and the wider public is firmly convinced that fatigued doctors present a significant risk.³ For two important reasons, though, it is perhaps unlikely that it will ever be possible to demonstrate that safer working hours definitively improve important patient outcomes. First, modern health care is complex, and long hours causing doctor fatigue is but one possible contributing factor to adverse events. Second, shorter periods of rostered duty necessitate frequent handover between shifts. Clinical handover is well recognised as a high-risk scenario,⁴ and increasing the frequency of shift changes may unintentionally contribute to poor outcomes through inadequate transfer of information resulting in acts of omission. Emerging literature on the benefits of structured handover practices and formal recommendations from expert groups⁵ have yet to widely translate into regular practice. Of note, studies that demonstrated a decreased serious error rate after reducing junior staff’s working hours were underpowered to show any reduction in preventable patient adverse events.⁶ If clinical complexity and the frequency of shift changes both increase as predicted, further consideration and deliberation will be necessary to address these issues.

Supervising the clinical practice and educational development of junior medical staff has always been a central component of consultant practice. Most studies have demonstrated better patient outcomes where there is engagement by senior intensivists in direct patient care,⁷ and there has been growing interest in promoting night-shift work for senior clinicians. The inherent tension in determining the optimal approach to increased senior supervision in every 24-hour period is tied in with factors that include acceptability, affordability and deciding on the optimal “dose” of consultant presence. While the possibility that an increase in the presence of senior staff after-hours might improve patient outcomes is attractive, there are potential negative aspects. These include a loss of autonomy for senior trainees, who currently benefit from the transition of closely supervised daytime practice to relatively independent night-time responsibilities.

The individual practice of napping during night duty has existed as long as structured shift work itself. Because, until fairly recently, napping was widely viewed as indicating a lack of professional ethics,⁸ sleeping-while-on-duty arrangements have been largely informal and rarely overtly acknowledged or tolerated, let alone recommended. Evidence of benefit from night-time napping has been steadily accumulating, however,⁹ and the practice is now established in some industries and regions.⁸ Allowing for the adverse impact of a period of initial grogginess (sleep inertia) on waking, and a small likely reduction in total hours slept

during any given 24-hour period, on balance, there is much to suggest that overall functional capacity is improved by even fairly brief periods of sleep while on duty.¹⁰ If this evidence becomes widely accepted, there are significant implications for the structure and rostering of after-hours critical care. Many units would currently struggle to provide an appropriate area for sleeping, and a clinically safe approach would require rosters that ensured effective continuity of patient care while medical staff rest.

The study undertaken by Poynter and colleagues explores several of these important issues that will need to be addressed as practice and expectations evolve.¹¹ In response to training requirements for expanded senior registrar positions and a desire to improve the degree of supervision for junior staff, the authors designed a roster intended to meet these demands in a large mixed ICU in Wellington, New Zealand, accredited by the College of Intensive Care Medicine of Australia and New Zealand for 24 months of core advanced training in intensive care medicine.

Additionally, the Wellington group was interested in assessing the sleep practices of their trainees, with particular reference to potentially "risky" sleep patterns. Their results indicate that the new approach worked as far as providing additional senior registrar positions within the existing financial resources of the unit. Interestingly, feedback from junior doctors did not indicate any change in their perception of senior supervision. The authors surmised that this was due to a misunderstanding by the study participants of the questions pertaining to the quality and amount of senior presence, and perhaps this is so. It might also be that the lesser amount of ICU experience held by the second group of trainees contributed to this finding. However, the possibility remains that the finding is real, and future studies will need to consider relevant design issues carefully to answer this question with certainty. While it is not especially surprising that there were no important differences between the sleep patterns before and after the introduction of the new roster, the finding that nearly 40% of shifts were completed by a trainee who was potentially sleep-deprived is of considerable concern. Whether this presents a genuine risk to patient care, however, is not certain. That a considerable number of night shifts (especially first night shifts) were associated with periods of more than 24 hours of wakefulness is worrying, and the risk to individual trainees while on their way home from work must be significant.¹²

Of interest, despite the authors describing that conditions favourable to planned night-duty napping were present in the unit, napping only occurred on around a third of shifts. Such a finding gives some insight into the complexity of issues surrounding sleep, fatigue and clinical service demands. Whether trainees would change their behaviour in response to sleep hygiene education, as the authors propose to undertake, is uncertain. Add to this the marked variation in endurance and sleep preferences between individuals (apparent to anyone who has worked in shift-

rostered teams), and it would seem that rigidly enforced guidelines may be counterproductive and ineffective for, or even resisted by, some individuals subject to them.

Regardless of what the future may hold in relation to the regulation of safer working hours, it is certain that there will be no return to schedules with limited supervision and intolerably long shifts such as those outlined in the notorious semi-autobiographical recollections of Stephen Bergman in *The House of God*.¹³ Developing strategies that are palatable, affordable, effective and safe is likely to prove difficult. As Hamlet forewarned, "Ay, there's the rub".

Author details

Stephen Warrillow, Deputy Director

Department of Intensive Care, Austin Hospital, Melbourne, VIC, Australia.

Correspondence: stephen.warrillow@austin.org.au

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