MANAGING THE THREAT: BEYOND ENDURANCE SUSTAINING OPERATIONS

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BACKGROUND

Literature concerning the risk of accidents and injuries during shift work has revealed three key aspects to shift work scheduling that heighten risk: working night shift, shifts in excess of 8 hours, and working a high number of consecutive shifts [1]. Bushfire fighting deployments in Australia currently involve 12 hour day or night shifts, with the length of deployment determined by operational requirements. In addition, the start-up phase of deployment frequently involves sleep restriction arising from the commute to the fire ground and initial shift [2]. As such, current scheduling involves heightened risk with fire fighters exposed to a number of long, consecutive shifts, and a high burden of night shift.

Fatigue-related risk during long deployments may be reduced by the introduction of shorter, rotating shifts. These may reduce fatigue by shortening shift lengths and allowing some night time sleep opportunities for all personnel. The current project will be providing an evidence base for different approaches to manage shift scheduling during long deployments. In particular, we are interested in whether alternative shift schedules may improve operational performance and minimising the risk of fatigue-related accidents and injuries.

RESEARCH QUESTIONS

This project will compare the traditional 12on/ 12off day and night shift roster with an 8 hours on/ 8 hours off rotating roster and a 6 hours on/ 6 hours off rotating roster, during a simulated deployment. Key outcomes will include sleep, fatigue, cognitive performance, complex decision making, driving performance and salivary cortisol secretion (sometimes known as the ‘stress’ hormone).

As significant fatigue-related risk may remain at the end of deployments, particularly in regard to the commute home and return to work, the present study will also examine recovery following sustained operations. In particular, how many nights of recovery seep are needed for cognitive performance, alertness and driving performance to return to baseline levels.

As the operational environment exposes fire fighters to much more variability than that experienced in a laboratory environment, a biomathematical model will be developed from the data of these lab-based studies. This model can be used to estimate the fatigue risk associated with deployments under different constraints. For example, longer deployments (i.e., more consecutive shifts), or shorter sleep opportunities due to lengthy travel times between the work environment and accommodation.

APPLICATIONS

This study will be the first to directly compare these different shift work systems. The outcomes of this research will provide an evidence base for the possible use of alternative rostering schedules for sustained operations deployments.

1. Folkard, Lombardi & Tucker. Industrial Health 2005, 43, 20-23. 2. Cater et al. Joint AFAC-Bushfire CRC Conference, 2007.

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