Who's for five nine-hour shifts a week?

Nicholas Horrocks and Roy Pounder

Nicholas Horrocks
MSc, Researcher, Royal College of Physicians

Roy Pounder
MD DSc FRCP, Lead for the European Working Time Directive, Royal College of Physicians

Clin Med 2006;6:440–2

Following the application of the European Working Time Directive (EWTD) to junior doctors in the United Kingdom, almost all of them now work night shifts. The most common pattern of shift work in January 2006 was still to work seven consecutive night shifts, each lasting 13 hours. In 2009 the average working week will drop to 48 hours which means that, without extra staff, the training and work output of junior doctors will have to increase by about 20% in the next three years.

A multidisciplinary Working Group met at the College on 4 November 2005 to hear evidence from British and international experts about the problems of working night shifts, and how to diminish the risk. The outputs of the workshop were *Working the night shift: preparation, survival and recovery – a guide for junior doctors,* published in January 2006,[1] and *Designing safer rotas for junior doctors in the 48-hour week,* published in October 2006.[2] This article provides an introduction to the second report.

Night shifts and safety

While working at night does contribute to an increased risk of making errors, it is not the only factor to consider. Evidence collected from a range of industries where shift work is common shows that the length of individual shifts and the number of shifts worked in succession are also very important. The more shifts that are worked consecutively, the greater the relative risk compared to the first shift worked. Likewise for the length of each shift – the longer each shift, the greater the chance of an accident. If two otherwise identical shifts in terms of length and number of previously worked shifts are compared, the risk of an accident is always greater on the night shift than during the day.

The conclusion from this evidence is that the present working pattern of most British junior doctors is about the most potentially hazardous that can be devised – and the Working Group resolved unanimously that things must change. Tired doctors make mistakes that may damage their patients or themselves.

Junior doctors driving home when excessively tired

Night workers travelling home at the end of a shift have been identified in international studies as being particularly at risk from sleep-related vehicle accidents. To quantify this risk, the performance impairment associated with fatigue has been compared to that produced by alcohol; 20–25 hours without sleep was shown to reduce psychomotor performance to the level of someone with a blood alcohol concentration of 0.10%. A doctor who has worked just one night and was without rest during the day leading into the shift could easily achieve a period of sleep deprivation of this length. Doctors reporting for night duty must be fully rested, and impossible rotas for juniors must not be tolerated.

The rules for full shift working by junior doctors

The Working Time Regulations are Health and Safety law, and the New Deal sets out conditions of service relating to pay, but together they impose strict rules that affect rotas for junior doctors in training.

From 1 August 2009, the two standards will underpin the following rules:

- The maximum average number of hours on duty is 48 per week.
- The minimum break between shifts is 11 hours daily rest.
- The maximum continuous duty period is 13 hours; that is, no shift can be scheduled to last longer than 13 hours, unless compensatory rest is given.

In addition, there are complicated rules that relate to weekends off duty.

How many doctors are needed to form a good rota?

We have argued for some years that there must be 10 doctors in the 'cell'; any less makes the rota unacceptable because, depending on the specialty and daytime commitment, the service work will dominate non-clinical work in a way that would be unacceptable in a training post.[3] A 'cell' of less than 10 doctors may be acceptable for those posts that involve only a single type of duty – for example, a senior house officer working exclusively in an accident and emergency department, or another dedicated to a medical admissions unit. But if the post involves periods of duty on call as well as working as

	Mon	Tues	Wed	Thur	Fri	Sat	Sun
1	23:00 - 08:00	23:00 - 08:00	Zero hours	Zero hours	Daytime 9h		
2	Daytime 9h	Daytime 9h	Daytime 9h	07:00 - 16:00	07:00 - 16:00		
3	15:00 - 00:00	15:00 - 00:00	23:00 - 08:00	23:00 - 08:00	Zero hours		
4	Daytime 9h	Daytime 9h	Daytime 9h	Daytime 9h	Daytime 9h	07:00 - 16:00	07:00 - 16:00
5	Daytime 9h	Daytime 9h	Daytime 9h	Daytime 9h	Daytime 9h		
6	Daytime 9h	Daytime 9h	Daytime 9h	Daytime 9h	Daytime 9h		
7	Daytime 9h	Daytime 9h	15:00 - 00:00	15:00 - 00:00	23:00 - 08:00	23:00 - 08:00	23:00 - 08:00
8	Zero hours	Zero hours	Daytime 9h	Daytime 9h	Daytime 9h		
9	Daytime 9h	Daytime 9h	Daytime 9h	Daytime 9h	Daytime 9h		
10	07:00 - 16:00	07:00 - 16:00	07:00 - 16:00	Zero hours	15:00 - 00:00	15:00 - 00:00	15:00 - 00:00

Table 1. A rota with three nine-hour shifts per 24 hours is both New Deal- and EWTD-compliant, and it provides an average 48-hour week. (Ten doctors rotating in one cell; until 2009, some doctors working the daytime nine-hour shifts could work a 13-hour day, to provide extra cover on the wards at either end of the day.)

part of a speciality firm – for example, a specialist registrar (SpR) in thoracic medicine who also covers acute medical take – then a 'cell' with less than 10 SpRs is unacceptable. Medicine and its specialties have the largest numbers of junior doctors, but in planning for the 48-hour week in 2009, we need to press for additional SpR posts and the consolidation of 'Trust doctors' into SpR posts.

A rota with three nine-hour shifts per 24 hours

Designing safer rotas for junior doctors in the 48-hour week[2] describes the advantages and disadvantages of six different rota patterns, and concludes that the optimal pattern for covering a 24-hour post – for example, the lead SpR for acute medical take – is the pattern shown in Table 1.

Three nine-hour shifts per 24 hours have a number of advantages over all the other potential shifts:

- A shorter shift should lead to less doctor exhaustion, with its associated errors and loss of clinical precision, and therefore make working practices more efficient.
- The change from two 13-hour shifts in 24 hours to three nine-hour shifts provides fresher doctors in the late afternoon and early evening, at the peak of demand for most specialties, and it also alters the proportion of hours on the night shift from 50% to only 33% of the time 'on duty'.
- Working alongside the two nine-hour dayshifts may be more acceptable for consultants, with increased opportunities for teaching and supervision.
- A nine-hour shift is extremely unlikely to over-run to more than 13 hours, and therefore the Band Three penalty payment from the New Deal is not likely to be triggered.
- On Saturday and Sunday the daytime shifts could be lengthened by a few hours, to provide extra 'non-acute' medical cover in the afternoon and early evening.
- A junior doctor's working week will, on average, be made up of five nine-hour shifts, mostly in the daytime and on weekdays, but sometimes early, sometimes late, and sometimes at night.

What about flexible trainees?

The ideal solution is for several flexible trainees to be responsible for one or more posts in the rota – thus, the pattern will continue undisturbed, and the shorter working hours should be accommodated with some adaptability. The 48-hour standard week for 'normal' junior doctors makes the experience of a flexible trainee working part-time much less 'peculiar' than in the past, and working shifts that have a nine-hour rhythm should also help this group.

Other major problems – cover for leave and continuity of care

This rota describes an efficient way of providing 24-hour cover, using the diminishing resource of junior doctors, but it is not a complete answer. The report also discusses ideas about cover for leave, and improving the continuity of care – the subject of an earlier College report.[4]

Nine-hour shifts for consultants?

We are moving inexorably towards a consultant-delivered NHS – are nine-hour shifts the future, and might they be a good thing for all the medical team?

References

1 Royal College of Physicians. *Working the night shift: preparation, survival and recovery – a guide for junior doctors.* Prepared on behalf of a Multidisciplinary Working Group by Horrocks N, Pounder R. London: RCP, 2006. Also available free to download at www.rcplondon.ac.uk/pubs/books/nightshift/nightshiftbooklet.pdf

2 Royal College of Physicians. *Designing safer rotas for junior doctors in the 48-hour week*. Prepared on behalf of a multidisciplinary Working Group by Horrocks N, Pounder R. London: RCP, 2006. Also available for free download at www.rcplondon.ac.uk/pubs/brochure.aspx?e=180
3 'The case for a cell of ten', RCP statement. www.rcplondon.ac.uk/ college/statements/ewtd_caseforten.asp
4 Royal College of Physicians. *Continuity of care for medical inpatients: standards of good practice*. London: RCP, 2004. www.rcplondon.ac.uk/members/library/books/ContinuityOfCare.pdf