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## **Education and the working patterns of junior doctors in the UK:**

a review of the literature

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*Objective* To identify and review UK research relating to the effects of patterns of work on the education of junior doctors, describe the trends in the research, contextualise the progress of the UK in reducing the hours worked by junior doctors alongside other countries and identify areas for future research.

*Method* Seventy-seven research studies, most written since 1995, were identified as relevant from approximately 900 references generated by searching *medline* and using a 'snowball technique.' The articles identified were qualitatively reviewed to identify the key research conclusions and/or the main points of argument. These were collated and presented in a qualitative review.

*Result* Research in the UK is contradictory regarding the effects of working patterns and the views of doctors towards them. Further research is needed to examine in depth the differences in the effects of working patterns on education between hard-pressed and non hard-pressed specialties, hospitals and regions. When viewed in an international context the UK is one of a number of countries with similar medical systems moving towards reducing the hours worked by doctors in training, all of which are at different points in the process.

*Conclusion* The literature review has helped to identify the popular wisdom surrounding the

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debate on junior doctors' hours, the progress of the UK when compared to that of other countries and gaps in research. Further research is needed to refine understanding of this area.

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**Summary / Key learning points**

- There are few systematic research studies looking at the effects of working patterns on the education and training of junior doctors.
- Research evidence tends to rely on opinion surveys of one particular way of working.
- Variation in workload across specialties, hospitals and regions present problems in identifying a baseline for research.
- Little account is taken of the interaction between the quality of training and working pattern by researchers.
- A few studies suggest that high quality training may offset changes in working patterns introduced by shifts, but more research is needed to evidence this more fully.
- In Europe Denmark is closest to achieving the terms of the EWTD.
- Internationally the Australian Medical Association is seeking to reduce the hours worked by junior doctors through risk assessment and a campaign for a change in working practices.

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## **Introduction**

Changes to the working practices and education of junior doctors over the last decade have been principally shaped by the terms of the *New Deal*<sup>1-3</sup> and the requirements of the European Working Time Directive (EWTD), both of which are driving a reduction in the number of hours worked by junior doctors. Latterly the EWTD is pushing for the greatest change in the working patterns for doctors generally, and for junior doctors in particular. Where previously medicine, along with a number of other professions, was exempt from the terms of the directive, as of August 2000 it is now included. The directive sets out three steps to reducing junior doctors' hours: by August 2004 the average working week should be 58 hours, 56 hours by August 2007 and 48 hours by 2009. Alongside this stepwise reduction of the average working week, there are additional rules regarding the amount of rest employees can expect between shifts. When taken together, these two aspects of the directive have serious implications for the way junior doctors' working hours are structured, and what they do in them. One of the central contentions about these changes is whether the reduction in hours translates to a reduction in the educational value of junior doctors' training. This review outlines the main themes arising from the literature on education and shift working in the UK, gives a selective snapshot of the current status of research in an international context and identifies areas for future research.

## **Review methodology**

The research literature on education and working patterns was identified in two stages. In the first stage a number of keywords<sup>ii</sup> were used alone and in combination to search *medline*. Approximately nine hundred references were retrieved from a range of publications, and these related to letters, personal viewpoints, editorials, research reports and articles. The second stage of the process involved working through the search results to

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<sup>ii</sup> E.g. 'education,' 'rota,' 'roster,' 'training,' 'shift work,' 'on call,' 'new deal,' 'junior doctor' and 'European working time directive.'

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identify a sub-set of relevant articles from the initial trawl, and adding other works identified in the references of these articles using a 'snowball' technique. Most of the change in junior doctors' working practices has occurred over the last seven years, so the majority of the works cited are research studies dating from 1995 onwards. However studies conducted earlier with a direct bearing on the review have also been included, as have other informed pieces (editorials, letters, opinion pieces and so forth) that add something new. The review has been written to reflect the 'state of the knowledge' in this area, pieced together from the themes, arguments and findings of the selected works.

### **The UK context**

Recent studies<sup>4-10</sup> of the hours worked by junior doctors indicate a downward trend in line with the requirements of the *New Deal*<sup>1-3</sup> and the European Working Time Directive. However whilst hours are falling, some juniors are still working in excess of the set targets: forty eight percent of junior doctors exceed the *New Deal* limits in their working practices in 2001, and of these doctors PRHOs were the worst off: over sixty percent of posts were non-compliant.<sup>11</sup> The evidence also suggests that working practices continue to vary greatly between specialties, hospitals and regions.<sup>9,11-17</sup> Where a reduction in hours has been achieved, it has generally been by changing from a traditional 'on-call' rota to a shift system of working, or by increasing the number of posts to adapt traditional working practices.<sup>18</sup> The shift system of working has typically been adopted by 'hard-pressed' specialties due to the intensity of the workload that continues into out-of-hours periods.<sup>13,19</sup> A number of studies have described the successful implementation of shift systems to meet the terms of the *New Deal*<sup>9,10,20-24</sup> and positively acknowledge their effects in terms of junior doctors' welfare<sup>22,25</sup> education<sup>22,26</sup> and increased opportunity for flexible, part-time and 'family-friendly' working arrangements. The evidence for the success of shift working is, however, in dispute: the findings of other studies<sup>14,16,17,27-32</sup> suggest that this way of working leads to increased job dissatisfaction<sup>14,30,33-35</sup> disruption to quality of life<sup>28,31,34,36</sup> compromises

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training<sup>29,37</sup> and that it may not necessarily improve the welfare of doctors.<sup>14,30,32,35,38</sup> When taken as a whole the research evidence into junior doctors' views of working patterns is contradictory, and concern has been expressed about the interpretations that have been drawn from the findings of research studies<sup>39-41</sup> and at the narrowness of the approaches used for collecting data: generally studies have not jointly considered the job or training satisfaction of junior doctors in both on-call and shift systems under similar circumstances.

Whilst shift systems may appear to be a successful way to reduce the actual hours worked, research indicates that workload has largely remained constant with the result that the perception of junior doctors is that they work harder whilst on duty.<sup>5-8,21,31,42,43,51</sup> This increased pressure of work for junior staff is seen to result in the prioritisation of service provision over training<sup>7,21,29,44</sup> in that little time is available to learn from cases, extend competency or attended educational sessions. Whilst these problems are generally associated with shift working, they are not unique to it, and there is evidence to suggest that juniors working on-call rotas also experience difficulty in addressing their learning needs.<sup>26</sup> The tension between the service provided by junior doctors and their educational needs has long been recognised.<sup>44-47</sup> Workload studies<sup>3,6,15,19,31,44,48-53</sup> have indicated that part of the problem may lie with junior doctors undertaking inappropriate tasks, e.g. non-clinical or administrative duties, which do not contribute directly to training. The lack of clarity in the definition of the roles and responsibilities of the various members of the ward team, and junior doctors in particular, has also been noted.<sup>15,21,50,54-56</sup> Research indicates that junior doctors' experiences and views of training are variable<sup>12,16,18,43,48,50,51,57-64,68</sup> especially when concerned with the amount of supervision received. Adequate supervision is a key factor in the educational development of junior doctors as without it they do not learn from the cases they see.<sup>77</sup> Allied to the responsibility of adequately supervising juniors to ensure that the cases seen contribute to their education, is responsibility to the patient to ensure that the care delivered by trainees is safe and appropriate and that the trainee is not placed in a position

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where she or he is expected to carry out inappropriate tasks for level of experience, or where he or she may make a mistake or suffer harm. Review evidence<sup>78</sup> suggests that adequate supervision is especially important in certain specialties which are vulnerable to error or accidents, for instance anaesthesia, A&E, obstetrics paediatrics and surgery. As with job satisfaction, few studies have considered the training and supervision of junior doctors in both on-call and shift systems, therefore there is no clear evidence to suggest that perceptions of the quality of training or the reality are better under either system in isolation.<sup>12,18,32,51,65,68</sup> This is in part due to the methodology adopted to conduct research: few studies have attempted to examine training in both contexts, and the variability between hospitals and specialties in the nature of workload and training: for example not all junior doctors benefit from basic educational provision as outlined in the *Calman* report.<sup>15,26,51,58,59,66-69</sup> Thus it is difficult to identify a baseline for researchers to work from. The findings of the few studies<sup>8,18,26,42,70</sup> that have attempted to address this area tend to indicate that a closely structured and well-supervised working environment may offset a reduction in hours or a high work intensity.<sup>20,22,49,70,71</sup> Case studies of particular approaches to training have generally found that it has improved<sup>9,58,70,72,73</sup> leading to positive views about the experience of training amongst junior staff.<sup>21,70,72</sup> Certain educational tools have been found to be useful in assisting with assessment and appraisal processes, among them: log books<sup>42,74</sup> learning contracts<sup>75</sup> appraisal portfolios and records of in-service training based upon the competencies laid down in *Good Medical Practice*.<sup>63,70,75,76</sup> Whether or not such examples of successful educational practice are widespread is unclear.

### **The international context**

Concern about the long hours worked by doctors in training is not unique to the UK. An international<sup>iii</sup> review of junior doctors' working practices conducted by the Australian Medical Association (AMA)<sup>79</sup> showed that a number of countries with similar medical

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<sup>iii</sup> Netherlands, Denmark, France, Germany, UK, Ireland, USA.

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systems were: moving towards the goal of reducing the hours worked by doctors in training, managing the transition in different ways, and at different points in the process. France was considered to face the greatest change as doctors' hours are relatively less regulated than those of Ireland and the UK. In the US hours are regulated but not necessarily adhered to by hospitals. The Danish model of working was found to come closest to the requirements of the European Working Time Directive. Doctors there demanded working hours that reflected those of the rest of the work force, and by 1995 were working an average of 45 hours per week without adverse effects to training.<sup>79</sup> The most recent agreement (2000) sees junior doctors working an average of 37 hours per week over a 14-week 'norm' period.<sup>iv</sup> This reduction in hours has been achieved as there are relatively more doctors available to work than in the UK. Concern about the long hours worked by junior doctors in Australia has also driven research to examine the effects of such working practices. The Australian approach has been to undertake a risk assessment of the work of junior doctors in line with health and safety practice for employers, and to examine the results for areas where risk controls may be applied. This has formed part of the AMA federal policy of promoting a safer working environment for junior doctors, adopted in 1996. The strategy has included the development of a *National Code of Practice*<sup>80</sup> on working practices for junior doctors, itself adopted in 1999. The code aims to inform the working practices of public hospitals, assess and manage the risks of these working practices, and monitor them. It also provides guidance for employees regarding their duty to assist hospitals in the implementation of the code. The code forms part of a broader campaign to change the belief culture surrounding medicine that sees it as acceptable for doctors in training work hours deemed unacceptable in other occupations. Whilst not being binding - seventy percent of Australian juniors still work an average of more than 50 hours a week - the code aims to inform hospitals as employers of their 'duty of care' towards employees and patients, and of their vicarious liability towards patients. As part of the code, the AMA has developed a risk assessment

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<sup>iv</sup> [www.dadlnet.dk/fayl/tr-tips/engelskvagt.htm](http://www.dadlnet.dk/fayl/tr-tips/engelskvagt.htm)

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strategy<sup>81</sup> to assist in evaluating the extent of the hazard of the hours worked by junior medical staff, and recommends principles that should underpin the design of work schedules to minimise risk to health. Alongside the risk assessment of junior doctors' posts, the *Safe Hours Campaign* included a literature review of the effects of extended working practices on learning.<sup>82,83</sup> The authors concluded that extended hours of work probably did have a negative impact on hospital based training for three reasons, all of which echo concerns expressed in the UK literature:

- Lack of time for formal training and independent study;
- Lack of motivation and focus due to fatigue;
- Extended hours working conditions were less likely to provide the necessary supervision, coaching and feedback for effective learning.

## **Conclusion**

What emerges from the literature is that in the light of the way medicine is practised today, there is a growing awareness that the hours junior doctors work are unacceptable for their own welfare, as well as that of the patients they treat. Any reduction in the hours worked inevitably raises concerns about the educational quality of training. These concerns are generally based upon a straightforward assumption that experience equals learning, a view that is not necessarily sustainable on inspecting the research literature. Individual research studies indicate that a 'one size fits all' approach to structuring junior doctors' time and education may not necessarily be appropriate across all medical specialties: for instance shift systems may suit specialties where the intensity of work is high, however other systems of work may be more suitable for non 'hard-pressed' specialties. Case study research in the UK does however suggest that educational practice can be developed to make the most of a shorter period of training, if it too is revised and made more structured, but there is little systematic research into ways to fully achieve this. The process of

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reviewing the literature into the working patterns of junior doctors therefore highlights a number of areas of possible future research, among them:

- Establishing a baseline for researchers to work from: a clearer picture is needed of whether those training placements of junior doctors that do not meet the standards set out in the *Calman* report are the exception or the rule.
- Broadening research focus: the majority of research studies, with few exceptions,<sup>26</sup> have tended to focus on one particular working pattern. Additional useful information could be generated by attempting to look at the way training is structured under different working patterns that run under similar hospital or specialty circumstances.
- Using other methods of data collection: much of the data has been collected through surveys of opinions and experience. Subjective insight into the experience of training generated by these methods could be counter-balanced by using techniques of observation. Such third party data collection methods can generate the descriptive context that informs the opinions of trainees.
- Drawing on broader theoretical perspectives: a critical understanding of the organisational context of the delivery of health care and input from health care risk management may provide alternative perspectives on this area. For instance the process of research could be helped by drawing clearer distinctions between the various tasks, roles and responsibilities of the health care team, and the differences between the specialties in which they work.
- Further exploration of positive practice: more case study research is needed into educational interventions that generate positive trainee feedback.

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