

# CORRESPONDENCE

## Minor-injury care by nurse practitioners or junior doctors

Sir—M Sakr and colleagues (Oct 16, p 1321)<sup>1</sup> describe a randomised controlled trial that compared the care of minor injuries by emergency nurse practitioners and by junior doctors. We have recently completed a similar randomised controlled trial,<sup>2</sup> in a department seeing similar numbers of patients to that studied by Sakr and colleagues. Patients' satisfaction was significantly higher for care by emergency nurse practitioners than care by junior doctors, specifically for the information given to patients about their injury and advice on avoiding future injury and illness. In all other respects our results are similar to those reported by Sakr and colleagues.<sup>1</sup>

In our opinion, there are flaws in the statement, taken up in Susan Robinson and Victor Inyang's commentary,<sup>3</sup> that emergency nurse practitioners are more expensive than junior doctors. The work study and costs, detailed in the paper, are very superficial and do not take into account several important factors. First, emergency nurse practitioners are available for other nursing duties when not attending to their own patients; moreover, many are part of the existing nursing workforce and not supernumerary. Second, junior doctors require nursing support when treating most patients; our own work shows emergency nurse practitioners actually provide the treatments for most patients whom they see, whereas junior doctors generally delegate treatments to other nursing staff. Third, the time taken for the treatments after assessment was not included; Sakr and colleagues included only time for assessment and recording of findings. Fourth, self-reported unplanned follow-up is greater for junior doctor than for emergency nurse practitioners. Finally, the role of the emergency nurse practitioner includes health education to a greater extent than that of the junior doctors.

We believe that the leap between adjusted hourly rates for staff and the statement that employment of nurse practitioners is more expensive is too simplistic when so many important factors have been excluded.

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- 1 Sakr M, Angus J, Perrin J, Nixon C, Nicholl J, Wardrope J. Care of minor injuries by emergency nurse practitioners or junior doctors: a randomised controlled trial. *Lancet* 1999; **354**: 1321–26.
- 2 Cooper M, Lindsay G, Kinn S, Swann I, Ibbotson T. An evaluation of the safety and effectiveness of the emergency nurse practitioner in the treatment of minor injuries: a pilot study. Edinburgh: Chief Scientist Office, Scottish Executive, Reference K/RED/6/24 Final report, 1999.
- 3 Robinson S, Inyang V. The nurse practitioner in emergency medicine—valuable but undefined. *Lancet* 1999; **354**: 1319–20.

Sir—Against a background of increasing demands on limited resources, the emphasis on skill mix seeks to match presentations with an intervention delivered by a health professional within an appropriate level of skill and training. Studies that relate the outputs of interventions by different health practitioners to the costs incurred will facilitate efficient use of resources.

M Sakr and colleagues<sup>1</sup> conclude that the outputs of a junior casualty doctor and a nurse practitioner were similar, although the doctor was cheaper. This study falls into the trap of focusing on a comprehensive measurement of outcomes but an inadequate consideration of costs, and is likely to mislead decision-makers.

The perspective of a study defines which costs to count; for questions that have implications for long-term skill mix, all National Health Service costs should be considered irrespective of who bears them. For example, the estimated cost of training annuitised over expected working life is £4735 per year for a nurse and £21 215 per year for a doctor.<sup>2</sup> Although the unit cost of the nurse used by Sakr and colleagues is correct, a more accurate unit cost for a junior doctor of the senior house-officer grade is £34.00 per h,<sup>3</sup> not £14.91 per h they used. This value leads to quite different conclusions.

An accurate estimate of resources consumed is as important as the measurement of outputs in reporting and interpreting of studies that aim to influence health-service delivery.

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- 1 Sakr M, Angus J, Perrin J, Nixon C, Nicholl J, Wardrope J. Care of minor injuries

by emergency nurse practitioners or junior doctors: a randomised controlled trial. *Lancet* 1999; **354**: 1321–26.

- 2 Netten A, Knight J. Annuitising the cost of health service professionals. *Health Econ* 1999; **8**: 254–55.
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Sir—M Sakr and colleagues<sup>1</sup> clearly show that nurse practitioners err at the same 10% rate as junior doctors. But before we recommend that they take over some of the “minor” chores of junior doctors, we should look at the issue in its full perspective. What was the gold standard in Sakr and colleagues' study? “The rigorous standard of the experienced accident and emergency research registrar.” The key word here is experienced—the experience he or she gained as a junior doctor. If doctors are forced to miss out on such experience during their training, the entity “experienced senior doctor” will become obsolete, perhaps replaced by an equally expensive “experienced nurse doctor”.

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- 1 Sakr M, Angus J, Perrin J, Nixon C, Nicholl J, Wardrope J. Care of minor injuries by emergency nurse practitioners or junior doctors: a randomised controlled trial. *Lancet* 1999; **354**: 1321–26.

Authors' reply

Sir—We thank Mark Cooper and Sue Kinn for their interest in our paper and look forward to reading their findings. We agree that we did not assess the costs of increased numbers of unplanned follow-up visits in the group treated by the junior doctors. However, we also noted that the nurses had slightly higher rates of planned follow-up (although this was judged to be appropriate) giving a small effect on total numbers of patients who required follow-up, whether planned or unplanned (1.5 extra visits per 100 patients treated).

In our study, the nurse practitioners did not have other nursing duties. We believe that to have a nurse practitioner switching between other nursing duties and the nurse-practitioner role is

unsatisfactory. The simple addition of nurse practitioner to an already busy role of a senior accident and emergency nurse commonly leads to suboptimum introduction of a nurse-practitioner service. However, the doctors in this study did have other duties; they saw patients who did not meet the nurse-practitioner guidelines. For this reason, we measured the time for the patient to be assessed and the findings recorded because this part of the process was common to all patients in both groups. Junior doctors may have been delegating tasks to other nurses, but they were also assessing other patients at the same time. This study is one part of a much larger study of 40 000 episodes of care provided by nurse practitioners or accident and emergency doctors. The preliminary findings give us no reason to change our conclusions that the revenue costs of a nurse-practitioner minor-injury service are greater than the costs of a similar service provided by junior doctors. There are probably quality benefits in such a service, but our study could not detect any difference in outcome as measured by recovery at 28 days or patients' satisfaction.

We acknowledge the point made by D P Kernick. However, the doctors in our study were using their training not only in seeing patients with minor injury but also in seeing the full range of patients presenting to the accident and emergency department. How could one begin to apportion that part of medical training used in minor-injury care (probably a small part of the curriculum in most medical schools)? There are also significant costs borne by acute trusts in training accident and emergency nurses for 4 years, the minimum experience of the nurses in our study. Indeed, perhaps the most important "cost" is that experienced accident and emergency nurses are in short supply and while they are performing the nurse-practitioner role, their other skills in general accident and emergency care are lost to the service.

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Sir—M Sakr and colleagues' report<sup>1</sup> and Susan Robinson and Victor Inyang's commentary<sup>2</sup> assess the role of the nurse practitioner in emergency medicine. These favourable findings are consistent with previous reports on cardiovascular disease and management of congestive heart failure.<sup>3</sup> Conversely, nurses are still under-recognised in the world of hypertension<sup>4</sup> and this is very evident in Italy, where the sole opportunity for

nurses is a move into an administrative post.

Hypertension is a major public health problem, because of its heavy economical burden in Italy: 114 592 hospital admissions, for a total of 876 356 days in 1996. We created and validated a simple model to manage patients, for whom the emergency ward had requested admission. Since knowledge of the guidelines is important they were intensively taught to doctors working in the emergency ward (all surgeons) and the following model was defined. Patients with uncomplicated high blood pressure were given 50 mg captopril orally and controlled for 90 min in the emergency ward. At 90 min, patients with blood pressure lower than 160/100 mm Hg were discharged and underwent (within 48 h) routine blood analysis and cardiological assessment, to initiate rational pharmacological treatment, when indicated. Exclusion criteria included urgent and emergency treatment for hypertension.<sup>5</sup>

Between Jan 1, and Dec 31, 1998, we screened all patients referred to the emergency ward who fulfilled the above criteria. 71 patients were enrolled, and nine were treated in the emergency ward and discharged, but they did not give their informed consent for subsequent follow-up. Before the initial visit for cardiological assessment, patients were examined by a nurse trained in cardiovascular disease, who measured blood pressure and weight, checked diet, smoking and drinking habits, and physical activity sodium restriction, weight loss, smoking cessation, and monitored compliance to anti-hypertensive drug treatment. Finally, the nurse advised the patient on compliance strategies and encouraged adherence to behavioural, dietetic, and pharmacological treatment, ensuring long-term compliance. This counselling was renewed during two more cardiological assessments planned at 3 and 12 months. Patients were encouraged to telephone the nurse every weekday morning for advice on new difficulties. The nurse may have also requested a routine or urgent cardiological assessment, in accordance with predetermined decisional algorithms.

In 1998, the total number of admissions for hypertension fell from 63 to 42 ( $\chi^2$  test,  $p=0.05$ ), compared with 1997. The total number of hospital stays also decreased from 457 to 231 days ( $\chi^2$  test,  $p<0.001$ ). Subsequently there was a substantial lowering of annual overall health-care costs for hypertension (diagnosis-related group 134) in our hospital: overall €44 775 in 1998 compared with €74 517 in 1997. None

of the patients admitted to the protocol have major adverse events; 88% showed adequate blood pressure control at 1 year follow-up.

We agree with Robinson and Inyang that the role of nurses should be redefined, and that this may be easily and effectively extended to the management of hypertension within a cardiologist supervised model.

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- 1 Sakr M, Angus J, Perrin J, Nixon C, Nicholl J, Wardrope J. Care of minor injuries by emergency nurse practitioners or junior doctors: a randomised controlled trial. *Lancet* 1999; **354**: 1321–26.
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Sir—The increasing demands for health services and new technology, in association with the limited resources available and made available for health services, demand continuing remodelling of health systems. When changes in service delivery can occur with similar or enhanced quality at a reduced cost, a total systems approach should indicate that such changes need to be rapidly implemented. If there is increased cost for enhanced quality, there are a range of methods to decide whether such a change is appropriate.<sup>1</sup> Unfortunately, determining whose quality, whose cost, and the totality of the system presents substantial difficulties.

M Sakr and colleagues<sup>2</sup> compare the quality of service from junior doctors and nurse practitioners through a comprehensive range of indicators, which include local health service costs. The investigators comment that "if the training costs for junior doctors were removed, then the cost differential would be greater"—ie, the costs would favour use of junior doctors. However, they do not comment on the impact of a switch from junior medical staff to specialist nurses on the long-term training needs of doctors. Discussion of this unbundling of medical education from medical service is also omitted from Susan Robinson and Victor Inyang's commentary.<sup>3</sup> Although the total societal cost of doctors

inexperienced in the treatment of minor ailments early in their careers may be small and certainly remediable, the philosophy applied of an intra-sectoral and local view rather than a societal approach is a concern. There are a range of implications for the individuals involved and resources used for the development of health careers, particularly if the model is applied and extended to other scenarios.

Robinson and Inyang are correct in stating that physicians need to redefine their roles, as indeed will most health workers, because the benefits of knowledge, technology, and empowerment of patients increasingly affect the remodelling of health systems. However, we need to ensure that, where possible, change is considered incorporating an understanding of the knock-on effects outside the health discipline, health agency, and health region concerned, and to society as a whole.

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- 1 Laupacis A, Feeny D, Detsky AS, Tugwell PX. How attractive does a new technology have to be to warrant adoption and utilisation? Tentative guidelines for using clinical and economical evaluations. *Can Med Assoc J* 1992; **146**: 473–81.
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## Glaucoma and paclitaxel

Sir—Elizabeth Fabre-Guillevin and colleagues (Oct 2, p 1181)<sup>1</sup> report a case of glaucoma induced by docetaxel therapy that recurred during treatment with paclitaxel in a woman affected by metastatic breast cancer. They suggest that fluid retention, a taxane side-effect, could have led to glaucoma.

Other workers had suggested that fluid retention is a toxic effect peculiar to docetaxel. Hudes and colleagues<sup>2</sup> reported that fluid retention occurred in 50% (17 of 33) of patients treated with paclitaxel and estramustine phosphate in oral formulation, but the latter drug is commonly associated with this toxic effect. Kim and colleagues<sup>3</sup> reported two cases of fluid retention in 41 patients affected by advanced gastric cancer who received combination chemotherapy with three drugs including paclitaxel, but this toxic effect was not clearly related to paclitaxel. No other data exist on fluid retention associated with paclitaxel. A prospective evaluation of

ocular complications after high-dose chemotherapy with support of peripheral blood progenitor cells has been done without evidence of glaucoma in the paclitaxel group (30 patients).<sup>4</sup>

We are investigating ocular neurotoxicity in patients affected by breast cancer who receive three cycles of high-dose chemotherapy with epirubicin 150 mg/m<sup>2</sup> and paclitaxel 400 mg/m<sup>2</sup> with peripheral blood progenitor cell support and granulocyte colony-stimulating factor every 16–19 days. We examined a 56-year-old woman who, soon after treatment, developed bilateral visual-field loss that was more pronounced in the right eye. Ophthalmological examination did not show an increase in intraocular pressure. Fundoscopy and visual evoked potentials were normal. On gonioscopic examination, the angle was wide open. No signs of fluid retention were seen in organs and body cavities. 6 months later, visual field was normal, although an increase in intraocular pressure was registered (right eye 29 mm Hg, left eye 23 mm Hg), and local treatment with timolol was started. This event could be related to an arising primitive open-angle glaucoma, and not to paclitaxel. Of 12 patients assessed in our prospective study, two additional patients showed visual-field loss at the end of therapy, with complete resolution after 6 months. In all cases intraocular pressure was normal. We believe that visual-field defects are due to neurotoxicity.<sup>5</sup> In our continuing study with high-dose paclitaxel, neither fluid retention nor glaucoma has been reported.

In the case that Fabre-Guillevin and colleagues report,<sup>1</sup> induction of glaucoma is probably related to docetaxel, but recurrence might be caused by high total dose of steroids rather than paclitaxel. The investigators state that “a major side-effect of docetaxel and paclitaxel is fluid retention—a possible cause of generalised oedema and visceral effusion”. Other studies show that docetaxel induces cumulative and dose-related fluid retention, but there is no evidence of body fluid retention or glaucoma induced by paclitaxel.

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- 5 Capri G, Munzone E, Tarenzi E, et al. Optic nerve disturbances: a new form of paclitaxel neurotoxicity. *J Natl Cancer Inst* 1994; **86**: 1099–101.

## Screening for congenital dislocation of the hip

Sir—Annabelle Chan and colleagues (Oct 30, p 1514)<sup>1</sup> report the success of the Australian screening programme for congenital dislocation of the hip (CDH), and contrast this success with the findings of the Medical Research Council Working Party<sup>2</sup> on the UK programme. The aim of a CDH screening programme is to detect and treat abnormal hips at an early stage to ensure normal hip development and function during childhood and adolescent growth. The success of a screening programme cannot be measured directly because there is no confirmatory diagnostic test for CDH; treatment is usually started before the disorder becomes manifest, and there is a lack of population-based data on hip morphology and function in screened or unscreened populations. Assessment is thus by inference from the incidence of early treatment and the incidence of an operative procedure, and the relation of these to the background prevalence of CDH.

The Australian and the UK screening programmes used routine hospital inpatient data to identify children under 5 years receiving a first operative procedure for CDH. However, the UK study undertaken in a larger population included active case reporting through a national surveillance scheme among orthopaedic surgeons. This scheme showed that routine data would have identified 77% of eligible cases. If this finding were applied to the Australian population the incidence of an operative procedure would be 0.61 per 1000 livebirths (95% CI 0.47–0.75) rather than 0.46 (95% CI 0.34–0.59) as reported. This revised figure is consistent with the findings of the UK study in which the incidence of an operative procedure was estimated to be 0.78 per 1000 livebirths (95% CI 0.72–0.84). The unadjusted estimates of the incidence of an operative procedure in the two studies are similar. None of the children identified through routine data in the UK study were born outside the UK, whereas 19% (16) of children