Letters

Tobacco should be excluded from free trade agreement

EDITOR—The World Health Organization estimates that by 2030 tobacco will become the world's biggest single cause of death and disease, killing 10 million people each year.[1]

This week the European Union and the South American trading bloc Mercosur will continue negotiations towards a free trade agreement. We call on negotiators to place health before trade, by excluding tobacco from the agreement.

Every day, doctors see the deadly effects of tobacco. In the Doctors' Manifesto for Global Tobacco Control, more than 130 national medical associations united to call on governments and international bodies to take decisive action to tackle the tobacco pandemic.[2] While trade liberalisation can bring benefits, free trade in tobacco leads to increased consumption.[3] This inevitably leads to more tobacco related illness and death.

Tobacco is a uniquely harmful consumer product. Representatives of national medical associations from the European Union and the Mercosur region have written to the negotiators stating that tobacco products have no place in free trade agreements.

Excluding tobacco from free trade agreements would protect health. It is compatible with international law, which provides for other harmful products such as landmines to be exempted.[4] Moreover, the World Trade Organisation has recognised that human health is important in the highest degree and that if necessary, governments may "put aside WTO commitments" to protect human life.[5]

Negotiators from the European Union and Mercosur must act to protect the future health generations by excluding tobacco from this agreement. Such action would not only show leadership but would set an important precedent for future trade agreements, whether bilateral, regional, or international.

Eduardo Bianco *representative*
Sindicato Médico del Uruguay, Bulevar Artigas 1515, CP 11200, Montevideo, Uruguay

Sinéad Jones *director*
Tobacco Control Resource Centre, BMA, Edinburgh EH2 1LL

Competing interests: None declared.

1 World Health Organization. *The world health report 2003—shaping the future.* Geneva: WHO, 2003. www.who.int/whr/en (accessed 27 Feb 2004).
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Ionising radiation in infancy and adult cognitive function

Protocols for computed tomography must be optimised

EDITOR—Hall et al report adverse effects on adult cognitive function among male patients treated with radiation for skin haemangioma during infancy.[1] The evidence for effects was strongest among those receiving the highest doses.

It is unclear whether there was a dose threshold below which no effects occurred. This study of a sizeable cohort seems to be well conducted with minimal risk of bias. A group of patients with haemangioma was compared by brain dose rather than with an external group. Consequently confounding would seem plausible only if the severity of the clinical condition affected cognitive function and was correlated with brain dose.

Other studies have shown adverse effects of radiation on intellectual development, although interpretation is complicated because some studies used higher doses from exposures in utero or may have been subject to confounding.

Good radiation protection practice (reducing unnecessary exposures and minimising radiation doses) controls well established risks, largely of radiation induced cancers. Computed tomography entails higher doses than plain radiography. Computed tomography of the head is a first line examination only for children whose symptoms imply notable brain injury.[2]


PHILIPPE PLAILLY/SPL

Nevertheless, unless the protocol for computed tomography scanning is adjusted for infants, the brain dose (as opposed to the "effective dose," which is integrated across the whole body) could exceed 100 mGy, within the upper range of doses in the study by Hall et al. This reinforces the need for optimising protocols for computed tomography, minimising the dose to the patient and restricting examinations to infants with clear clinical indications.

Jill Meara *deputy director*
jill.meara@nrpb.org

Gerry Kendall *head, population exposure department*
Colin Muirhead *group leader, epidemiology*
Barry Wall *group leader, medical dosimetry*
National Radiological Protection Board, Chilton, Didcot, Oxfordshire OX11 0RQ

Competing interests: All authors work for the National Radiological Protection Board, which has a statutory duty to advise on protecting the public from the harmful effects of radiation. The original electronic response also appears on the website of the National Radiological Protection Board.

1 Hall P, Adami HO, Trichopoulos D, Pedersen NL, Lagiou P, Ekbom A, et al. Effect of low doses of ionising radiation in infancy on cognitive function in adulthood: Swedish population based cohort study. *BMJ* 2004;328:19-24. (3 January.)
2 Royal College of Radiologists. *Making the best use of a department of clinical radiology; guidelines for doctors.* 5th ed. London: RCR, 2003.

Radiation may not solely explain later cognitive function

EDITOR—Hall et al did not give a detailed description of the patients they studied; the boys had cutaneous haemangiomas in the head region, and they were in 1930-59 younger than 18 months.[1]

How many of these boys had Sturge-Weber syndrome with cutaneous and cerebral haemangiomas? In a typical case the cutaneous lesions are in the territory of the trigeminal nerve and the cerebral in the hemispheral cortex of the same side, but there are many variations. The neurological symptoms, if present, include epileptic seizures, hemiparesis, and some mental retardation. Cortical calcifications may be seen on skull radiography.

Possible cortical haemangioma was not diagnosed at the time of radiation. In 1930-59 none of the current neuroradiological examinations was available, and skull radiography, if performed, was of little help because cortical calcifications are rare at such a young age.

The study found an inverse association between the estimated radiation dose and

high school attendance, and frontal radiation dose and military test results. In Sturge-Weber syndrome the cutaneous lesions are predominantly in the forehead, and the sizes of the cutaneous and cortical lesions are often correlated. Therefore, large frontal doses of radiation are likely to be associated with larger cerebral cortical lesions.

Sturge-Weber syndrome may have affected only some of the boys who had radiation treatment for cranial haemangiomas, but it could explain the poorer (mean) results in both high school attendance and military tests. This probability should be examined before frightening lay readers more about the hazards of computed tomography and x ray examinations.

Rainer Fogelholm *neurologist (retired)*
Pappilantie 10 B 8, 02400 Kirkkonummi, Finland
r.fogel@kolumbus.fi

Competing interests: None declared.

1 Hall P, Adami HO, Trichopoulos D, Pedersen NL, Lagiou P, Ekbom A, et al. Effect of low doses of ionising radiation in infancy on cognitive function in adulthood: Swedish population based cohort study. *BMJ* 2004;328:19-24. (3 January.)

Much research on low dose radiation remains hidden

Editor—Hall et al say that little is known about the effects of low doses of radiation or a possible threshold value, ignoring a large body of scientific evidence.[1]

Muller said in 1955 that radiation produces permanent changes, mutations, no matter how long or how short a time the total dose was received—more than 99% are harmful, causing some functional impairment.[2] A survey by Stewart et al followed in 1958, the first human study documenting cancer and leukaemia in children whose mothers had been exposed to in utero x ray of only 1-2 rad.[3] In 1969-70 Gofman presented several studies to congressional committees dealing with low dose issues and authored five books on human health effects, the latest linking at least 50% of cancers and ischaemic heart disease to the primary co-action of medical x rays.[4] Recently 15 cancer experts published a review confirming these earlier warnings, indicating there is good evidence for cancer risk in the 1-5 rad range.

US journalist Laurie Garrett observed that scientists who independently studied the human health impacts of low level radiation would be vilified, their reputations smeared.[5] Many researchers have been scientifically shunned and subjected to attacks on their person. History will show that much substantial low dose research is still hidden.

Lynn Howard Ehrle *senior policy analyst (pro bono)*
National Association for Public Health Policy, 8888 Mayflower Drive, Plymouth, MI 48170, USA
ehrlebird@comcast.net

Competing interests: None declared.

1 Hall P, Adami HO, Trichopoulos D, Pedersen NL, Lagiou P, Ekbom A, et al. Effect of low doses of ionising radiation in infancy on cognitive function in adulthood: Swedish population based cohort study. *BMJ* 2004;328:19-24. (3 January.)
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Wrong impression was created by study's publicity

Editor—The study by Hall et al on ionising radiation in childhood is flawed for several reasons.[1]

Firstly, exposure to radiation in 1930-60 was without adequate collimation and shielding, and the machines used were far less accurate than recent models.

Secondly, the x ray treatments entailed mainly contact therapy at low (60 kVp) voltage, which means less penetration and lower energy photons, which are absorbed more in tissue. Some children were treated more than once, either by receiving several treatments for one haemangioma or by receiving individual treatments for several haemangiomas. This would have a stochastic effect. Today's average patient is not exposed to anything resembling what the paper quotes.

Thirdly, no consistent difference was seen between the two lowest dose categories (1-20 mGy and >20-100 mGy), but the increment of exposure was limited, with median values of only 0 and 30-40 mGy. These are the maximum levels of exposure on computed tomography, and this is further reduced with newer scanners and dose reduction protocols based on infant age and body weight. The dose in computed tomography varies with both equipment and operator dependent factors.[2 3]

Fourthly, in the United Kingdom computed tomography is opted for in young children only after considering national and international guidelines. Various strategies exist to limit the radiation dose.[4 5] However, it would be far preferable to have computed tomography to rule out serious intracranial disease than worry about the loss of a couple of IQ points in later life in a child with serious clinical signs.

This paper is another example of the *BMJ* publishing an article to gain publicity in the media by sensationalising an issue.

Sanjay P Prabhu *specialist registrar in general and radionuclide radiology*
Royal United Hospital, Bath BA1 3NG
drsanjuuk@yahoo.co.uk

Competing interests: SP is a radiologist with paediatric training and an advocate of best possible care for children.

1 Hall P, Adami HO, Trichopoulos D, Pedersen NL, Lagiou P, Ekbom A, et al. Effect of low doses of ionising radiation in infancy on cognitive function in adulthood: Swedish population based cohort study. *BMJ* 2004;328:19-24. (3 January.)
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3 Frush DP. Pediatric CT: practical approach to diminish radiation dose. *Pediatr Radiol* 2002; 32:714-7.
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5 Paterson A, Frush DP, Donnelly LF. Helical CT of the body: are settings adjusted for pediatric patients? *Am J Roentgenol* 2001;176:297-301.

Authors' reply

Editor—We agree with Meara et al that optimising computed tomography protocols is crucial.

Fogelholm raises the possibility of the study subjects having Sturge-Weber syndrome—cutaneous and cerebral haemangiomas linked to neurological symptoms such as epileptic seizures and mental retardation. We matched the cohort with the Swedish inpatient registry and compared the observed and expected number of admissions for epilepsy. In all, 19 boys had been admitted under this diagnosis, which was non-significantly fewer than expected. Sturge-Weber syndrome is not likely to have influenced our findings.

Ehrle says that we have ignored a large body of evidence and says that little is known about the effects of low doses of radiation or a possible threshold value. One of the most important studies in this field estimated cancer risks in 50 000 survivors of the atomic bomb, focusing on those having been exposed to <500 mSv.[1] A linear no threshold model fitted the data, but they could not exclude a possible threshold of 60 mSv.

Prabhu points out that x ray treatments during 1930-60 had less penetration than today. However, in our study only 6% received x ray treatment and the remaining patients were treated with radium-226 applicators. The envelopes of the applicators absorbed α and β rays and the main dose contribution to the brain came from the γ rays.

Prabhu also asserts that, at least in the United Kingdom, careful discussion takes place before deciding on computed tomography for young children and that only necessary examinations are conducted. Let's just hope that he is correct, that his colleagues follow his example, and that this behaviour quickly spreads outside the United Kingdom.

Per Hall *associate professor*
Department of Medical Epidemiology and Biostatistics, Karolinska Institutet, S-171 76 Stockholm, Sweden
per.hall@meb.ki.se

Marie Lundell *hospital physicist*
Department of Hospital Physics, Karolinska University Hospital, S-171 76 Stockholm

Competing interests: None declared.

1 Pierce DA, Preston DL. Radiation-related cancer risks at low doses among atomic bomb survivors. *Radiat Res* 2000;154:178-86.

Hospital bed utilisation in the NHS and Kaiser Permanente

Bed management in the NHS can be improved easily

Editor—The comparison by Ham et al of bed utilisation in the NHS and Kaiser Permanente indicates that the NHS could improve its management of beds drastically but leaves open the possibility that it could be expensive in effort and money to reach the degree of efficiency at Kaiser.[1] However,

a body of direct evidence from other statistics in the NHS already shows that large improvements are possible and likely to be cheap to implement.

Length of stay varies greatly in different hospitals (and for reasons not readily explained by demographics or differences in specialisations). In most hospitals the expected length of stay varies by around one day, depending on which day you arrive (a pattern with no conceivable clinical justification).[2]

Our models build a picture of hourly bed utilisation given known patterns of emergency arrivals (which are random), elective arrivals (which are, at least in principle, subject to management control), and discharges (which are definitely under management control). They show that the observed variations are largely due to the widespread practice of not discharging many patients at weekends. For a hospital with a length of stay of about seven days (about average), the consequence of not discharging patients at weekends is to waste at least 30% of the effective bed capacity.

Data nearly two years on

Our evidence shows that few hospitals try to manage discharges and planned arrivals: in many trusts elective "planned" arrivals are more variable than (and uncoordinated with) emergency arrivals. Discharge during weekends requires consultants either to run discharge rounds or to set criteria for nurse-led discharges. Neither of these options is an expensive change.

We know how to improve bed management in the NHS, and it is not expensive. The biggest barrier is not a lack of resources but a deep rooted unwillingness to change working practices for the benefit of patients.

Stephen Black *principal consultant*
PA Consulting, London SW1W 9SR
stephen.black@paconsulting.com

Nathan Proudlove *lecturer in operational research*
Manchester School of Management, University of Manchester Institute of Science and Technology, Manchester M60 1QD

Competing interests: SB has spent part of 2003 working for the Department of Health on issues related to performance of accident and emergency departments. NP has been working on issues involved in inpatient flows for many years. Both are collaborating on some original work on the management of beds in hospitals. The views expressed are theirs.

1 Ham C, York N, Sutch S, Shaw R. Hospital bed utilisation in the NHS, Kaiser Permanente, and the US Medicare programme: analysis of routine data. *BMJ* 2003;327:1257-60. (29 November.)
2 Audit Commission. *Acute hospital portfolio: bed management—review of national findings.* London: Audit Commission, 2003.

Do not throw the baby out with the bath water

Editor—The NHS is a learning organisation, and the secretary of state for health recently warned the critics opposed to learning from other healthcare systems.[1] Ham et al have been criticised for not presenting evidence for the conclusion that Kaiser's better bed utilisation is due to integration of care, active management, use of intermediate and self care, and leadership.[2]

According to the authors, one of them interviewed senior clinical and managerial staff and visited Kaiser facilities to gather data. It is hard to quantify this type of qualitative data. However, evidence shows that Kaiser's chronic care programme management has reduced emergency department visits.[3] A randomised controlled trial in a Kaiser facility found that a multidisciplinary outpatient diabetes care management programme reduced both inpatient and outpatient utilisation.[4] Kaiser is the market leader in providing and implementing self-management support for patients.[5]

In the 21st century the NHS should be open to new ideas and, with regard to Kaiser, should not throw the baby out with the bath water. To quote the health secretary, "To refuse to learn at all is to commit an institution to steady decline. The NHS is a strong powerful social force in British society. It has the capacity and the strength to learn from the market just as it has the capacity and strength not to copy it."[1]

Political and managerial champions are as essential as clinical champions to deliver the best possible service, and we should not veto ideas simply because they originate from market economies.

P Badrinath *specialist registrar in public health*
Southend Primary Care Trust, Southend on Sea, Essex SS2 6HE
p.badrinath@southend-pct.nhs.uk

Competing interests: PB is a keen believer in some of the principles and methods of health care delivery by Kaiser and has approached the unit headed by Ham for a letter of support to spend a month in a Kaiser organisation to learn from observation and interaction.

1 Department of Health. The NHS must learn from other healthcare systems. Press release, Tuesday 4 November 2003. www.info.doh.gov.uk/doh/intpress.nsf/page/2003-0423?OpenDocument (accessed 23 Jan 2004).
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Debate about Kaiser needs transparency and hard evidence

Editor—The article by Feachem et al comparing Kaiser with the NHS attracted much attention, not least from the Department of Health.[1] However, the authority of the debate is diluted by the way in which the article by Ham et al was published.[2]

Firstly, Ham did not declare any competing interests. The Department of Health, for which he is strategy director, is currently running pilot studies in seven primary care trusts, adapting elements of the Kaiser model. He therefore has a vested interest in showing that the model his team has advocated performs better than the NHS.

Secondly, the conclusions of the paper were presented as fact in the summary box "What this study adds." The paper implies that Kaiser has accomplished its better acute bed utilisation through integration of care, active management of patients, and the use of intermediate care, self care, and medical leadership. Neither it nor Feachem et al's paper present any evidence that this is the case: these claims are either speculative or based on their own analysis of the Kaiser system. Whether Kaiser achieves better bed utilisation and how this is achieved has not been conclusively shown.

The presentation of the paper in this way does not promote debate but weakens it. The Department of Health set up pilots modelled on aspects of the Kaiser system on the basis of Feachem et al's flawed article, which was surely intended only to initiate debate. Unsubstantiated conclusions should not be presented as fact to fuel another fruitless political exercise.

Unfortunately, the primary care trust pilots will all omit the most important distinction of the Kaiser system—that it is not run by politicians.

David A Evans *senior house officer, obstetrics and gynaecology*
Chesterfield and North Derbyshire Royal Hospital NHS Trust, Chesterfield S44 5BL
dae28@hotmail.com

Competing interests: None declared.

1 Feachem RGA, Sekhri, N, White, K. Getting more for their dollar: a comparison of the NHS and California's Kaiser Permanente. *BMJ* 2002:324: 135-43
2 Ham C, York N, Sutch S, Shaw R. Hospital bed utilisation in the NHS, Kaiser Permanente, and the US Medicare programme: analysis of routine data. *BMJ* 2003;327:1257-60. (29 November.)

Quality of care, length of stay, and readmissions need to be considered

Editor—Ham et al report that bed days used for a range of common diagnoses among people aged 65 and over are substantially higher in the NHS than in US managed care programmes.[1]

Stroke admissions contribute most to the extra bed days in the NHS and also show the largest relative differences from the US comparators. Comparable incidences are not available, but mortality, a reasonable proxy, shows that the United States has much lower rates of stroke than the United Kingdom: age adjusted stroke mortality in the United States is about 35% lower at age 35-74 and 49% at age 75-84.[2]

However, admission rates for Medicare in California and the United States are about 45% higher than in the NHS, Kaiser's rates being broadly similar. The higher Medicare stroke admission rates in the face

of lower incidence seem likely to be due to a higher proportion of readmissions among US patients. A considerable proportion of the longer average stay for NHS patients must simply show that more British patients are admitted only once, rather than repeatedly. Furthermore, the NHS bed days include days spent in intermediate care beds, but these post-acute bed days are not included for the US data.

Randomised controlled trials of stroke units show clear benefits for long term disability and mortality, with none of the trials in a Cochrane systematic review reporting median lengths of stay of less than 13 days.[3] That high quality stroke care is consistent with US managed care stays of only four to six days seems implausible. Elderly people with strokes (and other conditions) can be discharged rapidly, but if the consequences are readmission from a failure to apply effective clinical interventions this hardly constitutes successful management.

Ham et al suggest that patients should be "co-providers" of their care. The vision of stroke patients admitted, then readmitted would be a perfect satire on the "cost is all" view of "saving" the NHS, if it were not clear that this message would be greeted enthusiastically by government.

Shah Ebrahim *professor of epidemiology of ageing*
Shah.Ebrahim@bristol.ac.uk

Stephen Frankel *professor of epidemiology and public health*
George Davey Smith *professor of clinical epidemiology*
Department of Social Medicine, University of Bristol, Bristol BS8 2PR

Competing interests: None declared.

1 Ham C, York N, Sutch S, Shaw R. Hospital bed utilisation in the NHS, Kaiser Permanente, and the US Medicare programme: analysis of routine data. *BMJ* 2003;327:1257-60. (29 November.)
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Authors did not compare like with like

Editor—The analysis by Ham et al seems to be seriously flawed by the inability to distinguish NHS acute hospital bed days from stays in community hospitals and similar facilities.[1] This is particularly relevant to stroke, which contributes most to the overall difference, by having long total lengths of stay.

The availability in the Kaiser system of "skilled nursing facilities" with access to therapists would presumably equate to stroke rehabilitation facilities in intermediate care in the NHS. It would be good to see what effect the inclusion of these bed days makes to the comparison.

Mark L Mallet *consultant physician*
Royal United Hospital, Bath BA1 3NG
mark.mallet@ruh-bath.swest.nhs.uk

Competing interests: None declared.

1 Ham C, York N, Sutch S, Shaw R. Hospital bed utilisation in the NHS, Kaiser Permanente, and the US Medicare programme: analysis of routine data. *BMJ* 2003;327:1257-60. (29 November.)

Authors' reply

Editor—We agree with Black that improved bed management is not expensive and with Badrinath that other evidence supports our argument that the NHS can learn from Kaiser. Like Evans, we were sceptical of the claims made by Feachem et al in their original paper,[1] but as the evidence has changed we have been willing to change our minds.

Ebrahim et al claim that incidence figures for stroke are not available. They seem to have overlooked evidence that shows that the incidence is only marginally lower in the United States than in England (362 per 100 000 compared with 379 per 100 000).[2] As admission rates for stroke are also marginally lower in Kaiser than in the NHS, it is difficult to sustain their argument that Kaiser has much higher rates of readmission. In view of the lower mortality in the United States cited by Ebrahim et al it is also hard to argue that quality of stroke care is lower in that country.

Kaiser's lower use of acute beds results mainly from big differences in length of stay. In the case of stroke, Kaiser does not skimp on effective clinical interventions but chooses to provide these in non-acute care settings. Most acute hospitals are not well suited to provide several hours a day of intensive rehabilitation, and Kaiser's use of skilled nursing facilities for this purpose enables it to make much less use of acute beds.

We agree with Mallet that it would be valuable to distinguish between the time patients spend in an acute hospital and the time spent in community hospitals and similar facilities. This was identified in our paper as one of the limitations of the data we had available. Despite this, there are important lessons from Kaiser about the scope for reducing the time patients with stroke stay in the acute hospital by providing care in alternative settings.

Another correspondent on bmj.com reports improvements in performance in Lambeth and Southwark applying principles similar to those used in Kaiser.[3] Like her, we believe the appropriate response to the analysis we have undertaken is not to deny these differences or seek to explain them away, but to ask how can we do better.

Chris Ham *director*
Strategy Unit, Department of Health, London SW1A 2NS
chris.ham@doh.gsi.gov.uk

Nick York *senior economic adviser*
Rob Shaw *economic adviser*
Economics and Operational Research Division, Department of Health, Leeds LS2 7UE

Steve Sutch *senior consultant*
NHS Information Authority, Winchester SO22 5DH

Competing interests: None declared.

1 Feachem RGA, Sekhri N, White K. Getting more for their dollar: a comparison of the NHS and California's Kaiser Permanente. *BMJ* 2002:324:135-43.
2 Sudlow CLM, Warlow CP. Comparable studies of the incidence of stroke and its pathological types. *Stroke* 1997;28:491-9.
3 Close JCT. Pursuit of perfection. Electronic response to: Hospital bed utilisation in the NHS, Kaiser Permanente, and the US Medicare programme. bmj.com 2003. http://bmj.bmjjournals.com/cgi/eletters/327/7426/1257#45773 (accessed 2 Feb 2004).

Money should be spent on effective, well documented solutions

Editor—It took 35 clinicians and managers, travelling to and staying in California, to discover that the NHS can learn from Kaiser's approach to day bed use.[1]

I have been a Kaiser patient, have recently spent a year working in the NHS, and have now returned to work as a family practice mid-level clinician in the Medicare system in California. I could have told you for a fraction of the cost that beds are managed tightly here, with support from more cost effective support services, a more practical philosophical lifestyle approach, and less turf protection among doctors than in the NHS.

Money is not only being wasted on kind but absurd day bed use in the United Kingdom but also on junkets to California, New York, Minnesota, and Louisiana by NHS staff looking for solutions to the NHS workforce crisis.

Well trained, mid-level providers, such as the inaccurately named physician assistants, could tap a reservoir of skill and experience available to augment the inadequate NHS workforce. Accessing this group would not take staff away from nursing but would take advantage of ethnic and gender diversity. A national programme of training, evaluation, and registration could be set up quite easily, and physician assistants added to the NHS workforce in a comparatively short time, providing continuity on the wards, and liaison with general practitioners.

Margaret E Allen *physician assistant*
East Palo Alto, CA 94306, USA
margaret.allen@intelynx.net

Competing interests: None declared.

1 Ham C, York N, Sutch S, Shaw R. Hospital bed utilisation in the NHS, Kaiser Permanente, and the US Medicare programme: analysis of routine data. *BMJ* 2003;327:1257-60. (29 November.)

Ownership, integration, and medical leadership are key

Editor—Shapiro and Smith provide an insightful summary into possible reasons for the success of the Kaiser Permanente model compared with the disintegrated system which is clearly failing in the NHS.[1]

The authors say that Kaiser "employs its doctors." This is incorrect. Kaiser Permanente delivers health care through regional Permanente medical groups, which are entirely owned, led, and run by their shareholder doctors. These work in an equal and exclusive partnership with, but are totally separate from, the Kaiser health plans, which fund the medical groups to provide health care for members. Shareholder doctors agree to pay themselves competitive salaries rather than take profit shares as this arrangement is

consistent with the Kaiser Permanente philosophy and allows the medical groups to attract doctors who are both of sufficiently high calibre and of a "cultural good fit" with the organisation.

The reason for the success of this model is that it allows for true medical leadership—the shareholder doctors make all decisions related to treatment and use of resources, and this basic underlying principle is accepted and supported by the health plans. As Sharon Levine, associate executive director of the Permanente medical group in northern California puts it, "the pen (and the mouse) are the most expensive items of medical equipment" (personal communication).

In the hegemony of the NHS manager and flattened clinical hierarchies this is all rather controversial and at odds with the authors' contention that distinctions between doctors and nurses may all be considered as largely obsolete.

The lessons to be learnt from Kaiser Permanente are those of true medical leadership as well as ownership and integration. These lessons are valuable to the NHS, regardless of the given method of healthcare funding. Politicians please take note.

Robert Morley *general practitioner principal*
Erdington Medical Centre, Birmingham B24 8NT
robert.morley@oc.birminghamha.nhs.uk

Competing interests: None declared.

1 Shapiro J, Smith S. Lessons for the NHS from Kaiser Permanente. *BMJ* 2003;327:1241-2. (29 November.)

Systematic reviews of public health in developing countries are in train

Editor—The Cochrane Collaboration's health promotion and public health field, in collaboration with an international taskforce comprising the World Health Organization, the Global Health Council, the International Union for Health Promotion and Education, the South African Medical Research Council, the Burnet Institute for International and Public Health, and the US Centers for Disease Control and Prevention, has recently completed a study to make recommendations for priority systematic reviews of public health topics of global importance and of particular relevance to developing countries.[1]

We identified nearly 400 published public health systematic reviews and mapped these against WHO's *World Health Report 2002* to identify gaps in the evidence base. The taskforce nominated topics of importance to global decisions, in light of existing reviews.

The criteria for priority selection were burden of disease, magnitude of problem, urgency; importance to developing countries; avoidance of duplication; and opportunity for action.

Twenty six recommendations for priority systematic reviews have been made. Examples include:

- Community building interventions to improve physical, social, and mental health
- Interventions that use a combination of environmental, social, and educational strategies to prevent infectious diseases such as malaria, dengue fever, and diarrhoea
- Non-testing dependant prevention of mother to child transmission of HIV
- Interventions to enhance compliance with regulations of waterworks systems that supply potable water.

Active dissemination to global policy-making organisations and potential reviewers seeking topics has started. The research is currently in press—please contact cochrane@vichealth.vic.gov.au for further information.

Elizabeth Waters *director*
elizabeth.waters@rch.oeg.au

Jodie Doyle *coordinator*
Cochrane Collaboration Health Promotion and Public Health Field, Centre for Community Child Health, Department of Paediatrics, University of Melbourne, Murdoch Children's Research Institute, Parkville, Victoria 3052, Australia

The Cochrane Health Promotion and Public Health Field is funded by the Victorian Health Promotion Foundation, the Australian Commonwealth Government, and the UK NHS.

Competing interests: None declared.

1 Richards T. Poor countries lack relevant health information, says Cochrane editor. *BMJ* 2004;328:310. (7 February.)

School exam results matter in medical job applications

Editor—Last month's report from the Working Group on 14-19 Reform announced 6-7 point assessment scales reforming current A level grading, welcoming counteraction of grade inflation and findings that A level mathematics fail to meet higher education needs.[1–3]

McManus et al identified speed of career progression and attainment of postgraduate qualifications as indicators of vocational success in medicine.[4] These principal outcome measures were used to justify the use of A level results as intelligence indicators during selection for medical school.

However, A level results continue to exert a post-selection bias during postgraduate training, and nowadays, these indicators can inversely correlate with vocational success if applicants undertake full time postgraduate research or general medical or surgical training.

We surveyed 51 registrars in various specialties in London to test the hypothesis that A levels influence postgraduate medical applications and career progression. Fifty of them had time to answer standard questions anonymously.

Eleven reported having been asked for A level results at or before interview and 28 had put A level results on CVs during postgraduate medical applications. Furthermore, 37 knew of colleagues who had used A level results for these applications, and only three doubted that colleagues had used A level results at all.

This shows that A level results are used in postgraduate medical recruitment. It indicates "expectancy effects" influencing training and advancement, casting doubt on A levels as independent, proved intelligence predictors, useful in anticipating career success.

The universities of Oxford and Cambridge and University College London use the biomedical admissions test (BMAT, www.bmat.org.uk/) to aid selection of candidates with predicted As at A level. A study of Nottingham medical students found that only high GCSE grades were consistent independent predictors of success during both preclinical and clinical studies.[5] BMAT and GCSE results are currently less likely to influence the postgraduate selection process, although they would be better markers to test as "intelligence predictors" of medical success than A levels.

The BMAT might also apply to school leavers from outside England and Wales. Twenty three per cent of hospital consultants in the United Kingdom were foreign graduates in 2002 (Department of Health, medical and dental workforce status. www.dh.gov.uk/PublicationsAndStatistics/Statistics/fs/en), as were a fifth of the registrars in our study. Of course, once a marker is identified as a predictor of success, it will undoubtedly feature in the future application process and thus select itself, regardless of its underlying worth.

R E Weir *visual science research fellow*
Institute of Ophthalmology, London EC1V 9EL

F H Zaidi *visual science research fellow*
Department of Ophthalmology, Imperial College, London W6 8RP

D E J Whitehead *senior house officer*
Charing Cross Hospital, Ear Nose and Throat, London W6 8RF

R E MacLaren *lecturer in human anatomy*
Merton College, University of Oxford, Oxford OX1 4JD

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