LETTERS

Salt intake and health in the Australian population

Jennifer B Keogh and Peter M Clifton

To the Editor: There is an established link between salt intake and blood pressure. The public health impact of a 1–3 mmHg reduction in blood pressure by lowering salt intake could be substantial. An American study found that a projected reduction in diastolic blood pressure of 2 mmHg would result in a 17% decrease in the prevalence of hypertension, a 6% reduction in the risk of coronary artery disease events, and a 15% reduction in risk of stroke and transient ischaemic attacks.[1] In Finland, a one-third decrease in average salt intake achieved over 30 years was accompanied by a fall of more than 10 mmHg in the population averages of systolic and diastolic blood pressure.[2] However, in the absence of active measures to reduce salt in the food supply, public health messages to reduce salt intake have largely been unsuccessful.

The National Health and Medical Research Council (NHMRC) has recently revised its recommendations and now states that an adequate sodium intake for adults is 460–920 mg/day (20–40 mmol/day), with a suggested dietary target for chronic disease prevention of 1600 mg/day (70 mmol/day).[3]

The most recent Australian sodium intake data are from the 1995 Hobart Salt Study, in which the then national target of 6 g/day was achieved by only 6% of men and 36% of women, with an average salt intake of 7–10 g/day.[4] Volunteers in weight-loss studies at the Commonwealth Scientific and Industrial Research Organisation (CSIRO) Human Nutrition unit over the past 5 years continue to have a high salt intake of 8–11 g/day (urinary sodium/24 h: men [$n = 85$], 181 ± 95 mmol; women [$n = 189$], 136 ± 61 mmol; reference range, 40–100 mmol).[5] Recent data from another Australian study report similar urinary sodium concentrations.[6] The average salt intake of Australian adults appears to be 7–12 g/day, which is little changed from 10 years ago.

Achieving a low salt intake in the present food supply is difficult, as more than 80% of intake is from salt added to food during processing. As well as the more obvious foods in which salt is a preservative, staple foods such as bread also contain salt. The variety of foods has increased considerably, and many of the numerous processed foods now available contain very high salt levels. Processed and convenience foods frequently have salt added that the consumer cannot avoid. It is clear that large changes to the food supply are needed to reduce salt intake. We believe that salt reduction in the food supply should be the first line of attack to reduce the risk of cardiovascular disease in the population.

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"I want the one for older women" — extending the human papillomavirus vaccine population base

Lilon G Bandler

To the Editor: It's all very difficult isn't it? Teasing out the issues around impartiality, weighing evidence and competing interests? Wain wrote a recent editorial for the Journal, and included a list of his "competing interests":

- Chair of the CSL Gardasil Advisory Board;
- speaker fees, travel assistance and consultancy fees from CSL Biotherapies and from Merck and its affiliates in relation to Gardasil; and
- shares in CSL Limited.[1]

He helpfully advises that Gardasil (Merck) "is available at no cost to Australian girls and women between the ages of 12 and 26 as part of the National Immunisation Program. The bivalent vaccine, Cervarix (GlaxoSmithKline), has to date not been included in the program, having initially been rejected by the Pharmaceutical Benefits Advisory Committee (PBAC) on the basis of uncertain cost-effectiveness, but subsequently recommended for inclusion."[1]

This is disingenuous at best. Initially, the PBAC also "rejected the application for [Gardasil] . . . based on unacceptable and uncertain cost-effectiveness at the price requested."[2] At the request of the then Health Minister, the PBAC reviewed its decision after the company made some small changes to its submission, including a change in pricing.

At about the time Wain's editorial was published, a hard copy of the previous *Medical Journal of Australia* article on human papillomavirus (HPV) arrived on my desk,[3] courtesy of GlaxoSmithKline. That article on HPV vaccination listed the "competing interests" at the end. Clearly, all the authors have received some sort of funding through GlaxoSmithKline, CSL and/or Merck.

I am not impressed by authors who receive funding from pharmaceutical companies that market the drugs they are discussing. It seems to me that the problem lies with interests not competing, or at least not competing with the author's intent. Perhaps a little healthy competition would bring out some more thoughtful, articulate articles, unaffected by any commercial pressures.

"A plague o' both your houses." Let's consider where we could best spend our

money without the help of the competing interests of various pharmaceutical marketing mechanisms. "HPV vaccination will not prevent all cases of cervical cancer, therefore vaccinated women should continue to have two yearly Pap smears."[4] Given that HPV vaccination (in this country) will not change the rate of cervical screening required in the near future, perhaps the money would be better spent on ensuring that all Australian women are screened in a timely manner. That is, ensuring that poor women, Indigenous women, rural women, and immigrant women are part of "Cervical screening in Australia . . . one of the great public health success stories, as witnessed by a continuing dramatic fall in the incidence of carcinoma of the cervix and mortality from this disease since the introduction of the National Cervical Screening Program (NCSP)."[5]

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Helen S Marshall and David Isaacs

TO THE EDITOR: We would like to express our disappointment with the Journal's decision to publish an editorial on human papillomavirus (HPV) vaccines that demonstrated significant bias.[1] It seems that simply documenting an author's conflicts of interest exonerates the author and relieves the Journal of the responsibility of considering whether or not the article is biased.

In his article, Wain states that the bivalent vaccine, Cervarix (GlaxoSmithKline), has not been included in the National Immunisation Program, having initially been rejected by the Pharmaceutical Benefits Advisory Committee (PBAC) on the grounds of uncertain cost-effectiveness. He omits to mention that Gardasil (Merck), was initially also rejected, and only funded after political intervention, an emergency meeting of the PBAC and further price negotiations with CSL.[2]

Wain claims that Cervarix is being promoted to older women despite the absence of efficacy data and the uncertain population benefits in this age group. Surely a balanced argument would include the fact that Gardasil is licensed for boys aged from 9–15 years based on immunogenicity data only, and that efficacy has not been established in this population. Why does the author consider this to be acceptable, but that licensing the vaccine for older women where the indication is to prevent cervical cancer is unacceptable? Many vaccines are licensed on the basis of immunogenicity data provided these have been shown to predict efficacy. While the efficacy of HPV vaccines in older women is being established, there are good data to show that an immune response to HPV vaccine is predictive of efficacy.[3] Women aged over 26 years produce a robust immune response to HPV vaccines, similar to levels achieved in women aged 15–25 years, for whom efficacy has already been demonstrated. The Therapeutic Goods Administration has licensed Cervarix for women aged 26–45 years, before efficacy data became available, based on the assumption that efficacy will be demonstrated in seronegative older women.

Women of all ages have shown interest in benefiting from a vaccine to protect against cervical cancer.[4] Women of any age have the right to be informed, and to have the opportunity to discuss with their treating physician the relative benefits and risks of receiving the HPV vaccine for prevention of cervical cancer.

Many vaccines are initially available only if purchased by individuals and, although this may result in inequity, ultimately, this is a decision of priority (individual financial and public health funding priorities) and not a reason to withhold licensing a vaccine with proven benefit.

Competing interests: Helen Marshall is a member of a CSL Gardasil Advisory Board; has been a principal investigator for clinical vaccine studies sponsored by both CSL and GlaxoSmithKline; and has received travel assistance to present scientific data at international meetings.

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Jeffrey HJ Tan and Michael A Quinn

To the Editor: Wain's criticism of the Australian Therapeutic Goods Administration (TGA) approval of the bivalent vaccine, Cervarix (GlaxoSmithKline), suggesting it did not adhere to World Health Organization guidelines,[1] should not detract from the potential benefits of human papillomavirus (HPV) vaccination in women over 26 years of age.

An immunogenicity study showed all women up to the age of 55 years seroconverted to both HPV types and, while mean antibody concentrations at Month 7 were lower than in the younger age group, they were still three to four times higher than those observed in 15–25-year-old women in the long-term follow-up study (up to 4.5 years after vaccination), where continued efficacy was demonstrated.[2] HPV infection is most prevalent in younger age groups, with one study showing a prevalence of 44.8% in women aged 20–24 years.[3] As indicated by Wain, the vaccine has diminished efficacy in populations with high rates of previous exposure. Thus, 20–24-year-olds would benefit least, and if we extrapolate his argument, should not be included in any catch-up vaccination program. The United Kingdom has, in fact, recommended a catch-up campaign for girls aged up to 18 years only. The prevalence of HPV infection decreases after 26 years of age, and these "older" women should benefit from vaccination as supported by preliminary efficacy data of the quadrivalent vaccine Gardasil (Merck) in an older population.[4] This vaccine may also be protective for women who have been previously exposed to the same subtypes of HPV as the vaccines, as shown by 100% efficacy against cervical intraepithelial neoplasia (CIN) grade 2/3 or adenocarcinoma in situ (AIS) among people who are seropositive but HPV-DNA-negative to the relevant HPV type.[5]

The Pharmaceutical Benefits Advisory Committee initially did not recommend funding for Gardasil on the basis of cost-effectiveness until after an extraordinary meeting to consider a revised submission, following an "unusual" request from the Health Minister.[6,7] CSL agreed to reduce the price, undertook to make a substantial contribution to any booster program if it became necessary in the next 20 years, and also to the costs of setting up a national register to link vaccination data to later cervical screening records.

It is obvious that the efficacy of HPV vaccines will inevitably be lower after commencement of sexual activity, but we believe that it is the medical practitioner's responsibility to offer women aged over 26 years the current, albeit incomplete, information on vaccine efficacy, and allow women to make the choice.

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All in a day's work: an observational study to quantify how and with whom doctors on hospital wards spend their time

Mark Mackay and Pamela J Castle

To the Editor: Recent articles in the Journal describing endeavours to measure and classify the tasks of doctors are indicative of the re-emergence of work analysis and time and motion studies.[1,2]

While commending the authors on their endeavours, it is concerning that the articles state almost contradictory findings. Westbrook and colleagues reported that professional communication, social activities and meal breaks represented the greatest proportion of observed time.[1] Zhu and colleagues reported that direct patient-related tasks accounted for 86% of intern time.[2] Acknowledging the different contexts of the individual studies, the collective picture is one of confusion and may lead to misrepresentation of the work of doctors.

We have also analysed the work of doctors using observational techniques.[3] We built on work done in the United States[4] that is underpinned by functional job analysis (FJA)[5] to produce a list of tasks (task taxonomy) that describe the work in the acute-care setting, and coordination of roles between hospitals and the community.[3,6] The task is the fundamental unit of work, and FJA describes each task in terms of behaviours and interdependencies between people, data and things for the achievement of the task. The method seeks to achieve quality information through adopting precise language descriptions and benchmarks for levels of tasks required for jobs.[5] Data are recorded by means of a simple electronic tool.[6]

Our method captures contextual information about the service (eg, location of work) and rigid details about the observed tasks. We have presented our findings at the 5th Health Services and Policy Research Conference of the Health Services Research Association of Australia and New Zealand,[6] and the Change Champions Skill Mix and Workforce Development conference, both in 2007. We found that doctors in the units studied spent about 11% of time on education and training, between 50% and 60% on direct clinical activities (depending on context and role), and less than 10% of time on non-clinical administration. We suggest that if observations are recorded according to the purpose of the output, what may appear to be "socialising" may, in

fact, be waiting for something or someone. It is far more important to measure what the impediment to getting on with the job is, rather than inferring that socialising is the main activity.

There is a need for a consistent task classification system that can be used across units and across professions to describe the work that is being performed. A common unit of measure would provide a strong foundation for collaboration and learning in work redesign projects across the nation. Without such a system, planning for the future and evaluation of new roles will continue to be hindered. To this end, we are happy to share the task taxonomy that we have developed, and welcome contact via email.

Competing interests: Pam Castle and Mark Mackay were formerly employed by the South Australian Department of Health. They conducted the research mentioned in this letter during their employment with the Department.

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An observational study of emergency department intern activities

Belinda Doherty and Mark A Brown

To the Editor: The study of intern activities in Melbourne emergency departments (EDs) highlighted gaps in the ED training of interns.[1] In particular, it was shown that interns undertake a low number of procedural tasks. Most did not perform urinary catheterisation, nasogastric tube insertion or reductions of fractures and dislocations, just some of the skills highlighted as important in the Australian Curriculum Framework for Junior Doctors (ACFJD).[2] Time pressure on supervisors was cited as a reason for this.

New South Wales will experience a doubling in the number of medical graduates in the next few years. Increased capacity in emergency terms will be needed. The reported capacity (available supervision, clinical workload and funding) in NSW EDs indicates that a shortage of terms could develop from 2011.

The NSW Institute of Medical Education and Training (IMET) recently explored the educational validity of retaining the emergency term as a mandatory requirement for general registration[3] in view of the reported limited capacity.

IMET-accredited emergency term descriptions were reviewed and mapped against the "Common presenting problems and conditions" listed in the ACFJD. The study found that an ED term would likely provide exposure to most of the common conditions, many of which were unlikely to be encountered in other medical or surgical hospital rotations. The acute phase of key conditions, that all medical practitioners are expected to be able to recognise and treat appropriately, were often unique to the ED term. Further, most of the "Skills and procedures" for junior doctors were likely to be learned in the ED, and around 50% were not commonly experienced elsewhere. Many of the broader competencies of the curriculum such as "Doctor and society" are also covered in an ED term.

The ED provides a unique context for learning, bridging community and hospital situations. The approach to acutely ill patients, with as yet undifferentiated problems, for whom JMOs learn to initiate treatment and appropriate investigations concurrently, cannot be reliably replicated elsewhere.

Emergency departments bear the brunt of the growing demand for acute care from an ageing population with multiple comorbidities, and also of the growing demand for excellent and accountable postgraduate medical training. In NSW, about 30% of directors of prevocational training are ED physicians, reflecting their commitment to education. They typically supervise numerous trainees at a time. The educator role of ED physicians and other senior doctors in EDs is essential. Resources should be directed to supporting this role and enhancing the capacity of EDs to train medical graduates.

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A day in the life of a doctor-in-training

Lisa Caputo, Fiona R Lake, Margaret Potter and Ian Rogers

To the Editor: Learning in the clinical setting remains central to the development of well trained health care professionals. The issue is whether that learning should occur through formal or informal learning opportunities. Westbrook and colleagues define "supervision or education" in a way that focuses mainly on formal experiences,[1] possibly because trained observers could accurately classify such experiences. As noted by Brown and Arnold, much learning in the hospital setting is largely informal in nature.[2] Although learning is likely to be occurring during the many discussions that junior doctors have with consultants or during the procedures they perform in an emergency department,[3] it can be difficult to describe, and may not be recognised as learning by the individuals involved.[4]

There is a divide between the perceptions of teachers and trainees about how much learning is occurring, whether teaching has

occurred and feedback has been given. Consultants believe they are providing a great deal, but junior doctors do not recognise it. Although junior doctors perceive they have adequate informal contact with registrars, and some (but not enough) with consultants, what they want is more teaching in "formal" sessions.[5] Additionally, supervisors think they give detailed feedback, but junior doctors view it as less than adequate.[6]

The answer might lie in upskilling both junior doctors and teachers to make teaching and learning more effective, in part by making it more explicit to all involved.

At Sir Charles Gairdner Hospital in Perth, an innovation has been to create new positions known as "medical education registrars" who, as supernumerary staff at a senior registrar level, have time to advise on patient management, supervise and teach skills.[7] Much of this is provided at the patient's bedside. The very nature of their job title makes it explicit that they are there to help learning during daily activities.

The staff development program, "Teaching on the Run", developed by the Education Centre at the Faculty of Medicine and Dentistry, University of Western Australia,[8] aims to make teachers more effective. More recently, we have piloted another program, "Learning on the Run", for junior doctors and students, to provide them with the skills to recognise opportunities and drive their own learning agendas.

We agree with Brown and Arnold that learning and service are not mutually exclusive.[2] By providing both junior doctors and senior medical staff with the necessary skills, many tasks within a day in the life of a new doctor could become a valuable learning experience. Whether this will ultimately translate into improved teaching and learning outcomes is a question we are continuing to explore.

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Evidence-based advocacy: the public roles of health care professionals

Bill Williams

To the Editor: In his exploration of the health advocacy potential of modern clinicians, Gruen[1] observes that the public first needs to be convinced that "the profession has its own house in order". Unfortunately, one room in that house accommodates one of the serious health threats identified by the author: terrorism. Currently, over 95% of the world's radiopharmaceuticals are generated from highly enriched (bomb-grade) uranium (HEU), an unnecessary nuclear weapons proliferation hazard.[2] Prompt conversion of the global medical isotope supply chain to *low* enriched uranium (LEU, containing less than 20% uranium 235, so not viable for weapons production) is technically feasible.[3] Clinicians are thus uniquely placed to advocate conversion to the use of LEU, while pressuring their imaging and isotope providers to end reliance on HEU, thereby blocking one of the most vulnerable pathways to producing a "terrorist bomb".

But, as Gruen suggests, we can do even more through "collective advocacy" to address the much larger nuclear threat: that is, the 26 000-plus nuclear weapons remaining in the arsenals of Russia, the United States, the United Kingdom, France, India, Pakistan, Israel, China and North Korea. While a sophisticated terrorist group armed with home-manufactured nuclear weapons could devastate a few cities, the existing nuclear-armed states have the capacity to destroy between tens and thousands of urban centres and their populations within a few short hours.

Worse still, recent research indicates that 100 Hiroshima-sized (ie, "small") nuclear weapons exploded on major cities would be capable of precipitating a "nuclear winter" that could persist for 10 years.[4] The dispersal of carbonaceous material into the stratosphere from major urban firestorms could dramatically reduce terrestrial sunlight, lower surface temperatures by several degrees, shorten the growing season, reduce rainfall and trigger global famine. One billion deaths from starvation is a realistic assessment of the consequences.[5] Such a catastrophic scenario is within the firepower capacity of all currently nuclear-armed nations except North Korea.

A new generation of medical students and young physicians has launched several initiatives over the past few years to challenge this threat, including the Nuclear Weapons Inheritance Project and Target X (http://www.ippnw-students.org). Most recently, International Physicians for the Prevention of Nuclear War launched the International Campaign to Abolish Nuclear Weapons (http://www.icanw.org), whose goal is to establish a nuclear weapons convention to eliminate all nuclear weapons once and for all.

By ending our reliance on bomb-grade HEU in medical imaging, we can certainly begin to put our own house in order. But let's also follow Virchow's lead: let's "engage with the broader social concerns that cause illness and harm",[1] get active for our patients' — and our own — wellbeing, and help prevent a global nuclear pandemic.

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Respiratory rate: the neglected vital sign

Allen C Cheng, James F Black and Kirsty L Buising

To the Editor: We note with interest the recent commentary by Cretikos et al on the predictive value of a high respiratory rate for adverse outcomes.[1] We wish to provide empirical evidence from Australian patients with pneumonia in support of their view that simple clinical parameters are good predictors of adverse outcomes.

We examined data from a prospective cohort of consecutive patients presenting to the Royal Melbourne Hospital Emergency Department with radiologically confirmed, community-acquired pneumonia between 2003 and 2006.[2] In an earlier study of a subset of these patients,[3] we found that hypotension and tachypnoea were strongly associated with death and/or the need for respiratory/inotropic support (odds ratios, 8.0 and 3.5, respectively).

In the full cohort ($n = 740$), we examined factors associated with either admission to the intensive care unit (ICU) or mortality (106 patients were in one of these two categories). Respiratory rate was documented in 712 patients (96%). A combination of tachypnoea (≥ 24 breaths/min) and/or hypotension (systolic blood pressure ≤ 90 mmHg) had similar predictive value for the risk of ICU admission and/or death to the recommended system of risk stratification, the Pneumonia Severity Index (PSI)[4] (Box). The combination of respiratory rate and systolic blood pressure performed better than either sign alone in ruling out at-risk patients if both were normal (ie, a high negative predictive value), although almost a quarter of patients with either clinical sign had adverse outcomes.

The PSI is based on 20 individual clinical and laboratory parameters, and evidence suggests that it is poorly documented in patients' records.[5] Our data relate to patients with community-acquired pneumonia from a single centre and thus have limited statistical power for making comparisons. However, they suggest that these two routinely measured clinical parameters can be used to stratify patients at risk of adverse outcomes at the time of presentation. We support efforts to incorporate simple clinical indicators into systems that can identify seriously unwell patients early in the course of illness.

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Summary statistics for tachypnoea, hypotension and PSI class as predictors of ICU admission and/or death from community-acquired pneumonia*

	Number of patients	Sensitivity	Specificity	PPV	NPV
RR ≥ 24 breaths/min	712	82% (73%–89%)	48% (44%–52%)	22% (18%–26%)	94% (91%–96%)
RR ≥ 27 breaths/min	712	70% (60%–78%)	67% (63%–71%)	27% (22%–32%)	93% (90%–95%)
RR ≥ 24 breaths/min and/or systolic BP ≤ 90 mmHg	713	93% (86%–97%)	45% (41%–49%)	23% (19%–27%)	97% (94%–99%)
PSI class IV or V†	740	90% (82%–95%)	49% (45%–53%)	22% (19%–27%)	97% (94%–98%)

BP = blood pressure. ICU = intensive care unit. NPV = negative predictive value. PPV = positive predictive value. PSI = Pneumonia Severity Index. RR = respiratory rate. * Figures in parentheses represent 95% CIs calculated using the exact binomial distribution. † Severe pneumonia.

Olivier Steichen, Gilles Grateau and Eric Bouvard

To the Editor: Cretikos et al make a strong case for routinely recording patients' respiratory rate (RR) in acute wards.[1]

In a prospective study designed to evaluate the prognostic value of RR in acutely hospitalised patients aged over 75 years, we analysed data from all admissions to a single 14-bed acute-care geriatric unit between 15 May and 15 November 2007. Clinical data were recorded on admission and blood tests were performed the next morning. The Charlson score was used to assess comorbidity.[2]

Features of the 195 admissions during the study period (13 patients were admitted twice) are reported in the Box. The main reasons for admission were falls (15%), left ventricular failure (11%), pneumonia (11%), cancer complications (9%), pyelonephritis (7%) and stroke (5%). Twenty-nine patients died in hospital, including six from cancer complications, five from pneumonia, four from pyelonephritis and four from left ventricular failure.

Based on univariate logistic regression analysis at the 0.05 significance level, the following variables were predictive of death

Features of the 195 admissions to the acute-care geriatric unit between May and November 2007

Age (years)	85 (81–91)*
Women	123 (63%)†
Charlson score	6 (5–8)*
Dementia	88 (45%)†
Body temperature (°C)	37.0 (36.8–37.5)*
Systolic blood pressure (mmHg)	136 (120–152)*
Heart rate (beats/min)	80 (70–92)*
Respiratory rate (breaths/min)	20 (20–25)*
Serum sodium level (mmol/L)	140 (137–143)*
Serum creatinine level (μmol/L)	91 (76–120)*
Serum protein level (g/L)	65 (59–70)*
Serum C-reactive protein level (mg/L)	36 (12–108)*
Blood haemoglobin level (g/L)	115 (100–125)*
White blood cell count (× 10^9/L)	8.3 (6.3–11.5)*

* Median (interquartile range). † Number of admissions (%).

during hospitalisation: being male (odds ratio [OR], 2.42, Wald test $P = 0.03$); increased Charlson score (OR, 1.50 for each additional point between 3 and 13; $P < 0.001$); decreased systolic blood pressure (OR, 6.71 for systolic blood pressure < 100 mmHg; $P = 0.004$); abnormal heart rate (< 60 beats/min or > 100 beats/min) (OR, 3.63; $P = 0.003$); increased RR (OR, 1.81 for each additional 5 breaths/min between 14 and 44; $P < 0.001$); abnormal blood sodium level (< 137 mmol/L or > 143 mmol/L) (OR, 2.82; $P = 0.01$) and raised C-reactive protein level (OR, 2.67 for C-reactive protein level > 45 mg/L; $P = 0.02$).

After multivariate logistic regression analysis with stepwise backward elimination, the only remaining factors that were significant predictors of death during hospitalisation were Charlson score (OR, 1.53 for each additional point between 3 and 13; $P < 0.001$) and RR (OR, 1.83 for each additional 5 breaths/min between 14 and 44 breaths/min; $P < 0.001$).

RR on admission was associated with an area under the ROC (receiver operating characteristic) curve of 0.73 (95% CI, 0.64–0.82) for the prediction of death during hospitalisation. An RR of ⩾ 20 breaths/min had a sensitivity of 97% (95% CI, 80%–100%), a specificity of 28% (95% CI, 21%–35%) and a negative likelihood ratio of 0.12 (95% CI, 0.02–0.82) for prediction of death during hospitalisation. Only one patient (admitted for stroke) with an RR of < 20 breaths/min at admission died in hospital. Higher RR cut-off values increased specificity but reduced sensitivity. For instance, an RR of ⩾ 30 breaths/min had a specificity of 90% (95% CI, 84%–94%), but a sensitivity of 38% (95% CI, 21%–58%), leading to a positive likelihood ratio of 3.68 (95% CI, 1.93–7.04) for prediction of death during hospitalisation.

In conclusion, besides comorbidity (Charlson score), RR was the most useful predictor of death in acutely hospitalised patients aged over 75 years. Our results extend the evidence base promoting regular documentation of RR in acute-care departments.[1]

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Simon C Gandevia and David K McKenzie

To the Editor: The concept that respiratory rate (RR) is a key vital sign is hardly new,[1] but it is being re-emphasised.[2,3] The recent article by Cretikos et al[3] highlights the diagnostic relevance of a raised RR for serious adverse events. The authors make sensible recommendations regarding the need to educate hospital staff about the importance of measuring patients' RR.

However, they do not specify how this rate should be measured. Indeed, most textbooks of general medicine, and even respiratory medicine, fail to provide guidance on this or to define an abnormal rate. A widely used book on clinical examination[4] suggests measuring RR while feeling the pulse, and quotes a normal (adult) resting range of 16–25 breaths/min, but no source for this information is provided.

There are few reports of true normal resting RR measurements obtained by covert observation. Respiratory physiologists have long known that RR commonly increases and becomes more regular as soon as a subject becomes aware of the measurement. This is especially so if a mouthpiece is in place. Rates as low as 8 breaths/min may be seen at rest, and the normal adult range quoted by physiologists is 11–14 breaths/min.[5] Bradypnoea is usually defined as a rate less than 8 breaths/min and tachypnoea as a rate greater than 18–20 breaths/min.

There is no gold standard method for accurate measurement of RR in clinical practice. Of course, when patients are being monitored, particularly with a nasal cannula, it should be easy to obtain the rate. Oximetry is not a surrogate measure of RR, although it is often easier to record. Inductance bands around the chest provide a simple non-invasive way to measure RR. In addition to the absolute rate, an irregular and erratic rate is of concern.

In settings in which formal monitoring is not being conducted, RR is the one "vital" sign that must be assessed when the patient is resting quietly, unaware of its measurement, and not conversing with staff. Duplicate measurements should be made over an interval of at least 1 minute. An RR of over 20 breaths/min, particularly if irregular, is noteworthy. Tachypnoea is intimately linked with the sensation of breathlessness, and hence the patient's respiratory sensations should be assessed. In some patients with a normal RR at rest, marked tachypnoea may be precipitated by mild exertion, such as walking a few paces.

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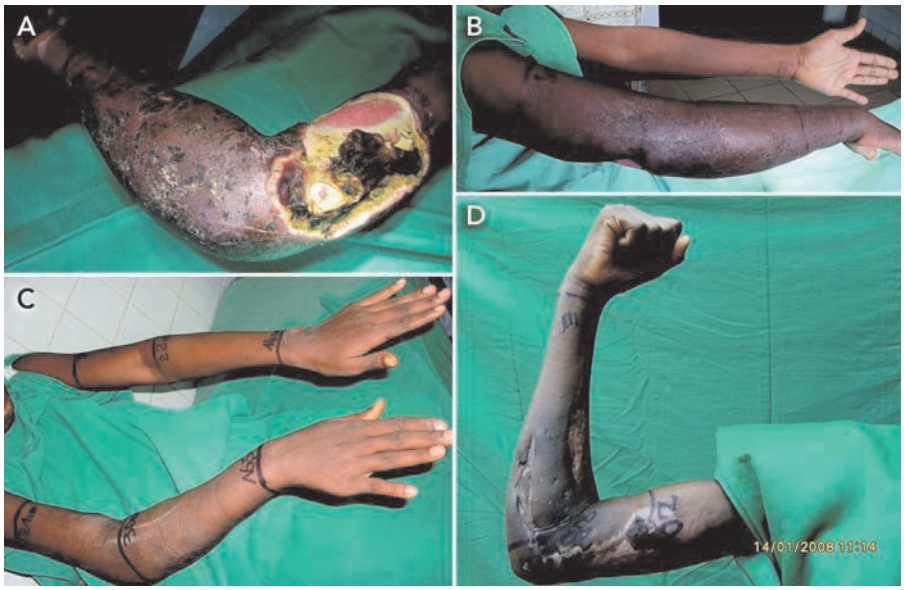
Management of *Mycobacterium ulcerans* infection in a pregnant woman in Benin using rifampicin and clarithromycin

Ange D Dossou, Ghislain E Sopoh, Christian R Johnson, Yves T Barogui, Dissou Affolabi, Sévérin Y Anagonou, Théophile Zohoun, Françoise Portaels and Kingsley Asiedu

To the Editor: Buruli ulcer, caused by the bacterium *Mycobacterium ulcerans*, leads to the destruction of skin and sometimes bone. It has been reported in many tropical countries in Africa and in some temperate regions of Australia, Japan and China.[1] In 2004, the World Health Organization recommended treatment with the combination of oral rifampicin and intramuscular streptomycin (or amikacin) for 8 weeks.[2,3] In-vitro studies and new data from mouse models suggest that combinations of rifampicin with clarithromycin, rifampicin with moxifloxacin, or clarithromycin with moxifloxacin may be as effective as rifampicin and streptomycin.[4,5]

In June 2007, a woman who was 6-months pregnant with her first child and had a 7-month history of Buruli ulcer on her right upper limb (Box 1, A) was admitted to the Buruli ulcer treatment centre in Allada,

1 Serial views of Buruli ulcer in a woman treated with rifampicin and clarithromycin



A: At presentation. B: After 4 weeks' antibiotic treatment. C: On completion of antibiotic treatment (8 weeks). D: At hospital discharge after skin grafting, showing full movement of the elbow joint (23 weeks). ◆

2 Clinical response to treatment

	Week after treatment start			
	0	4	8	23
Limb circumference (cm)				
At wrist				
Affected limb	21	17.5	16.5	15
Unaffected limb	14	14	14	14
% difference	50%	25%	18%	7%
At mid-arm				
Affected limb	36	33	30	25
Unaffected limb	22	22	22	22
% difference	64%	50%	36%	14%
At elbow				
Affected limb	34	21	21	21
Unaffected limb	23	23	23	23
% difference	48%	– 9%	– 9%	– 9%
Lesion dimensions				
Diameter (cm)*	30.3	23.8	22.5	20.3
Area				
Estimate (cm^2)	722	446	397	325
% reduction	—	38%	45%	55%

* Median diameter. ◆

Benin. She was otherwise in good health, and the fetal heart beat was normal. Routine laboratory examinations, including HIV serology tests, found no abnormalities. Swabs from the ulcer were positive for acid-fast bacilli by Ziehl–Neelsen stain, and for *IS 2404* (DNA sequence specific for *Mycobacterium ulcerans*) by polymerase chain reaction testing, but no growth of *M. ulcerans* was obtained on culture. Histopathological analysis of punch biopsy specimens showed typical features of Buruli ulcer.

As streptomycin is contraindicated in pregnancy, we treated the patient with a combination of oral rifampicin (600 mg daily) and oral clarithromycin (500 mg twice daily) for 56 days, beginning 2 weeks after presentation. The treatment was well tolerated. We monitored the clinical response through serial photographs (Box 1) and measurements of the circumference of the affected and unaffected limbs at defined points (Box 2).

The patient gave birth to a healthy boy weighing 2.25 kg in September 2007, 2 weeks after completing antibiotic treatment. She underwent skin grafting a month later. The lesion healed without functional limitation (Box 1, D), and the patient was discharged in December 2007. At that time, the surface area affected by the lesion was reduced by 55%.

To our knowledge, this is the first report of successful treatment of Buruli ulcer using fully oral treament with rifampicin and clarithromycin alone. We hope our experience will contribute to future discussion and studies to find an oral treatment for this devastating disease.

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Kaposi's varicelliform eruption in a healthy adult

Hajime Kimata

To the Editor: Kaposi's varicelliform eruption (KVE) is a disseminated cutaneous infection caused by herpes simplex virus (HSV) in patients with predisposing factors such as atopic dermatitis, widespread skin injury and sun exposure.[1-5] I report a patient with KVE but no apparent predisposing factors.

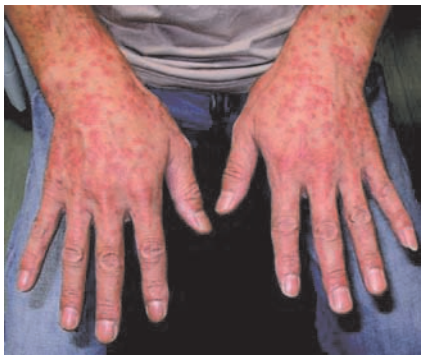
A 54-year-old man presented with a 3-day history of a rapidly progressing vesiculopustular rash on his trunk, legs, arms and hands (Box). He reported a burning skin sensation and had a temperature of 38.2° C. He had no labial or oral erosions, and no history of skin disease, HSV infection or any systemic disease. He was not taking any medication and reported no excessive sun exposure before symptom onset. Haematological, biochemical and immunological parameters, including levels of C-reactive protein, immunoglobulins, complement components, lymphocyte blastogenesis and natural killer cell cytolytic activity were normal. An HIV test was negative. Skin swabs from the lesion were positive for HSV-1 by polymerase chain reaction (PCR) testing; HSV-1 was also isolated on culture. Cultures were negative for bacterial, fungal and mycobacterial pathogens. A diagnosis of KVE was thus established.

Based on past experience treating KVE with a combination of oral valaciclovir and vidarabine ointment, which accelerated resolution of symptoms,[6] I treated the patient with oral valaciclovir (1 g three times per day) and vidarabine ointment (three times per day). The lesions were completely healed after 7 days of treatment. HSV-1 antibody titres on Days 1 and 7, respectively, were: IgM, 3.1 and 5.2 (reference range, < 0.8); and IgG, < 2.0 and 4.7 (reference range, < 2.0). HSV-2 IgM and IgG antibody titres on Days 1 and 7 were within reference ranges (< 0.8 and < 2.0, respectively).

This case is unusual as it occurred in an otherwise healthy patient. KVE is usually associated with healing second-degree burns, peribuccal dermabrasion and laser skin resurfacing,[2-4] and sun exposure in patients with recurrent HSV infection.[5]

The origin of the patient's HSV-1 infection was not identified: there was no outbreak of HSV infection in his city of residence; his wife and two children were healthy and had no systemic or skin diseases; PCR testing of their saliva for HSV-1 and HSV-2 DNA 3 days after the patient's presentation gave negative results; and the patient had no apparent contact with HSV-infected patients before onset of symptoms.

Vesiculopustular lesions in a patient with Kaposi's varicelliform eruption



KVE has been successfully treated with intravenous aciclovir (three times per day) or oral aciclovir (five times per day).[2,5] However, intravenous aciclovir requires hospital admission, and compliance with the dosage regimen of oral aciclovir is troublesome. In contrast, oral valaciclovir (three times per day) and vidarabine ointment do not require hospital admission and are easier for patients.[1,3,6] Oral valaciclovir is also very effective for preventing herpes infection.[7]

This case highlights that KVE should be considered in otherwise healthy patients with a sudden, rapidly progressing vesiculopustular rash.

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Serotonin toxicity precipitated by concomitant use of citalopram and methylene blue

Ali Khavandi, John Whitaker and Hanney Gonna

To the Editor: Serotonin toxicity is an under-recognised, potentially fatal syndrome that is becoming more common as the use of serotonergic drugs increases.[1] We report a case of serotonin toxicity following the concomitant use of the antidepressant citalopram and methylene blue.

A 44-year-old woman underwent elective partial parathyroidectomy for primary hyperparathyroidism. Three hours after surgery, the patient became agitated and restless while staring vaguely into space, making incomprehensible sounds (Glasgow Coma Scale: 11/15; motor response, 5; verbal response, 2; eye opening, 4). Her blood pressure (120/66 mmHg), pulse (100 beats/minute [sinus rhythm]), oxygen saturation (92% while breathing room air), and temperature (37.5° C) were not clinically significant.

Neurological examination revealed bilateral pupillary dilatation with sluggish response to light, myoclonic movements of the lower limbs, brisk reflexes throughout and downgoing plantar responses. Clonus was absent and there was no focal neurological deficit. Blood tests showed a mild inflammatory response (white cell count, 12.7×10^9/L [reference range (RR), 4.0–11.0×10^9/L]; C-reactive protein, 23 mg/L [RR, < 10 mg/L]), normal serum levels of calcium (2.50 mmol/L [RR, 2.12–2.65 mmol/L]), and mildly elevated phosphate (1.5 mmol/L [RR, 0.8–1.4 mmol/L]). A computed tomography scan of the head showed no abnormalities.

The patient's medical history included ischaemic heart disease, hypertension, obesity and depression. Regular long-term medications included aspirin (75 mg daily), simvastatin (40 mg each night), atenolol (50 mg daily), isosorbide mononitrate (20 mg daily), bendroflumethiazide (a thiazide diuretic not available in Australia; 2.5 mg daily), felodipine (5 mg daily) and citalopram (20 mg daily). On the day of the operation, she received propofol, remifentanil, rocuronium, dexamethasone, morphine analgesia and a preoperative methylene blue infusion (560 mg in 500 mL of saline over 2 hours; used to stain the parathyroid glands). She had previously undergone general anaesthesia without complication.

Serotonin toxicity was diagnosed, precipitated by the combination of methylene blue and citalopram. She was transferred to the intensive care unit, where she was sedated for 12 hours with propofol and alfentanil. Citalopram was withheld, and she received supportive treatment only. She was discharged to the ward 24 hours later and then home (3 days after discharge from the intensive care unit), with no long-term adverse effects. Three months after discharge, she continued to take citalopram, and serum calcium levels were in the normal range.

Serotonin toxicity can be caused by a single drug or a combination of drugs with serotonergic activity. Methylene blue attenuates the metabolism of serotonin through inhibition of monoamine oxidase A.[2] When used in combination with a selective serotonin reuptake inhibitor, such as citalopram, toxic accumulation of serotonin may result.[3] Features include mental state changes, autonomic hyperactivity, and neuromuscular abnormalities. In mild cases, treatment is supportive, with withdrawal of serotonergic drugs and control of agitation. Moderate to severe cases require control of hyperthermia and autonomic instability, and administration of 5-HT_{2A} (5-hydroxytryptamine$_{2A}$) antagonists.[1]

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Cancer care: what role for the general practitioner?

Jon D Emery

To the Editor: The 21 July 2008 "general practice" issue of the Journal raises a number of important issues about the future of generalist medical care, including the role of the general practitioner in the care of cancer patients. The editorial by Weller and Harris acknowledges the importance of multidisciplinary teams, including the full gamut of primary care practitioners, in meeting the diverse needs of people with cancer, from diagnosis to long-term "survivorship".[1] Jiwa et al propose a new model of an "integrated primary care hub" — with a "cancer care coordinator" — as a possible solution to the challenges of providing good team-based care.[2] However, creating an entirely new disease-centred role would seem to ignore much of the debate in the rest of the general practice issue. Multiple morbidity is an emerging reality in Australia, and it is a fact that many survivors of cancer will die from other chronic conditions. Disease-specific care coordinators are currently being promoted as the new model for delivering chronic disease management to the community, but how many of these care coordinators will be needed for patients such as those described by Britt et al?[3] And who will coordinate the coordinators?

Gunn et al make a strong case for the generalist primary care medical practitioner as the overarching coordinator of care.[4] We must stop seeing our patients through the eyes of our disease-centred hospital colleagues. Instead, we must create new mechanisms that will allow the experts in generalism — GPs — to move away from predominantly "reactive, consultation-based medicine"[4] to high-quality integrated care planning in coordination with other members of the primary care team.

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Venous thromboembolism associated with train travel

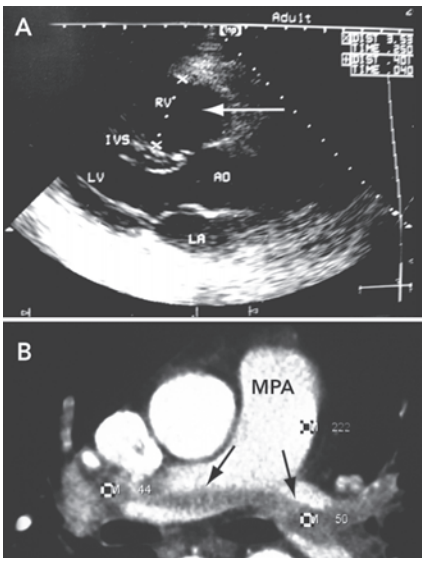
Jeet Ram Kashyap, Sanjay D'Cruz, Sandeep Chauhan and Suman Kochhar

To the Editor: Venous thromboembolism (VTE) is frequently described among air travellers but data on VTE related to train travel are limited.[1-3] We report a case of VTE in a patient after a prolonged train journey.

A 35-year-old man presented with sudden onset of breathlessness, perspiration and syncope after a 14-hour train journey, during which he had limited mobility. He had no history of similar episodes, no significant comorbidities or previous periods of prolonged immobility and no family history of thromboembolic disorders, and he was vegetarian. Physical examination revealed tachycardia, tachypnoea, blood pressure of 90/60 mmHg, raised jugular venous pressure and a right ventricular third heart sound. Blood-gas analysis showed hypoxaemia with respiratory alkalosis: PaO_2, 49 mmHg (reference range [RR], 95 ± 5 mmHg), pH 7.49 (RR, 7.40 ± 0.02), $PaCO_2$, 22 mmHg (RR, 40 ± 2 mmHg). A plasma D-dimer test result was positive.

Electrocardiography revealed right axis deviation with an $S_1Q_3T_3$ pattern. Echocardiography revealed right ventricular dilatation, a thrombus in the main pulmonary artery, and pulmonary arterial hypertension (pulmonary artery systolic pressure, 65 mmHg) (Box, A). Computed tomographic angiography of the pulmonary artery confirmed the presence of a large saddle embolus at the bifurcation of the

Echocardiogram and angiogram of a patient with venous thromboembolism after prolonged train travel



A: Echocardiogram (parasternal long axis view) showing dilatation of the right ventricle (arrow) as a result of acute pulmonary arterial hypertension.

B: Computed tomographic angiogram of pulmonary artery showing a saddle embolus (arrows) at the bifurcation of the main pulmonary artery (MPA). ◆

main pulmonary artery (Box, B) and a wedge-shaped infarct in the middle lobe of the right lung. Venous Doppler imaging showed a thrombus in the left popliteal vein.

The patient had fasting hyperhomocysteinaemia (plasma homocysteine level, 36.6 μmol/L; RR, 4.4–10.8 μmol/L] secondary to nutritional vitamin B_{12} deficiency (serum vitamin B_{12} level, 42 pmol/L; RR, 206–735 pmol/L]. Tests for antithrombin III, protein C, protein S, factor V Leiden mutation and antiphospholipid antibodies returned normal results.

The patient was successfully treated with intravenous streptokinase followed by standard anticoagulation therapy and vitamin B_{12} supplementation. He was well on follow-up.

The association between thrombosis and prolonged travel was first described in 1954.[1] Symptoms usually develop within 1–8 weeks of travel. Any journey of more than 4 hours poses a risk of VTE. Factors involved are low humidity, hypoxia, immobilisation and cramped conditions.[2,3] Individuals with underlying hypercoagulation states such as factor V Leiden mutation, prothrombin gene G20210A mutation, and protein C and protein S deficiency have increased risk of VTE.[4] Recently, hyperhomocysteinaemia has also been identified as an important risk factor for VTE.[5] Acquired risk factors include obesity, oral contraceptive use, pregnancy, recent trauma or surgery, malignancy and history of VTE.

This case highlights the association between train travel and VTE, and the importance of considering all types of prolonged travel as potential risk factors for VTE.

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