LETTERS

Probable transmission of meningococcal disease on a school bus

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To the Editor: We report two cases of serogroup B meningococcal disease, caused by genotypically indistinguishable organisms, where transmission is likely to have occurred on a school bus. To our knowledge, transmission of meningococcal disease on a bus has been reported only once before.[1]

In June 2005, two cases of serogroup B meningococcal disease in teenagers from the same school were reported to the Northern Sydney Public Health Unit. Patient 1 had symptoms of fever, headache, vomiting, and an erythematous rash. Two days after onset of this patient's symptoms, Patient 2 also developed fever, headache and vomiting.

In both cases, diagnosis of meningococcal disease was confirmed by polymerase chain reaction (PCR) testing of cerebrospinal fluid (CSF). CSF cell counts were consistent with bacterial meningitis, but blood and CSF culture were negative, despite lack of prior antibiotic administration.

The patients were in different school years. No obvious links, such as common classes, sporting teams, or mutual friends, could be found. However, they reported travelling on the same buses to and from school each day. These buses carry up to 78 students (53 seated and 25 standing) from the patients' school and other nearby schools. The patients reported that the buses were usually crowded.

Chemoprophylaxis was provided 8–9 days after symptom onset in Patient 2 to 132 students who claimed to have travelled on these buses during the exposure period.

The two patients recovered fully and returned to school. No subsequent cases of meningococcal disease have occurred at the school.

In the absence of meningococcal isolates, *porA*/*porB* genotyping[2,3] was conducted on the meningococcal DNA contained in the CSF samples, and yielded identical sequences. While genotyping is not routinely conducted, *porA*/*porB* sequence nomenclature can be equated with serotype/subserotype (phenotypic expression of *porA*/*porB*). All 38 serogroup B isolates to date in NSW in 2005 have had serotyping/subserotyping performed, with no other cases having a serotype/subserotype equivalent to that of the two cases reported here. This supports the school bus as the most likely setting of transmission, given the lack of mutual friends and activities identified between the two cases.

Asymptomatic nasopharyngeal carriage of meningococci is common, with about 10% of individuals being carriers at any one time.[4] While crowding and close contact increase transmission of meningococci, factors leading to invasive disease are poorly understood.[5] Antibiotic chemoprophylaxis is given to close contacts to eradicate nasopharyngeal carriage and limit disease spread.[5] However, the absence of further cases among the 132 fellow travellers in this setting does not provide evidence of effectiveness of the chemoprophylaxis, given that the secondary attack rate, even in close household contacts, has been estimated at 2–4 per 1000 people.[6]

Current Australian guidelines recommend that, in school-based outbreaks, chemoprophylaxis be considered for a wider group than solely close contacts of a household nature.[7] This report provides evidence to support chemoprophylaxis in similar circumstances, where linked cases are identified in school bus co-travellers, and no other, more specific natural grouping makes epidemiological sense.

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Willingness of general practitioners to participate in enhanced primary care discharge care planning

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To the Editor: The care of patients at the time of hospital discharge and on returning home is often neglected, and has implications for those needing multidisciplinary care. Research has shown that discharge planning can produce better health outcomes, facilitate the patient's and the general practitioner's involvement with discharge care, and improve communication between hospital and general practice services.[1-3]

To encourage GPs to be involved in discharge care planning for patients with chronic diseases, there are Enhanced Primary Care (EPC)-specific Medicare Benefits Schedule (MBS) Items for contributing as a team member to EPC discharge care planning (Item 728), and for review at 3 months post-discharge (Item 724).[4] However, the fact that < 1% of claims for EPC care plans are for discharge-related items has been attributed to barriers to GPs' involvement in discharge planning, or their unwillingness or inability to *initiate* such a process rather than simply participate.[5] Further, little evidence exists that, given the opportunity, GPs are willing to be involved as a team member in this process.

In a recent study of ours investigating EPC discharge care planning for chronically ill patients,[3] we required GPs to comprehensively review and comment (in writing) on discharge plans developed by the hospital. GPs also performed a follow-up consultation within 7 days of discharge and completed a questionnaire. We found that 90.1% of 91 GPs in the intervention arm of the study willingly contributed to discharge care planning for their patients, indicating that, when offered input into planning discharge and post-discharge care, GPs are willing to fulfil such a role. Further, this finding, in addition to the high questionnaire response rate of trial GPs (80.6%), indicates the importance of

this issue to GPs and the belief that GPs are not sufficiently included in discharge processes.

Additional results from a follow-up survey, at 28 days post-discharge, of those GPs who participated in discharge planning (n = 91, 70.3% response) showed that only 42% of GPs claimed the MBS Item 728 ($39.80 in 2002, at the time of the study). Results from a subsequent survey (n = 91, 45.1% response) suggested that even fewer (about 15% of respondents) claimed reimbursement for a 3-month care plan review (Item 724, $98.20), although we do not have data on the number of 3-month reviews performed.

The reasons given for not claiming these Items included poor understanding of the Item and claiming procedures, and a belief that excessive administration was required to claim the increasing number of MBS items. In the light of sanctions for administrative claiming errors, this may explain the low claim counts for these Items. However, the most common response was that input into the discharge care plan was, in their opinion, not sufficient to justify reimbursement, even with the extra time required for care plan review and post-discharge follow-up. This suggests that GPs do not simply view EPC discharge care planning as a revenue raising exercise, but rather as quality patient care. Further, it may indicate an undervaluation by some GPs of their role in hospital-driven processes.

Considering the evidence in support of discharge care planning for improving quality of care, focus should be directed towards ways of encouraging this process, other than simply providing a financial incentive.

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3 Preen DB, Bailey B, Wright A, et al. Effects of a multidisciplinary, post-discharge continuance of care intervention on quality-of-life, discharge satisfaction and hospital length-of-stay: a randomised controlled trial. *Int J Qual Health Care* 2005; 17: 43-51.

4 Enhanced Primary Care Manual: Standards and Guidelines for the Enhanced Primary Care, Medicare Benefits Schedule Items. The Royal Australian College of General Practitioners, 2000. Canberra: Australian Government Department of Health and Aged Care. Available at: http://www.racgp.org.au/downloads/20010316epc.pdf (accessed Dec 2005).

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Action is required to reduce kava supply in Arnhem Land . . . again!

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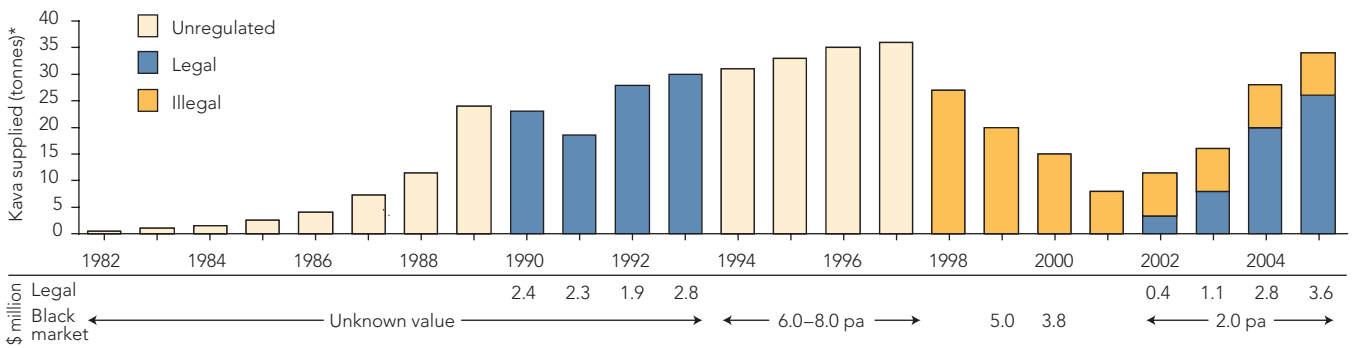
To the Editor: We are concerned that the Northern Territory's regulations on kava have not succeeded in controlling its availability in Arnhem Land (the north-eastern region of the NT). Under the *Kava Management Act 1998* (NT), one wholesaler is licensed to supply kava (*Piper methysticum* Forst. f.) to four licensed retailers in Arnhem Land Aboriginal communities.[1]

"Kava Management Plans" in "Kava Licence Areas" permit retailers to supply 600–800 g per week of kava powder to each purchaser[1] — more than double the known harmful consumption levels (240–440 g per week).[2] Legal kava supplied will reach 26 tonnes in 2005 (worth $3.6 million), with a

History of kava use and retail value ($ million) on the legal and black markets in Arnhem Land, Northern Territory, since 1982, extrapolated to the end of 2005*



Arnhem Land people from Yirrkala begin using kava in 1982; use spreads to other Arnhem Land communities; trade is unregulated

Concern about adverse effects leads to regulation under *Consumer Protection Act 1990* (NT)†

Kava becomes "prohibited botanical" under national *Food Standards Code 1994*; NT regulations dismantled

Kava Management Act 1998 (NT) introduced; from May 2002, licensed kava supplied to four retailers

* Data on kava supplied were obtained from d'Abbs (for 1982–1993);[3] were estimated from population surveys of kava use (for 1994–1997); were estimated from kava seized by Police and Licensing Inspectors (for illegal use, 1998–2005) (seizures were estimated to account for 14% of the illegal kava supplied, based on correlation with population surveys in 1999 and 2000); and were based on the licensed wholesaler's monthly figures, extrapolated to the end of 2005 (for legal use from May 2002). Retail value was calculated from data on kava supplied and regulated values of $100 per kg (1990–1993), $140 per kg (2002–2004) and $150 per kg (2005), or a black market value of $250 per kg.[2] † Approval required from Minister for communities to supply kava. pa = per annum. ◆

persistent illegal trade adding 8 tonnes, worth perhaps $2 million (Box). Two proposed additional retail licences[1] will increase kava's availability.

Kava's social and economic effects remain an ongoing concern. The region's community-controlled health service attributes to kava abuse an accelerated decline in participation in traditional ceremonies and mortuary rites in some localities. Kava is the psychoactive substance with greatest impact on the financial resources of communities and individuals in Arnhem Land.[2]

Kava's health effects include seizures and extreme weight loss in heavy users (up to 20% of body mass), similar to that seen in anorexia nervosa.[4] Extreme weight loss, evident during the 1980s, has re-emerged in the region's kava users (MW Yunupingu, unpublished observations). Raised total and low-density lipoprotein (LDL) cholesterol levels[4] add to unresolved concerns that heavy kava use may be a risk factor for cardiovascular disease and sudden cardiac deaths. Potential immunosuppressive effects are suggested by relative lymphocytopenia in heavy kava users[4] and by increased risk of melioidosis.[5] Raised levels of liver enzymes (alkaline phosphatase and γ-glutamyltransferase), which reverse after ceasing moderate kava use, should be monitored because of fatal hepatotoxicity documented in users of manufactured kava products available as natural therapies.[6]

Given the scarcity of substance misuse treatment services in the region, with no effective treatments for kava misuse, controlling supply is the only practical measure to reduce kava-related harms. Tighter controls on kava supply are urgently required while licensees implement promised demand-reduction and harm-minimisation strategies.[1] We recommend that:

- no further retail licences be granted until kava supply is reduced;
- retail licensees supply no more than 440 g per week to individual kava consumers;
- quantities permitted to be imported by the wholesaler and supplied to retailers be limited;
- kava selling prices be reviewed in the light of trade-offs between higher prices to reduce demand and minimal financial drains on communities;
- rigorous enforcement be continued to eliminate illegal kava dealing; and
- the Kava Management Act be reviewed to facilitate these changes.

Acknowledgements: The research reported here is supported by a National Health and Medical Research Council Postdoctoral Training Fellowship.

Competing interests: Alan Clough has been a member of the Northern Territory Licensing Commission, the body responsible for licensing kava in the Northern Territory.

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Specialty training should not be exclusively hospital-based

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To the Editor: I congratulate Harris et al[1] on conducting a survey that identified aspects of specialty training that are difficult for female doctors and doctors with partners and/or children.

However, there are some omissions in their article, which, although small, illustrate further ways in which "specialty" training is unfriendly to the aforementioned groups. The authors purported to survey all medical graduates registered in 2002 "with a clinical college training program". It appears that registrars on the Australasian College of Sports Physicians (ACSP) training program were not included. This training program has been in place since 1992, has been recognised by the Health Insurance Commission since 1999, and is most definitely a "clinical college training program". Although similar in structure, there are two major differences between the sports physician training program and most other "specialty" training programs; namely, that the training is almost entirely *non*-hospital based and that the resulting qualification (the FACSP) is *not* recognised as a "specialty" in Australia. In 2002, I believe that the Australasian College of Sexual Health Physicians was in a similar position to the ACSP, administering a "non-specialty" clinical college training program (which is now under the auspices of the Royal Australasian College of Physicians).

The recognised specialties in Australia, with the major exception of general practice, almost all conduct most of their training in hospitals. Not only are these hospital-based positions relatively "female-unfriendly" and "parent-unfriendly", they don't adequately train specialists for the majority of doctor–patient interactions, which do not actually take place in hospitals. They also contribute to the reality that our "health" system is focused on treatment of disease rather than prevention.[2] Areas such as women's and men's health, travel medicine and dietary medicine also exist within our health system.[3] Ideally, if we want a health system that is better at actually promoting health, these areas should also have formally recognised training programs.

The conservatism of both the Australian Government and the medical profession is reflected in the process for recognising new specialties, which has severely discouraged community-based specialties from being developed. The "choice" of specialty training that Harris et al examined in their study was limited by what was officially sanctioned in 2002. If it were accepted that there should be more recognised specialty postgraduate training positions in community-based fields of medicine, then not only would our medical system start to address its deficiencies in health promotion, but there would be far more attractive training opportunities for doctors who don't wish to pursue full-time hospital-based positions.

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Malignant ascites and bacterial peritonitis

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To the Editor: We describe a patient with malignant ascites and bacterial peritonitis, with no apparent intra-abdominal source of infection.

A 56-year-old woman with advanced breast cancer was admitted to hospital with a 10-day history of diffuse abdominal pain, umbilical tenderness, and increasing abdominal girth. Breast cancer had been diagnosed 13 years before admission (T2 N0 M0) and treated with radical mastectomy and adjuvant chemotherapy. Five years before admission, disease had recurred at the chest wall, and 2 years before, liver metastases were found. Chemotherapy had failed, and her only current treatment comprised capecitabine and analgesics.

On admission, the patient had tachycardia (110 beats per min), tachypnoea (26 breaths per min), blood pressure of 115/80 mmHg, and no fever or signs of sepsis. Examination showed evidence of local recurrence around the left mastectomy scar, and marked ascites with discoloration, warmth, tenderness and a diffuse infiltration over the umbilicus. There were no signs of peritoneal irritation, nor leg oedema.

Blood test results were in the normal range, except for mild leukocytosis (10.6×10^9 cells/L; reference range [RR], $3.8–9.8 \times 10^9$ cells/L), with left shift (86% neutrophils, and 6% lymphocytes; RR, up to 67% neutrophils, and at least 32% lymphocytes). X-ray did not show abdominal free air. Abdominal computed tomography revealed ascites, retroperitoneal lymph nodes, omental and umbilical infiltration, and the known liver metastases without signs of portal hypertension.

Peritoneal tap removed 2800 mL of fluid. Examination of the fluid revealed a white blood cell count of 2×10^9 cells/L (80% neutrophils), glucose concentration of 790 g/L, and albumin concentration of 22 g/L (serum–ascites albumin gradient, 0.7; a gradient < 1.1 indicates that the patient does not have portal hypertension).

Gram stain of the ascitic fluid revealed gram-positive cocci, and culture identified *Staphylococcus aureus*. Cytological examination showed sheets of atypical enlarged epithelial cells highly suggestive of malignancy. Therapy was begun with parenteral cloxacillin and ciprofloxacin, but the patient died shortly after.

This patient's condition is unlikely to have been spontaneous ("primary") bacterial peritonitis, which usually occurs in patients with liver cirrhosis, portal hypertension and ascites with high serum–ascites albumin gradient,[1] and occasionally in patients with malignant ascites.[2] However, in our patient, infection may have originated from the umbilical metastasis. The umbilicus has a direct connection with the intra-abdominal cavity and is also connected to a number of intra-abdominal organs via embryological remnants, such as the umbilical vein and the urachus. Both routes may be involved in the spread of malignant tumour to the umbilicus,[3] but spread may also be in the opposite direction, causing peritonitis.

This diagnosis may be missed by physicians who may not notice anything new in a patient with longstanding malignant ascites, and may fail to consider bacterial peritonitis, a treatable condition.

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3 Albano EA, Kanter J. Sister Mary Joseph's nodule. *N Engl J Med* 2005; 352: 1913. ❑

Severe nocturnal bradycardia with daytime tachycardia in obstructive sleep apnoea

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To the Editor: A 50-year-old morbidly obese woman (weight, 183 kg; body mass index, 70 kg/m^2) presented after 1 month of worsening dyspnoea. Risk factors for cardiovascular disease included hypertension, smoking and previous heavy alcohol consumption. She had left ventricular failure (thought to be due to diastolic dysfunction) and atrial fibrillation with rapid ventricular response. There was no evidence of infection or pulmonary embolism.

A transthoracic echocardiogram showed normal systolic function, although the images were poor. Measurement of arterial blood gases showed a compensated respiratory acidosis ($PaCO_2$, 58 mmHg; PaO_2, 76 mmHg; pH, 7.39; bicarbonate, 34 mmol/L; base excess, 8 mmol/L). Administration of intravenous digoxin, frusemide and heparin led to some symptomatic improvement.

Cardiac monitoring showed atrial fibrillation, with ventricular rates of 120–170 beats/minute despite the digoxin treatment. Overnight, 70 pauses in heartbeat of up to 7 seconds were recorded (Box).

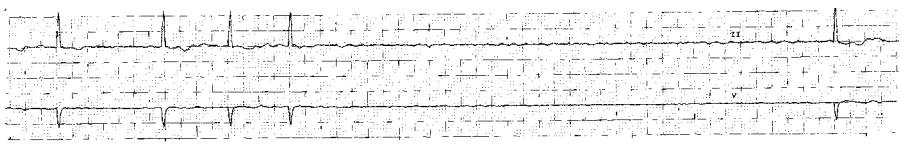
The constellation of the nocturnal rhythm disturbance, hypercapnia and obesity suggested sleep disordered breathing as a unifying diagnosis. Further questioning revealed symptoms indicative of obstructive sleep apnoea. Polysomnography, performed that night, showed a respiratory disturbance index (number of apnoeic or hypopnoeic episodes per hour) of 130 (normal value, < 15). The longest apnoeic episode was recorded at 34 seconds. The average minimum oxygen saturation was 84% during non-REM (rapid eye movement) sleep and 64% during REM sleep. The lowest saturations reached during non-REM and REM sleep were 64% and 61%, respectively. These results suggested severe obstructive sleep apnoea.[1]

The following night, her condition improved with application via mask of continuous positive airway pressure (CPAP) at a level of 12 cm H_2O using room air. Cardiac monitoring continued to show atrial fibrillation with high ventricular rates, but no pauses in heartbeat occurred. This allowed treatment with atenolol and digoxin to control the ventricular rate.

At 6-week review, the patient was complying with home CPAP therapy and felt well. An electrocardiogram confirmed spontaneous reversion to sinus rhythm at 70 beats/minute.

There is increasing evidence to suggest a link between obstructive sleep apnoea and atrial fibrillation.[2] Obstructive sleep apnoea is also a risk factor for hypertension, coronary artery disease and heart failure, all of which are known to precipitate atrial fibrillation.[3,4] Transient heartblock has been found in 10% of patients with obstructive sleep apnoea. Pauses of up to 2 seconds are a predictable physiological response to inspiratory airflow obstruction and hypoxia. These pauses are exacerbated by negative chronotropes. Studies have shown that bradycardia can be effectively abolished with mask CPAP therapy.[5]

Overnight cardiac monitor trace, showing atrial fibrillation and a 7-second pause



The dramatic response to CPAP therapy in this patient suggests that sleep apnoea caused the significant nocturnal ventricular pauses and had a role in the aetiology of the atrial fibrillation.

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More students and less patients: the squeeze on medical teaching resources

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To the Editor: A black day for the *MJA*, I thought, on seeing the title of the article by Crotty, "More students and less patients: the squeeze on medical teaching resources".[1]

I hesitate, but only briefly, to wave the Fowler brothers' classic work at you. The revised 3rd edition, by the brothers' proxy, R W Burchfield, notes that "Regrettable, but prevalent among some standard as well as many non-standard speakers, is the use of *less* with an unprotected plural noun".[2] He goes on to give examples, among which your article title could well appear, and concludes, "The incorrect use is very widespread and seems likely to be ineradicable, however regrettable that may be".

The author of the Editorial is not discussing an amorphous pile of patients. He is writing about a countable number of people, of which, regrettably, *fewer* are willing to participate in the education of those they expect to look after them in later life.

1 Crotty BJ. More students and less patients: the squeeze on medical teaching resources [editorial]. *Med J Aust* 2005; 183: 444-445.
2 Burchfield RW, editor. The new Fowler's modern English usage. 3rd ed. Oxford: Clarendon Press, 1996: 295. ❑

Helen Randall
Senior Assistant Editor
The Medical Journal of Australia

In reply: We plead guilty, but knowingly so. When this article was being proofread, there was much discussion about this "regrettable" use of less, but in this instance a catchy title was preferred to following Burchfield's prescription.[1] We take comfort from *The Cambridge Australian English style guide*, which notes that "using fewer rather than less is . . . a stylistic matter rather than one of correct grammar".[2]

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2 Peters P. The Cambridge Australian English style guide. Cambridge: Cambridge University Press, 1995: 277. ❑

Intern choices for the first graduates of James Cook University

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To the Editor: The School of Medicine at James Cook University (JCU) was established in 1999, based on a case that the workforce needs of northern Australia needed to be addressed.[1] The model was based in part on other regional medical schools in the United States, Canada and Europe, which had demonstrated that local student recruitment and training could produce graduates who prefer to work in either local or similar regional and rural areas.[2] The 6-year undergraduate curriculum at JCU has achieved considerable success in recruiting students from rural backgrounds[3] and in developing and delivering a rural curriculum.[4]

The first cohort of students graduated at the end of 2005, and the intended locations of their internship are now known. JCU students were treated like graduates of other schools by the intern allocation systems within each state. Of 58 graduating students, 51 (88%) have chosen to remain within Queensland, with 29 (50%) in the three North Queensland intern training hospitals, occupying a majority of available intern places in the region. Twelve (21%) will work in other regional hospitals in Queensland and 10 (17%) in a hospital in Brisbane. Seven will work interstate. Furthermore, most of the 37 students of North Queensland origin are staying in North Queensland or adjacent regional centres (only two are leaving Queensland); and about half of the Brisbane-origin and interstate-origin students are staying in Queensland. Hence, while some local students have chosen to move away, some from other states have chosen to stay close to where they moved to study.

Forty-two students (72%) responded to a brief survey exploring their decisions. The most popular reasons for choosing the location of their internship were proximity to family and friends, and trying somewhere different from where they had received their training. All but five respondents indicated that they were "likely" or "very likely" to work somewhere in North Queensland in the future, depending on the availability of postgraduate training opportunities.

This outcome suggests that the intended workforce mission of the school may be achievable through a combination of selection and curriculum strategies. A longitudinal cohort study is in progress to address longer-term graduate career choice outcomes.

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Problem-based learning: a dissemination success story?

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To the Editor: The article by Sanson-Fisher and Lynagh on problem-based learning (PBL)[1] is very timely, raising important questions about the popularity and efficacy of this method.

My "traditional" education included lectures involving 600 students, as well as small-group sessions on the wards and in tutorial rooms. The sessions focused on real patients. Problem-based sessions often deal

with videos, at best, and, at worst, paper case histories and laboratory data.

I believe the differences between PBL and the standard "curriculum" have been overstated. The quality of the teacher is a critical factor that is understated by proponents of PBL. An excellent teacher can captivate large groups with highly relevant and exciting deliveries, and there is nothing to suggest that such teaching is less effective, stimulating or encouraging than PBL-based teaching.

The authors challenge the proponents of PBL to provide evidence that their methodology works. It is also time for those who teach PBL curricula to ask whether this approach is cost-effective.

With the knowledge base of medical science increasing exponentially, it is hard to understand how students, without some guidance, can be expected to take on board the complexities of some of the problems that they are faced with. Taking a humane approach and communicating well with patients are commendable goals, but not if they are pursued to the point where patients fail to receive a correct diagnosis and appropriate treatment.

Good teaching is provided by good teachers rather than by a particular teaching approach. The PBL system is just as fallible as any other system. I applaud the authors for raising this matter and for asking the questions they asked. I look forward to seeing answers provided in the months to years ahead.

1 Sanson-Fisher RW, Lynagh MC. Problem-based learning: a dissemination success story? *Med J Aust* 2005; 183: 258-260. ❑

Barriers to student access to patients in a group of teaching hospitals

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To the Editor: The two excellent articles in the *MJA* on an issue important for medical education provided too few strategies for improvement.[1,2]

First, there is a need for a fundamental attitude change concerning the role of student "doctors". As long as they are viewed as inexperienced novices, intruding on hapless "guinea pigs", barriers will always be found to reduce access.

Patients should be informed that interview and examination by a student doctor adds much to the discussion of their problem, with real clinical advantage for their care program. Student doctors are usually grateful for the privilege, and should be encouraged to be part of the team, and assured of the value of discussion with nurses, residents and other team members. No additional funding should be needed for such activity.

Secondly, as surgical patients are admitted on the day of operation, students should attend the preadmission clinics to help with fuller evaluation. Most teachers would welcome student doctors in their rooms, but this requires planning. It works best when there is a separate examining room for stu-

dents and patients seeking the added benefit of re-examination.

Thirdly, although it is difficult to conduct symptom analysis for someone without symptoms, much value can be obtained from rehearsing specific interrogation and physical examination of all systems in normal people; for example, family and friends. It is not surprising that a few students in exams cannot feel pulses, when they have never tried to feel their own!

Fourthly, with modest financial compensation, an army of people with abnormal signs, not in need of treatment, could be recruited for clinical teaching. This task could be assigned to a teaching coordinator, with skills in social interaction, and would need the cooperation of clinical staff.

1 Crotty BJ. More students and less patients: the squeeze on medical teaching resources. *Med J Aust* 2005; 183: 444-445.
2 Olson LG, Hill SR, Newby DA. Barriers to student access to patients in a group of teaching hospitals. *Med J Aust* 2005; 183: 461-463. ❑

Use of prescribed medications in a South Australian community sample

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TO THE EDITOR: Goldney and Fisher recently reported data on medication use in an Australian community sample and estimated the financial savings that could be made if the number of prescribed medications was reduced.[1]

However, the assumption that the average number of medications per patient could be reduced ignores the large body of evidence that has accumulated over recent years demonstrating under-use of beneficial medicines. Under-prescribing has been identified in the management of a broad range of chronic conditions, including heart failure, ischaemic heart disease, hypertension, atrial fibrillation, asthma, osteoporosis, pain, and depression.[2,3] It has been suggested that under-use of beneficial therapies may be an even bigger problem than over-prescribing, especially in older patients.[4,5]

As Goldney and Fisher did not collect any clinical information about their study subjects, no conclusions can be drawn about whether medications were more frequently over-prescribed or under-prescribed. Focusing solely on reducing the number of medications prescribed may be misguided and may result in poorer health outcomes. A broader view of prescribing is required, recognising that problems result from both over- and under-prescribing, as well as inappropriate dose selection and monitoring.[5]

1 Goldney RD, Fisher LJ. Use of prescribed medications in a South Australian community sample. *Med J Aust* 2005; 183: 251-253.
2 National Institute of Clinical Studies. Evidence–practice gaps report. Vol 1. Melbourne: NICS, 2003.
3 National Institute of Clinical Studies. Evidence–practice gaps report. Vol 2. Melbourne: NICS, 2005.
4 Gurwitz JH. Improving the quality of medication use in elderly patients. A not-so-simple prescription. *Arch Intern Med* 2002; 162: 1670-1672.
5 Rochon PA, Gurwitz JH. Prescribing for seniors. Neither too much nor too little. *JAMA* 1999; 281: 113-115. ❑

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IN REPLY: We agree that, because of our research methodology, we could not necessarily assume that any medication prescription was inappropriate, and we noted that on two occasions. However, our economic analysis addressed only those people using six or more prescribed medications (mean, 7.8), and we reported multiple use of same-class medications, and, at times, use of two different preparations of the same medication. Therefore, we believe our estimate of potential cost savings to be conservative. Nevertheless, we accept that our hypothesis needs more formal testing using clinical data.

Competing interests: Robert Goldney is on a psychotropic drug advisory board for Wyeth Australia and Lundbeck Australia, and the study was supported by the companies noted in the previously-published Acknowledgements. He has also received travel assistance from Sanofi-Synthelabo Australia and speaker fees from several of the companies named in the Acknowledgements. Laura Fisher has received part-salary/funding for data analysis from the companies noted in the Acknowledgements. ❑

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