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[An interventional program for diagnostic testing in the emergency department](#)

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IN REPLY: As Murray notes, appropriate test ordering belongs firmly in the domain of quality care and clinical accountability. In his seminal article on clinical leadership of healthcare system improvement, Berwick lists appropriate use of testing and therapy as the first challenge facing people who wish to improve healthcare systems in the developed world.¹

Murray also identifies the paucity of structured educational programs aimed at providing junior medical staff with the skills to exercise “knowledge and judgement” in test ordering. The Royal Australasian College of Pathologists is seeking to address this deficiency through the development of educational modules on test ordering.

It is unlikely, however, that education alone will curb the increase in test ordering in Australia. Educational programs for junior medical staff are notoriously resource-intensive and difficult to sustain. In addition, they rarely provide the point-of-care guidance that seems to be more effective in sustainably modifying behaviour. Such guidance may require test-ordering software that provides guidelines for ordering and feedback of individual performance, or the use of structured test-stratification programs such as that described by Stuart et al.²

Improved education, supervision and point-of-care guidance will prove ineffective if fears of litigation continue to drive the behaviour of clinicians. As Carter points out, concerns about litigation must be considered in any program aimed at improving practice. However, although litigation related to missed diagnosis is a recurring theme, this may relate more to time pressures rather than a failure to perform investigations. Indeed, many mal-practice suits result from failure to adequately check and act upon the results of the barrage of tests ordered. Attempts to reduce medicolegal risk by ordering all conceivable tests may increase practitioners’ risk unless they have extremely well-designed follow-up systems.

It is important that clinicians not sacrifice high-quality, evidence-based investigation and treatment in an attempt to minimise perceived litigation risks. By testing inappropriately, clinicians may in fact expose themselves to greater risks of litigation, as their patients are exposed to the risks of the tests themselves, the chance

of false-positive results and inappropriate treatment, and the failure to follow up on investigation results.

It is unfortunate, and an indictment of our current reimbursement system, that the financial realities of community practice make it difficult for clinicians to take sufficient time to communicate with patients about the appropriateness of an investigation or treatment. If we continue to allow this to become the way we practise, we will continue to see a diminution of our professional role as we become merely booking agents for tests.

As Berwick says, “Efforts to reform the health system from the outside can help motivate and set the stage for improvement. Yet, if clinicians do not wish to make specific changes in their own work to better meet society’s need for better outcomes and lower cost, no-one outside the health system can be clever enough or powerful enough to make them do it.”¹

1. Berwick DM. Eleven worthy aims for clinical leadership of health system reform. *JAMA* 1994; 272: 797-802.
2. Stuart PJ, Crooks S, Porton M. An interventional program for diagnostic testing in the emergency department. *Med J Aust* 2002; 177: 131-134. □

An interventional program for diagnostic testing in the emergency department

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TO THE EDITOR: While agreeing that sensible utilisation of pathology tests in emergency departments (EDs) is important, we are concerned that the article by Stuart et al¹ might be misinterpreted to justify wholesale reductions in important diagnostic microbiological tests, particularly blood cultures. Stuart and colleagues imply they could safely reduce the number of blood cultures by 80%.¹ Other local data have suggested a minority of blood cultures in the ED influence patient management.²

Confirmation of aetiology will be denied for patients by “rationalisation” of blood cultures in EDs. Although most pathogens are susceptible to broad-spectrum antimicrobial agents, widespread empiric pre-

scribing of such agents in an era of increasing antimicrobial resistance is unwise.

A recent Australian study evaluating blood cultures found that a third of patients with positive blood culture results were not clinically suspected to be bacteraemic.³ Furthermore, the Journal recently reported the emergence of community-acquired methicillin-resistant *Staphylococcus aureus* (MRSA),⁴ and increasing resistance in *Streptococcus pneumoniae*.⁵ Missing MRSA or multidrug-resistant pneumococcal bacteraemia will result in adverse patient outcomes. What about missed cases of meningococcal disease, or typhoid fever, with their associated public health costs? Paradoxically, amid emerging antimicrobial resistance, we may become less aware of the problem. Furthermore, what about the infection control costs required to control the resultant outbreaks of multidrug-resistant organisms?

Empiric broad-spectrum antibiotic prescribing, driven by failure to undertake important microbiological investigations, is bad medicine:

- It teaches everyone to guess the microbiological diagnosis, and, if you do not test, who can prove you wrong? Perhaps only when the patient presents to the tertiary referral hospital with therapeutic failure and evolving multisystem organ failure.
- It logically extrapolates to all patients getting vancomycin plus meropenem to ensure covering MRSA and resistant gram-negative bacilli.
- It inevitably drives resistance, which is increasing rapidly.
- It has never been subject to rigorous scientific scrutiny with cost-effectiveness studies.

Moreover, the study by Stuart et al¹ provides no data on readmission rates, lengths of stay, adverse events and rates of missed or incorrect diagnoses; the ED setting studied has limited generalisability; and United States guidelines, which may be inappropriate in the Australian healthcare context, were used to develop the diagnostic testing protocol.

Might not reducing the ordering of some microbiological tests cause “spiralling therapeutic empiricism”? Might not the overall healthcare budget growth accelerate because of increased prescribing of expensive broad-spectrum antimicrobials?

1. Stuart PJ, Crooks S, Porton M. An interventional program for diagnostic testing in the emergency department. *Med J Aust* 2002; 177: 131-134.
2. Kelly AM. Clinical impact of blood cultures taken in the emergency department. *J Accident Emerg Med* 1998; 15: 254-256.

- Gosbell IB, Newton PJ, Sullivan EA. Survey of blood cultures from five community hospitals in south-western Sydney, Australia, 1993-1994. *Aust N Z J Med* 1999; 29: 684-692.
- Gosbell IB, Mercer JL, Neville SA, et al. Non-multiresistant and multiresistant methicillin-resistant *Staphylococcus aureus* in community-acquired infections. *Med J Aust* 2001; 174: 627-630.
- Turnidge JD, Bell JM, Collignon PJ. Rapidly emerging antimicrobial resistances in *Streptococcus pneumoniae* in Australia. *Med J Aust* 1999; 170: 152-155. □

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TO THE EDITOR: The rate of growth of pathology and radiology testing over the last decade has surpassed the average growth of most other medical services.¹ Pathology Medicare items processed per capita between 1996-97 and 1998-99 demonstrated the largest increase (8%) of all item types. The interventional program for reducing diagnostic testing reported by Stuart, Crooks and Porton shows promise in addressing this increase in the emergency department, and has significant potential across other hospital departments.²

The program's focus on initiating behavioural change among test-ordering staff as a precursor to effecting significant long-term reduction of test use is important. Views differ as to the reasons for excessive clinical testing among hospital staff. Medico-legal issues, level of experience, fear of the consequences of inadequate testing and the desire to diagnose within a single presentation have been previously described.³ These issues were dealt with to some extent via the described educational component of the authors' intervention program and seem to explain the apparent sustainability of the intervention.

The authors report a "40% decrease in ordering of tests in the emergency department, with test utilisation falling from a mean of \$39.32/patient to \$23.72/patient." Other measures reported include reduced time taken for result review, with a resultant availability of additional resources for "other critical areas of service delivery". An assertion is made that "improvements to quality care" are "likely". Issues relating to improvement in quality of care, however, still remain:

- Although "no adverse patient outcomes relating to underutilisation of investigations" were identified, what follow-up was performed to ascertain "adverse outcomes"?
- What proportion of patients for whom further testing was requested via a general

practitioner or outpatient clinic did not follow through with these investigations?

- Is there the potential for sufferers of undiagnosed chronic disease to develop more serious disease, requiring eventually more expensive therapies?

- What is the cost of patients' attending GPs and outpatient clinics for further investigations?

- Are the investigators' "evidence-based list of clinical indicators for ordering . . . tests" appropriate and are they rigid enough to prevent operator bias?

Test utilisation measured by cost was the primary outcome measure for this study. Based on this measure, the results appear promising; however, important quality-of-care issues need investigation before more widespread implementation is considered.

- Vining R, Mara P. General practitioners and pathology testing [editorial]. *Med J Aust* 1998; 168: 591-592.
- Stuart PJ, Crooks S, Porton M. An interventional program for diagnostic testing in the emergency department. *Med J Aust* 2002; 177: 131-134.
- Hammett R, Harris R. Halting the growth in diagnostic testing [editorial]. *Med J Aust* 2002; 177: 124-125. □

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IN REPLY: Our intervention¹ was developed following concerns with the quality of test ordering in our department, and resulted in a significant improvement in the checking and documentation of test results. Quality of care is also influenced by test over- and underutilisation. The study demonstrated a marked reduction in test ordering and accorded with the current estimates for test overutilisation.² Test underutilisation was monitored using established mechanisms for reporting critical incidents (including missed or incorrect diagnoses) and patient complaints, as well as feedback from staff, general practitioners and other departments and hospitals. Patient outcome factors (eg, readmission rates, length of stay) were confounded by the dramatic onset of access block during the intervention period, making retrospective comparisons unreliable.

The intervention is unlikely to have increased GP and outpatient referrals, as the previous practice of the department had been to refer patients having non-urgent tests (where the result was not immediately available) to a GP or outpatient clinic for follow-up of the test result. The department did not have the resources to ensure all patients attended for follow-up of the test result, raising medico-legal concerns and quality-of-care issues. The

intervention, by deferring the ordering of non-urgent tests until after review, has the potential to reduce test duplication and the ordering of inappropriate (specialised) tests by junior emergency department staff. In addition, this process allows the patient's condition to be reviewed to determine whether further or alternative testing is required.

Gosbell and colleagues speculate on the potential adverse outcomes that may follow from a reduction in the routine ordering of blood cultures. Blood cultures change patient management in only a fraction of cases, and the clinical situations where this occurs have been defined.³ A major concern is the high rate of false positive results and the consequent economic and social cost of additional unnecessary testing, treatment and prolonged hospital stay.⁴ As with any clinical tool, the use of blood cultures must be supported by evidence-based guidelines rather than based on expert opinion.

The widespread use of blood cultures to limit the prescribing of broad-spectrum antimicrobial agents and development of disease resistance needs to be subjected to scientific examination and a cost-benefit analysis. If, as Gosbell et al seem to argue, the value of blood cultures lies predominantly in their public health role, the public have a right to be informed of the evidence used to substantiate the "test-all" approach being advocated to allow proper debate on the opportunity costs to public health.

- Stuart PJ, Crooks S, Porton M. An interventional program for diagnostic testing in the emergency department. *Med J Aust* 2002; 177: 131-134.
- Van Walraven C, Naylor CD. Do we know what inappropriate laboratory utilisation is? A systemic review of laboratory clinical audits. *JAMA* 1998; 280: 550-558.
- Kelly AM. Clinical impact of blood cultures taken in the emergency department. *J Accident Emerg Med* 1998; 15: 254-256.

Correction

Re: "The effectiveness of coordinated care for people with chronic respiratory disease", by Smith BJ, McElroy HJ, Ruffin RE, Frith PA, Heard AR, Battersby MW, Esterman AJ, Del Fante P and McDonald PJ, published in the 4 November issue of the Journal (*Med J Aust* 2002; 177: 481-485). The correct credentials and title for Peter A Frith are MB BS, FRACP, Director, Respiratory Medicine, Repatriation General Hospital, Daw Park, SA 5041. □

4. Bates DW, Goldman L, Lee T. Contaminant blood cultures and resource utilisation: the true consequences of false positive results. *JAMA* 1991; 265: 365-369. □

Measuring outcomes in patients with depression or anxiety: an essential part of clinical practice

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TO THE EDITOR: In advocating the use of questionnaire measures for outcomes for patients with depression or anxiety in clinical practice, Hickie, Andrews and Davenport advised that "for physicians who work predominantly in academic, specialist or administrative settings, the arguments for routine outcome measurement are obvious".¹

The arguments are not at all obvious for clinicians. What is obvious is the divide between clinical practice and academia. The claim that there is now "an urgent need" to promote such questionnaires for general practitioners is difficult to understand. The historical and professional resistance to the use of such "instruments" is for good reason. They are unwieldy and unreliable. The oldest measure of outcome, known to clinicians but overlooked by academics, is to ask the patient "Are you feeling any better?", and to evaluate outcome using clinical skill and expertise.

The key to understanding this peculiar proposition is to be found in the final sentence of the article, in its reference to the move for governments to "support major service innovations in primary mental healthcare". Those who produce, administer and measure such innovations will not, of course, see themselves unrewarded for their valued efforts to improve healthcare outcomes in the community. The poor GP will be burdened with yet another clinically irrelevant activity.

Hickie and colleagues will no doubt press on regardless. There is a hint of insight, however, in the professorial *obiter dictum* that these measures would not be "the prime concern for the treating clinician". The "health services planning and other research benefits" of collating clinical data is a nice idea. It is hard to see its relevance to general practice based treatment of psychiatric disorder. If it is true that one out of three general practice consultations are driven by some psychiatric problem, then GPs will have a lot of forms to fill out, won't they?

1. Hickie IB, Andrews G, Davenport TA. Measuring outcomes in patients with depression or anxiety: an essential part of clinical practice. *Med J Aust* 2002; 177: 205-207. □

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IN REPLY: It is pleasing to note that a senior psychiatrist is looking at the practicality of general practitioners (GPs) measuring the clinical outcome of patients with mental disorders. However, Dinnen's concerns may be groundless. For example, the Kessler Psychological Distress scale (K10) consists of 10 simple questions that patients can complete in two minutes in the waiting room and doctors can then score by summing 10 numbers between one and five.¹ This takes less time than writing a progress note.

The websites www.gpcare.org, www.beyondblue.org.au and www.mentalhealth.gov.au¹⁻³ are the simplest places for doctors to familiarise themselves with the proposed outcome measures and with other new initiatives for better outcomes in mental healthcare. For the K10, the website¹ advises GPs that if, after treatment, a patient's score remains above 25 the GP should review the patient and consider seeking a second opinion from a psychiatrist. In a specialist clinic (St Vincent's Hospital, Sydney) the average K10 score of a cohort of patients was 26.1 before treatment and 21.7 after treatment (indicating the effect of sound treatment). Nevertheless, the scores of a fifth of patients remained above 25 after treatment. Psychiatrists might therefore familiarise themselves with the measure so they understand when a GP refers a patient for a second opinion "with a K10 score above 25 after treatment".

1. Resources for clinicians. Available at <http://www.gpcare.org> (accessed Sep 2002).
2. *beyondblue: the national depression initiative*. Available at <http://www.beyondblue.org.au> (accessed Sep 2002).
3. Better Outcomes in Mental Health Care initiative. Available at <http://www.mentalhealth.gov.au> (accessed Sep 2002). □

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