Editorials

Decentralised anticoagulant care

In recent years there has been a large increase in the number of patients receiving long term anticoagulant treatment. A survey of computerised general practice patient records in Cambridge in 1995 indicated that 1 in 200 of the population were taking warfarin. This prevalence was associated with an 80% increase in INR determinations during a four year period.¹ In some areas the increase over a similar period was even greater.² If all patients were to attend hospital based anticoagulant clinics the number of clinics would have to increase five to 10-fold. The traditional model of long term oral anticoagulant care involves repeated attendance at a hospital based anticoagulant clinic³ often with capillary blood sampling. Patients' preferences for capillary or venous blood sampling vary but a major concern with capillary blood sampling is variable accuracy and precision with manual methods, and the inability to adhere to conventional quality management. With capillary sampling quality control is only possible through duplicate venous testing at regular intervals, and at present materials for quality assurance are either not available or not validated. These problems also apply to new near-patient testing devices. Venous blood samples can be subjected to rigorous quality assurance procedures and samples sent from the community can be processed in an identical manner to those from anticoagulant clinics. This permits movement between clinic and community without any effect on precision or accuracy.

With increasing numbers of patients requiring long term anticoagulation new models of care involving various degrees of decentralisation are being considered. The advantages of decentralised care are apparent. Anticoagulant clinic staff can concentrate on primary patient education, which results in improved standards of care.⁴⁻⁶ Patients need not travel to hospital based clinics. Patients and general practitioners equate successful decentralisation with improved care.¹ Delivering anticoagulant care to increasing numbers of patients has led to expansion of anticoagulant clinics and some movement into primary care. However, expansion of this process is limited by resources and there has been no large scale devolution of the service.⁷ General practitioners have legitimate concerns that decentralisation will be an extra burden for them. In addition, when general practitioners prescribe warfarin they take responsibility for side effects. While there is now objective evidence that general practitioners, with or without computer assisted dosing, are able to achieve accepted standards of care⁸⁻¹⁰ many consider lack of funding, lack of time, insufficient knowledge, and inadequate care plans as obstacles to further decentralisation.¹ The key to success is to tailor the process to a degree that is compatible with local needs and resources. Establishing a local development group consisting of general practitioners and the hospital clinician responsible for the anticoagulant clinic is particularly important to optimise forces driving decentralisation, and to identify and eliminate restraining forces. With the gradual deployment of a suitably tailored process most general practitioners consider avoidance of attend-

ance at hospital based clinics as a major advantage for their patients.¹

When planning or developing the process of anticoagulant care, consideration must be given to: maintaining appropriate standards of care; the ability of patients to attend for blood tests and receive instructions; workload of general practitioners, practice nurses, haematologists, and haematology laboratories; and available resources and the relative costs of different models of service. With respect to these factors there are varying degrees of decentralisation that can be adopted.

- (1) Patient attends a hospital clinic and has blood taken. Testing is performed in the laboratory and warfarin dosage is recommended by the haematology department. Anticoagulant clinics can be operated by pharmacists and specialist nurses, not only obviating the need for medical personnel but also leading to potential improvements in dosing and preventing drug interactions.
- (2) Patient attends general practice and blood is sent to the laboratory. Testing is performed in the laboratory and warfarin dosage is recommended by the haematology department. This minimal decentralisation can be facilitated by provision of phlebotomy services that could be extended to domiciliary visits where necessary.
- (3) Patient attends general practice and blood is sent to the laboratory. Testing is performed in the laboratory and results are sent to the general practice where warfarin dosage is recommended. Computerised dosing with subsequent verification by a qualified practitioner is applicable in the community as well as in hospital clinics.
- (4) Patient attends general practice where testing is performed and warfarin dosage recommended. If this service is provided by hospital staff visiting the general practice or the patient's home then responsibility is not transferred to the general practitioner.

The more decentralised the service the greater the potential responsibility of the general practitioner for each aspect of the service. For example, near-patient testing and dosing by non-hospital staff will require understanding and implementation of internal quality control, external quality assurance, health and safety with respect to laboratory procedures as well as knowledge of how to give dose recommendations and schedule testing. Furthermore, decentralisation to this degree will inevitably lead to general practitioners having to make management decisions regarding when to institute anticoagulant care, what intensity of anticoagulation to use for each condition, and the management of complications arising from treatment. It will also result in an increase in the cost of testing and a shift of the cost from laboratories to the general practitioner.

A simple strategy for retaining a coordinated service with appropriate expertise and quality assurance of the laboratory process while decentralising at minimal cost to primary care is through offsite patient sampling (number 2

above).¹¹ With this system patients attend their local general practice and a venous blood sample is sent to the central laboratory. The INR is determined and a dose calculation and schedule for the next test is sent by post either to the patient directly or to the general practitioner. Patient care can then be monitored centrally and expert advice given when necessary. There is no clinically significant change in INR when analysis is delayed for up to three days¹¹ and the quality of control with near-patient sampling is at least equal to that in a hospital based clinic.¹ This system is considered preferable by patients. The process requires access to phlebotomy in general practice while the cost of testing and dosing remains in the central laboratory. This system also offers an opportunity for the gradual development of expertise in primary care. Near-patient testing and dosing can then be adopted by practices that consider this preferable either as a quality service or on financial grounds. Guidelines on near-patient testing are now available¹² and a new edition of guidelines on oral anticoagulation will soon be published by the British Society for Haematology. These guidelines will help to develop new models of care.

One can safely say that the quality of anticoagulant care has improved over recent years with the development of clinical guidelines, adoption of the INR system, quality control and assurance, computerised decision support systems, and clinical audit. New models of delivering care must now be developed to ensure availability of this service

to an ever increasing number of patients. Decentralisation can make care available to all patients while maintaining the standard of care that has been achieved in a hospital setting.

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Health economics and clinical pathology

In this issue, Langlois and Donaldson¹ suggest that marginal analysis may be used to determine sampling strategies for surgical specimens. This is worthy of detailed consideration as we become increasingly aware of the academic basis of management.

Marginal analysis is the examination of the effects of adding one extra unit to, or taking one unit away from, a given economic variable. It may for instance assess the effects on overall company profits of removing staff from one area of activity to redeploy in another. The loss in one department may be outweighed by the gains of increased production in the other, so that resources are used more efficiently. This is an attractive concept in the context of a cash limited health service: if no additional resources are available, how can we make best use of the existing funds? One suggested adaptation of marginal analysis is to group clinical activities into related areas, identify the current expenditure in those areas, and examine the effects of redistributing funds in a different way to the individual activities.² In one such exercise,³ a multidisciplinary working group charged with examining maternal and early child health determined that reducing the number of fetal ultrasound scans in women with low risk pregnancies would do little harm and could free up resources to increase screening for women with high risk pregnancies, resulting in an overall health gain with no increase in cost. A part of marginal analysis is the calculation of the cost per extra abnormality detected: the cost of additional scans in the low risk group (most pregnancies) divided by the number of additional malformations diagnosed (a relatively small number) is much higher than the cost of additional scans in the high risk group (a small number) divided by the number of extra abnormalities detected (a relatively large number).

The suggested new approach¹ to sampling strategies in histopathology is based on this one narrow aspect of marginal analysis, the cost per extra case detected, ignoring the wider concept of examining the effects of shifting resources. In health care, measuring outcomes is not as simple as determining profits in industry, but is critical if informed decisions are to be made on health care expenditure. The US government has tackled this by convening a panel that includes experts in health outcome measures and clinical medicine to establish the principles along which data should be collected and analysed, to guide decisions about which services to provide and how they should be provided.⁴

Other key aspects will be ignored if decisions on resource allocation are made solely on the basis of efficiency.⁵ Improving technical efficiency through marginal analysis will inevitably lead to a time when the outcome of some patients will be worsened to improve that of others. This raises the question of equity, of what society believes to be fair. Histopathologists cannot set themselves up as judge and jury: public involvement is necessary. Making choices raises wide ethical issues and the burden of resolving these should not be placed on individuals. Importantly, the US panel charged with establishing a framework for cost-effectiveness analysis includes experts in ethics.⁴

Rationing occurs in the NHS as shown by the existence of waiting lists. Langlois and Donaldson have attempted to provide an explicit method for allocating finite resources in histopathology based on mathematical formulae and costs that are easy to identify. However, we have little respect for our specialty if we fail to recognise the effects that our diagnoses have on patients, and if we implicitly accept that these effects can be ignored when determining the alloca-

tion of resources. The only way forward must be to assess the total clinical costs and costs to society of diagnosing and treating (or not diagnosing and treating) a patient with a given disease. In the case of transurethral resections of prostate, the diagnosis of a cancer that was clinically unexpected may not benefit patients for whom therapeutic options are limited because of their general state of health but may be important for others, such as the relatively young. It may be appropriate not to process any tissue in the first group but to examine the whole sample in the second smaller group. By examining the full range of our activities in their clinical context, we may identify areas where no health benefit accrues from our intervention, and others where increasing investment in histopathology could reduce total costs by ensuring that the right patient gets the right treatment at the right time, eliminating waste

and the cost of getting it wrong. One thing is clear, unless we focus our attention on the contribution that histopathology makes to patient care, we will not attract the investment required to provide the high standards our patients deserve.

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