

Cancer recognition and primary care

FOR many patients, the general practitioner's most fundamental role is being able to act appropriately when they attend with a symptom about which they are concerned.¹ Furthermore, the recently published NHS Cancer Plan sets out an ambitious target to improve cancer survival in England and Wales, and places additional responsibilities on primary care professionals to educate and encourage patients to attend earlier with key cancer symptoms.²

Some have sought to equate improved cancer survival with better treatment.³ While this may be the case for some cancers it is not a universal phenomenon. Randomised controlled trials of breast cancer⁴ and colorectal cancer⁵ screening have demonstrated significant effects on mortality as a consequence of detecting cancers earlier. In relation to symptomatic patients, Richards *et al* have conducted a systematic review of the available literature in which, independent of the effects of lead-time bias, delays of three to six months were shown to be associated with lower survival.⁶ Population-based studies provide some further indications that what happens to patients in the early symptomatic stages of the cancer journey does matter in terms of their eventual outcome. The EURO CARE programme has highlighted a potential for improvements in cancer recognition as assessed by the stage at patient presentation for definitive treatment.⁷ The pathway to care in patients with, for example, colorectal cancer, is often very complex. In the absence of a screening programme it involves a combination of patient, professional, and administrative reactions to symptoms of possible oncological significance. However, compared with the UK, it seems that our Dutch colleagues are receiving patients at an earlier Duke's stage with consequent improvements in survival.⁸ Other evidence from a cross-sectional study in certain North American states suggests that the primary care provision is important in earlier cancer diagnosis. Roetzheim *et al* have demonstrated that the supply of primary care physicians is significantly correlated with the stage at diagnosis of patients with colorectal cancer: as the supply of primary care physicians increased, the odds of late-stage diagnosis decreased.⁹

Thus it is clear that the responsibility for improving cancer survival cannot be abrogated by GPs. Both primary care clinicians and primary care clinical researchers need to play their part in seeking to address this issue. Unfortunately, the problem has been compounded by a lack of clarity about objectives as well as a poor appreciation of the unique diagnostic perspective within primary care. There is a requirement for a much greater focus on what we are actually trying to achieve — the diagnosis of all cancers, or the direction of our effort on cancers, at an earlier stage, thus enhancing the chances of cure and minimising the need for distressing and disabling, extensive and aggressive treatment. There are arguments in favour of trying to diagnose all cancers earlier;¹⁰ however, if we wish to improve survival then our focus ought to be on cancer identification at the earliest possible stage. We need to push earlier symptomatic diagnosis back until it is able to be particularly sensitive to the initial symptoms of possible oncological signifi-

cance, rather than all such symptoms. The recently published *Cancer Referral Guidelines*¹¹ do not differentiate cancer presentation by stage, but rather they seek to strike an appropriate balance between sensitivity and specificity. To impact on cancer survival, a more logical trade-off would be between sensitivity and prognosis.

In relation to the unique perspective within primary care there is also a need for much more clarity about the symptoms and signs of the earlier cancers in the settings where primary care clinicians work and among the patients that they care for. Because of the hospital-centred nature of medical education, traditional symptomatic approaches for earlier cancer recognition have always been viewed in terms of the individual symptoms or signs that present to secondary care physicians. There is a paucity of evidence in relation to the significance of such information in the community as well as the relevance of the less traditional discriminators (for example, 'quantifiable features of health-seeking and health-modifying behaviour').¹² Applying Bayes' theorem, it is clear that if identical patients with identical histories are seen in primary care and in secondary care, then the likelihood of significant disease will be much greater in the latter setting. The theorem emphasises that the interpretation of any new information should depend on the prior probability of disease. Thus, in primary care, the posterior probability of disease will be lower than in a selected population, even if the same discriminant functions with identical weights of evidence can be applied.¹³

The impact of prior probability of disease on the discriminant value of symptoms is illustrated by the relationship between rectal bleeding and colorectal cancer. According to Fijten, the positive predictive value of isolated rectal bleeding for colorectal cancer is less than 0.1% in the general population, 2% among those patients who choose to consult their GP, but 36% among patients subsequently referred on to secondary care.¹⁴ These differences reflect the broad range of selective factors affecting both consultation¹⁵ and referral behaviour¹⁶ (e.g. the effects of demographics, comorbidities, social circumstances, educational attainment, and psychological variables) as well as any developments occurring because of the simple passage of time. Some symptoms will have a greater propensity to cause patients to consult and hence there may be little difference between the community and the primary care populations.¹⁷ However, in the case of new-onset rectal bleeding, the factors affecting consultation and referral practices are multifactorial and remain only partially understood.¹⁴ For example, it seems that colorectal cancer patients with significant comorbidities are often referred on at an earlier pathological stage,¹⁸ whereas older patients with symptoms suggestive of colorectal cancer are more likely to be admitted as emergencies with more advanced disease.¹⁹ Furthermore, in a community setting the colorectal cancer will be not only be at an earlier pathological stage but other 'traditional' symptoms and signs (e.g. change in bowel habit, abdominal pain, weight loss) will also be less defined and developed.²⁰

For discriminant information to be clinically useful it must

exhibit both validity as well as reliability within the populations where it will be applied.²¹ As a patient rises through the health care system, it is clear that some clinical discriminant information will be used up. For example, a combination of urinary symptoms, prostate nodularity with gross enlargement, age, and prostate specific antigen might possibly be helpful to the GP in differentiating between patients with or without potentially significant disease for onward referral. However, from the secondary care perspective, prostate nodularity with gross enlargement may well be a useless sign as all patients will have it (or else they would not have been referred!). The specialist may therefore be more concerned with, perhaps, the midline furrow or the fixation of the gland. However, it would clearly be wrong for the consultant to encourage the GP to switch over to use such findings in their decision making, as such 'detailed' findings are likely to exhibit significant unreliability in primary care.²²

Unfortunately, there is a persisting failure by those outside clinical primary care to appreciate and understand the primary care clinical and clinical epidemiological perspectives.²³ To many, looking down from the apex of tertiary care, it seems that primary care has failed and, increasingly, cancer screening is seen as the answer for earlier cancer recognition. For example, although a recent systematic review has highlighted the inadequacies in the primary care-oriented evidence in relation to lung cancer diagnosis,²⁴ the currently favoured route to address the problem of earlier lung cancer recognition by the United Kingdom Co-ordinating Committee on Cancer Research (UKCCCR) is screening (using spiral CT scanning in heavy smokers).²⁵ Admittedly, some attempts have been made to adjust for selective biases but even this work is handicapped by significant deficiencies in the evidence base²⁶ and a lack of insight into the effects of stage, age or comorbidity on clinical discriminant information. In community or in primary care populations diagnostic discrimination may best be achieved by using three or four discriminators together (taking into account any interactions with appropriate statistical modelling). Unfortunately, very little good quality work has been undertaken into such clinical discriminant information clusters *in any setting*; this is important, as it seems likely that such clusters will have particular relevance in low-prevalence populations.^{27,28}

The great strength of the NHS Cancer Plan is that it promotes a public health approach to cancer and underlines the need for a broader perspective.² Cancer recognition serves as a good example of an aspect of the cancer journey that has suffered from an inappropriate dominance by specialist interests. Furthermore, the establishment of a National Cancer Research Network as part of the plan presents a golden opportunity to develop the type of large-scale clinical epidemiology that will prospectively generate the clinical discriminant information clusters that are so urgently required by practising GPs. If we continue to expect patients to consult GPs and for GPs to initiate onward referral of such patients, in accordance with raw symptom information derived from hospital patients with established disease, then it should come as no surprise if we make little impact on the stage-specific spectrum of patients that are seen by our hospital-based colleagues.

References

- Green S, Price J. Complaints. *Pulse*, 4 April 1998; **63**: 67.
- Department of Health. *The NHS Cancer Plan*. London: Department of Health, 2000.
- Sikora K. Cancer survival in Britain. *BMJ* 1999; **316**: 461-462.
- Nystrom L, Rutqvist LE, Wall S, *et al*. Breast cancer screening with mammography: overview of Swedish randomised trials. *Lancet* 1993; **341**: 973-978.
- Towler B, Irwig L, Glasziou P, *et al*. A systematic review of the effects of screening for colorectal cancer using the faecal occult blood test, Hemoccult. *BMJ* 1998; **317**: 559-565.
- Richards MA, Westcombe AM, Love SB, *et al*. Influence of delay on survival in patients with breast cancer: a systematic review. *Lancet* 1999; **353**: 1119-1126.
- Berrino F, Capocaccia R, Esteve J, *et al* (eds). *Survival for cancer patients in Europe; the Eurocare II study*. Lyons: International Agency for Research on Cancer, 1999.
- Gatta G, Capocaccia R, Surt M, *et al*. Understanding variations in survival for colorectal cancer in Europe: a EURO CARE high resolution study. *Gut* 2000; **47**: 533-538.
- Roetzheim RG, Pal N, Gonzalez EC, *et al*. The effects of physician supply on the early detection of colorectal cancer. *J Fam Pract* 1999; **48**: 850-858.
- Summerton N. New guidelines for urgent referral of patients with cancer. *BMJ* 2000; **320**: 1476.
- NHS Executive. *Referral guidelines for suspected cancer*. London: Department of Health, 2000.
- Pereira Gray DJ. The role of general practitioners in the early detection of malignant disease. *Trans Hunt Soc* 1966; **25**: 135-179.
- Sox HC, Hickman DH, Marton KI *et al*. Using the patient's history to estimate the probability of coronary artery disease: a comparison of primary care and referral practices. *Am J Med* 1990; **89**: 7-14.
- Fijten G. *Rectal bleeding, a danger signal?* Amsterdam: Thesis publishers, 1995.
- Campbell SM, Roland MO. Why do people consult the doctor? *Fam Pract* 1996; **13**: 75-83.
- O'Donnell CA. Variation in GP referral rates: what can we learn from the literature? *Fam Pract* 2000; **17**: 462-471.
- Morrell DC. *Diagnosis in general practice. Art or Science?* London: Nuffield Provincial Hospitals Trust, 1993.
- De Marco MF, Janssen-Heijnen MLG, van der Heijden LH, Coebergh JWW. Comorbidity and colorectal cancer according to subsite and stage: a population-based study. *Eur J Cancer* 2000; **36**: 95-99.
- Hargarten SW, Roberts MJS, Anderson AJ. Cancer presentation in the emergency department: a failure of primary care. *Am J Emerg Med* 1992; **10**: 290-293.
- Di Gregorio C, Fante R, Roncucci L, *et al*. Clinical features, frequency and prognosis of Dukes' A colorectal carcinoma: a population-based investigation. *Eur J Cancer* 1996; **32**: 1957-1962.
- Summerton N. Diagnosis and general practice. *Br J Gen Pract* 2000; **50**: 995-1000.
- Varenhorst E, Berglund K, Lofman O, Pedersen K. Inter-observer variation in assessment of the prostate by digital rectal examination. *Br J Urology* 1993; **72**: 173-176.
- Rosser WW, Shafir MS. *Evidence-based family medicine*. Hamilton: BC Decker Inc, 1998.
- Liedekerken BMJ, Hoogendam A, Buntinx F, *et al*. Prolonged cough and lung cancer: the need for more general practice research to inform clinical decision making. *Br J Gen Pract* 1997; **47**: 505.
- Sone S, Takashima S, Li F, *et al*. Mass screening for lung cancer with mobile spiral computed tomography scanner. *Lancet* 1998; **351**: 1242-1245.
- Froom P, Froom J. Adjusting for selection biases in referral populations. *J Fam Pract* 1987; **24**: 80-82.
- Fijten GH, Starmans R, Muris JWM, *et al*. Predictive value of signs and symptoms for colorectal cancer in patients with rectal bleeding in general practice. *Fam Pract* 1995; **12**: 279-286.
- Muris JWM, Starmans R, Fijten GH, *et al*. Non-acute abdominal complaints in general practice: diagnostic value of signs and symptoms. *Br J Gen Pract* 1995; **45**: 313-316.

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New arrangements for NHS R&D funding: implications for primary care research

ALMOST 90% of National Health Service (NHS) clinical contacts take place in general practice and primary care, and the content and configuration of this care should be based on the best available evidence of effectiveness and safety. The importance of a solid research base for primary care has been emphasised repeatedly, notably in the MRC Topic Review of research in primary care¹ and in the Mant Report on primary care R&D in the National Health Service.² Yet primary care research receives only a tiny fraction of UK research funding and the ratio of academic to service general practitioners is minuscule compared with other clinical disciplines. Although the recently-introduced NHS R&D researcher development and clinical scientist awards for primary care — augmented by postdoctoral fellowships with financial support from PPP Healthcare Medical Trust — have been a most welcome step in the right direction, potential primary care researchers still encounter an underdeveloped career structure with uncertain rewards. The Department of Health has now announced a new funding system for R&D in the NHS.³ Will this provide the continuing support required to consolidate the research base of primary care?

The NHS R&D programme, established by Michael Peckham a decade ago, was developed initially against a target R&D expenditure of 1.5% of NHS funding. With the advent of the 'primary care-led NHS', the importance of increasing research activity and capacity in primary care was recognised; with it came a commitment to double the NHS R&D investment in primary care. It is not clear whether a commitment to either of these targets still exists. When Alan Milburn, the Health Secretary, announced extra resources for the NHS and a rise in the R&D budget by 6.6% in February 2001, the new funding (amounting to about £20 million) was focused on research into the 'supercharged' priorities of the NHS — cancer, coronary heart disease, and mental health — and on health technology assessments for the National Institute for Clinical Excellence. These new resources will be fed into the system through two new funding streams for NHS R&D. What are these? And to what extent are they likely to support and enhance research in primary care?

NHS R&D funding is now being reorganised into two new funding streams called 'Support for Science', and 'Priorities and Needs'. Support for Science will meet the NHS costs of doing research and will include an element for the costs of developing research proposals. Priorities and Needs will support research and development projects, largely related to the research needs of the National Service Frameworks, the National Performance Assessment framework and the work of the National Institute for Clinical Excellence. The introduction of this new funding system has been slowed by the supervening priority of developing and disseminating a research governance framework in the NHS and the consultation process for the establishment of primary care trusts.

There are real concerns that neither Support for Science nor Priorities and Needs funding are likely to provide either

the stability or the expansion needed in primary care research. The Priorities and Needs consultation document⁴ is thin on detail about how primary care researchers (whether individual practices, research networks or academic departments) might, in partnership with other researchers and funders, become eligible for this funding stream. More worryingly, the recently-published DH/Medical Research Council modelling exercise on Support for Science⁵ has specifically excluded detailed consideration of primary care research, commenting that further work needs to be done in this area.

These developments may be linked to a faulty perception of the significance of research in primary care and to a confusion between the imperative to increase research capacity — clearly felt in the old Regional offices — and the need to enhance research quality and provide continuity of support to productive researchers. We now need a clear statement that an appropriate mechanism for NHS R&D support for primary care research funding will be included in the new funding streams. Any such plans will have to take into account the increasing importance of primary care trusts and their role in the funding system.

For many years, doctors in general practice have tended to disregard research findings because of their lack of applicability or low relevance to their own working environment. In the past 15 years, through the efforts of many primary care-based researchers and the first signs of real support from the established funding mechanisms, a research base has developed that is relevant to clinical practice in primary care. A continuing programme of clinical and health services research in primary care is required to ensure that we deliver high-quality care in the most appropriately configured health system. No-one would argue about the need to provide better access to better care and, in a fast-changing NHS and a rapidly-changing society, it is more important than ever for primary care researchers to be in a position to examine critical issues in the management of individuals and populations and to evaluate objectively some of the consequences of policy imperatives. Most worrying of all, recent requirements to claw back significant amounts from the national R&D levy, including a freeze on all new R&D commissioning to support frontline care, suggest that R&D is being assigned even lower priority by the Government. This is an unfortunate development at a time when the calls for evidence-based practice are louder than ever.

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References

1. Medical Research Council. *MRC Topic Review: Primary Health Care*. London: MRC, 1997.
2. NHS Executive South and West. *National Working Group on R&D in Primary Care*. NHSE South and West, June 1997.
3. Department of Health. *NHS Support for Science R&D Activity and Cost Modelling Project: Interim Report*. London: DoH, December 2000.
4. Department of Health. *NHS Priorities and Needs R&D Funding*. London: DoH, August 2000.
5. Department of Health. *NHS Support for Science*. London: DoH, August 2000.

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