and cardiothoracic surgery as well as of other health workers for screening and for rehabilitation. Professor Hampton suggests clinicians draw up 'an alternative NSF for CHD' but it is too late. The NSF could well have been very different had he and his colleagues made appropriate suggestions some years ago - but they did not. He concludes that 'the emperor has no clothes'. I suggest that the emperor has plenty of clothes, albeit old ones - he just has to be taught how to put them on; he could then perhaps buy a new suit.

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Erratum
Vol 34 No 2, March/April 2000, p168
Corneal opacity following Bell's palsy
JRCPL failed to name Dr Geraint Fuller as co-author of Dr Philip Smith's filler, for which we apologise.

Managed clinical networks: a new paradigm for clinical medicine

I H Kunkler

The improvement of cancer services is one of the top priorities of the parliaments at Westminster and at Holyrood. Evidence exists of significant regional variations in cancer treatment and outcomes in the UK. In addition, the Eurocare study showed that for many cancers the 5 year survival rate in the UK is 5-6% lower than in most other European countries, particularly among the elderly. It was suggested that these differences in survival rates were explained by differences in access to and quality of care. In response to these findings and to pressure from patients, the Expert Advisory Group on Cancer to the Chief Medical Officers for England (Sir Kenneth Calman) and Wales (Dame Deirdre Hine) in 1995, and subsequent reports in Scotland and Northern Ireland, made a number of recommendations to restructure cancer services to improve the quality of cancer care. The evidence for these recommendations has been summarised. What implications do these reports have on the way oncologists should practise and what are the lessons for clinical practice in other branches of medicine?

The main principles laid down by Calman-Hine for the organisation of cancer services were:

1. uniform access to high quality care
2. public and professional education to assist early diagnosis
3. clear information to patients and their families/carers on the choice of treatments available
4. the importance of primary care during the patient's whole illness
5. access to psychosocial support.

The main recommendations are summarised in Table 1.

Integration of cancer services and training

The Calman-Hine report indicated a need for horizontal integration of cancer services on a tumour site specific basis. At present the wide range of health care professionals involved in cancer care is represented by different Royal Colleges and professional associations. Integration of training across the Royal Medical Colleges may be the forerunner to the establishment of a new professional body of
oncologists sharing common philosophies engendered by joint training.

**Multidisciplinary working**

Multidisciplinary teams of all relevant specialists on a cancer site specific basis should provide advice on primary treatment and on relapsed disease. This model of cancer care is a significant change in clinical working, since decisions by the team are collective rather than those of the individual doctor alone. It has advantages both for patients and doctors. For patients, it is reassuring that a number of specialists have reviewed the case and different treatment options have been carefully considered. The open nature of peer review is consistent with the demands of clinical governance. For doctors, the corporate nature of the decision (which should be documented) gives added weight, particularly in complex cases. It may also help to protect the individual physician against litigation and encourage adherence to evidence based protocols of management. Its disadvantages are the expense in staff time and the risk that continuity of care between an oncologist and an individual patient is lost. For such teams to work effectively, it is essential that all patients are seen by the team before a decision on treatment is taken and that all members of the team have a balanced view of the strengths and weaknesses of their own and others' treatment modalities.

With the increasing tendency to subspecialisation in general medicine, the same arguments might be advanced in favour of extending elective, multidisciplinary team decision making to other medical specialties. To some extent this already occurs: for example, cardiologists meeting with thoracic surgeons to discuss treatment options. Whether the differences in outcomes between physicians managing patients on an individual rather than team basis would justify this approach, for example in deciding on the management of a newly diagnosed diabetic, is open to question. However, there is evidence, at least from the management of stroke, that organised multidisciplinary care does improve outcomes.12

**Lessons from paediatric oncology**

The clearest evidence of the effectiveness of this strategy has been in paediatric oncology. Starting in the mid 1960s, the Medical Research Council organised a series of trials in acute lymphoblastic leukaemia. The median survival of children included in these trials was twice that of patients not entered into the trial13. Survival rates were lowest for children treated in centres treating few patients. For patients treated according to protocols, there was little variation in survival by type of centre. For retinoblastoma too survival rates were best at national referral centres. The key element in the progressive improvement in survival in paediatric malignancy has been the commitment to standardisation of treatment within and outside clinical trials and the rapid dissemination of research findings into routine clinical practice.

**Managed clinical networks**

In Scotland the model of the cancer unit/cancer centre has been replaced by managed clinical networks. These have been chosen as the organisational framework to link health care professionals involved in the delivery of cancer services17,18. The core principles underlying managed clinical networks are summarised in Table 2. The concept of managed clinical networks was introduced in the Acute Services Review18 under the direction of the Chief Medical Officer for Scotland, Sir David Carter. It recommended ‘the sharing of patients, expertise and resources rather than unidirectional centripetal flow. It was felt that this framework would be more compatible with subspecialty cover when

### Table 1. Main recommendations of the Calman-Hine report on cancer services.

| Access for all patients to a high standard of care throughout the UK |
| Needs of patients and their carers to be main focus of service provision |
| Integrated network of cancer centres and cancer units |
| Clear pathways of referral and follow up between general practitioners, cancer centres and cancer units |
| Appointment of lead clinician to co-ordinate cancer services in a cancer unit |
| Cancer units to have input from non surgical oncology (clinical/medical oncology) |
| Manpower planning |
| Linkage of radiotherapy units not based in cancer centres to cancer centres |
| Palliative care services |
| Importance of education, audit and entry of patients into clinical trials |

### Table 2. Principles of managed clinical networks.

| Clarity about management of the network and designation of person in overall charge |
| Production of annual report |
| Defined structure defining points at which services are delivered and connections between them |
| Clear statement of specific clinical and service improvements anticipated |
| Use of documented evidence base eg SIGN guidelines, with commitment to expansion of the evidence base through appropriate R&D |
| Multiprofessional membership including representation from patients' organisations |
| Clear policy on dissemination of information to patients |
| Confirmed willingness of members to practise in accordance with evidence base |
the population base is too small to achieve this in isolation.
The document recommends 'connection and partnership rather than isolation and self-sufficiency, on distribution of resources rather than centralisation, maximising benefits for large numbers of patients'. While medical staff are key professionals within each network, other health care professionals, such as nursing and allied professional staff, have an important role to play. It is intended to break down the traditional barriers between primary and secondary care, creating seamless delivery of care. The Acute Services Review emphasised the managed element of the network to ensure that lines of responsibility and accountability for the network are clear and that patient safety is protected. These networks are not seen as static structures but as evolving in response to changes in the delivery of clinical care. Their inclusive approach to membership encourages the commitment of professionals to make them effective. The rolling out of managed cancer clinical networks on a regional basis started in 1999. Their focus is the 'cancer journey' of the patient through primary care, district general hospital and cancer centre.

The development of managed clinical networks may change the allegiance of consultants to a region extending beyond the area served by their trust. The South East (SE) Scotland Breast Cancer Managed Clinical Network, for example, encompasses four health boards (Fife, Lothian, Borders and Dumfries and Galloway). The lead clinicians for cancer from the four health boards will set the overall strategy for the cancer network and priorities for funding, while keeping within the priorities established in national policy documents, such as Towards a healthier Scotland. However, clinical ownership of these networks is seen as a key element to make them work effectively. The framework of managed clinical networks is attractive to clinicians committed to the idea of multidisciplinary working. Since they cross traditional boundaries, trusts and health boards, it is likely that regional and supraregional relationships between health care professionals will be strengthened. Managed clinical networks should provide the forum for rapid implementation of evidence based guidelines in oncology and other medical disciplines, such as those of the Scottish Intercollegiate Guidelines Network (SIGN). The rigorous assessment process of the development of guidelines has involved wide peer review, both in and outside Scotland, among health care professionals involved in cancer care. Many of those involved in the development of SIGN guidelines are also members of managed clinical networks.

Managed clinical networks are to be linked to the development of a quality assurance system for cancer services. This includes the establishment of open and collaborative audit of practice. The first to be established was the West of Scotland Gynaecological Cancer Network. Those for breast, colorectal and lung cancer are more recently established and others are to be added on a tumour site specific basis. A similar template will apply to palliative care. The Scottish Cancer Therapy Network, an infrastructure established to support the running of collaborative clinical trials in Scotland, is assisting with the development of prospective audit for breast, colorectal, lung and ovarian cancer.

Communications between cancer centres, cancer units and primary care

Lead clinicians for cancer services

An important organisational change recommended by Calman-Hine was the appointment of a lead clinician in each cancer unit. These individuals carry responsibility for co-ordinating the development of cancer services and implementation of cancer site specific protocols. In Scotland, regional lead clinicians meet on a regular basis with the lead clinician for cancer services in Scotland to discuss the implementation of national policies at a regional level and to report information from regional cancer centres. The network has the merit of being clinician led and of providing a channel to inform health boards and trusts in a systematic way of the requirements for capital investment, manpower and performance of cancer services against national targets and quality standards. The move towards increasing subspecialisation within general medicine mirrors the changes in oncology. For example, designating a lead clinician for cardiology might be a logical development to achieve national targets and ensure the equity of access, for example, for interventional cardiology.

Application of telemedicine in oncological services

While the concept of cancer unit and cancer centre linked to primary care is an attractive unifying concept, its practical application has to take account of demographic and geographical factors which influence the delivery of cancer services. Providing site specialist clinics in the common cancers for remote cancer units may not be cost effective because of the substantial 'dead' time of several hours spent by the oncologist travelling between cancer centre and cancer unit. Other models of offering specialist advice to patients with cancer in remote areas are needed. A pilot study linking the multidisciplinary meetings of surgeons, oncologists and cancer nurses for decisions on primary and adjuvant therapy for breast cancer is planned in SE Scotland between Edinburgh, Dunfermline and Dumfries. Potentially, this telemedicine platform could serve to link members of the managed cancer clinical network in the whole of SE Scotland, with substantial savings in staff travelling time which could be devoted to service delivery. It is important to emphasise that telemedicine does not replace the need for the oncologist to visit.

Conclusion

Calman-Hine has been a watershed for cancer services in the UK. The organisational frameworks are evolving differently in Scotland from the rest of the UK but there is
shared commitment to evidence based protocols of management and quality assurance systems. The corporate models of multidisciplinary care and managed clinical networks may provide a paradigm for other branches of medicine to apply selectively.

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