

Patient burden of centralization of head and neck cancer surgery

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Abstract

This study was undertaken to assess the impact on patients of proposals to centralize head and neck oncology services in the UK. A retrospective audit of the 2001–2002 head and neck cancer database at South Devon district general hospital identified 85 patients (50 males: 35 females; median age 66 years; range 29–93) diagnosed with head and neck cancer. The total number of hospital visits for diagnostic, therapeutic and other management services were recorded (median number of visits 28; range 1–78). Using this data, the extra distance required to travel to a potential regional cancer centre located in Bristol during the first six months of management was extrapolated. It was calculated that each patient would have to travel on average an extra 5333 miles (median 5658; range 185–13 759). Published documents advocating centralization of oncology services make no reference to the patient burden of geographic relocation of medical services. Agencies involved with restructuring oncology services must recognize the non-clinical impact of centralization and make some provision to overcome the burden facing patients and their carers.

Key words: Head and Neck Neoplasms; Centralized Hospital Services; Disease Management

Introduction

Twenty years ago Professor Stell reported how head and neck carcinoma (HNC) management had failed to improve survival over several decades.¹ Shortly after the publication of these startling findings, suggestions that dramatic improvements in cure rates of other cancers were due to the adoption of standardized protocols and centralization of oncology services appeared in the medical literature.² In an effort to standardize UK practice and improve outcomes for all cancers, the Expert Advisory Group on Cancer produced the Calman-Hine Report, which made several recommendations on the development of cancer services.³ The proposals included recommendations that cancer units (district general hospitals) should manage commoner cancers (e.g. breast, lung and gastrointestinal) and that cancer centres (larger regional hospitals) should provide expertise in the management of common cancers within their immediate geographical locality and less common cancers (head and neck cancer comprises only three per cent of all new cancers in the UK and is considered uncommon) by referral from cancer units. The British Association of Head and Neck Oncologists (BAHNO) have affirmed the Calman-

Hine recommendation that HNC should be managed only in cancer centres; also stating that these centres should manage a minimum of 80 new cases per year.⁴ The National Institute of Clinical Evidence (NICE) is expected to publish recommendations on the commissioning of HNC services in the coming year. It is widely expected that NICE will advocate centralization in their publication.

The South Devon Healthcare NHS Trust (SDHT), which serves 260 000 people in a catchment area of 300 square miles, is a level 3 cancer unit and offers multi-disciplinary team (MDT) head and neck oncology services for the majority of the more common head and neck tumour types, referring only those tumours with intrathoracic extension or requiring craniofacial or otoneurosurgery on to specialized units. Although the geographical sites of cancer centres have not been confirmed, the Commission for Health Improvement (CHI) recently reported that the North Bristol NHS Trust (NBT) is the largest acute trust in the South West, providing services to a population of almost 500 000, making it a likely site for cancer centre status.⁵

The aim of this study was to evaluate the utilization of the SDHT multi-disciplinary head and

neck oncology services by new HNC patients and to assess the extra travel burden to patients if their HNC management was moved to the NBT cancer centre (as originally suggested by the Calman-Hine, BAHNO and CHI publications).

Materials and methods

All patients diagnosed at South Devon Healthcare NHS Trust with primary HNC in the period 1st January 2001 to 31st December 2002 were retrospectively identified from the HNC database. Lymphomas and cancers of the thyroid and skin (including melanoma) were excluded. Utilization of NHS multi-disciplinary resources by each new HNC patient during the first six months following diagnosis were identified and recorded. A variety of treatment and ancillary management strategies requiring patients to attend the SDHT were identified and comprised: MDT clinic attendance; examination under anaesthesia +/- biopsy; radiology examination; restorative dentistry assessment and treatment; gastrostomy feeding tube insertion; surgery; radiotherapy; surgery and post-operative adjuvant radiotherapy; chemotherapy; chemoradiotherapy and palliative care therapy.

Using the Royal Automobile Club’s route planner website, the extra distance each HNC patient would have to travel in order to attend MDT head and neck oncology services based at NBT (cancer centre) was calculated.

Results and analysis

Eighty-nine patients (54 males: 35 females; mean age 65 years; median 66; range 29–93) with HNC diagnosed in the study period were identified retrospectively from the head and neck database. Of the 89 patients, 85 (50 males: 35 females; mean age 65 years, median 66, range 29–93) were included in this report. The remaining four were excluded for the following reasons: two patients died shortly after

diagnosis; one patient living within the catchment area of RDE requested treatment at SDHT and one patient’s surgery was performed at RDE at the request of the reconstructive surgical team. The mean number of hospital visits made in the first six months following diagnosis was 27 (median 28, range 1–78). Based on the postcodes of the 85 HNC patients, the average distance for a return trip to SDHT was 14 miles (median 12, range 2–30) compared with an average 215 miles (median 215, range 193–236) for a return trip to NBT. Therefore, if MDT management of HNC patients were transferred to NBT, patients would have to travel on average an extra 201 miles per round trip and more than half (n = 52, 61 per cent) would have to travel an extra 5000 miles or more during the first six months of their treatment. Table I summarizes the findings according to treatment received.

Discussion

When interpreting the data it is important to note the following: 1) whilst this report analysed new cases only, the actual annual activity is higher given that over 40 per cent of HNC patients will develop local or regional recurrences;⁶ and 2) this audit has not measured treatment outcomes, therefore interpretation of its findings may be limited.

The Calman-Hine report recommends that uncommon cancers (e.g. head and neck) should be managed in cancer centres, which serve populations in excess of one million. The southwest region of England spans 240 miles from the Cornish coast to the northern parishes of Gloucestershire and is populated by approximately three million people. Whilst there are several relatively heavily populated urban areas in the south west, many of the larger regional hospitals are not easily accessible to rural residents and none serve a population in excess of one million. Birchall *et al.* reported that this situation is common throughout the UK with fewer than 18 per cent of head and neck oncology teams serving

TABLE I
SUMMARY OF HOSPITAL ATTENDANCES AND EXTRA PATIENT TRAVEL DURING FIRST SIX MONTHS OF TREATMENT

Treatment	n = patients	n = hospital visits	Extra miles to NBT
Primary surgery and radiotherapy	31	37 (37; 26–78)	7463 (7691; 4855–13 759)
Primary surgery and chemo-radiotherapy	7	46 (45; 35–57)	9201 (8811; 7259–11 879)
Radiotherapy	11	28 (27; 23–38)	5491 (5497; 3878–7359)
Surgery	23	6 (5; 1–13)	1206 (1047; 185–2696)
Chemo-radiotherapy	6	46 (48; 31–55)	8893 (9380; 5214–11 198)
Chemotherapy	3	16 (11; 8–28)	3248 (2240; 1597–5908)
Palliation	4	6 (6; 4–8)	1122 (1096; 698–1597)

NBT = North Bristol Trust. Mean (median, range) quoted to nearest integer

population sizes recommended by the Calman-Hine report.⁷ If HNC services in the southwest peninsula centralized to Bristol, patients residing in the furthest reaches of the South West (e.g. Lands End) would face a round trip of over 400 miles (equivalent to London–Manchester return) to attend the regional multi-disciplinary team.

Failure to significantly improve the survival of patients with HNC over recent decades has contributed to a shift in therapeutic philosophy toward quality of life outcome issues. However, the Calman-Hine report and other publications advocating centralization fail to consider the impact of centralization on the quality of life of patients residing in large sparsely populated regions. This study has highlighted one of the potential detrimental quality of life outcomes (i.e. excess travel burden) that will result from centralization of oncology services. Excessive distances will also pose difficulties for relatives and carers wanting to visit in-patients and to community liaison service providers. Currently the specialist head and neck nurse affiliated to the local MDT provides an essential supportive role for HNC patients throughout their hospital management and rehabilitation in the community. It is difficult to envisage how this continuity of care will be maintained if the proximity of the local MDT to the patient's home is lost. The provision of urgent services (e.g. out-patient tracheo-oesophageal valve replacement) is unclear, particularly as non-cancer centre personnel will become deskilled in many of these services. Other authors, who have investigated the effects of distance on attendances to healthcare services, have shown distance decay (reduced use of healthcare services with increasing distance) and a shift in costs from the NHS to patients.^{8,9} This phenomenon is likely to be significant in this setting particularly as centralization proposals appear likely to be inadequately supported financially. Unless there is major expansion in the workforce from the grass roots (it is unlikely that clinicians currently providing these services will wish to move to the newly declared centre with their patients and so their care will have to be completely taken over by a new team) and major investment in buildings and equipment, geographical centralization will inevitably result in higher numbers of patients being treated by a relatively reduced and overstretched workforce working in an inadequate infrastructure. Each of these factors is likely to have a negative impact on the quality of life of the HNC patient.

The centralization debate appears to be driven by a desire to reduce the number of HNC units, thereby increasing the caseload of the remaining cancer centres – BAHNO recommends that cancer centres should treat a minimum of 80 cases per year.⁴ Since a relationship between surgeon caseload and improved outcomes ('volume-quality') remains unproven, the rationale for this recommendation is unclear. Intuition suggests that surgeons require a repetitive and frequent throughput of surgical cases

to maintain competence and that if this is denied, particularly in a complex area such as head and neck cancer, outcomes falter. Whilst it is widely acknowledged that many surgeons perform head and neck surgery infrequently^{10,11} and that retrospective data suggests a 10 per cent lower five-year actuarial survival for patients whose surgeon performs less than 20 oncological procedures per annum, the research methods used to collect such data are insufficiently robust to draw definite conclusions.¹² Unfortunately, the complexities of analysing associations between volume and outcome obscure conclusions regarding the direction of causality. That is, do higher-volume hospitals have better outcomes because their experience enables them to improve their performance ('practice makes perfect') or do hospitals with better outcomes have higher volumes because their competence is well-known and rewarded (the 'selective-referral' hypothesis).¹³ Given the inevitable dilution of surgical personnel (e.g. by surgical trainees), it is unlikely that all surgeons in high volume cancer centres will have high caseload volumes.

Given the lack of conclusive evidence of the effects of activity volume on the outcomes of specific procedures and the lack of data on threshold volumes, one may be forgiven for asking: what is the motive behind the issue of centralization? A recent audit of head and neck oncology services¹⁴ demonstrates that UK oncology services are increasingly adopting the multi-disciplinary team-work approach recommended in head and neck cancer management evidence-based consensus documents published by The British Association of Otorhinolaryngologists, Head and Neck Surgeons.¹⁵⁻¹⁷ However, none of these documents provide supporting evidence that centralization of HNC services improved outcomes. A recent audit showed that centralization of head and neck cancer services in South England resulted in increased waiting times, because of a lack of resources, both human and physical, needed to cope with the increased numbers of patients being treated on a reduced number of sites.¹⁸

Head and neck cancer patients arguably suffer the greatest disturbance to quality of life, pose complex management issues and are highly resource intensive.^{19,20} Despite this, personal and socio-economic factors and the survival and quality-of-life aspirations of individual HNC patients have been ignored in the centralization debate. In recent years NHS policy has been driven by fiscal pressures, which has resulted in numerous Trust mergers and concentration in the provision of hospital services. Is centralization of cancer services yet another example of cost-cutting measures? If so, experience shows that this policy is doomed to failure.

Conclusions

This study provides evidence that centralization of head and neck oncology services will have a significant impact on the quality of life of patients with head and neck squamous cell carcinoma. Successful restructuring of oncology services

requires recognition of these factors in order to channel appropriate resources to patients, carers and health providers.

- **The Calman-Hine proposals have suggested that head and neck cancer services should be concentrated in cancer centres in the United Kingdom**
- **This paper documents some of the non-clinical aspects of such a policy for patients living at a distance from such centres, and concludes that one of the penalties of such a policy for such patients and their carers – in this case from South Devon – is likely to be a very considerable increase in the distances travelled to obtain appropriate care**
- **It is suggested that consideration of these aspects should be taken into account by those who seek to implement these changes**

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