Faculty of Radiologists
Royal College of Surgeons in Ireland

CONSULTANT STAFFING LEVELS IN RADIODIAGNOSIS AND CLINICAL ONCOLOGY/RADIOThERAPY REPUBLIC OF IRELAND 1993
A REVIEW

by
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Part 1 - RADIODIAGNOSIS

Introduction

Comhairle na nOspideal in August 1978 published its consultant manpower projection up to 1981. The following extract relates to diagnostic radiology: "The Comhairle considers (that) an establishment of 92 consultant diagnostic radiologists by 1981 is necessary". The 6th Report of Comhairle na nOspideal published in 1992 showed that the number of consultant radiologists in post at that time was 97. In other words, the target set for 1981 by Comhairle had not been achieved by 1992.

It is of interest that the 1978 Comhairle document accepted that the proposed expansion in the number of consultant radiologists was large and reflected the rapidly expanding nature of the specialty. Furthermore the proposed expansion represented a corrective of long standing deficiencies in staffing, accepting tacitly that there was a very low consultant base in radiodiagnosis in Ireland at that time.

The Faculty of Radiologists carried out a workload study in 1979 "to assess ... manpower requirement by 1984 in order to advise on the numbers of those who could with benefit be trained as radiologists within the interim period". The conclusion of the Faculty study was that a minimum of 129 consultant radiologists would be required by 1984, extending to 160 if average weighting for administration, teaching etc. was used. Clearly it is timely to reflect on the failure to adequately staff radiology departments at consultant level, to identify the underlying causes and to put forward some immediate remedies.

The Comhairle publication "The Development of Diagnostic Radiological Services at Consultant Level 1979" will be referred to extensively throughout this review. The contents of this influential document are still relevant and apposite today. It is the purpose of this publication to update and re-orient this document so as to make it of continuing relevance into the next century and, in addition, to review the staffing requirements at consultant level both in radiology and in clinical oncology/radiotherapy.
The Role of the Radiologist in the 1990s

Radiologists are clinicians with expertise in investigatory imaging using x-ray, ultrasound, nuclear medicine and other techniques like computer tomography (CT) and magnetic resonance imaging (MRI). This role has been expanded into the therapeutic field through various interventional techniques e.g. angioplasty, percutaneous abscess drainage, calculus extraction, stent placement etc.

Diagnostic radiology is an extension of the clinical examination and requests to the Department of Radiology are essentially for clinical consultation. It is therefore a referral specialty providing consultative services at the request of other qualified doctors. The interest of the patients and their referring doctors is thus served when all radiological examinations are supervised and interpreted by a qualified radiologist. Diagnostic techniques which utilise ionising radiation and other forms of radiant energy should be under the direction of a qualified radiologist trained in the biological effects of such energy forms on the human body and their medical use. The advance in the medical and technological facets of radiology is so rapid that only qualified radiologists can reasonably be expected to maintain the high level of proficiency required to supervise and interpret these procedures thus ensuring a maximum diagnostic yield for the benefit of the patient and the referring doctor. The performance of radiological procedures by those with less training than that provided by approved radiology training programmes has been shown to lead to an increase in utilisation and decreased quality of care and cost efficiency.

The spectrum of work undertaken by a radiologist depends on a number of factors:- (a) the type of hospital, whether a teaching hospital, large district hospital or a small county hospital, (b) Area of specialisation within the hospital, whether a general hospital, paediatric, obstetric etc and (c) the type of radiologist, whether a general radiologist, general radiologist with a special interest or interests, or a specialist radiologist e.g. paediatric or neuroradiologist.

The Work undertaken by a consultant radiologist may be classified as follows:-
1. Procedural Radiology

This is work directly associated with patient examinations and corresponds to the out-patient clinics and operating sessions undertaken by physicians and surgeons. This is the only portion of a radiologist's work which can be quantified with accuracy. It embraces

(a) Reporting on plain radiographs. These films are usually produced by radiographers on foot of request from clinicians. They are then collated with previous radiological examinations and presented to the radiologist for reporting. The rapid availability of reports to the referring doctor is vital for expeditious patient management.

(b) The supervision and reporting of more time consuming plain film examinations eg. tomography etc.

(c) Undertaking and reporting contrast studies ranging from barium studies or intravenous urography to the more complex invasive contrast examinations and procedures eg. arthrography and angiography etc.

(d) Undertaking and reporting on time consuming contrast examinations and therapeutic procedures eg. complex angiography, angioplasty stent placement etc. this involves pre-procedure patient assessment and subsequent follow up.

(e) Ultrasound examinations with a wide range of complexity including Doppler studies and ultrasound guided biopsy and drainage,

(f) Supervising and reporting on nuclear medicine examinations including computer analysis of the nuclear medicine images.

(g) Supervising and reporting on CT and MRI studies including injection of contrast, image reconstruction and manipulation and associated therapeutic procedures.

The introduction of the newer imaging modalities, ie. ultrasound, isotope scanning, CT and MRI has initiated progressive and major change in the work pattern of diagnostic radiologists. Conventional radiographic techniques are being displaced or supplemented by diagnostic information obtained from these alternative procedures.
When a patient is referred a radiologist will identify the problem and organise the appropriate examination or series of investigations.

2. Clinical Consultations
(a) This approximately corresponds to ward rounds undertaken by physicians and surgeons and consists of ad hoc discussion with clinicians or radiologist colleagues on management of individual patients.
(b) Regular meetings are undertaken with individual clinical firms as are large inter-departmental meetings with formal clinical radiological presentations and discussions. Many of the most important therapeutic and diagnostic decisions relating to patient care are now made in the x-ray department during clinical conferences. The necessity to expedite patient investigation and the need to make the best use of scarce resources means that planning of the investigation strategy for each patient is taking place increasingly at conferences in the x-ray department. This provides a forum for the updating non-radiological colleagues in recent advances in radiology and their appropriate application to patient care.

3. Management and Administrative Duties
Radiology departments are units which require close integration and co-ordination of all staff categories and facilities. The department employs a number of doctors, radiographers, physicists, nurses, technicians, secretaries, clerks, porters etc. and may be of a considerable size. It is the equivalent of a small business or factory. Its management takes place against a background of continuous clinical activity which occupies every session of the working week. The management of such a large service department is complex. There is constant high throughput of widely differing procedures. To be effective the department must be sufficiently flexible to undertake emergency procedures and to deal with demand for various specialist examinations. The consultant radiologist has the key role in achieving efficiency and effectiveness in the department and for this reason must be in administrative control of it.

Commonly in larger departments, one of the consultants is appointed or elected as administrative head of the department on a rotation basis. Thus the consultant in administrative charge is responsible for the day-to-day administration of the department, the co-ordination of the work of his or her colleagues, the overall supervision and control of junior professional and non-professional staff as well as quality control and radiation protection. Further duties cover safety of radiological and radiographic practice, liaison with medical and surgical staff, involvement in hospital
management, budget holding functions and participation in management meetings within the department and the hospital at large.

4. Radiation Protection
Radiation protection deserves a special mention, as a consultant radiologist is responsible for the supervision of radiation protection within the radiology department and hospital at large and is usually chairman of the radiation protection sub-committee. This is an important aspect of the work of the consultant and covers occupationally exposed staff, patients and general public. It is the responsibility of the consultant radiologist to work to the Department of Health, RPII and EEC guidelines in order to minimise radiation exposure to patients, staff and general public. Arising out of these considerations the consultant radiologist is responsible for the purchasing of equipment and materials to ensure that patients can be investigated in the most efficient, cost effective and least harmful way possible.

5. Teaching Duties
This involves teaching of medical students through formal lectures and attachments, postgraduate medical teaching, in particular provision of courses for MRCP and FRCSI candidates, teaching of trainee radiologists to FFR and postfellowship levels and also the teaching of paramedical staff in the department and nursing staff in the hospital.
Changes in the Role of the Consultant Radiologist since 1979

In parallel with a steady increase in plain film radiology by approximately 5% - 6% per annum there has been a marked expansion in the utilisation of the newer radiodiagnostic modalities - ultrasound, nuclear medicine, CT and laterally MR imaging.

Ultrasound equipment is now widely disseminated throughout all of the X-Ray departments in the country, and provides a large out-patient and in-patient workload. The development of intracavitary probes and colour Doppler facilities has broadened the range of useful investigations available to the radiologist. Likewise CT and MRI equipment is becoming more widely available and is leading to major changes in radiologist's work pattern. Conventional radiological techniques are being displaced and supplemented by diagnostic information derived from these alternative techniques eg. requests for IVP's have decreased and have been replaced by ultrasound and radioisotope studies.

It is part of the expertise of a modern radiologist to identify and arrange for the appropriate radiodiagnostic examination or series of investigations. In the present cost-conscious climate more patients are being investigated on an out-patient basis. Radiologists have a pivotal role in this effort at cost-containment.

Radiologist Training
At present Radiologists begin training on a recognised course after completion of a minimum of two years post registration training, ie. the intern year plus one further year. Most of the trainees entering radiology have higher qualifications in medicine or surgery. In the first academic year the trainee is taught physics as applied to radiology, radiation protection, radiological anatomy and techniques. The examination for the Part I Fellowship is taken at the end of the first academic year. A successful candidate may then proceed to the Part II Fellowship Examination which is taken after a minimum of a further two years of study. Following this basic radiological training a further two years minimum study is required before the radiologist is eligible for a consultant post. Most Irish trainees who carry out their basic training in Ireland tend to emigrate to Britain, the United States or Canada for this period of post-fellowship training and for sub-specialisation in various aspects of radiology. While there has been no great demand from the trainees for senior registrar posts in Ireland, there is possibly a case to be made for a limited number of senior registrar posts based in Ireland with a one year integrated fellowship rotation overseas.
In the near future the necessity to comply with E.C. Medical Directives will entail that the time allowed for specialist training will be shortened. At present a period of five years training in diagnostic radiology appears likely, following which trainees will be certified as having completed specialist training. The training curriculum will therefore become more concentrated with emphasis on assessment and feed-back to the trainee. This will entail a further burden for consultants in training hospitals. The Faculty favour the retention of formal examinations as part of the assessment programme. The examination system will need to be augmented by continuous assessment to ensure that competence to practice independently is achieved within the prescribed time frame. The new system requires to be flexible enough to address the diverse needs of all the trainees eg to allow for a period of general professional training before entry into specialist radiology training. It remains to be seen whether it is possible to provide adequate training in a five year timeframe, clearly however the training period should not exceed seven years after full registration. A programme of continuing medical education (CME) should be entered immediately after finishing specialist training.

**Continuing Medical Education (C.M.E.)**
The rapid development of diagnostic and therapeutic modalities makes continuing medical education mandatory for all consultant radiologists. This can partly be provided by private study and in-hospital discussion groups, journal clubs etc. Attendance at Faculty conferences and international congresses serve an essential role in keeping consultants aware of new developments. In future, computerized audio visual teaching aids and medical broadcasting will provide a valuable adjunct to continuing medical education. Formal involvement in C.M.E. will, in the near future, be a requirement for re-accreditation.
Statistics

Workload statistics from a spectrum of Irish hospitals are used as the basis for this survey. A comprehensive study of radiology workload in all Irish hospitals has not been undertaken. Nevertheless statistics provided from the range of hospitals below give a reliable indication of the trend in growth of workload over a twelve year period.

Table 1.
Number of radiodiagnostic examinations 1980-1992 and % increase 1980-1992

<table>
<thead>
<tr>
<th></th>
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<th></th>
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<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Wexford General Hospital</td>
<td>18,187</td>
<td>35,790</td>
<td>36,713</td>
<td>38,998</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Meath Hospital, Dublin</td>
<td></td>
<td>41,047</td>
<td></td>
<td></td>
<td>62,121</td>
<td>65%</td>
</tr>
<tr>
<td>Mullingar/Athlone/Longford Hospitals</td>
<td>33,447</td>
<td>34,953</td>
<td>50,989</td>
<td>56,887*</td>
<td>55,434</td>
<td>66%</td>
</tr>
<tr>
<td>Cork Regional Hospital</td>
<td>84,560</td>
<td>87,941</td>
<td>97,889</td>
<td>101,240</td>
<td>101,709</td>
<td>20%</td>
</tr>
<tr>
<td>St Vincent's Hospital Dublin</td>
<td>54,000</td>
<td>70,020</td>
<td></td>
<td>88,752</td>
<td>90,102</td>
<td>67%</td>
</tr>
</tbody>
</table>

* - second radiologist commenced duty Jan 1st 1991

A more accurate estimation of workload can be derived from applying the original Forresterhill points system in assessing the data provided above. This system is used by Comhairle na nOspideal to evaluate workload and assigns values to different radiodiagnostic procedures on the basis of complexity and time:
Class 1 procedure - eg interpretation of plain radiograph, 1 point.

Class 2 procedure - execution and interpretation of simple contrast study (eg. barium meal), 7 points.

Class 3 procedure - execution and interpretation of complicated contrast study or therapeutic procedure (eg. selective angiogram or angioplasty), 24 points.

Weighting is allowed as follows: an additional 20% for small hospitals, 30% for larger general hospitals and 40% for teaching hospitals.

One whole time equivalent (WTE) consultant radiologist = 30,500 points per annum.

The Faculty Workload Study shows that a modest increase in class 2 and class 3 examinations radically increases the amount of sessional time required to deal with the workload.

**Faculty Workload Study (1976):**

<table>
<thead>
<tr>
<th></th>
<th>Class 1</th>
<th>Class 2</th>
<th>Class 3</th>
</tr>
</thead>
<tbody>
<tr>
<td>% of Examinations</td>
<td>86</td>
<td>13</td>
<td>1</td>
</tr>
<tr>
<td>% of Sessional Time</td>
<td>43</td>
<td>45</td>
<td>12</td>
</tr>
</tbody>
</table>

For example in the Meath Hospital since 1976, in addition to an annual incremental increase of 5-6% in conventional radiological techniques, ultrasound, nuclear medicine and CT services have all been newly developed and now constitute 15% of total departmental workload. Interventional techniques - 1.5% of total workload adds considerably to the departmental burden in sessional time. Some of these procedures require the attention of multiple staff members for a matter of hours.

A measure of the undermanning of consultant radiology in Ireland may be obtained by comparing the ratio of consultant radiologists to population in Ireland and other countries:
<table>
<thead>
<tr>
<th>Country</th>
<th>Radiologist per Population</th>
</tr>
</thead>
<tbody>
<tr>
<td>Canada</td>
<td>1 radiologist per 14,000 population.</td>
</tr>
<tr>
<td>Finland</td>
<td>1 radiologist per 10,000 population.</td>
</tr>
<tr>
<td>Sweden</td>
<td>1 radiologist per 11,400 population.</td>
</tr>
<tr>
<td>U.S.A.</td>
<td>1 radiologist per 15,300 population.</td>
</tr>
<tr>
<td>Australia</td>
<td>1 radiologist per 21,500 population.</td>
</tr>
<tr>
<td>New Zealand</td>
<td>1 radiologist per 24,600 population.</td>
</tr>
<tr>
<td>Ireland</td>
<td>1 radiologist per 36,300 population.</td>
</tr>
</tbody>
</table>

Target for Australasia - 1 radiologist per 20,000 population.

(Figures from RCR Newsletter number 29, 1991) 4

It can be seen how far behind most developed countries the staffing level has fallen in Ireland. A further illustration is provided by comparing Irish figures with those for various American states. The ratio of consultant radiologist to patient population in Ireland is 1:36,300 compared to 1:5,568 in Washington D.C. or, taking the worst case in America, 1:17,542 in Alaska in 1982. Comparison with a median value in a rural state such as Indiana gives a figure of 1:15,296 in 1982. It should be noted that the time-consuming modalities such as CT, MRI and interventional therapeutic procedures have become available since 1982.

The Royal College of Radiologists recommend5 that the number of examinations performed by a consultant radiologist should be 12,500 per annum. These recommendations are invariably exceeded in Ireland frequently by a factor of two.

In effect the average workload of a Consultant Radiologists in the Republic of Ireland in 1991 was approximately 25,000 examinations compared with 20,438 in England, 22,102 in Wales, 16,125 in Scotland and 20,016 in Northern Ireland.

It is estimated that the annual number of examinations per 1,000 of the population in Ireland is 694. The figure for the U.K. is 490, and for Canada and the United States a 1,000 and 790 respectively, ie. Ireland is about average for western countries.

The Nuclear Energy Board Radiation Survey in 1982 showed that 1,600,000 x-ray examinations were carried out and in the Republic of Ireland in that year. This figure did not include ultrasound, nuclear medicine or CT. At a conservative estimate there has been a 50% increase in that number in the interim period, and if ultrasound, nuclear medicine, CT and MRI are taken into account, there are now at least 2,500,000 x-ray examinations carried out in Ireland per annum. Using the Royal College of
Radiologist's norm of 12,500 examinations per consultant per annum would give a requirement of 200 consultant radiologists in Ireland at this time, i.e. twice the current consultant establishment. Clearly then there is a gross deficiency in the number of consultant radiologist posts in Ireland. The number of consultant radiologists per million of the population in the Republic of Ireland is 27, the range in other Western countries extends from 100 per million in Sweden through 84 per million in France, 60 per million in the U.S.A. to 34 per million in the United Kingdom. Note the figure in Northern Ireland in 30 per million 5. To some extent the causes are historical. There was clearly a slow start in the development of the specialty in Ireland with a considerable developmental lag in the 1950s and 1960s. While there was some attempt to address the manpower problem subsequently, cutbacks in the Health Service since the mid-1980s have meant that consultant numbers have fallen behind international norms. The situation has been exacerbated by the marked change in work practice occasioned by the development of newer imaging technology, allied to a steady incremental rise in conventional radiological examinations over the last decade. The proposals for the increase in the number of consultant radiologists in the discussion document 6 produced by the Department of Health, Comhairle na nOspideal and the Postgraduate Medical and Dental Board, Ed. Tierney, N. (1993), of 120 consultants by the year 2003 is clearly totally inadequate.

The Faculty would not support the development of a sub-consultant grade in diagnostic radiology as suggested in this document as this would lead to diminished standards but would, however, support jobsharing arrangements, at consultant level where appropriate.
Annual Workload of Single-handed Consultant Posts

The Faculty is particularly concerned at the continuing number of single-handed consultant radiology posts throughout the country. The spectrum of skills needed in a modern x-ray department can no longer be wholly encompassed by a single radiologist. Similarly, it is not possible for single-handed radiologists to supply adequate cover for an acute hospital. Single-handed consultants are professionally isolated from their colleagues and job satisfaction is low. Many single-handed radiologists are carrying workloads sufficient for two consultant and therefore do not have time to develop new skills. Much of this problem stems from the failure to close smaller hospitals or at least rationalise their services. As stated in the Tierney discussion document on manpower 1993, it is not anticipated that any of the smaller hospitals will close. The desired solution therefore would be to double up on all single-handed appointments. Alternatively, the formation of joint departments with, where possible, grouping of radiological services between a larger central hospital and one or two smaller peripheral hospitals should be envisaged. This would give access for peripheral radiologists to central specialist diagnostic services and sophisticated equipment and would provide a framework for cross-cover arrangements. There are 16 single-handed radiologist posts requiring replacement or reorganisation. Supportive linkages need to be developed between central and peripheral hospitals, to provide a spread of skills and to take account of sub-specialisation within radiology.

Workload of single-handed consultant radiologists in 1989:-

<table>
<thead>
<tr>
<th>Location</th>
<th>Examinations</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ballinasloe</td>
<td>20,500</td>
</tr>
<tr>
<td>Cashel/Clonmel</td>
<td>33,500</td>
</tr>
<tr>
<td>Cavan</td>
<td>16,000</td>
</tr>
<tr>
<td>Dundalk</td>
<td>27,000</td>
</tr>
<tr>
<td>Ennis</td>
<td>25,000</td>
</tr>
<tr>
<td>Kilkenny/Kilcreen</td>
<td>30,000</td>
</tr>
<tr>
<td>Mallow</td>
<td>16,000</td>
</tr>
<tr>
<td>Merlin Park</td>
<td>23,500</td>
</tr>
<tr>
<td>Naas</td>
<td>31,000</td>
</tr>
<tr>
<td>Navan</td>
<td>28,000</td>
</tr>
<tr>
<td>Portlaoise</td>
<td>24,000</td>
</tr>
<tr>
<td>Tullamore</td>
<td>26,000</td>
</tr>
<tr>
<td>Wexford</td>
<td>33,500</td>
</tr>
</tbody>
</table>
There is almost certainly a hidden unmet need behind these figures in most if not all of the above hospitals as indicated in a detailed study of figures from Mullingar hospital as set out below.

**Table 2 - Patient examinations - Mullingar Hospital 1990-1992**

<table>
<thead>
<tr>
<th></th>
<th>1990</th>
<th>1991</th>
<th>1992</th>
</tr>
</thead>
<tbody>
<tr>
<td>Total</td>
<td>29,678</td>
<td>33,837</td>
<td>33,155</td>
</tr>
</tbody>
</table>

**Table 3 - Comhairle points totals - Mullingar Hospital 1990-1992**

<table>
<thead>
<tr>
<th>Class</th>
<th>1990</th>
<th>1991</th>
<th>1992</th>
</tr>
</thead>
<tbody>
<tr>
<td>Class 1</td>
<td>26,459</td>
<td>29,012</td>
<td>27,725</td>
</tr>
<tr>
<td>Class 2</td>
<td>22,232</td>
<td>32,977</td>
<td>36,988</td>
</tr>
<tr>
<td>Class 3</td>
<td>1,032</td>
<td>2,736</td>
<td>3,504</td>
</tr>
<tr>
<td>Total</td>
<td>49,723</td>
<td>64,725</td>
<td>68,217</td>
</tr>
</tbody>
</table>

With the appointment of a second consultant radiologist on January 1st 1991, the percentage increase in number of Comhairle points (37%) has outstripped that of patient examinations (12%) reflecting an increased number of the more sophisticated procedures. Clearly, a hidden demand for more sophisticated procedures existed prior to 1991 and could not be met by a single-handed consultant radiologist already doing the work of two consultant radiologists. It should be noted that an ultrasound service has been developed in these peripheral hospitals without a specific related increase in consultant staffing.

**Teaching Hospitals**

With regard to the teaching hospitals, undermanning has developed insidiously with the willing acceptance by radiologists of new technology for the benefit of patients without a corresponding expansion in consultant posts. This has led to a shortfall in the number of skills required in a modern teaching department. The change in the spectrum of work over a decade in a teaching hospital is underlined in the workload figures for St Vincent's Hospital, Dublin.
Workload figures for St. Vincent's Hospital:

1981    70,020 Examinations.
1991    88,752 Examinations.

1981  
Total Points Class A:- 4,439 per month  
Total Points Class B:- 6,839 per month  
Total Points Class C:- 2,448 per month.

Total: 13,726 points for one month and 164,712 points for 12 months divided by 30,500 points per whole time equivalent consultant radiologist, gives 5.4 Consultants.

1991  
Total Points Class A:- 5,412 per month  
Total Points Class B:- 10,430 per month  
Total Points Class C:- 12,144 per month

Total: 27,986 for one month and 335,832 points for 12 months divided by 30,500 points per whole time equivalent consultant Radiologist, gives 11 whole time radiologists by 1991. The actual figure in 1993 is 6 whole time equivalents.

Under the terms of the Common Contract it is proposed that, of the 11 whole time equivalent sessions available, a number of sessions will have to be provided for audit, management and teaching purposes, thus limiting the amount of time available for procedural radiology and again pointing to a required increase in the total number of consultant radiologist posts. It is noteworthy that a study by the Office of Manpower Economics (OME), reported in the BMJ in 1990 found that radiologists spent an average of 37.8 hours per week on clinical work. This was more than any other hospital specialty.

**Growth in Demand**

In 1979 the Comhairle document identified the following influences on patient demand:

a. Population size and age structure. The total population has increased slightly over the last decade, and there is a considerable increase in the number of the population over 65 years of age. The health requirements of this segment of the community are particularly high.
b. Bed Complement. The total number of acute beds in the hospital system has decreased, but the rate of bed utilisation has increased significantly with a marked diminution in patient stay. The more efficient use of hospital beds is very dependent on radiological and laboratory facilities.

c. Expansion in out-patient activity. Out-patient activity now accounts for approximately 75% of total radiological workload. General practitioners should have easier access to radiological facilities.

d. Continuing technological advances within the field of diagnostic radiology in particular the wide dissemination of new and more sophisticated ultrasound equipment, nuclear medicine and CT scanners with the beginning of the development of a public MRI service.

e. The increase in the number and particularly the specialisation of clinicians within the hospital service has created a demand for more detailed and complex radiological investigation.

f. The increase in radiological examinations arising from increased medical litigation.

g. Increased patient demand and freer access.

h. Medicine in general has become more consumer-led. Patients no longer wish to be subjected to hazardous invasive tests when diagnostic information can be achieved non-invasively. This has led to the development of ultrasound, CT and more lately MRI. The emphasis in the future will be towards non-invasive imaging with more emphasis on functional imaging and less reliance on ionising radiation.
Conclusions

It is clear from the foregoing that there has been a profound change in the practice of radiology since the Comhairle Review of 1979. There has been a steady growth in conventional radiology by about 5% to 6% compound per annum. In parallel with this, the process of displacement of conventional x-ray examinations by better, more diagnostic, and generally non-invasive tests has begun. For instance, ultrasound has become more sophisticated and rightly more widely available because of its non-invasive nature and the absence of ionising radiation. It is more time consuming than most of the conventional radiological tests but has a high diagnostic yield.

Against the background of the developments listed above there has been little or no significant expansion in the number of consultant radiologists in the country. There is an increasing number of specialist clinicians within the hospital service all providing greater demand for specialist examinations within the radiology department. It is now time to redress the balance as the unequal burden has been carried too long.

Proposals

a. Abolition of single-handed consultant radiologist posts. Ideally there should be a doubling up of posts currently manned by single-handed consultant appointments. Failing that, and as an interim arrangement, there should be some rationalisation of services between adjacent hospitals whereby supportive linkages can be forged between larger and more peripheral hospitals working on a joint department basis. This would overcome the problems of isolation currently endured by single-handed radiologists, and would allow for the sharing of more sophisticated imaging facilities. In these settings, a population base of 100,000 seems reasonable. This population base would ideally require a minimum of four consultant radiologists providing a variety of subspecialist skills. The situation of single-handed consultant radiologists is so acute that a special fund should be set aside by the Department of Health for the health board areas and hospitals where this is the greatest problem, ie. the North Eastern Health Board, the South Eastern Health Board with further selected hospitals in other health board areas.

b. Sub-specialisation will impact profoundly on the larger teaching centres. Accordingly, it is estimated that all of the major teaching hospitals in the country require
a further two additional consultant posts immediately. This situation would also pertain in many of the larger regional hospitals, eg. Limerick Regional, Waterford and Drogheda. We suggest that a strategic plan be put in place to achieve a consultant staffing level in diagnostic radiology of 143 by 1998, ie. 1 radiologist per 25,000 population, with a further increase to 180 by 2003, ie. 1 radiologist per 20,000 population.

c. Radiologists have very little control over their own workload. Proper locum cover is essential to enable consultants to take their annual leave entitlement and to avail of study leave for continuing medical education. The problem exists in all hospitals but is most acute in single handed situations. The Faculty proposes to set up a locum agency which would provide lists of suitable locum candidates eg. retired consultants, Irish trainees working overseas and radiologists from other EC Countries.
**Recommendations**

1. The immediate upgrading of all single-handed posts to two consultant posts and/or the formation of joint departments between adjacent hospitals with appropriate increase in consultant staffing levels.
2. The immediate increase in staffing of all teaching hospital departments by one post with provision for a further post within three years.
3. The development of a national strategic plan for an increase in consultant staffing to 143 consultants by 1998 growing to 180 by 2003.
4. The rationalisation of the hospital system throughout the country with appropriate linkages and mergers in order to make the best use of scarce manpower and equipment.
5. The provision of adequate support facilities including space, equipment and support staff to ensure the efficiency and effectiveness of consultant radiologists.
6. The wide dissemination of educational material on the appropriate use of radiological facilities to all referring doctors.
References

1. The Development of Diagnostic Radiological Services at Consultant Level (1979), Comhairle na nOspideal.
2. 6th report, Comhairle na nOspideal.
3. Faculty of Radiologists Workload Study (1979), R.C.S.I.
5. Medical staffing and workload in Clinical Radiology in the United Kingdom National Health Service 1993, Royal College of Radiologists
Part 2 - CLINICAL ONCOLOGY/RADIOThERAPY

Introduction

Cancer is the second most common cause of death. The Central Statistics Office confirm that just under 7,000 men and women die of cancer every year. The effect of cancer is additionally severe as the disease is characterised by a long natural history with many patients surviving for years. The burden of cancer falls heavily on all those associated with it; the patient, the family, the general practitioner, the hospital and ultimately the state. The clinical oncologist/radiotherapist plays a key role in managing cancer patients.

Definition of a clinical oncologist/radiotherapist
The clinical oncologist/radiotherapist is a physician skilled in the general care of cancer patients who is expert in all non-surgical clinical modalities of cancer treatment in particular radiotherapy, chemotherapy, hormone and biological manipulation.

Spectrum of work
The job description and type of workload undertaken by a clinical oncologist/radiotherapist includes the following components:

(a) Clinical Oncology Role
   (ii) Participation with surgical and medical oncology colleagues in clinical decision-making.
   (iii) General patient communication and non-specific supportive management.
   (iv) Palliative medical management of terminal care
   (v) To a varying degree management using chemotherapeutic drugs and hormones and biological disease modifiers.
   (vi) Clinical oncologic audit in general hospitals and biological therapy.
(b) Process of Radiation Therapy:

(i) Clinical evaluation
(ii) Establishment of treatment goals
(iii) Target volume localization
(iv) Treatment planning
(v) Simulation
(vi) External beam/brachytherapy treatment
(vii) Evaluation during treatment
(viii) Follow-up

(c) Teaching Role - for both undergraduate and postgraduate medical staff, paramedical staff and general public.

(d) Clinical and Laboratory Research.

General Principles

The Faculty is responsible for standards of Clinical Oncology/Radiotherapy training in Ireland. Clinical standards of care and ultimately standards of training are dependent on the quality and quantity of consultant manpower. Furthermore the Faculty has a role in promoting good practice and establishing proper international standards for the discipline.

The Faculty recommends that all patients with cancer have access to expert clinical oncologist/radiotherapist opinion as early as possible in their management. We support the view of the Royal College of Radiologists that "the aim should be to apply palliative radiotherapy within forty-eight hours and certainly within two weeks, while urgent radiotherapy and chemotherapy should be given within two hours and no later than forty-eight hours."

It is essential that the Clinical Oncology/Radiotherapy service provided is of the highest possible international standard and be available equally to all citizens in need regardless of their means or geographic location within the state.

Cancer is a major consumer of acute hospital resources. H.I.P.E. statistics show that in excess of 250,000 acute hospital bed days per year are used by cancer cases with an
average duration of stay of 9.1 days, second in importance only to circulatory system illnesses. Cancer causes 22% of all deaths in Ireland. There are 4,000 new cases of cancer per million population in Ireland. This represents a minimum 14,000 cases per annum in the Republic of Ireland.

One-third of cancers are disseminated at time of diagnosis and two-thirds are localized. Over half of the latter are cured and of those with metastatic disease 5% are cured. Of the 45% curable, the treatment modalities will contribute as follows: surgery 22%, radiotherapy 12%, combined surgery and radiotherapy 6% and chemotherapy 5%.

Statistics from the UK indicate a demographic-based increase in cancer incidence of 2.3% per year. It would be prudent to consider the same increase applies in Ireland.

An efficient acute hospital service cannot exist when the second largest cause of morbidity and mortality has never had a planned care structure. A logical and informed manpower policy is a key element in any such structural plan and is herewith proposed by the Faculty.

The Faculty wishes to point out that the discussion paper produced by a study group chaired by the chief medical officer of the Department of Health seems to have been deficient in oncological advice and expertise. It recommends 29 consultant oncologists but appears to provide for only 9 of these having radiotherapy expertise. It would be at variance with established clinical norms to have only 31% of consultant oncologists trained in radiotherapy as at least 50% of all cancer patients will require radiation therapy and this modality of treatment is the single most common type of oncologic therapy overall. Twice as many patients require radiation therapy compared with systemic drug therapy.

Basic data for estimating consultant manpower numbers

Overall numbers must be based on either population numbers or cancer incidence statistics. Distribution of that manpower must be designed to bring the service to the patients and not the converse, within the confines of pragmatism and fiscal limitations. Distribution is therefore considered separately.

Total numbers: Southern Tumour Registry figures for 1986 show 4,000 new cancers per million population. Extrapolated, this suggests 14,000 new cases for the whole country. There are good reasons to suspect that STR figures are at best minimum figures. Furthermore, if UK incidence figures apply here, the true incidence in Ireland may be closer to 17,000 new cases per annum. While we welcome with great enthusiasm the formation of the National Cancer Registry it will be some years before
accurate national incidence figures be available. In the interim we must not make the mistake of underestimating the problem and under-allocation of resources. 2,200 patients per annum require radiotherapy per million population. This means we need the manpower to cope with 7,700 patients for radiotherapy per year in Ireland. Even if the existing vacancies were filled there would be only eight common contract holders in Ireland, or one per 960 new patients requiring radiotherapy. The reality is clearly shown in STR statistics that only 4 out of every 10 patients who should be receiving radiotherapy actually do so and this is in no small way due to a manpower shortage. The further patients are from radiotherapy facilities the less likely they are to be able to avail of radiotherapy services. The Faculty is therefore concerned that in the more remote parts of the country services may not be realistically available to cancer patients.

The "European standard" to which we should aspire would be 250 new patients per clinical oncologist/radiotherapist. This would require 31 consultants as a baseline with a provision to increase by one consultant every 18 months to cope with rising incidence of 2.3% per annum. The Faculty recommends that the minimum acceptable level of manpower is the same as the UK level. This is 350 new patients per consultant and translates into 22 consultants. If this were to increase at the rate of one consultant every two years it would cover the projected annual increase. It should be borne in mind however that this would still leave Ireland and the UK at the bottom of the European league of consultant clinical oncologist/radiotherapist per head of population and is a minimum acceptable level. The fact that it would require a 500% increase in our current staffing to reach this minimum level is a damning indictment of our current service. Action is required now in the form of a five-year plan to achieve a target of 25 clinical oncologists/radiotherapists in post by 1998. The total figure for clinical oncologists/radiotherapists of 25 is consistent with that arrived independently by the study group chaired by CMO of the Department of Health. The difference is that the Faculty recommends 85% of the service be delivered by dual modality clinical oncologists/radiotherapists as opposed to the 31% in the report. The basis on which the report was drawn up would need to be known before the reason for the discrepancy can be shown.

**Geographical distribution of clinical oncologist/radiotherapists in relation to facilities**

Presently there are two clinical oncology/radiotherapy facilities in the country ie. St. Luke's and St. Anne's in Dublin and the Cork Regional Hospital. Both of these centres
are upgrading their facilities but still need major ongoing capital investment to enable them to practice state of the art radiotherapy and, in addition, cope with the increased number of patients who could benefit from this treatment. Presently for example 1) there are no electron facilities in Dublin, 2) only a limited number of high energy treatment units exist, 3) very limited possibilities to do specialist work like total body irradiation and stereotactic radiosurgery are available. In addition infrastructural backup namely physics, radiography, bioengineering staff levels are all grossly inadequate.

The report of the Medical Review Group on St. Luke's/ St. Anne's Hospital stresses the importance of a multidisciplinary approach to the management of cancer with the establishment of university-general teaching hospital consultant appointments and also stresses the need for consultants to have formal Health Board attachments. The Faculty supports these recommendations and in addition recommends a single centre of excellence for Dublin. Whether this should be on the present site or incorporated in to the site of a major general teaching hospital is a matter for debate. A major parallel investment needs to be made in the Cork centre.

The Faculty recommends the creation of a clinical oncology/radiotherapy facility in Galway to deal with patients from west of the Shannon. Access to clinical oncology/radiotherapy facilities to many patients in the West and North West is presently very difficult and needs to be addressed as soon as the two present facilities have been upgraded to international standards. In time therefore, one can visualize three centres in the country with the Dublin centre covering 2 million people, the Cork centre up to 1 million and the West of Ireland facility covering between a half and three-quarters of a million. Staffing will need to be based on patient workload and numbers attending each facility. This will need to evolve as the centres develop and streamline their geographical coverage. It is accepted that major population centres like Limerick, Tralee, Castlebar, Sligo, Letterkenny, Waterford, Portlaoise, Drogheda, Wexford and Cavan will require a level of oncological service on a regular number of days per week. Thus the proposed consultant clinical oncologist/radiotherapist posts envisaged will need to be linked both to the clinical oncology/radiotherapy facility and additionally to one of the centres listed above to service the geographical population needs. It is therefore envisaged that these would all be joint appointments.
Summary and Recommendations

(i) Cancer is the second largest cause of mortality in this country. Additionally it causes huge morbidity and is steadily increasing.

(ii) There has been no increase in consultant clinical oncology/radiotherapy levels for the past 10 years and only a minimal one over the past 20 years.

(iii) Present workload levels indicate that each consultant sees on average up to 960 new patients per year.

(iv) We recommend that the workload of a consultant in clinical oncology/radiotherapy should not exceed 350 new patients per annum and that a five-year plan be introduced to achieve these targets. This will require 22 consultants in clinical oncology/radiotherapy.

(v) In association with these manpower improvements the facilities of the clinical oncology/radiotherapy centres need to be upgraded and a further centre developed in Galway.

(vi) These manpower structures/developments with Health Board attachments should help to provide a national clinical oncology/radiotherapy service. Linkages with outlying centres listed above should help to provide a national clinical oncology/radiotherapy service.

(vii) Training would benefit from linkages between Dublin, Cork and Belfast centres and the Faculty Clinical Oncology/Radiotherapy Board will foster a multidisciplinary approach to cancer treatment by involving medical oncologists, surgeons, pathologists and radiologists in their academic programmes.

(viii) There should be an increase in the number of therapy radiographers.

(ix) The Faculty welcomed constructive dialogue on all aspects of this policy document with interested groups.
References
7. A consultant manpower study group chaired by the Chief Medical Officer, Irish Medical Times 26/3/1993.
8. Report on radiotherapy services, North West Thames Region, Cooper and Lybrand.

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