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Letter from the President

Pieter Inia, President of EFOMP

First of all, I want to encourage you to take part in the activities of EFOMP. The federal character of EFOMP entitles each member society to send two delegates to the Federation's annual Council Meeting. However, there are more ways in which you can contribute to your profession in the European scene than just being a delegate to Council. I would like to remind you that, in addition to the nominations to Council, each member organisation is entitled to nominate a representative on each of the two main EFOMP committees: one for the Committee on Professional matters, Education and Training (the PET Committee), and one to the Scientific Committee. These are the activity centres, where the principal action of EFOMP is going on. EFOMP depends upon your input to strengthen the position of the Medical Physicist in Europe.

The essential background to the meetings of the Officers and Council is the work done and the policies developed by these committees. The committee structure is also the backbone for a network of Medical Physicists in Europe. Please join in these activities, and thus make your membership of EFOMP count. From the committee reports in this edition of European Medical Physics News, you will see that there is much work to do. I can assure you that participating in the work of the committees is very rewarding - your telephone list grows remarkably, and your horizons are widened.

I hope to see you at our next Council Meeting, for which our Dutch colleagues will act as hosts. The meeting will be held on November 9th, 1992 in The Hague. The full schedule for the associated scientific meeting, the committee meetings and the Council meeting are given elsewhere in this issue. Please do come.

Of the many scientific meetings which are arranged or sponsored by EFOMP, I want to make specific mention of EAR '93. EFOMP has established a closer relationship with the European Association of Radiology. Until recently, the relationship was rather fragmentary, notwithstanding the fact that many physicists played an important, and in some cases decisive, role in the development of both diagnostic and therapeutic radiology. You may not be aware that Marie Curie, well known for her work in radiotherapy, set up an ambulatory X-ray service for the French army during the First World War!

The European Congress of Radiology 1993 will be held in Vienna from 12th to 17th September, 1993. EFOMP is a joint sponsor of the Congress, and is represented on the Scientific Programme Planning Committee. EFOMP's main task is to organise the refresher courses, workshops and scientific sessions on the physics of medical imaging. This is the first step in a growing cooperation between (diagnostic) radiologists and medical physicists at a European scientific level, comparable with the cooperation which our American colleagues in AAPM enjoy in the organisation of the annual RSNA meeting in Chicago.

Professor John Clifton, who chairs the programme subcommittee on the physics of medical imaging, has developed a very attractive programme as you should see from the conference information being sent out separately. Diagnostic radiology is afield in which medical physicists have a growing interest. I hope that many physicists, particularly those working in imaging or related fields, will attend EAR '93 and submit presentations.

See you in The Hague in November!

EFOMP Council Meeting, 1992

Jürgen Richter, EFOMP Secretary General

As decided at the council meeting last September in Vienna, the next EFOMP Council and Committee Meetings will be held in The Hague in November, 1992, at the invitation of our Dutch colleagues. The Netherlands Society of Clinical Physics will hold its 11th Conference on 6th and 7th November, at the Belair Hotel, Johan de Wittlaan 30, The Hague.

The programme of EFOMP meetings is:

Friday, 6th NovemberScientific Sessions of the 11th Conference. (Theme: Clinical Physics in the Netherlands
Saturday, 7th NovemberEFOMP Committee Meetings
Sunday, 8th NovemberEFOMP Council Meeting.

Detailed invitations will be sent to National Organisations within the next few weeks.

EFOMP Travel Award, 1991

Used to Gain Experience of Radiotherapy Physics in France

Flemming Kjaer Kristoffersen

I was lucky enough to be offered an EFOMP Travel Award for 1991, which made it possible for me to visit two of the most famous University Hospitals in Paris: Henri Mondor at Creteil and Institut Gustav Roussy at Villejuif. My intention was to get both theoretical and practical information about their Interstitial Brachytherapy Techniques.

From the 18th November, I spent two weeks at the Radiophysical Department of Henri Mondor. Unfortunately, I only managed to see one interstitial implantation, which was a treatment of the lip. I was just unlucky. During these two weeks, there were no other patients. Besides this, I saw several intra-cavitary treatments (cervix cancer), which was very interesting because the treatment is done with low dose rate Ir^{192} in a (mostly) standard mould. The standard mould is called an AGUB.

The rest of the time I spent discussing brachytherapy and radiotherapy. Through the discussions I learnt a lot. It is very useful to know how other departments treat the same disease in different ways.

On 29th November, I went to the village of Buc, just outside Paris, to visit the factory of CGR-MeV. On this site, CGR-MeV is developing, assembling and testing accelerators for treatment and experiments. I was received by Jerome Pavier, who gave me a short introduction to CGR-MeV and afterwards showed me the halls for assembling and testing machines. This was very interesting.

The third and final week was spent visiting the radiophysical department of the Institut Gustav Roussy. I was very well received by the Chief Physicist, Professor Jean Jacques Chavaudra. He and André Bridier did a great job preparing my programme for this week. Once more I was unlucky only to have the chance to see one interstitial treatment. This was a treatment of the mouth floor with hairpins, and was certainly very interesting to see. I also had the chance to see how cervical cancer was treated with intra-cavitary brachytherapy. At the Institut Gustav Roussy, the treatment was done with individual moulds and Cs^{137} afterloading.

In addition to discussions with the physicists about matters of common interest, Professor Chavaudra arranged two visits to other centres. First, I went to Hospital St Louis, where physicist Gisele Chotin took care of me. Here I was lucky to see an interstitial treatment of the skin with Ir^{192} in nylon tubes. After this, a patient was treated in the bronchus with a catheter from a Micro Selectron positioned by means of X-rays. At the Institut Curie, Professor Jean-Claude Rosenwald told me about the hospital and we discussed various treatments. These visits to different departments have given me new views of brachytherapy and radiotherapy. I hope that other young physicists in the future will also get the opportunity to visit other centres, because I believe I have learnt a lot from my visits.

Finally, I want to thank the different centres for their help and kindness, and especially CGR-Mev who made it all possible through the Travel Award.

Used to Visit Radiotherapy Centres in the UK

Hatice Bilge

This award was made for the time I spent in the Department of Medical Physics in Oxford, UK. The Travel Award made it possible for me to participate in two special courses in the UK and to visit other hospitals.

On 16 January 1992 I was able to learn about Stereotactic Radiosurgery Treatment at the Royal Marsden Hospital (Fulham) and the following day I was at the branch of the Royal Marsden Hospital at Sutton to observe a Total Body Irradiation Treatment. I saw a Total Body Irradiation treatment and conformational therapy at the Royal Free Hospital. This was very interesting for me as I had no previous experience of conformational therapy. At the end of February I saw stereotactic radiosurgery treatment at St Bartholomew's Hospital. On 5 March 1992 I visited Mount Vernon Hospital to see their Quality Assurance programme and I attended a one day Electron Dosimetry course at the Royal London Hospital where there were also demonstrations of several items of sophisticated equipment for radiotherapy.

I returned to the Royal Marsden Hospital with almost 20 participants at the end of March to attend a Radiotherapy Physics course. This covered radiation dosimetry (photon and electron interactions, NPL calibrations and calibration of treatment machines, in vivo dosimetry), treatment planning (simulation, CT planning, hand planning, tissue compensation, calculation algorithms, data collection, checking treatment plans), advanced techniques (dose calculation methods, conformal therapy, stereotactic therapy, Monte Carlo simulation) and practical sessions (ion chamber dosimetry for photon and electron beams, solid State dosimetry treatment planning and Simulation) .

I visited Addenbrooke's Hospital in Cambridge on 7 April 1992 where I have seen their own treatment planning computer programme and I went to Cheltenham General Hospital on 9 April to see their linear accelerator.

I would like to thank firstly Dr B Stedeford, Mrs A Dixon-Brown who helped me to come to the Churchill Hospital, Dr M Weatherburn, Miss C Barber who supported me and all staff who work in the Medical Physics Department.

I have had a very good time at the Churchill Hospital. I have participated with the Physicist team. I hope it will be useful training for my career.

The EFOMP Travel Award has given me an opportunity to meet with physicists from the UK and other countries. I would like to thank EFOMP officers for the Award and all the people who helped me during my visits, particularly Dr A Warrington, Dr W P Mayles, Dr T Davy, Mr D Doughty, Dr E Aird, Dr P Dendy, Miss A Welsh and Ms A Tierney.

The European Federation of Organisations for Medical Physics

CRITERIA FOR THE NUMBER OF PHYSICISTS IN A MEDICAL PHYSICS DEPARTMENT

Approved by EFOMP Council September 1991.

PREAMBLE

Modern Health Care Services are provided with ever-increasing demands for competence, specialization and cost effectiveness. The Medical Physics Service as practised in hospitals faces the same demands. The Hospital Physicist has to make decisions with consequences for the patient and such decisions are based on a competence which only the discipline of Medical Physics covers. These facts have to be taken into account within the organisation and management of the Medical Physics Service.

INTRODUCTION

Medical Physics can be described as the scientific discipline which is concerned with the application of the concepts and methods of physics in medicine.

In the opinion of the European Federation of Organisations for Medical Physics (EFOMP) Medical Physics is a Health Care Profession and the Medical Physicist whose training and function are specifically directed towards Health Care is entitled to an official recognition as a specialist. High standards in Medical Physics Services are important and at a time of increasing demand sufficient resources must be directed towards an appropriate, safe and cost effective use of physical sciences in the Health Service for the benefit and safety of the patient.

MEDICAL PHYSICIST

The formal entry qualification to the profession of Medical Physics is academic with physical sciences as an essential component of the training. A formalised in-service training scheme must be completed succesfully before a physicist may proceed to a post in a hospital Medical Physics Department that is higher than the training grade. A certificate or diploma should be given to the candidate to recognize succesfull completion of training.

A qualified Medical Physicist is thereafter an individual who is competent to practice independently, one or more of the subfields of medical physics e.g. therapeutic radiological physics, diagnostic radiological physics, medical nuclear physics or one of the many branches of medical physics that does not involve the use of ionising radiation.

LEGAL REQUIREMENTS

EEC Directive 84/466/Euratom of 3 September 1984 contains the following statement in article 5. "A Qualified Expert in radiophysics shall be available to sophisticated departments of radiotherapy and nuclear medicine". Such departments would normally have one or more high energy therapy machines or gamma cameras respectively.

If a "sophisticated department" is taken to mean one in which complex radiological methods and procedures requiring special protection of the patient are undertaken, the concept should also be extended to many departments of diagnostic radiology.

EFOMP has already issued a policy statement entitled "Radiation Protection of the Patient in Europe: The training of the Medical Physicist as a Qualified Expert on Radiophysics". In it, a Qualified Expert in Radiophysics is described as "an experienced Medical Physicist working in a hospital, or in a recognised analogous institution, whose knowledge and training in radiation physics are required in services where the quality of the diagnostic image, or the precision of treatment, is important and the doses delivered to patients undergoing these medical examinations of treatments must be strictly controlled".

MEDICAL PHYSICS DEPARTMENT

The Organization of Medical Physics Services in Health Care varies widely throughout Europe. The highest standards and most cost effective provision of services are usually obtained if the service is organized by an independent Department of Medical Physics. That means that the head of the department is an experienced Medical Physicists with responsibility for professional standards, provision of scientific services and for the department's budget. These responsibilities may be within a hospital or within a region. Small departments are likely to be relatively more expensive and less efficient, at the risk of the quality and availability of services to be reduced and the level of safety for patients may be compromised. Therefore it is recommended that small departments have collaboration with a larger department.

Medical Physics Departments generally serve a variety of medical specialities. In some countries the Medical Physics Service is still restricted mainly to the radiological field (radiotherapy, nuclear medicine, X-ray diagnostics and radiation protection), where the service has a long and recognised tradition. In other countries services are already provided to magnetic resonance and ultrasound imaging, physiological measurements, clinical applications of non-ionising radiations (lasers, ultraviolet light and microwaves), bioengineering, electronics, information technology, general data processing and computer technology. The role of medical physics in these areas is expected to increase in the future.

Because the Medical Physicist must have in depth understanding of techniques used for examinations or treatments there must be close daily relationship between the Medical Physicist and the patient environment especially the medical staff. The Medical Physics Department should therefore be close to relevant clinical areas.

GENERAL OBSERVATIONS ON STAFFING THE MEDICAL PHYSICS DEPARTMENT

Generally the number of Medical Physicists required in a Medical Physics Department depends upon:

(i) the range of applications of physics in medicine

(ii) the scale of organisational and management responsibilities (number of hospitals, population served)

(iii) the amount and complexity of equipment and procedures used in related clinical specialities

(iv) the number of patients examined and treated in the relevant modalities and the complexities of these examinations or treatments

(v) the load for formal teaching and training

(vi) the level of participation in research, development and clinical trials

(vii) the number of supporting staff (e.g. technical and radiographic).

The number of Medical Physicists per million inhabitants shows wide variations in different European countries, from less than 2 in Portugal to 14 in Sweden (1988). Figures can be used in comparisons between countries only if they are covering the same areas of physics related activities. Variations between departments in the same country also depend on the range of physics related activities together with the number and qualifications of the supporting staff. Largely for this reason, it is difficult to specify appropriate staffing levels. However in radiotherapy, nuclear medicine and partly in diagnostic radiology there now exists legal requirements for the services of a physicist, who has the status of a Qualified Expert in radiation physics related to these disciplines. Therefore, for these services it is appropriate to make recommendations on minimum staffing in the Medical Physics Department. The following general points apply to the staffing figures given.

1. Staffing provision has been made for immediate duties in radiation protection associated with the specialty. Additional staff will be needed if the Medical Physics Department has to act as a general radiation protection adviser to the Authority on measures it must take to comply with national regulations and has to advise on other health and safety matters connected with ionising and non-ionising radiation.
2. Additional staff are required if there are research activities or training responsibilities. Physicists who have academic commitments should be scored by only 0.5 whole time equivalent for service work.
3. In deciding the level of staffing based on major items of equipment allowance has also been made for minor items (e.g. in radiotherapy: a superficial X-ray unit, plotting tanks, secondary standard dose meters etc.).
4. Some duties may be interchangeable among the three services depending on local organization.

MINIMUM STAFFING OF THE MEDICAL PHYSICS SUPPORT OF RADIOTHERAPY

1.1. Only staff who have had an approved course of training in radiation physics related to radiotherapy should be included in the minimum staffing level.

1.2. In all departments there must be at least two medical physicists, each specialising in radiotherapy physics, at least one of whom is a qualified expert.

1.3. Minimum staffing levels should be calculated from factors depending both on equipment load, number of patients treated and sophistication of treatments.

General guidelines are given below (wte = whole time equivalent)

1 high energy linear accelerator	0.8 wte physicist
1 major item of equipment (e.g. cobalt unit, simulator, computer treatment planning system, high dose rate afterloading)	0.4 wte physicist
1000 new courses of treatment per annum with external beam therapy	1.2 wte physicist
100 new courses of treatment per annum with brachytherapy	0.25 wte physicist

The number of physicists should be summed to give the total.

1.4. The figure for a second standard subsequent accelerators may be reduced by 0.2 provided they do not have electron facilities and are not under computer control.

1.5. The number of physicists per item of equipment may be reduced by 0.1 if maintenance and repair is carried out by staff not managerially responsible to the physicist.

MINIMUM STAFFING OF THE MEDICAL PHYSICS SUPPORT OF NUCLEAR MEDICINE

2.1. Only staff who have had an approved course of training in radiation physicis related to nuclear medicine should be included in the minimum staffing level.

2.2. In all departments there must be at least one medical physicist who is a qualified expert with experience in nuclear medicine physics. If the department has responsibilities related to therapy with radionuclides a second qualified expert may be necessary.

2.3. Minimum staffing levels should be calculated from factors depending both on equipment load and patients examined or treated.

General guidelines are given below (wte = whole time equivalent)

1 gamma camera	0.50 wte physicist
5000 examinations per annum	0.50 wte physicist
500 dynamic studies involving significant data processing by a physicist per annum	0.25 wte physicist
250 studies involving single photon computed emission tomography per annum	0.25 wte physicist
50 new courses of treatment per annum	0.25 wte physicist

The number of physicists should be summed to give the total.

2.4. Additional staff are required if the Nuclear Medicine Department has other facilities such as sample counting or a whole body counter or the physics staff supervise work in the radiopharmacy.

2.5. The number of physicists required for second and subsequent cameras may be reduced by 0.2 provided they are used mainly for simple static imaging procedures.

2.6. The number of physicists per item of equipment may be reduced by 0.1 if maintenance and repair is not carried out by staff managerially responsible to the physicist.

MINIMUM STAFFING OF THE MEDICAL PHYSICS SUPPORT TO DIAGNOSTIC RADIOLOGY

3.1. Only staff who have had an approved course of training in radiation physics related to diagnostic radiology should be included in the minimum staffing level.

3.2. All departments using complex equipment or carrying out complex radiological procedures should have available to them the services of at least one medical physicist who is a qualified expert with experience in diagnostic radiological physics.

3.3. The number of physicists needed will very much depend on the quality assurance programme performed in the department, the involvement of radiographers or other staff in that programme and the involvement of the manufacturer.

3.4. Application of digital techniques demands extra expertise in computing and data handling for evaluation and analysis of digital images.

3.5. The medical physics staffing level is likely to depend on the size of the population served as well as on the range of equipment.

3.6. For a diagnostic radiology department utilizing a full range of techniques, including e.g. digital radiology, computed tomography, dedicated mammography to a population of 500.000 1.0 wte physicist would be appropriate.

3.7. Physics input to diagnostic imaging technique using nonionizing radiation is not considered.