

europaean medical physics news

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Letter from the President.

Karl Arne Jessen, President of EFOMP.

It is the time to review Medical Physics in Europe in 1993 and to consider the expectations we may have to our profession in the coming year. "Medical Physics 93" in Tenerife last September organised by the Spanish Medical Physics Society together with EFOMP was very successful, and one of the highlights of 1993. It also demonstrated in a figurative way that Medical Physics is progressing in all corners of Europe and the strong participation of young physicists was very promising. It was a balanced and intensive scientific meeting with an unforgettable social adventure. I would like to express my recognition to the local organizers for their hospitality, enthusiasm and professionalism.

In Tenerife our Committees met and made their state of affairs and planned strategies for the coming years. The work in our Committees is of extreme importance to EFOMP and I call upon all national organisations to support this work by sending delegates both as engaged individuals and as important ambassadors for the national organisations. It is only in this way that we can maintain our momentum as a federation and develop Medical Physics further in Europe. Therefore please send both delegates to our Committee and Council Meetings.

During 1993 EFOMP further developed its contacts with a number of international bodies. With the European Communities EFOMP has negotiated the Summer School of Medical Physics in Diagnostic Radiology in Nancy June 1994. EFOMP has carefully followed the development on the revision of the Patient Directive ready to assist if requested. IOMP has expressed interest in discussing regional structures and cooperation on education. Further discussions are expected at the World Congress in Rio de Janeiro in August 94. More direct cooperation with ESTRO has been aimed at and is now visible in some common activities. A very important and successful cooperation has been consolidated with the European Congress of Radiology (ECR). At the congress in September 93 in Vienna, EFOMP was allocated sessions on Physics of Medical Imaging performed with great success and EFOMP has been asked to join the next congress ECR '95 in March 1995 in Vienna. Professor John Clifton will again act as our subcommittee chairman and he is already busy in the preparation of the programme. 1995 is, of course, a very special year for all physicists working with the clinical use of X-rays.

EFOMP has to respect its democratic foundation as a federation of independent national organisations in its negotiations with other bodies. At the same time we have to realise that the actual daily life is becoming more and more political and demands a more professional approach in communicating with such bodies including also administrative management and health authorities. This is a real challenge for physicists who are trained to work scientifically. Political changes at the international level will affect an international federation but our sound scientific base helps us to state that EFOMP has no reasons whatsoever for political involvement though it does have a responsibility to assist our colleagues working under difficult political and economic conditions and to maintain contacts and support them with information until improved conditions are established.

See you in Aarhus in October.

Council Meeting, held on 25 September 1993, during Medical Physics'93 in Tenerife.

Wolf Seelentag, General Secretary of EFOMP

We all enjoyed a well organised meeting at a splendid setting, and the overwhelming hospitality of our Spanish colleagues - it is a pity not more attendants from abroad came to join us. Here, however, I have to concentrate on the EFOMP Committee/Officers'/Council Meetings. The following are not minutes of a specific meeting - I just want to report on the news in general.

Very important for any organisation are the finances : 1992 was another sound financial year with a small surplus. The capitation fee for 1994 was fixed at £ 2.00 - an increase basically reflecting the drop in the value of the £. The fact that we had accrued a surplus on the travel award in previous years, also allowed the travel award to be advertised for 1994, despite the fact that to date there is no guaranteed sponsorship for the award.

Equally important is to find people to do the work in the Committees. I-LLamm (Sweden) had taken over the secretariat of the ETP Committee from our (now) president, K.A.Jessen; P.Dendy will continue for the time being, to finish the important projects under way right now.

H.Bergmann had finished his term as secretary of the Scientific Committee, and J.Haywood (UK) has taken over; J.-C.Rosenwald will hand over chairmanship to F.Nuesslin (Germany) for 1994.

The present political changes in the Eastern parts of Europe also result in changes of EFOMP's membership. Yugoslavia has been deleted from the membership list for non-payment of dues, and other obvious reasons. So far Croatia has applied for and been granted membership; discussions with our colleagues in Slovenia are under way. The Czechoslovak Society had remained a member in 1993, despite the separation of the country; the best representation of our Czech and

Slovak colleagues is still under discussion - EFOMP will ensure that there is no lack of communication in the meantime.

EFOMP had participated in a successful joint meeting with ESTRO in Prague in May 1993; as a consequence ESTRO has invited EFOMP to also participate in their Röntgen Centennial Conference, to be held in Paris. Another success was the ECR '93 in Vienna in September, again

with EFOMP involvement; this cooperation will be continued for ECR '95 in Vienna; there are suggestions to organise a pre-conference course on "Physics for Radiologists" in 1997. A major event in 1994 will be the ICMP in Rio de Janeiro in August; this will give our representatives a chance to discuss EFOMP's role within IOMP in the future : it is one of IOMP's "strategic objectives" to establish "Regional Liaison Groups" - obviously these activities will be looked

after by EFOMP for Europe. 1995 is, of course, the Röntgen Centenary: EFOMP's main event will be the Centennial Conference to be held in Würzburg in September. Council has accepted with thanks Italy's invitation for the triennial Medical Physics '96 to join their meeting to be held in Trieste in September.

The preparations for the 1994 Summer School on "Radiophysics (Diagnostic Radiology)" to be held in Nancy in June are progressing according to plan. There has been a suggestion to repeat the course under the auspices of IAEA, possibly in Trieste in September ; this could be interesting especially for member organisation of non-EEC countries. There have also been initial contacts to discuss the possibility of a joint summer school with the AAPM in 1997.

Other projects of the ETP Committee are also progressing, especially the survey on numbers of Qualified Experts, and the recognition of registration schemes. The Competency Level material was re-examined, and it was decided to re-issue it with the request that member

organisations adopt and develop these ideas to meet their own requirements. A very good paper on "The Need for Continuing Education for the Clinical Medical Physicist" was received, and should lead to another policy statement.

There are at present two projects of "Basic Safety Standards" under consideration, one by IAEA/WHO/FAO/et al., the other by Euratom; also the Euratom "Patient Directive" is under review. EFOMP is carefully following both developments. On the other hand it is being attempted to enhance our "Accident Reporting Scheme" to an "Accident Prevention Scheme" : with this in mind, also "near misses" should be reported; to handle the increasing amount of data, a "Report Clearing House" is envisaged; at the moment EEC support for this project is being

sought.

The "EFOMP Handbook" has been delayed by software problems. On the other hand progress has been made with the EFOMP mail-server set up at Vienna University : details, how to access this mail-server, should be published soon; therefore now is the time to consider how

to make good use of this opportunity - suggestions from you are welcome ! To begin with, the EFOMP membership database will be available : in the meantime anyone requiring addresses for mailings may request self-adhesive address labels, for a specific purposes, from the Secretary General.

Finally - when will we meet again ? For the 1994 Meetings the invitation of our Danish Colleagues was accepted with thanks : their annual meeting will be held in Aarhus on 30 September and 1 October (one week later than anticipated, to avoid a clash with an ESTRO

meeting); after the first day, which should also be interesting for non-Danish colleagues, the EFOMP Committee/Officers'/Council Meetings will be held on 1-2 October : make a reservation in your diary !

The European Federation of Organisations for
Medical Physics

Policy Statement

**DEPARTMENTS OF MEDICAL PHYSICS -
ADVANTAGES, ORGANISATION AND
MANAGEMENT**

Approved by EFOMP Council, September 1993

I. INTRODUCTION

The objective of this document is to demonstrate the advantages of departments of Medical Physics and to provide guidance for the organisation and management of medical physics resources that will best meet the needs of the Health Service and will best be able to respond to continuing advances in technology.

The skill and inventiveness of physicists and engineers has led to the development of many of the techniques and instruments that form a vital part of modern medicine. Many examples can be cited, including the historical application of X-rays and radionuclides for therapy and diagnosis, measurement of body electrical activity, electromedical instrumentation, ultrasound, design and construction of rehabilitation devices, use of lasers particularly for therapy, and advanced computer-based imaging techniques such as X-ray computed tomography and magnetic resonance imaging.

In all these and other applications of physics in medicine, medical physicists co-operate with clinicians and other medical staff in a variety of ways to the benefit of the patient.

II. THE ADVANTAGES OF DEPARTMENTS OF MEDICAL PHYSICS

The Medical Physics service can only continue effectively to play its role in the care of the patient on the one hand and in the research and development of new medical technologies on the other, if it can draw on the specific skills and typical methods of work of the physicist for routine tasks, development projects, research, and teaching. It is the firm policy of EFOMP that this can only be realised in Departments of Medical Physics which have at the head an experienced medical physicist.

Advantages of an integrated Department of Medical Physics include: - links with many clinical specialities, a multidisciplinary approach to problems, cost-effective use of time and equipment, peer review of work, a broad training base and realistic career development prospects.

This policy statement elaborates on some of these advantages and considers the structure and organisation necessary to achieve them.

The close co-operation with medical departments should be emphasised. This may even have a formal character agreed upon in a written contract.

III. TASKS AND STRUCTURE OF DEPARTMENTS OF MEDICAL PHYSICS

Many techniques in medical therapy and diagnosis, even some routine tasks, require the collaboration of medical physicists, since not only technical but also physical parameters have to be controlled and optimised. This collaboration between medical and physics departments ensures the efficient and safe application of such techniques. These tasks can be handled successfully if Departments of Medical Physics exist with the following structure:

- a. The professional and organisational responsibility for all aspects of medical physics is vested in an experienced physicist who has a thorough understanding of the field and of competing service requirements. Only a medical physicist, by training and experience, has the qualifications and expertise to decide how the department can best solve the problems referred to it by the various clinical departments.
- b. The staff of a Medical Physics Department must support the widest possible range of services. A Medical Physics Department, particularly if it is integrated over several specialities of a hospital or several small clinics of a district, allows a given total number of staff to sustain a wider range of services during periods of staff absence, e.g. leave, sickness, training, resignation etc.
- c. A properly structured Medical Physics Department promotes cost-effective use of equipment and staff (particularly by avoiding wasteful duplication) and permits medical problems to be solved by drawing on a number of separate areas of science.
- d. An integrated Medical Physics Department comprising physical scientists, technicians and clerical/administrative staff, equipped with the appropriate resources (laboratories, workshops, office, library) provides good training facilities and a proper career development for both scientific and technical staff. With regard to professional quality and staff motivation this is indispensable.
- e. In hospitals where a medical physics service is still in its early stages, the number of staff will be too small for a separate department and also the scope will be limited. Nevertheless, the long term aim should be the structure described in this Policy Statement.

IV. THE ORGANISATION OF MEDICAL PHYSICS

To optimise the benefits of an integrated Medical Physics Department, specific management arrangements are recommended. One important requirement, especially if the diversity of applications discussed in Appendix 1 is to be covered or the department is to be integrated over several clinics in one district, is that physics services must be organised or co-ordinated at the highest practicable level.

A medical physicist must be designated as Head of a financially and administratively independent Medical Physics Department. He or she should be the budget holder and must be responsible for allocating resources as appropriate to supply the service required.

The Departmental Head should have comparable standing with the Heads of Medical Departments with a seat on appropriate administrative committees. This will enable scientific input at all levels in the optimisation of the service to the patient in a cost-effective manner.

Every medical physicist should be employed as a member of a Department of Medical Physics but may be seconded to another department to perform specific and clearly defined tasks. Individual medical physicists should not be employed directly as members of a medical department and must in all cases be professionally responsible to the Head of Medical Physics.

Medical physicists are responsible for the work of medical physics technicians in the Department. Therefore, they should be involved in the management of and provision of training courses for medical physics technicians as well as within their own profession.

V. THE TASKS OF MEDICAL PHYSICS IN RESEARCH, TEACHING AND TRAINING

One of the tasks of Medical Physics Departments (especially those in universities and large hospitals) is to further the development of physical techniques and procedures in medicine. For this, the necessary resources must be provided.

Another is to help students approach medical physics at the level of a subsidiary subject within the framework of the academic curriculum and to organise in-service training for medical physicists.

In-service training for members of related professions (medical physics technicians, physicians, nurses etc.) must also be organised and provided.

EFOMP recommends (reference 2) that entrants to Medical Physics training should normally have, as a minimum requirement, the Bachelor's Degree (BSc) or its equivalent in Physics. Individuals with degrees in Mathematics, Engineering, Chemistry, Biology or Medical Sciences could be considered but would need preparatory training to ensure that their knowledge of Mathematics and Physics is up to the required standard.

Postgraduate education in Medical Physics then comprises three stages, i) one or more formal courses of lectures, seminars, practical and tutorial work, ii) on the job training, iii) professional work.

Each training scheme should allow the physical scientist in training to have maximum flexibility and choice of subject within the practicalities of the daily commitments of the department. In view of the diverse range of modern medical physics and clinical engineering, such training can only be provided in a properly co-ordinated Department of Medical Physics.

VI. CONCLUSIONS

1. The role of Medical Physics Departments is to support the established broad range of applications of physics and engineering in medicine and to be actively involved in the development, implementation and exploitation of new medical technologies and procedures.
2. A main objective of a Medical Physics Department must be to provide a competent and cost-effective medical physics service to all parts of the national health services that need it. This service includes: safety of patients and hospital staff, maintenance of medical equipment and scientific support.
3. Medical Physics services must be the responsibility of an integrated Department of Medical Physics providing an agreed core of work activities representative of the diverse character of the specialty.
4. These services must be organised or co-ordinated at the highest practicable level, which can be through a regional or subregional structure.
5. The Head of Department must be a physical scientist in medical physics to whom all physical scientists employed on hospital physicists' grades and technical staff must be professionally and officially responsible.
6. The Head of Department should be responsible for the departmental budget.
7. University Departments of Medical Physics have the further tasks of teaching, research and training in this field.

APPENDIX 1

The Expanding and Developing Role of Medical Physics in the National Health Services

The demand for medical physics services and the range of work in Medical Physics Departments in the national health services of the member countries has increased markedly in recent times. Although physicists began to be employed in medicine in the 1920s, initially in the field of radiotherapy, the most dramatic growth has occurred during the last thirty years as new technologies have been developed.

Physics is remarkable in the number of other disciplines it influences. Virtually every field of medicine depends to a greater or lesser extent on understanding the laws of physics in the diagnosis, care and treatment of the patient. It is increasingly important that physical scientists in Medical Physics Departments are actively involved in the clinically developing areas of their sciences and associated technologies in order to secure the maximum benefit for patients.

Techniques developed in one field can be transferred and utilised in other areas of medicine, using the very same physical phenomena or technology and sometimes even the same equipment. Recent examples include developments in nuclear medicine imaging, ultrasound imaging, digital radiography, X-ray computed tomography, magnetic resonance imaging, medical uses of lasers and rehabilitation engineering. In all of these fields physics and bioengineering contributions have crossed recognised boundaries of medical specialities.

The role of the medical physicist in various specialities is dealt with in more detail in other Policy Statements of the EFOMP and its various associated national Medical Physics Societies. The following EFOMP Policy Statements have already been published:

- Ref. 1 The Roles, Responsibilities and Status of the Clinical Medical Physicist
- Ref. 2 Medical Physics Education and Training: The Present European Level and Recommendations for its Future Development
- Ref. 3 Radiation Protection of the Patient in Europe: The Training of the Medical Physicist as a Qualified Expert in Radiophysics
- Ref. 4 Criteria for the Number of Physicists in a Medical Physics Department.

Departments of Medical Physics are involved in the initiation, development and application of new technology throughout health care, from research to service commitment in areas spanning the use and measurement of ionising and non-ionising radiation, data handling information technology, bioengineering, the fabrication of equipment, safety, and routine equipment management. Management structure within the department takes account of the needs and responsibilities of the individual sections and of responsibility to supra-structures to which they are related.

November 1992. EFOMP ETP Committee

PHYSICA MEDICA

An International Journal Devoted to the Applications of Physics to Medicine and Biology

Alberto DelGuerra Editor in Chief, Physica Medica

The journal *Physica Medica* was established in 1984 as official journal of AIFB (Associazione Italiana di Fisica Biomedica). Since then its status has changed, as it has become also an official journal of DGMP (Deutsche Gesellschaft für Medizinische Physik), of NVKF (Nederlandse Vereniging voor Klinische Fysika) and has obtained official sponsorship by EFOMP. Its high scientific standard is now guaranteed by a fully international Editorial Board which brings together many outstanding scientists in the field of Medical Physics, either as individuals or as official representatives of the sponsoring societies.

Physica Medica is now printed by "Giardini Editori e Stampatori in Pisa" (Italy), formerly GESA (Switzerland). It publishes a variety of papers under strict peer review procedure with a referee data base well in excess of 150 worldwide experts.

The journal provides an international forum for research and reviews of the following main topics: - physics of biological systems; - study and measurement of physiological parameters; - dosimetry and clinical dosimetry; - medical imaging; - biomedical instrumentation and quality assurance; - optics and laser applications in biology and medicine; - physics methodologies in environmental science.

Contributions on other topics related to Applications of Physics to Biology and Medicine, and in particular related to new emerging fields such as biomagnetism, hyperthermia, cell cytometry, radiobiology, etc. are strongly encouraged.

Physica Medica features

Review papers Reviews of subjects of significance in the field of the Applications of Physics to Medicine and Biology. They are usually invited by the Editor in Chief, but may also be submitted on a voluntary basis; in either case they will be refereed according to the standard procedure

Original papers The major category in the journal for the reporting of original research of experimental and/or theoretical nature.

Conference papers This section may include prompt publication of reviewed manuscripts from International Conferences, primarily in Europe dealing with important news topics in medical physics

Technical notes These are descriptions of specific developments of apparatus, techniques or experimental procedures, or theoretical points

Letters to the Editor Short and/or preliminary communications, not necessarily subdivided into sections. They should be concise and occupy not more than two to three printed pages in *Physica Medica*. To expedite publication, the refereeing procedure for a "Letter to Editor" is simplified.

Special sections such Book review and Announcements and Calendar of Events are also present.

PHYSICA MEDICA is indexed/abstracted in EMBASE (Excerpta Medica data base), INSPEC data base (for Current Papers in Physics and Physics Abstracts), QUEST (a computer software package dedicated to Health and Medical Physics) and ISI (for Biophysics & Biochemistry Citation Index).

For further information or for a free sample copy of the journal please contact the Editor in Chief.

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Announcement and First Call for Papers
The 19th LH Gray Conference
Quantitative Imaging in Oncology

Medical School
University of Newcastle-Upon-Tyne
3rd to 7th April, 1995

Papers and Posters on the general subject of Quantitative Imaging in Oncology are invited. It is anticipated that the meeting's proceedings will be published as a peer-reviewed supplement of a leading scientific journal.

Diagnosis and Quantitation of disease
Techniques for treatment volume definition
Uses of imaging modalities in treatment planning
Treatment Planning Systems -- the state of the art and its current and potential value
Treatment verification
Quantitative assessment of tumour response

It is intended to distribute abstracts at the meeting. Abstract forms and further information are available from

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Items intended for publication in European Medical Physics News should be sent to the Editor at the following address:

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Copy should be submitted, preferably, on PC format floppy disk in either WordPerfect, MS-Word or plain ASCII text. A hard copy should accompany the disk.

EFOMP Policy Statement

The centre pages of this edition of European Medical Physics News have been given over to publication of a Policy Statement on the Numbers of Medical Physicists employed in a Medical Physics Department. This has been done to ensure the wide distribution of this important document, whilst permitting it to be removed easily for filing. Further copies of the Policy Statement are available from the General Office in York, UK.