

SESSION:
 DEVELOPMENTS IN INTERNATIONAL MEDICAL PHYSICS COLLABORATIONS IN AFRICA AND LATIN AMERICA

Status of Medical Physics Collaborations and Projects in Latin America



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Introduction

WHO : Cancer cases in South America are expected to increase by 88 % over the next two decades

It is estimated that by 2035 the greatest growth will occur in Ecuador (115% more cases) and Colombia (114% more).

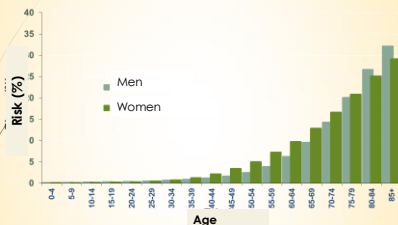
Forecasts are completely discouraging. For the next 20 years, no country will see a drop in the number of incidences and cases leading to mortality. According to the WHO, a total of 430,000 people died in South America as a result of cancer in 2012. By 2035 the regional projection is 883,000 . Brazil is the South American country with the largest number of new cases of cancer. Currently, there are 437,000 which will see a 90% increase.



<http://actualidad.rt.com/ciencias/765454-cancer-mortalidad->

Introduction

RISK OF CANCER AND AGE IN LA



Información tomada del GRUPO ONCOMEDICA (Dr. ...)

Introduction

Cancer Management

Objectives

- local control
- survival
- quality of life of patients with CANCER

Needs

- Facilities
- Adequate access to medicine
- Appropriate Technological Equipment
- Qualified Professionals

Setting Up a Radiotherapy Programme: Clinical Medical Physics, Radiation Protection and Safety Aspects

Radiation Oncologist:	1/250 patients
No more than 25/30 patients under treatment by a single physician	
Physicist:	1/400 patients
Dosimetrist:	1/300 patients
Physics Technology:	1/600 patients
RT Technologist:	2 per unit / 25 pat./day
	4 per unit / 50 pat./day
Simulation Technologist:	2 1/500 patients
Maintenance Engineer	1 2 megavoltage unit

Introduction

Cancer Management

Objectives

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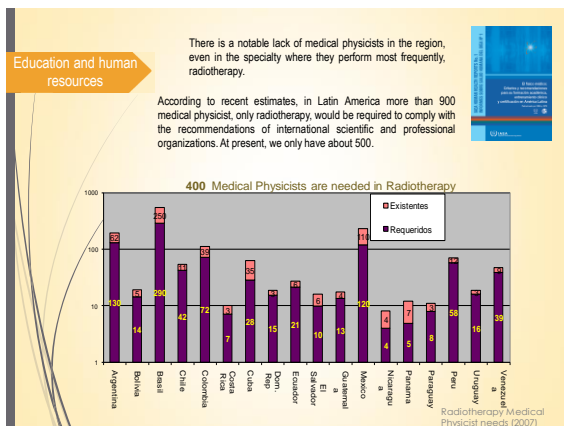
Needs

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Setting Up a Radiotherapy Programme: Clinical Medical Physics, Radiation Protection and Safety Aspects

Qualified Medical Physicist

Increasing the number of qualified MP require establishing a coordinated system of national Education & Training Centers (ETC)



Education and human resources

License/Degree in Medical Physics

University education in different countries includes training at the university degree level (known in some countries as an undergraduate), leading to a degree (I bacharelado in Brazil) in medical physics.

These studies have a duration of 4-5 years and their degrees are awarded by institutions of higher education (universities) recognized by the Ministries (or Secretariats) of Education in each country.

Master's and doctorate in Medical Physics

The aim is to train skilled professionals, academics and researchers, including: specialty, Master and PhD.

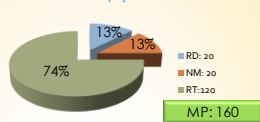
The duration of these studies is as follows: specialty - 1-3 years; Master - 1 to 2 years; Doctorate - 2-5 years.

Training programs

These programs are generally offered by health institutions (hospitals and clinics), called hospital residences, in addition to academic training, including clinical training for medical physicists, in which they acquire the skills and practical skills.

Education and human resources

Number of medical physicists



ARGENTINA

License/Degree in Medical Physics

Favaloro University
University of General San Martin
National University of La Plata

Master's and doctorate in Medical Physics

University of Buenos Aires
Instituto Balseiro Foundation School and Nuclear Medicine (Bariloche and Mendoza)

Training programs

Offers 9 seats in radiotherapy and 3 in nuclear medicine annually

Education and human resources

Number of medical physicists



BRASIL

MP: 331

License/Degree in Medical Physics

Federal University of Uberlandia
University of Sao Paulo (Ribeirao Preto)
Pontifical Catholic University of Sao Paulo
State University of Campinas
Federal University of Rio de Janeiro

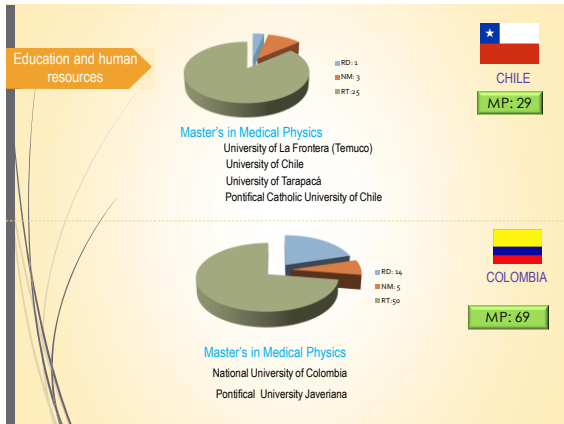
Federal University of Sergipe
Center University Franciscan
Catholic University of Pernambuco
Catholic University of Rio Grande do Sul
Sao Paulo State University in Jui mosque filho

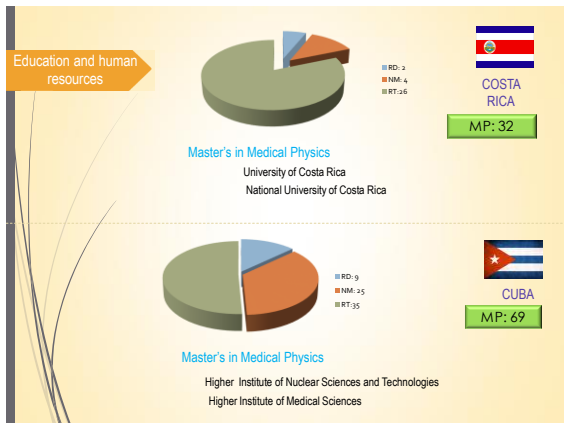
Master's and doctorate in Medical Physics

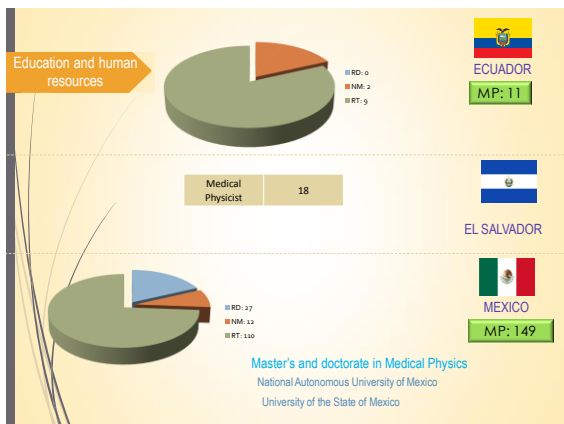
University of Sao Paulo
State University of Rio de Janeiro
Radiation Protection and Dosimetry Institute

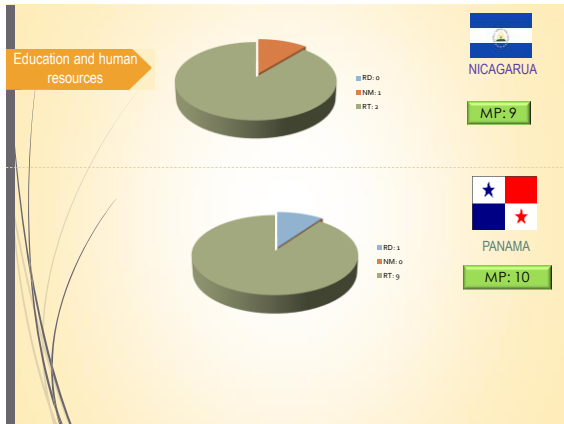
Training programs

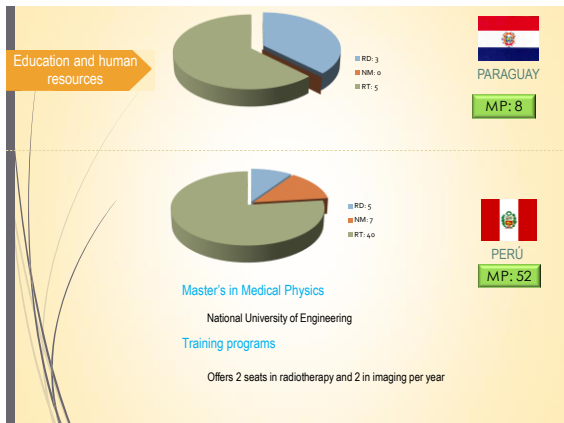
Offers 17 seats in radiotherapy and 6 in imaging per year

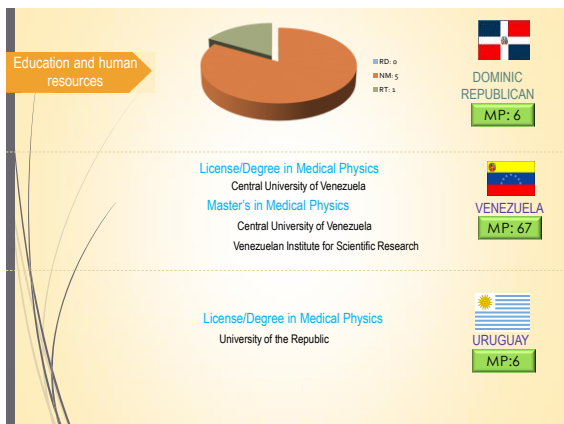


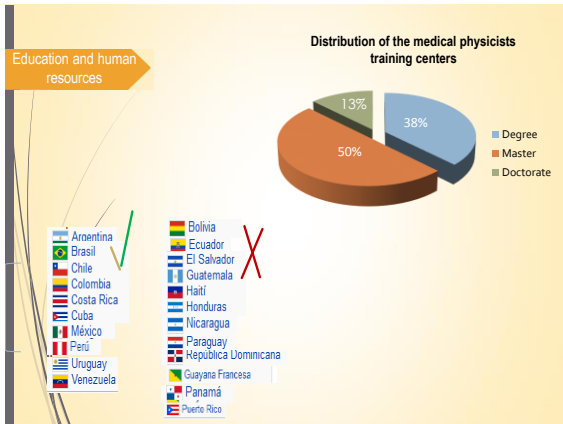


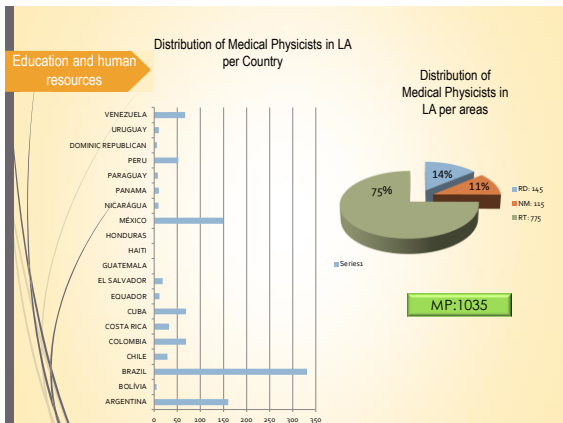












Education and human resources

LATIN AMERICAN NETWORK OF MEDICAL PHYSICS (RELAFIME).

The National University of San Martín (UNSAM) as Convenor University, spearheaded the creation in 2012 of the Latin American Network of Medical Physics.

Convenor university → National University of San Martín
Participating universities National University of Cuyo
National University of the Plata
University of the Habana - Cuba
University of Campinas - Brasil
University of the Republic - Uruguay

The integration of Latin America is a basic condition for the full development of its population, and that there is now wide variety of options in academic training of a medical physicist, the challenge is to accept that the path is to recognize those differences.

The aim is to facilitate communication between universities that will train human resources in the field of medical physics. This approach is intended to discuss which medical physicist profile will be more useful in our region, how we can work together to achieve equal academic policies which could promote the achievement of some medical physicists as well as allow for mutual recognition skills of medical physicists.

www.unsam.edu.ar/fisicamedica

Education and human resources

Clinical training in Medical Physics

Clinical training sites with formal programs are very limited

As we observe, clinical training programs are structured around a hospital's intensive practice called hospital residencies in the region (Brazil and Argentina) . To obtain a hospital residency requires that the applicant have a Bachelor in Physics or Medical Physics , with a background in theoretical courses and hospital practice. Most of the training is for the radiation area and the rest in radiology and / or nuclear medicine.

Accreditation of an academic program

The accreditation of an academic program and / or clinical training is a volunteer process which aims to ensure that the program or institution has reached a defined standard.

Education and human resources

Content of academic programs

Proposals

- ✓ Establish common academic programs in both theoretical aspects and practical education for medical physicists to provide a sustainable basis for quality diagnostics and safe treatments ;
- ✓ There is a proposal to unify the postgraduate academic training and clinical training for the medical physics area within a hospital residency program lasting a minimum of three years .
- ✓ Whatever the specific method chosen , it must be ensured the minimum content of academic programs and clinical training meet the needs of hospital practice , which should be subject to a accreditation process.
- ✓ A number of Education & Training Centers (ETC) should be created at each country

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Education and human resources

Content of academic programs

Proposals

We currently have the recommendations outlined in a publication of the IAEA , but there needs to be more concrete actions , for it should be a committee of action for:

The review of existing programs in training medical physicists in Latin America help define , address , implement and monitor changes to occur . This can be given with the support of organizations such as

AAPM, CAMPEP, WHO, IAEA ABR, SDAMP



- CAMPEP Accredited Programs in Medical Physics**
1. Accredited Graduate Programs in Medical Physics
 2. Accredited Degree Programs (MS, Ph.D)
 3. Accredited Certificate Programs in Medical Physics
 4. Accredited Residency Programs in Medical Physics

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Medical Physics Organizations	ARGENTINA	Argentinian Society of Medical Physics (SAFIM)
	BRASIL	Brazilian Association of Medical Physics (ABFM)
	CHILE	Medical Physics Society of Chile (SOFIMECH)
	COLOMBIA	Colombian Asociación of Medical Physics and Radiation Protection (ACOFIMPRO)
	COSTA RICA	Physics Society
	CUBA	Cuban Physics Society Medical Physics Section
	MEXICO	Mexican Federation of Organizations for Medical Physics (FMOFIM)
	PANAMA	Panamian Association of Physicists in medicine
	PARAGUAY	Paraguayan Society of Medical Physics
	PERU	Peruvian Society of Medical Physics
	VENEZUELA	Venezuelan Society of Medical Physics

Medical Physics Organizations

The latinoamerican Association of Medical Physics, its aims are as follows:
 -Group Medical physics societies in Latin America and the Caribbean.
 -To Promote and encourage the training of medical physics societies in Latin America and the Caribbean that do not have adequate training

Certification and Legislation

RADIOTHERAPY

The Nuclear Regulatory Authority extends the permissions to professionals who meet certain requirements to practice in radiotherapy. This permit is like "Specialists in radiotherapy physics".

REQUIREMENTS

- Bachelor's degree in Medical Physics,
- Master in Medical Physics or Physics and Engineering (the latter should be in a theoretical course)
- Over 1500 hours of clinical practice in no less than one year.

For nuclear medicine ARB extends a similar to Radioterapy permission but "partial" presence is required in the centers of attention. Unfortunately for diagnostic radiology nothing. This depends on the Ministry of Health of the nation and even the presence of specialists not required by diagnostic centers nor are they recognized professionals

SAFIM, presented a project to the Ministry of Health, for not recognizing the profession of medical physics within the framework of the Health Community. There SAFIM described the requirements, scope and specialties of medical physics.

Gustavo Sánchez
Vicepresident

Rosana Sagione

Certification and Legislation



BRASIL

The **Brazilian Association of Medical Physics - ABFM**, performs the recognition of qualifications of medical physicists who work in radiotherapy, diagnostic radiology and nuclear medicine, through an annual exam.

Recognition is made through the issuing title of Medical Physics Expert in one of three areas: Radiotherapy, Radiology and Nuclear Medicine.

The examination for obtaining the Medical Physics Expert Title is held annually and prepared by an exam board composed exclusively for this purpose.

REQUIREMENTS

- To have Bachelor, Bachelor, Master or PhD in Physics or Medical Physics;
- Have experience in Medical Physics in the specific area, with the minimum experience criteria as described below;
- To have had clinical training within the last 2 years.

Radiotherapy: minimum of 3800 hours

Diagnostic radiology: minimum of 2850 hours

Nuclear medicine : minimum of 2850 hours

Certification and Legislation

Colombian Asociación de Medical Physics and Radiation Protection



COLOMBIA

For the first time in 2006, Colombian legislation recognized the need for medical physicists in radiotherapy. They have allotted four years in order to acquire the number of medical physicists needed who will have received adequate training on an international level

Currently, Colombian law requires that those who work in *radiotherapy services* to have a graduate degree in medical physics and "If you have equipment PET, PET CT have " professionals with expertise in medical physics."

There is no structured certification.

Costa Rica has the peculiarity that the practice is regulated by a College of Physicists



COSTA RICA

REQUIREMENTS:

Years of experience,
Academic status
publications,
Passing the exam which will be divided into two sections, an oral and a written part.

Once submitted and evaluated all these crowded the applicant may be a Medical Physicist Collegiate as an area (RT, RX, MN, RP) or Specialist Medical Physicist area.

Significantly, the College of Physicians is in a phase of analysis to determine the members of an internal committee called COFIMED (Commission of Medical Physics), which will be responsible for start evaluating the skills of these professionals in Medical Physics.



Erik Mora Ramirez

Certification and Legislation



CUBA

RADIO THERAPY AND NUCLEAR MEDICINE.

National regulatory authorities (National Center CNSN the Nuclear Safety and Control Center of Drugs, Medical Devices -CECMED) . MN and RT .

REQUIREMENTS:

Specialist Medical Physics in NM	-Have the title of Master of Science : Medical Physics and at least six months of supervised work in a Department of MN by an expert and / or possess the Diploma in Nuclear Medicine Physics licensed medical physicist .
Specialist in Medical Physics at RT	-Have the title of Master of Science : Medical Physics and at least 6 months of work supervised by a licensed expert medical physicist in the Department of Radiotherapy and / or possess the Graduate Radiation Physics .


Another situation presented radiology services that are subject to the regulations of the Ministry of Public Health (Public Health Ministry) , which owns less control system certification and licensing requirements . These requirements do not require the presence of a medical physicist in services, although there is a growing awareness of its importance for the safe and best practice of radiological techniques.

They are working on the issue of certification



MaC Adin Lopez Diaz


Certification and Legislation

 PANAMA

The operating license granted by the Ministry of Health is the regulatory authority. Professional qualifications to practice as a Medical Physicist is granted under the Ministry of Health Technical Board of Health.


REQUIREMENTS:
Master of Medical Physics and two years of residency in the specialty (Radiotherapy , Diagnosis , Nuclear Medicine , Radiation Protection) .

Medical Physics is registered as Specialty Health Sector at the Ministry of Health.


Fis. Martin Acosta

Certification and Legislation

PERUVIAN INSTITUTE OF NUCLEAR ENERGY (IPEN)
TECHNICAL OFFICE OF THE NATIONAL AUTHORITY (OTAN)

 PERU

RADIOTHERAPY ((R.001.01))
Basic training : Professional in Physics or Engineering
Specialized training :
➤ Postgrado In Medical Physics at least two years ,
➤ Course Training in radiation protection 80 hours at least Teletherapy
➤ Practical experience of at least 2 years of work supervised by professionals licensed Adoption of the test applied by OTANI/IPEN

DIAGNOSTIC RADIOLOGY ((R.003.2013))
Professional graduate of a master's degree in Medical Physics Training or experience of not less than six (06 months) Adoption of the test applied by OTANI/IPEN

NUCLEAR MEDICINE ((R.003.2013))
Basic Training : Professional Specialized training : graduate master's or doctorate in Medical Physics .
Practical experience at least 1 year in medical physics tasks in nuclear medicine Adoption of the test applied by OTANI/IPEN

The Ministry of Health (MOH) is working on the process of official recognition of physical and medical health professional

Certification and Legislation

Summary : Individual professional certification

There is not standardized program for Training in Medical Physics in Latin America.
MP is not recognized as a health professional.
The presence of a MP is only mandatory in RT

-To obtain this certification , the candidate should meet the following requirements :
-Have a consistent academic training with any of the modalities
- Have attained the specific supervised clinical training in the area.

- 'In cases where the country does not have relevant professional bodies , IAEA and / or PAHO could select a group of experts to advise on the certification assessment of the candidate.

Technological Equipment

There is no plan (short and long term): The lack of a consistent plan, investments have been done in expensive and complex technologies, some times not in line with the facility routine and needs before an analysis of what is really necessary to improve the quality and level of health services to deliver to the public.

- There is no awareness of the importance of creating multi-disciplinary workgroups to plan equipment purchasing, and prioritize expenditures across the facility as a whole.
- Purchase of medical equipment: out of a plan, in most of cases does not have the participation of experts. Especially in the public sector, the purchase is carried out by the administrative staff without any input.

Proposals

- Gathering reliable information about the equipment.
- Planning your technology needs and allocating sufficient funds for them.
- Purchasing suitable models and installing them effectively.
- Providing sufficient resources for their use.
- Operating them effectively and safely.
- Maintaining and repairing the equipment.
- Decommissioning, disposing, and replacing unsafe and obsolete items.
- Ensuring staff have the right skills to get the best use out of your equipment.

THANK YOU!

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www.alfim.net