



# ABFM

Associação Brasileira  
de Física Médica



**BRAZIL:**

**Area:**

**8,514,876,599  
km<sup>2</sup>**

**Population:**

**188,181,069  
inhabitants**



**São Paulo**





São Paulo: Population - 11,016,672 inhabitants

# HOSPITAL DAS CLÍNICAS - USP





# BRAZILIAN FORMATION

## GRADUATION LEVEL:

- Graduation in Physics (20 Universities)
- Graduation in courses oriented to medical physics (7 Universities)

## POST-GRADUATION LEVEL

- Master Science, PHD (14 Universities)
- Specialization, Residence (8 Hospitals -13 places in radiotherapy – 1 in Nuclear Medicine – 3 in Radiology – 2 in Radiological Protection per year )

# OBJECTIVES OF THE RESIDENCE

- Learn the theory and its importance.
- Develop specific abilities.
- Learn to work respecting rules of professional behavior.
- Guarantee the comfort, the dignity and the benefit of patients.
- Learn to work as a team in good relationship with other professionals.

# ABFM

ASSOCIAÇÃO BRASILEIRA DE FÍSICA MÉDICA  
BRAZILIAN ASSOCIATION OF MEDICAL PHYSICS

was founded in 1969, it is a civil society of scientific and cultural feature that joins professional that work in the Physics applied to Medicine and correlated sciences.

# ABFM

## Objectives:

- Enhance the progress of Medical Physics and correlated sciences.
- Organize meetings, workshops, symposiums, congress, courses applied to Medical Physics.
- Represent Brazil in foreign countries regarding Medical Physics.
- Create liaisons with associations with same objectives.
- Promote publication of scientific papers.
- Certify professionals who work in Physics applied to Medicine.



# ABFM FILIATIONS

International Organization for Medical  
Physics (IOMP)

Latin American Medical Physics Association  
(ALFIM)

Brazilian Society for the Progress of Science  
(SBPC)

# ABFM

individual members: 426 (80%)

junior individual members: 90 (17%)

other members: 11 (3%)

**TOTAL : 527**



# MEDICAL PHYSICIST QUALIFICATION

The Brazilian Association of Medical Physics qualifies Medical Physicists in the following areas:

- Radiotherapy
- Radiology
- Nuclear Medicine

# QUALIFICATION REQUIREMENTS

- be graduated or have M.Sc. or PHD degree in physics,
- have done a training in the specific area during at least 3800 hours,
- be working in the area for at least two years,
- be approved in the certification exam at ABFM.



# ABFM SPECIALIST TITLE

This Specialist title begun to be provided in 1995.

Present situation:

Radiotherapy: 193 Specialists (73%)

Radiology: 45 Specialists (17%)

Nuclear Medicine: 25 Specialists (10%)

# LEGAL ASPECTS OF WORK

In Brazil there are three levels of law about the work in health services that use radiation:

- National Commission of Nuclear Energy (CNEN) - federal level
- Health Ministry – federal Level
- Health Secretary of State – state level

State requirements can be more restrictive than the Federal ones.



# REQUIREMENTS FOR A HEALTH SERVICE

In a health service that uses ionization radiation it's necessary to have:

- one legal responsible
- one technical responsible
- one Radiation Safety Officer

# RESPONSABILITIES

The legal responsible:

- is responsible for the Radiation Protection.

Normally is the director of the Institution.

# RESPONSABILITIES

The technical responsible:

- is responsible for the procedures which the patients are submitted and
- the Program of Quality Assurance.



# RESPONSABILITIES

## The Radiation Safety Officer

- is responsible for the execution of the Radiation Protection

This professional needs to have the certification of “Radiation Safety Officer” from CNEN, but he doesn’t need to be a physicist.

# RESPONSABILITIES

According on the technology, equipments and type and size of the service the requirements are different.

# RESPONSABILITIES

In a Radiotherapy service and in a Nuclear Medicine service with more than 200 procedure per month it is obligatory the presence of:

- a physician Specialist in the Area certified by the Brazilian College of Radiology,
- a physicist Specialist certified in Radiotherapy three hours of work for each new patient
- a physicist Radiation Safety Officer certified by CNEN.

In a Radiologic Service it isn't necessary the presence of a physicist it is only necessary a certified physician and that the program of quality assurance be realized.



# ACCREDITATION OF INSTITUTIONS

The ABFM is beginning the accreditation of the institutions that offer the education program to the physicist in radiotherapy with the objective of ensure that these residences have met a defined standard.

# ACCREDITATION OF INSTITUTIONS

The minimum requirements are:

- one linear accelerator with beams of photons and electrons
- high dose rate braquitherapy equipment
- a simulator or a computerized tomography
- a phantom for dosimetries in water until at least 20cm depth
- to have at least 300 new patients per year for each student
- three physicists with certification of Specialists working at least 20 hours/week and one certified physician for each two residents
- fulfill the program established by the accreditation.

# NUMBER OF SERVICES IN BRAZIL

Dental radiological equipments: 58.000

Diagnostic Radiological equipments: 18.000

Nuclear Medicine Services: 210

Radiotherapy Services: 202 (280 Al; 60 Co-60; 80 HDR)



# NOW-A-DAYS RADIO THERAPY

- New technologies (HDR, Computerized Planning Systems for Radiation Treatment, Stereotactic Radiosurgery and IMRT) began to be implemented in the 90's.
- IGRT Systems and Gating are being implemented in the last years.
- The Government program installed many new services in the last years.
- There are Public Cancer Hospitals that have projects with IAEA to support the improvement in technology.
- There is a great contrast in the technology available because in some services we have equipments with high technology and in many services there is only an old cobalt machine.
- There are several hospitals offering education program, with a total rate of 13 medical physicists per year.
- The Radiation Safety Officer must be a physicist.

# NOW-A-DAYS NUCLEAR MEDICINE

- There is a small number of certified physicist because the law doesn't claim and the law doesn't changed because there is a small number of physicists – vicious circle.
- The physician may be the Radiation Safety Officer .
- In reality the physicist is necessary because there many functions for him but not always he is the responsible.

# NOW-A-DAYS RADIOLOGY

- The Program of Quality Assurance and the radiometric survey are obligatory.
- Is very usual that a service contract an external company to do these tasks.
- There are a very little number of institutions that offers education program.
- The situation will improve when the presence of the physicist will be obligatory.



# REGULATION OF OUR PROFESSION

At the moment there is a project of regulation of the profession of physicist in the legislative chamber, federal senate.

# ABFM CONGRESS - 2009

We are inviting you to go to the Brazilian Annual Congress of Medical Physics that will be held October 8-12 in São Paulo

