Joint Council Symposium
Celebrating Recent Accomplishments of the AAPM

Education Council:
Promoting Medical Physics through the AAPM Public Education Committee Website

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UC San Diego
RETHINKING MEDICAL PHYSICS

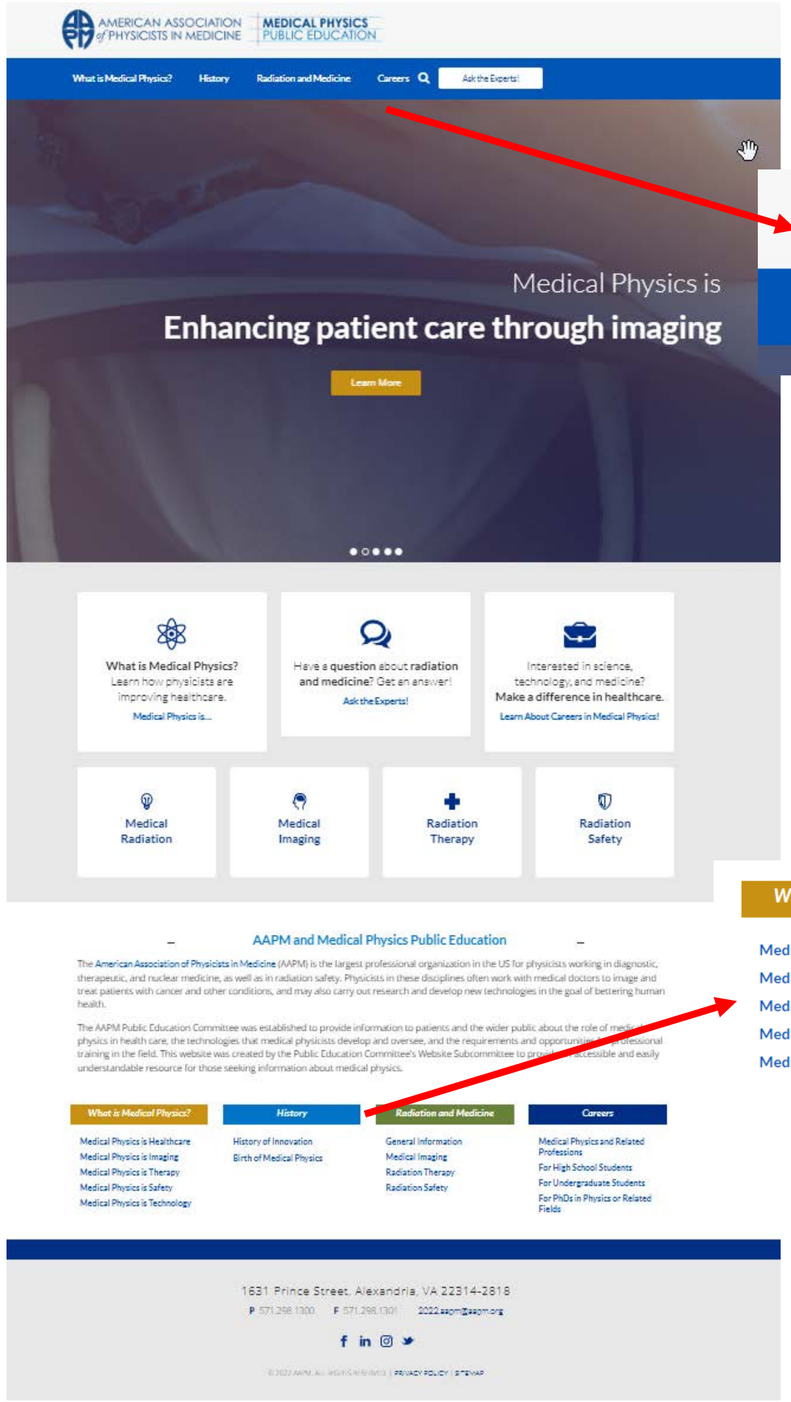
Disclosures

- Speaker & Consultant
  - Merit Medical
  - Varian Medical
- Board of Directors
  - UC Center for Laboratory Safety
- Funding
  - Department of Defense

Public Education Committee Website
www.medicalradiationinfo.org

- Go-live: March 21st, 2022 @ 12 Eastern
- Purpose: Provide a high quality website that is an accessible and easily understandable resource for those seeking information about medical physics.
- Media Format: Text, Picture and Video
- Funding: AAPM and American Institute of Physics (AIP) for Ask the Experts
- Collaborations: American Association of Physics Teachers (AAPT)

Main Page


AMERICAN ASSOCIATION of PHYSICISTS IN MEDICINE
MEDICAL PHYSICS PUBLIC EDUCATION
What is Medical Physics?
History
Radiation and Medicine
Careers
Ask the Experts!
Medical Physics is
Enhancing patient care through imaging
Learn More
What is Medical Physics?
Learn how physicists are improving healthcare.
Medical Physics is...
Have a question about radiation and medicine? Get an answer!
Ask the Experts!
Interested in science, technology, and medicine? Make a difference in healthcare.
Learn About Careers in Medical Physics!
Medical Radiation
Medical Imaging
Radiation Therapy
Radiation Safety
AAPM and Medical Physics Public Education
The American Association of Physicists in Medicine (AAPM) is the largest professional organization in the US for physicists working in diagnostic, therapeutic, and nuclear medicine, as well as in radiation safety. Physicists in these disciplines often work with medical doctors to image and treat patients with cancer and other conditions, and may also carry out research and develop new technologies in the goal of bettering human health.
The AAPM Public Education Committee was established to provide information to patients and the wider public about the role of medical physics in health care, the technologies that medical physicists develop and oversee, and the requirements and opportunities for professional training in the field. This website was created by the Public Education Committee's Website Subcommittee to provide accessible and easily understandable resource for those seeking information about medical physics.
What is Medical Physics?
Medical Physics is Healthcare
Medical Physics is Imaging
Medical Physics is Therapy
Medical Physics is Safety
Medical Physics is Technology
History
History of Innovation
Birth of Medical Physics
Radiation and Medicine
General Information
Medical Imaging
Radiation Therapy
Radiation Safety
Careers
Medical Physics and Related Professions
For High School Students
For Undergraduate Students
For PhDs in Physics or Related Fields
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PRIVACY POLICY | SITEMAP


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MEDICAL PHYSICS PUBLIC EDUCATION
What is Medical Physics?
History
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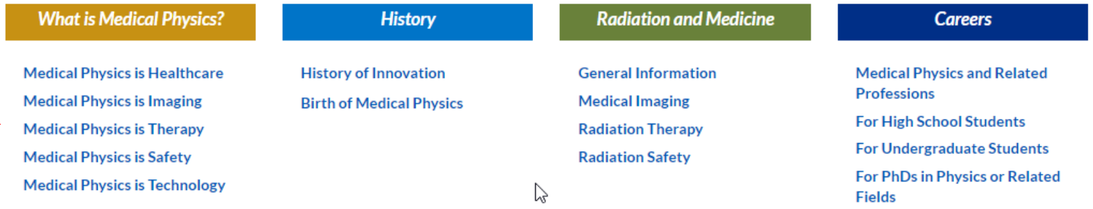
Ask the Experts!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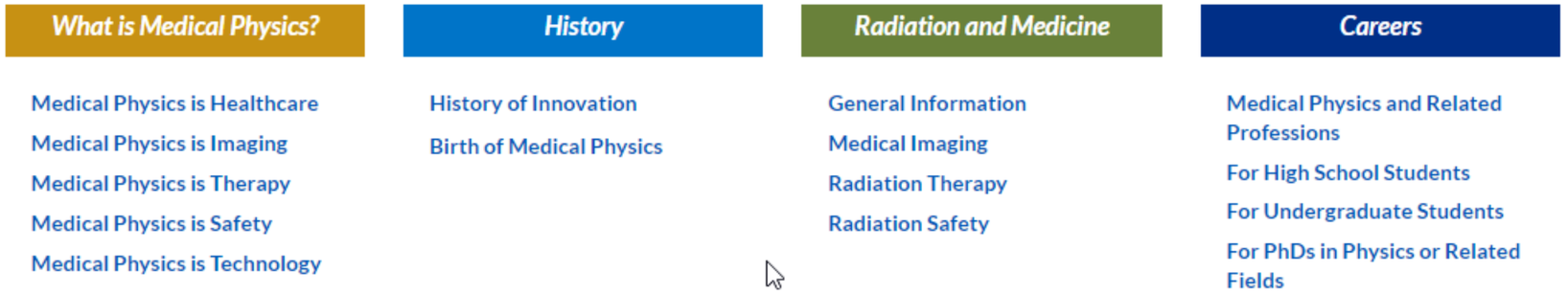
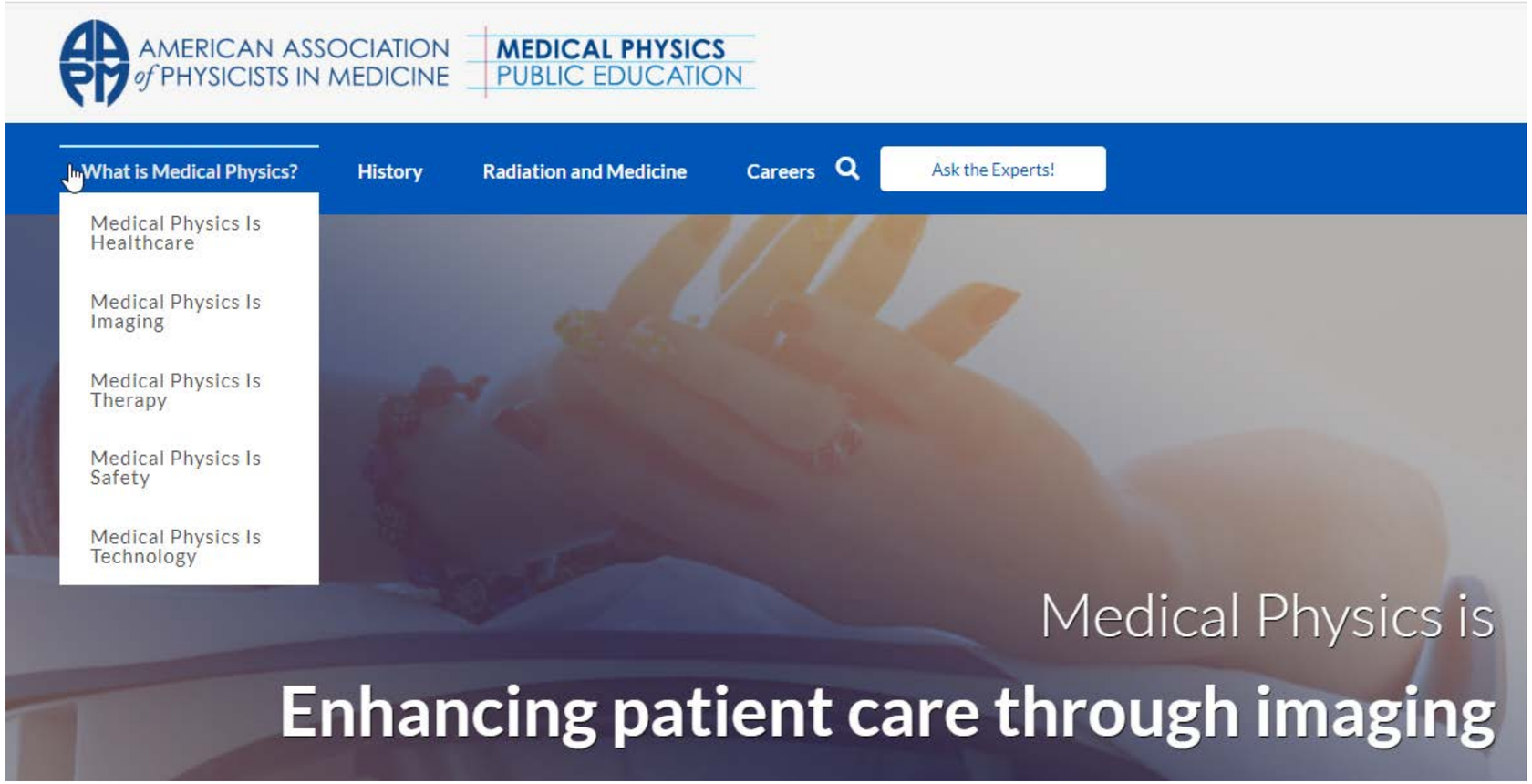
Sections

- What is Medical Physics?
- History
- Radiation and Medicine
- Careers
- Ask the Experts



What is Medical Physics?

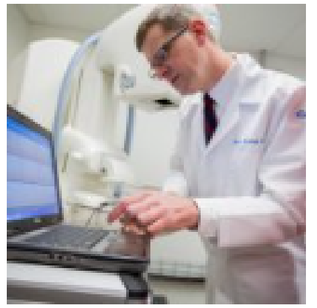
- Healthcare
- Imaging
- Therapy
- Safety
- Technology



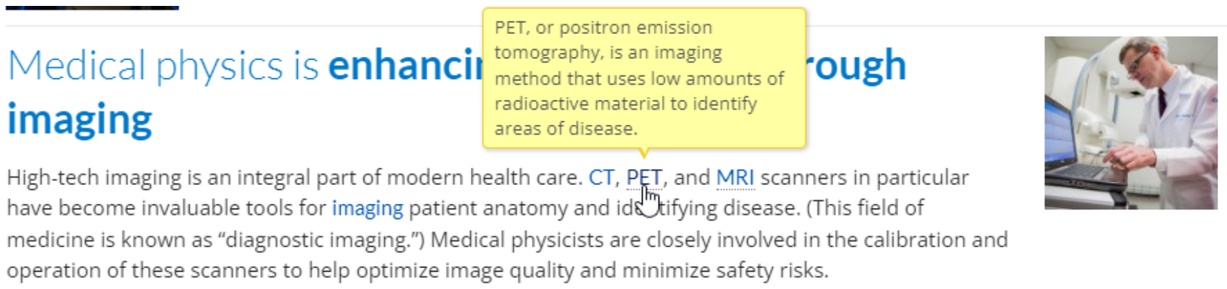
What is Medical Physics? (Example)

- Imaging

Medical physics is **enhancing patient care through imaging**

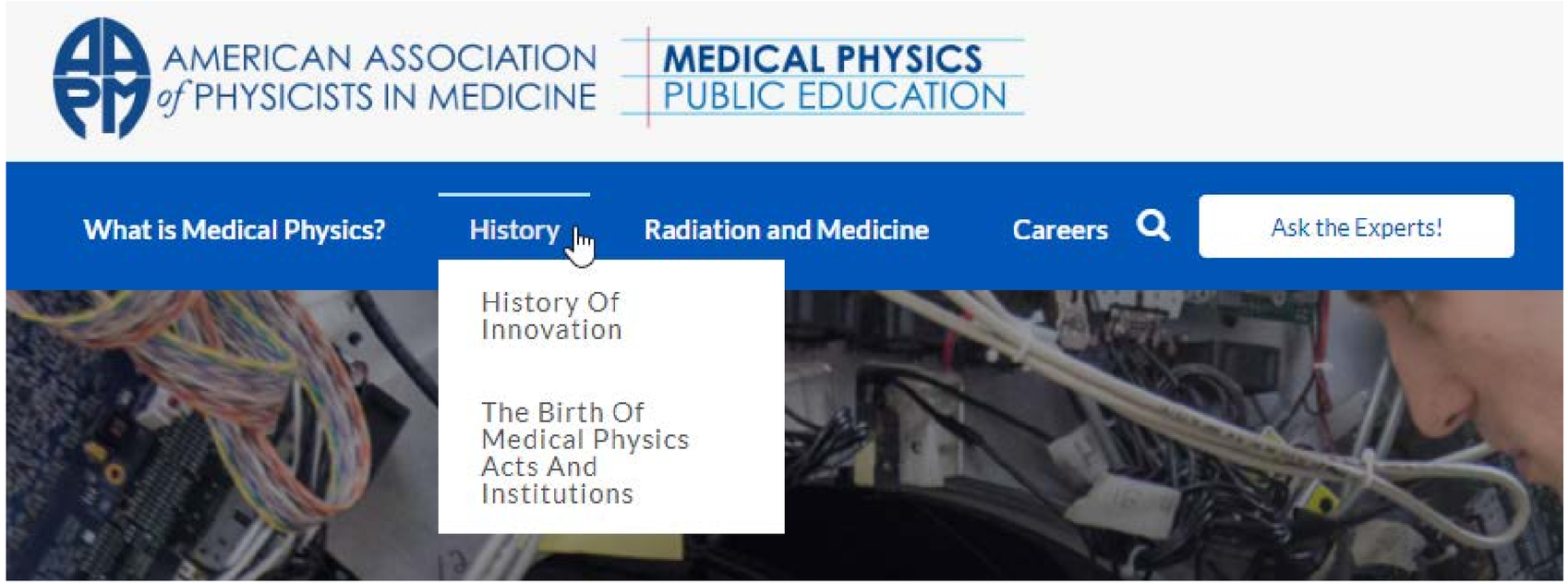


High-tech imaging is an integral part of modern health care. CT, PET, and MRI scanners in particular have become invaluable tools for imaging patient anatomy and identifying disease. (This field of medicine is known as "diagnostic imaging.") Medical physicists are closely involved in the calibration and operation of these scanners to help optimize image quality and minimize safety risks.



History

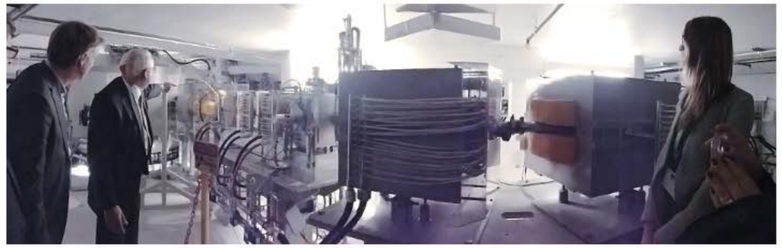
- History of Innovation
- The Birth of Medical Physics Acts and Institutions



History - Timelines

Home / History / Timeline: A History Of Innovation And Discovery

Timeline: A History Of Innovation And Discovery



A History of Innovation and Discovery

1800s -

1895

- Wilhem Conrad Roentgen produces and discovers x-rays.

1896

- Antoine Henri Becquerel discovers natural radioactivity.

1898

- Marie Skłodowska-Curie and Pierre Curie announce the discovery of radium, a radioactive element.

1900s -

1901

- The first Nobel Prize in Physics is awarded to Wilhelm Conrad Roentgen for discovering x-rays.

1903

- The Nobel Prize in Physics is awarded to Antoine Henri Becquerel for "his discovery of spontaneous radioactivity," and to Pierre Curie and Marie Skłodowska-Curie for "their joint researches on the radiation phenomena discovered by Professor Henri Becquerel."
- An afterloading technique for brachytherapy is proposed by Hermann Strebel.

1908

Radiation and Medicine

- General Information
- Medical Imaging
- Therapy
- Safety

Radiation and Medicine (Example)

- Radiation Therapy

Home / Radiation And Medicine / **Radiation Therapy**

Radiation Therapy

Radiation Therapy Treatment Options

- What is a medical linear accelerator (linac)?
- What is CyberKnife?
- What is Gamma Knife?
- What is brachytherapy?
- What is proton therapy?
- What is immunotherapy?

Additional Radiation Therapy Topics

- Are there any side effects to radiation therapy?
- How do medical physicists ensure the quality of radiation therapy?
- MR-Linacs

Home / Radiation And Medicine / Radiation Therapy / **What Is A Medical Linear Accelerator (Linac)?**

What Is A Medical Linear Accelerator (Linac)?

A medical linear accelerator, or *linac*, is a particular type of machine that produces high-energy x-ray or electron beams for use in radiation therapy. This method of treatment is commonly referred to as "external-beam radiation therapy" because the radiation beams are generated at a distance outside the patient's body.

Examples of different medical linear accelerators (linacs).

Image courtesy of Varian Medical Systems, Inc. All rights reserved.

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Home / Radiation And Medicine / Radiation Therapy / **What Is Brachytherapy?**

What Is Brachytherapy?

Brachytherapy refers to radiation treatments performed at short distances. (The prefix "brachy" comes from the Greek word for "short.") This typically involves placing small radioactive sources inside or next to the patient's body, usually to treat cancer. Brachytherapy sources are usually small pellets of radioactive material, though in some cases small electronic x-ray devices may be used.

What are the **advantages** of brachytherapy?

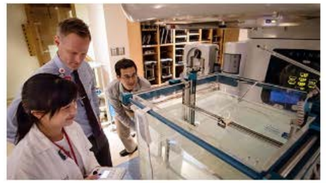
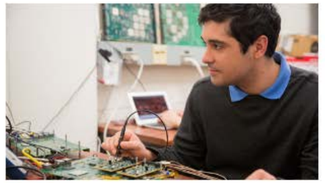
Careers

- Medical Physics and Related Professions
- High Schoolers
- Undergraduates
- Grads

Careers (Example)

Home / Careers

Careers


Interested in a Medical Physics Career?

Interested in healthcare, technology, and physics? Read on to learn how to become a medical physicist!

Careers in Medical Physics and Related Professions

Information for High School Students

Information for Undergraduate Students

Information for PhDs in Physics or Related Fields

References

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  The Society of Directors of Academic Medical Physics Programs (SDAMPP), 2016
- Academic Program Recommendations for Graduate Degrees in Medical Physics
  AAPM Report #197, 2009
- Essentials and Guidelines for Clinical Medical Physics Residency Training Programs
  AAPM Report #249, 2013
- The Essential Medical Physics Didactic Elements for Physicists Entering the Profession Through an Alternative Pathway
  AAPM Report #197S, 2011
- Alternative Clinical Medical Physics Training Pathways for Medical Physicists
  AAPM Report #133, 2008

Home / Careers / Information For High School Students

Information For High School Students

The purpose of a high school education is to prepare maturing teenagers for the transition into self-sufficient adults contributing to a vibrant society. High school cultivates the skills and academic talents necessary for young adults to become the next generation of business leaders, entrepreneurs, skilled laborers, teachers, doctors, engineers, health care professionals, and other workers needed to keep society thriving.

If you are currently in high school, you might be considering continuing your education at the university or technical college levels to acquire the skills needed to qualify for entry into intellectually stimulating and interesting occupations.

Home / Careers / Information For PhDs In Physics Or Related Fields

Information For PhDs In Physics Or Related Fields

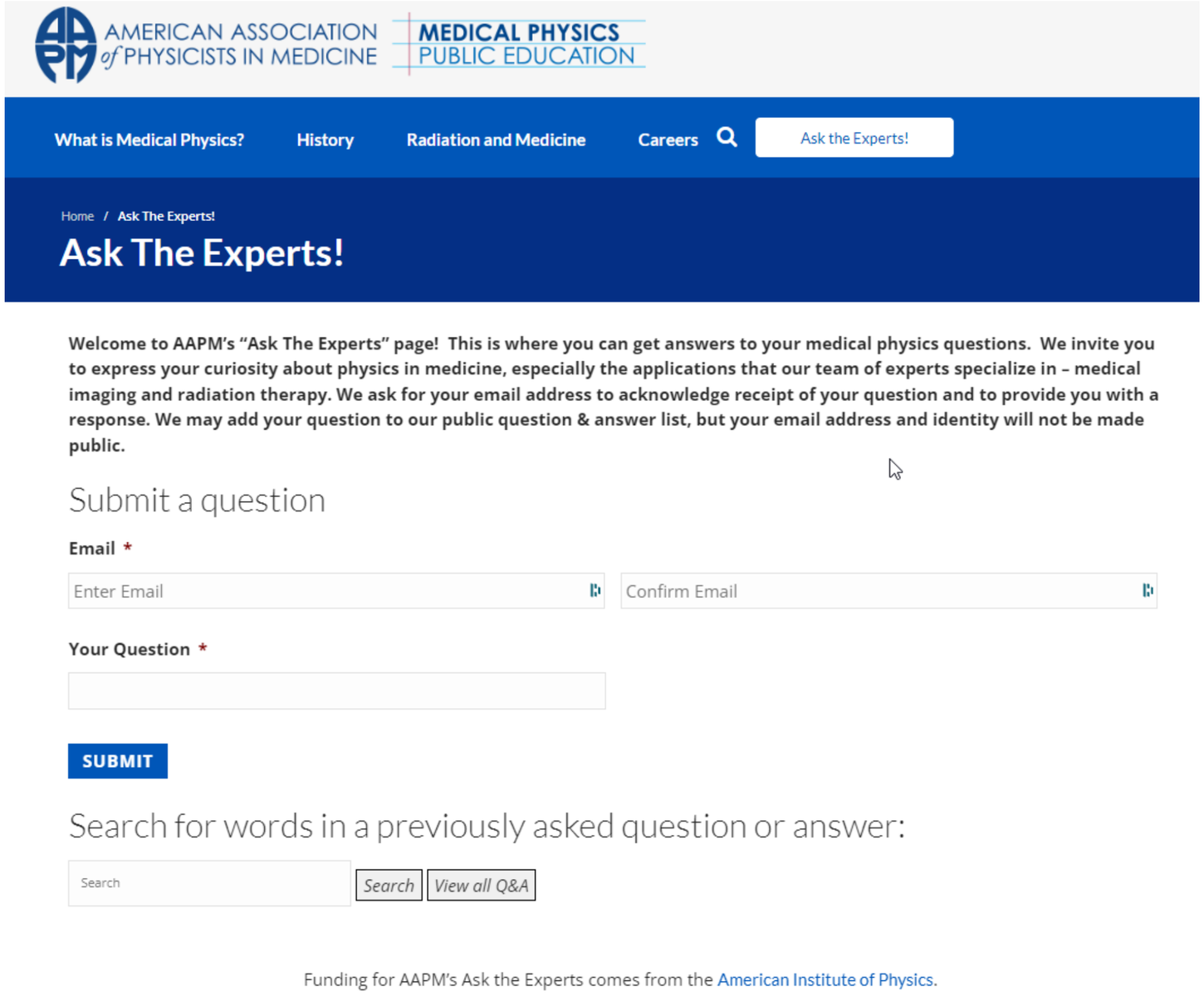
If you have a PhD in physics or a related field, you can pursue an alternative pathway to becoming a medical physicist.

To become a *clinical* medical physicist, you will need to fulfill the following requirements:

1. **CAMPEP-Accredited Medical Physics Certificate Program**
   Medical Physics certificate programs in North America are accredited by the Commission on Accreditation of Medical Physics Education Programs (CAMPEP), and provide medical physics didactic coursework required to enter a residency program.
2. **CAMPEP-Accredited Medical Physics Residency**
   Medical physics residency programs provide hands-on clinical training in diagnostic/nuclear medical physics or therapeutic medical physics. Residency training is required in order to be board eligible and work as a Qualified Medical Physicist (QMP) in the clinic.
3. **Board Certification**
   Clinical medical physicists typically seek board certification in their clinical specialty. Board certification is organized by entities such as the American Board of Radiology (ABR), the American Board of Medical Physics (ABMP), the Canadian College of Physicists in Medicine (CCPM), or the American Board of Science in Nuclear Medicine (ABSNM). A certificate showing that you've graduated from a CAMPEP-accredited residency program is required to take the board exam.

Ask the Experts (ATE)

- Easily submit questions
- Response ~ 1 week
- Pre-populated questions
- 7 questions submitted so far
- Technical
  - Why is Co-60 SSD 80cm?
  - How to measure FWHM in CT with Gafchromic film and Image J?
- Career
  - Why are gov MPs paid so much less than private sector MPs?
- 1 x Patient



Ask the Experts (ATE) (Examples)

Do patients need to cease breastfeeding after a chest x-ray exam? –

No, patients do not need to cease breastfeeding after a chest x-ray exam. The x-ray interactions with the body are complete as soon as the machine finishes taking the image. There is no lingering radiation inside of the body.

How should I interpret the sounds I hear during an MRI exam? –

While you are inside the scanner, the various clicking, buzzing and vibration noises that you hear are produced by magnetic field gradient coils that localize the information inside your body and produces images. It is important to keep still while you hear these noises throughout the exam, or else the images produced will be distorted or blurred. The technologist should advise you when it is ok to move or adjust your position, such as during the quiet period in between imaging sequences. While imaging is taking place, it is generally ok to make small movements using parts of your body not in the imaging field, such as toes or fingers during a head or body exam.

Am I radioactive when I go home after an EBRT or HDR procedure? –

No. You are not radioactive and pose no risk to those around you. The radiation you were treated with is a special kind of energy delivered to your disease in the form of small particles (electrons) or waves (gamma or x-ray radiation). When delivered, some of this energy passes through, reflects off, or is absorbed by your body. The portion of that energy that does not pass through or bounce off the body is absorbed and transfers its energy to tissues (which is how it kills cancer cells). None of this energy remains as a radiation source inside of the body.

This concept is distinct from the term "radioactive" which describes something that emits radiation as part of its physical nature. If you were treated via high dose-rate brachytherapy (HDR), you were treated with a form of the metal iridium which is radioactive. This source emitted radiation, which interacted with your body as described above, and then was retracted from your body. Since the radioactive source is no longer in your body, you are not radioactive and are no longer receiving the radiation. If you were treated with a linear accelerator, nothing radioactive ever entered your body.

I recently had a brain aneurysm treated, the first treatment included stents and coils and had around 2140 mgy of radiation. Recently, about 6 months later I had an angiogram and they saw coil compaction and added more coils, with the second treatment having around 2100 mgy. My question is, from these did I increase my cancer risk significantly? +

I am Colombian medical physicist (10 experience years in radiation therapy) and I would like to work as medical physicist in United States, its possible take a residencia and next present the three parts of ABR?, what I have to do? Thanks. +

Thank you

- AAPM HQ and staff
- Education Council
- Public Education Committee & PE Subcommittees
- George Sandison and many others