
Medical students need an understanding of physics

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Accompanying five Lancet articles on the important relationship between medicine and physics, Professor Sir Peter Knight, President of the Institute of Physics, urges medical schools to consider making qualifications in physics a prerequisite to entry.



Marie and Pierre Curie

Professor Knight said: "Physics has transformed medicine and, as this transformation is surely set to continue and accelerate, medical schools should consider restoring the requirement for applicants to hold A level or equivalent qualifications in physics."

The journal articles, to be published in The Lancet on Wednesday, 18 April, reflect on the historical relationship between the two fields; describe the contemporary physics-based methods used for diagnosis and treatment; as well as looking to the two fields' relationship in the future.

While physics already underpins many techniques used to diagnose illness (think X-rays, clinical PET scanning, MRI....) and to treat illnesses (radiotherapy, minimal-access surgery, scaling theory...), the future of medicine looks to be even more tied up in physics.

As genetic and molecular data is used to better target the delivery of healthcare, it is techniques being developed in, for example, nanomedicine to diagnose and treat illnesses via the manipulation of individual molecules that offer great promise.

The complexities of personalised medicine suggest that medicine is likely to become an information science, where a vast amount of complex data are analysed by techniques such as machine learning to discover patterns and principles; this is the physicist's forte.

Professor Knight argues that "for medical practitioners to make full use of modern physics-based technologies for diagnosis and treatment, it would be hugely beneficial to have a sound understanding of the physics involved.

"Basic physics was once a compulsory element in undergraduate medical education in the UK, with exemption for students with an A level pass in physics. This requirement was dropped in the 1980s.... I would ask UK medical schools to consider restoring the requirement for applicants."

Professor Knight also urges the UK Government to remember the symbiotic relationship between fundamental physics research and advances in modern technology and recognise that continued support for fundamental research will continue to deliver medical advances in years to come.