



# EMBRACING THE FUTURE:

Community and  
Technology in Imaging  
and Radiotherapy

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The British Institute of Radiology (BIR) is an international membership organisation for everyone working in imaging, radiation oncology and the underlying sciences.

We aim to support the work of our members and their colleagues to achieve professional excellence, provide continuing professional development for our multidisciplinary community, publish cutting edge research for our authors and readers across the world and influence and connect with the wider professional sector.



The **BIR World Partner Network** is a community of international societies with the shared goal of advancing the knowledge and understanding of all its individual members. The ultimate aim is to improve the scope and value of imaging and radiation oncology for patients across the world.

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# Welcome

To our latest publication representing the views of a worldwide network of imaging and oncology societies.

In **Embracing the future: Community and technology in imaging and radiotherapy** we reflect on how new technology in imaging and radiation oncology has advanced hugely in recent years. We have smarter, smaller, more efficient machines and the evolution of artificial intelligence continues at a rapid pace, all contributing to exciting developments in radiology and radiotherapy.

We asked our sister organisations around the world how they are approaching three challenges: how to better communicate with patients, how to attract new and diverse talent to the profession, and how we can all best use evolving technology to meet the growing demands for imaging and radiotherapy. The answers show an almost universal interest in the challenges and opportunities posed by artificial intelligence, and we were inspired by innovative ideas such as the use of manga to raise the profile of radiology in Japan.

We are honoured to have received such diverse responses from our colleagues. We hope you enjoy reading this latest publication in the series, and look forward to hearing your feedback.

*Sara Purdy*

**Sara Purdy**

*Chief Executive, British Institute of Radiology*



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## Professor Ehsan Samei

*President of American Association of Physicists in Medicine, Reed and Martha Rice Distinguished Professor and Chief Imaging Physicist, Duke University, Durham, NC, USA*

### American Association of Physicists in Medicine (AAPM)

AAPM is the national society for medical physics in the United States, representing nearly 10,000 medical physicists and associated professionals. The mission of the AAPM is to advance human health through the application of physical sciences to medicine, including scholarship, professional practice, and education.

### How can we, in the professional imaging community, better communicate with the general public, to ensure patients and their carers have all the information they need about imaging or treatment?

Communication is more than providing information. There was an age when our understanding and insights were limited by the availability of information – we did not know because we did not have the information. That age is passed. Thanks to advances in information technology, we all now are perpetually exposed to an ever-expanding flow of information. The challenge before us now is sorting through this information, to prioritise and to differentiate between what is relevant and what is irrelevant or even misleading. Communication thus becomes a central preoccupation for us all. To be effectual in what we do – enabling and informing excellence in medicine – we need to take on the responsibility of not only providing reliable information about imaging and therapy, but also making sure such information is communicated – to go to the root of word, “made common, imparted, taken on.” This requires us to accept the reality that the information-limited age of society is passed, and to be smarter in the way our insights are curated, cast, and extended to the medical community at large and to patients. That is the only way that we can ensure our intelligence and diligence will have the proper effect.

### In what ways can we best use evolving technology to meet the growing demands for imaging and radiotherapy?

We need to recognise and advocate for two major directions in advancing our contribution to medicine. The first is innovation: what has brought us this far will continue to take us to the next phases of the journey. That includes both hardware advancement (new ways to extract and impart “signal”, to see and treat) and software (new ways to use and appropriate “signal” for care, including AI). The second is implementation science: innovation is only impactful to the extent that it is used proficiently in the clinic. New technologies often have a tumultuous path before they are deployed optimally. Researchers often think their developmental work is done, vendors think they have already provided their technology, and clinicians are too busy to delve into the details to figure things out. As such, our brilliant innovations are often shortchanged and not optimised to give us their best. We need to find a way to concurrently advance both of these priorities.

*“As the guardians and appropriators of radiation in medicine, we can and should tap into these exciting facets of our vocation”*



## Professor Gary Whitman

*President of The American Roentgen Ray Society, Professor of Breast Imaging and Radiation Oncology Medical Director, Mobile Mammography Program*

*The University of Texas, USA*

### **The American Roentgen Ray Society (ARRS)**

The American Roentgen Ray Society (ARRS), founded in 1900, is the first and oldest radiology society in the United States. The mission of the Society is to improve health through a community committed to advancing knowledge and skills in radiology. Learn more about membership, meetings, and educational offerings at [www.arrs.org](http://www.arrs.org).

### **How can we, in the professional imaging community, better communicate with the general public, to ensure patients and their carers have all the information they need about imaging or treatment?**

As members of the professional imaging community, we can better communicate with the general public through conventional media, social media, and advertising to ensure that patients and their caregivers have all the information that they need regarding imaging and/or treatment. The communication efforts should involve articles and advertisements in newspapers, magazines, and social media as well as television and radio advertisements. The method of communication may depend on the demographics and the preferences of the targeted population, as younger people are probably more likely to use social media and older people are probably more likely to look at conventional print media.

This multifaceted approach should be practical – with the message that imaging plays a major role in diagnosing and treating a host of conditions in all age groups in addition to imaging's role in screening and monitoring response to therapy. It should be emphasised that radiologists, experts in imaging, use imaging to make diagnoses and find answers, obviating the need for “exploratory” surgery. The major role of imaging-guided biopsies and interventional procedures should be emphasised.

### **In what ways can we best use evolving technology to meet the growing demands for imaging and radiotherapy?**

Evolving technology offers opportunities to meet growing demands for imaging and radiotherapy with the development of more accurate, cost-effective imaging technologies and the development of artificial intelligence techniques so that we can match the perceived medical problem with the appropriate imaging examination. In order to meet growing demands, we need to continue to focus on the development and utilisation of fast, accurate imaging approaches that are patient-centric with as little radiation exposure as possible. Artificial intelligence offers opportunities as an up-front triage mechanism as well as a second reader, similar to a spell checker. In addition, artificial intelligence can provide value in terms of scheduling and resource utilisation.

*“It is important to emphasise the central role of imaging and radiation oncology in modern medicine”*



# Professor Dr Alejandro Tempra

President of the Argentinian Federation of Radiology,  
Founder and Director of CT and MRI in "Imagen Diagnóstica"  
Mendoza, Argentina



## Argentinian Federation of Radiology (FAARDIT)

The Federation that represents radiologists of Argentina. Our goal is the educational excellence in Argentina, creating opportunities across the country from South to North.

### How can we, in the professional imaging community, better communicate with the general public, to ensure patients and their carers have all the information they need about imaging or treatment?

In order to communicate better with patients and all of the community, we should campaign from the institutions, hospitals and private practice about the process of every examination or procedure. We should explain to the patient with a short tutorial, the process of their examination or procedure from the beginning to the end. This provides them with the ability to fully understand the process prior to their visit to the clinic. In conclusion, I think that communication with patients has to be further developed; we should tell them who we are and what we do, be personable, ask them their name, etc. I think this would improve the relationship between medical staff and patients.

### What can we do to make the imaging and radiation oncology professions attractive to new recruits, including people from a wide range of backgrounds?

I think that the best way to make our profession interesting to future professionals is to provide them with information that highlights the huge benefit that imaging can have for all patients, helping in early diagnosis and monitoring during oncology treatment. The staff we need in diagnostic imaging is not only the radiologist. In our team, we have nurses, technicians, social workers and a nutritionist. We should communicate this in order to give all these different professional groups the opportunity to join our field.

*"AI is a tool that is here to stay, and it will give us the opportunity to have great results in less time"*

### In what ways can we best use evolving technology to meet the growing demands for imaging and radiotherapy?

The growing demand of imaging will be helped by new technologies and artificial intelligence (AI). I think that AI is a tool that is here to stay, and it will give us the opportunity to have great results in less time, as well as provide better and more precise diagnostics.

I think that new technologies will give us the opportunity to help all patients in the future.

I think that we should incorporate new technologies throughout the entire pathway, not only in making the diagnosis, but also from the moment that the patient comes to the clinic, the registration of their information, the communication and delivery of the diagnosis. If we use the tools that technology provides, we can improve the lives of both staff and patients.



## Dr Eduardo Eyheremendy

*President of the Argentine Society of Radiology,  
Dr Eduardo Eyheremendy, EBIR -FSIR, Chief  
Diagnostic Imaging, Hospital Aleman  
Ciudad de Buenos Aires, Argentina*

### Argentine Society of Radiology (SAR)

The Argentine Society of Radiology (SAR) is 105 years old and has around 3,000 members. Our purpose is to provide education in radiology to ensure best practice for our patients.

**How can we, in the professional imaging community, better communicate with the general public, to ensure patients and their carers have all the information they need about imaging or treatment?**

Today, through social networks and their environment, we can get much closer to the public than previously. These communication channels allow us to show in a pleasant and relaxed way what the role of the medical specialist in imaging diagnosis is, what the examinations we carry out consist of, when and why they are requested, what the risks are, and the care that is taken to carry out examinations. This way of communicating is extremely effective both for colleagues from other specialties and for the public.

We have open channels of communication through the Argentine Society of Radiology secretary where we collaborate via consultations from professionals and the public in everything related to when, how and where diagnostic imaging practices can or should be performed.

In our postgraduate course, teachers emphasise this aspect of the specialty, giving residents guidelines on how to care for the patient and the importance of achieving trust.

**What can we do to make the imaging and radiation oncology professions attractive to new recruits, including people from a wide range of backgrounds?**

The main way to generate interest in these areas is through teaching; educators must have the ability to know how to transmit passion for their work and their profession. Activities should be carried out where the new professional can be included, so that they feel that they can collaborate and participate. This is one of the main pillars to make this specialty attractive.

**In what ways can we best use evolving technology to meet the growing demands for imaging and radiotherapy?**

The good use of technology favours our specialty, as long as its use follows the necessary quality standards. These tools (such as the use of artificial intelligence) allow us to carry out our activities more easily, making good use of our time, optimising work and human resources.

*The main way to generate interest in these areas is through teaching; educators must have the ability to know how to transmit passion for their work and their profession*

# Professor Stephen Keevil

*President of the British Institute of Radiology, Head of Medical Physics, Guy's and St Thomas' NHS Foundation Trust, London, UK*



## British Institute of Radiology (BIR)

The BIR is the international membership organisation for everyone working in imaging, radiation oncology and the underlying sciences. We aim to support the work of our members and their colleagues to achieve professional excellence, provide continuing professional development, publish cutting edge research and influence and connect with the wider professional sector.

### How can we, in the professional imaging community, better communicate with the general public, to ensure patients and their carers have all the information they need about imaging or treatment?

As a community, we have not done a good job in terms of communicating with the public about the role that imaging plays in medicine. It is commonly assumed that imaging is simply a diagnostic test, when in fact it plays a crucial part not only in diagnosis but also in planning and monitoring the effectiveness of treatment and sometimes in guiding the delivery of therapy too. The roles of the various professions involved in imaging are even less well understood. I believe that a multidisciplinary organisation like the BIR is ideally placed to help address this, for example by producing educational materials that explain the importance of imaging in modern medicine and how all the different parts of the workforce contribute. These materials could take many forms (printed material, videos etc.), and I think it is important that they are made available to the public at large, not just to patients who are already attending the hospital for imaging investigations. I have sometimes wondered whether there is scope for a really high-quality popular science television series about imaging: it is a very visual topic after all, and there are some amazing stories to tell!

### In what ways can we best use evolving technology to meet the growing demands for imaging and radiotherapy?

Healthcare is a victim of its own success. In the past, consumption of healthcare peaked dramatically in the final stages of life; in future high consumption will be sustained perhaps over decades with people experiencing multimorbidity and posing ever more complex challenges. This affects imaging just as much as other parts of the system. Artificial intelligence is often touted as the panacea: it certainly has a role to play as long as we realise that it will change how imaging professionals work, not mean that we need fewer imaging professionals! We certainly need far more imaging devices than we currently have in the UK, and this will probably mean a move to devices that are tailored to high-throughput imaging rather than featuring all of the latest techniques. Development of 'appropriate' technology is becoming a field of research and development in its own right, with a role even in advanced economies.

*“Development of ‘appropriate’ technology is becoming a field of research and development in its own right”*

### What can we do to make the imaging and radiation oncology professions attractive to new recruits, including people from a wide range of backgrounds?

This leads on very nicely from Question 1: If people do not fully appreciate the role of medical imaging, they are hardly likely to know about the range of fulfilling career options in the field. I have previously been involved in work with schools to increase awareness of career opportunities in medical physics. Importantly, these are not limited to very academic roles requiring education at postgraduate level: apprenticeship schemes are now being developed that allow school leavers to train on the job, while receiving a salary, and potentially to work their way up to degree level and beyond without the costs of university education that are a deterrent to many. Radiography apprenticeships have been available for a few years now, offering a more accessible route into that profession. But none of this will be effective unless we can make potential recruits more aware of the exciting careers that are available in a field that underpins so much of modern medicine.



## Rubens Chojniak MD, PhD

*President of the Brazilian College of Radiology and Imaging Diagnosis, Head of the Imaging Department at A.C. Camargo Cancer Center – São Paulo, Brazil*

### **Brazilian College of Radiology and Imaging Diagnosis (CBR)**

The Brazilian College of Radiology and Imaging Diagnosis (CBR) is a national entity that officially represents the specialty in Brazil by bringing together physicians specialised in radiology and imaging diagnosis. CBR promotes national representation, education, guidelines, board certification and quality programs in our field.

### **How can we, in the professional imaging community, better communicate with the general public, to ensure patients and their carers have all the information they need about imaging or treatment?**

There are different barriers for communication with patients, caregivers and with the general public. For caregivers, lectures, online education, guidelines, decision support systems, consultations and multidisciplinary meetings have proven to be useful in assisting the understanding and proper use of imaging techniques. For the general public, the challenges are greater, especially in the Brazilian context, a country of continental dimensions with wide cultural, socioeconomic, structural and healthcare access diversity.

In any context, the patient's visit to health facilities is a fundamental opportunity. All professionals involved in the service must be prepared and available for the listening, guidance, and efficient education of patients about diagnostic and therapeutic procedures, respecting their diversity and vulnerabilities. Facilitating access to information for the public is also important. The creation of specific explanatory materials, different access channels and guidance campaigns on the need for people's involvement in the decisions taken in their care may also contribute. Whichever approach is chosen to better communicate, it involves raising awareness and educating the radiological community to value and make itself available to incorporate this mission. Specialty societies can help by introducing this discussion in their guidelines, scientific agenda, and training curriculum at all levels of education.

### **In what ways can we best use evolving technology to meet the growing demands for imaging and radiotherapy?**

Recent technological developments already increased efficiency of health services through telemedicine, portable equipment, remote operation and image interpretation. Artificial intelligence solutions optimise service workflow, equipment and professional efficiency, enhancing the capacity of installed services, and is evolving. But the impact assessment, selection and incorporation of these technologies in different health systems has become a challenge. Cost-effectiveness studies are still scarce, could facilitate these tasks and should be encouraged and led by our community. Another challenge is the integration of the various technologies with different purposes and platforms turning some centers into a patchwork. We also need to call for solutions to facilitate the adoption and replacement of all these tools. And still, in low- and middle-income countries, we need to help to establish national policies of investment, provision and management of imaging and treatment technologies in different levels of care and regions to optimise the scarce structural and human resources and diminish access disparities.

### **What can we do to make the imaging and radiation oncology professions attractive to new recruits, including people from a wide range of backgrounds?**

Few students in medical and other health disciplines have enough exposure to understand the scope of imaging and radiation oncology professions and it will therefore be difficult for them to pursue these careers. Specialty societies should implement initiatives to increase students' exposure to the various possible fields of practice, their importance, the advances achieved and the entire scope beyond the use of technology. We should promote the intervention procedures carried in these fields, the necessary clinical skills, the consultant role, and the opportunities for interaction with other specialties and patients.

We can engage students and professors by structuring and supporting interest groups, offering free membership and access to events and scientific contents, organising dedicated scientific and case discussion sessions, teaching materials and curricula, and by utilising social media to communicate effectively with this generation.

An important aspect is the demystification of the role that artificial intelligence can play in the foreseeable future. Demonstrate in a realistic way that these techniques are used to enhance and not replace our professions and that they constitute an additional opportunity for those who are enthusiastic in research and data science.

## Mr Irving Gold

*President of the Canadian Association of Medical Radiation Technologists, Chief Executive Officer, Canadian Association of Medical Radiation Technologists (CAMRT)*



### Canadian Association of Medical Radiation Technologists (CAMRT)

The CAMRT is the national professional association and certifying body for radiological, nuclear medicine and magnetic resonance imaging technologists and radiation therapists in Canada. Established in 1942, the CAMRT today represents over 12,000 members.

#### How can we, in the professional imaging community, better communicate with the general public, to ensure patients and their carers have all the information they need about imaging or treatment?

The Canadian Association of Medical Radiation Technologists (CAMRT) believes that building trust and consistency in messaging are the keys to better communicating with patients, carers and the general public. We believe this starts with a proper introduction, where the medical radiation technologist (MRT) introduces themselves, their profession and explains the procedure or treatment they are going to perform. The MRT is also responsible for answering any question that the patient or carers may have regarding the procedure and ensures those questions have been addressed in an appropriate manner. This assists the MRT in obtaining informed consent and educates the patient and carer as to what is going to happen before, during and after the procedure or treatment. A person-centered approach allows the MRT to tailor the messaging to the patient and carers they are serving. CAMRT has best practice guidelines on how to perform all the tasks discussed above. These can be found on our website at [www.camrt.ca](http://www.camrt.ca).

#### What can we do to make the imaging and radiation oncology professions attractive to new recruits, including people from a wide range of backgrounds?

Attracting new recruits to the imaging and radiation therapy professions is a consistent challenge. As the national voice for the MRT profession, the CAMRT is constantly trying to advocate for and highlight the contributions imaging technologists and radiation therapists provide within the healthcare system. CAMRT assists our members who participate in job fairs aimed at youth, to promote our profession as front-line healthcare and feature the technologies we use to serve our patient populations. These job fairs are often held in small and rural communities as well as in larger intercity centers to attract as many diverse individuals as possible into our professions. In 2022, the CAMRT also advertised in the magazine *Canadian School Counsellors* to potentially get more exposure to high school aged students looking for a future career.

#### In what ways can we best use evolving technology to meet the growing demands for imaging and radiotherapy?

Technological advancements, particularly advancement in artificial intelligence (AI), will be front and center in addressing the demand for imaging and radiotherapy services. In imaging, AI technologies will assist in decision support software for ordering clinicians and will allow medical imaging departments to optimise scheduling. AI technologies will also allow increase signal to noise ratios in imaging modalities such as MRI to reduce scan times and improve image quality. In radiation therapy there will be significant advancements in treatment planning, targeting of tumours and adaptive radiation therapy treatments. To harness the greatest benefits of these technologies, MRTs will have to work closely with our partners in industry, radiologists, oncologists, and medical physics to ensure they are optimised for the benefit of our respective facilities and the patients we serve.

*“Technological advancements, particularly advancement in artificial intelligence (AI), will be front and center in addressing the demand for imaging and radiotherapy services”*



## Professor Zhengyu Jin

*President of the Chinese Society of Radiology (CSR)*

*Peking Union Medical College Hospital, Beijing, P.R. China*

### Chinese Society of Radiology (CSR)

The largest radiology society in China, CSR is a non-profit national community dedicated to radiology research and clinical treatment, founded in 1937 in Shanghai. As a subordinate of the Chinese Medical Association (CMA), CSR set its purpose for uniting all radiologists as well as radiologic technologists nationwide, and actively promotes the development of Chinese radiology.

### How can we, in the professional imaging community, better communicate with the general public, to ensure patients and their carers have all the information they need about imaging or treatment?

Before an imaging examination, the patient may be unclear about the examination process and the value of diagnosis and treatment. Adequate education and communication with patients is of great significance for better medical treatment and improved compliance. Communication can be carried out through multiple channels, such as traditional media for example radio, television, and self-media, and medical institutions can play pre-recorded videos or examination precautions in the waiting area. In order to achieve better communication and medical standards, medical professionals can lead or cooperate with experienced media personnel to produce popular science works to improve the professionalism and popularity of popular science works.

### In what ways can we best use evolving technology to meet the growing demands for imaging and radiotherapy?

Medical imaging is currently one of the hottest applications of artificial intelligence in the medical field. At present, there are many problems in the field of medical imaging in China: the supply is unbalanced, the number of radiologists is insufficient, especially those with rich clinical experience, there is a shortage of high-quality doctors, and the number of reports is very large.

With the continuous development of medicine and the increasing number of examination foci, the division of related specialties is more detailed, and clinicians need to master richer disease knowledge and treatment methods in the face of complex multidisciplinary and multi-field conditions, so as to understand the essence of the disease. At the same time, the supply of medical resources in China is unbalanced, and some grassroots health institutions have insufficient resources, experience and diagnosis and treatment capabilities, while the supporting hardware facilities are relatively complete.

Combined with artificial intelligence technology, personalised treatment plans can be achieved. The treatment process includes assessing disease risk and formulating personalised diagnosis and treatment plans which requires a lot of computing resources and deep mining of data. Artificial intelligence based on powerful computing power can quickly complete the analysis of massive large quantities of data, mine and update the potential connection between mutation sites and diseases, strengthen our ability to interpret genes, and then provide faster and more accurate disease prediction. It can analyse results, help generate personalised treatment plans, and facilitate patients to heal better and faster.

The multi-disciplinary treatment (MDT) model is a treatment model in which multidisciplinary experts discuss cases of a certain disease or a system of diseases around a certain MDT model. This allows the team to formulate the best treatment plan for patients on the basis of comprehensive opinions of various disciplines.

### What can we do to make the imaging and radiation oncology professions attractive to new recruits, including people from a wide range of backgrounds?

The addition of new talent is essential for the sustainable development an organisation. A cohesive department culture with proactive employees, high levels of encouragement and a refined management system are very attractive to newcomers.

In addition, an organisation can guide the progress of newcomers by setting excellent examples, and having an education and teaching system with one-on-one mentoring, regular communication and exchange meetings, evaluation promotion meetings, timely and effective support, etc. can help to ensure the department attracts new applicants.

# Professor Dr Jörg Barkhausen

*President of the German Roentgen Society, Director of the Department of Radiology and Nuclear Medicine at the University Hospital Schleswig-Holstein, Campus Lübeck*



## German Roentgen Society

The German Roentgen Society, Society for Medical Radiology e.V., was founded in Berlin in 1905 and is a very traditional and important medical society in Germany. It is dedicated to promoting radiology in all its areas, including basic scientific research, and is the organiser of the annual “German Roentgen Congress”.

### How can we, in the professional imaging community, better communicate with the general public, to ensure patients and their carers have all the information they need about imaging or treatment?

Although radiologists are central and prominent in patient care, their important role is not always perceived by the public. Therefore, information and education are of particular importance. First and foremost, radiologists should communicate imaging and treatment information relevant to patients in their daily practice through personal contact with their patients. Additionally, information campaigns and other communication activities, such as events for and with patients, can be used to raise awareness of the importance of radiology in patient care. This should also include patient organisations and self-help groups, which are important and competent contacts on the one hand and can achieve a great outreach effect through their networks on the other.

Another aspect is that radiologists should work to improve patient care by raising awareness of guidelines and making them a living reality in healthcare. Examples include non-invasive imaging methods for diagnosing coronary heart disease, such as CT coronary angiography and stress MRI, which are now anchored in all national and international guidelines as the imaging methods of first choice. We have not yet achieved all of our goals, but German radiology is working hard to make these new radiological methods available nationwide.

### In what ways can we best use evolving technology to meet the growing demands for imaging and radiotherapy?

When it comes to digitisation, radiologists have a big lead over many other subjects, as they started it much earlier than most other subjects. However, the potential of digitisation is far from exhausted in radiology.

In general, digital technologies provide the means to convert the growing amounts of data into valuable insights, and to support the role of the radiological experts in providing a correct diagnosis to their patients in a timely manner. At the same time, artificial intelligence can reduce the workload of radiologists and support them, for example, with time-consuming tasks that do not relate to reporting. This gives them the opportunity to focus on more complex cases where their full expertise is required. And of course provides them with more time for their patients too.

### What can we do to make the imaging and radiation oncology professions attractive to new recruits, including people from a wide range of backgrounds?

Radiology is a subject that has always been characterised by variety. This does not only mean a variety of methods and clinical applications, which undoubtedly characterise radiology as a cross-sectional subject. But variety is much more and this can be better described by the term “diversity”. Diversity should be anchored even more firmly in radiology and the openness of the subject should be clearly communicated to the outside world. Because radiology is open to (prospective) specialists with different backgrounds and is therefore an attractive professional field.

Radiology is also part of an attractive professional environment, i.e. a system of “welcoming” people who work in radiological fields. A welcoming culture, in turn, is associated with a good leadership culture. Employers and managers in general should look after new employees with great care. The combination of openness to diversity, welcoming culture and good leadership radiates outwards and shapes the image of a professional field.

*“German radiology is working hard to make these new radiological methods available nationwide”*



## Dr Stephen Chun-Key Law

*President of the Hong Kong College of Radiologists, Honorary Consultant in Clinical Oncology, Hong Kong Sanatorium & Hospital. Honorary Clinical Associate Professor, Department of Clinical Oncology, The University of Hong Kong Clinical Associate Professor (Honorary), Department of Medicine and Therapeutics, The Chinese University of Hong Kong, Hong Kong SAR, China*

### Hong Kong College of Radiologists

Hong Kong College of Radiologists was incorporated in September 1991. The College is established with the objectives to encourage the study and advancement of the science and practice of radiology, as well as to maintain the good practice of radiology by ensuring the highest professional standards of competence and ethical integrity.

### How can we, in the professional imaging community, better communicate with the general public, to ensure patients and their carers have all the information they need about imaging or treatment?

Radiological imaging and treatment can be difficult for the general public to comprehend. In order to facilitate better understanding of the patient journey in imaging and treatment, we have several suggestions. Firstly, regarding imaging for out-patients, information leaflets detailing the patient journey can be designed and distributed to relevant imaging suites. These pamphlets should include information on what to expect for a patient undergoing imaging from arrival to completion, with additional emphasis on indications and risks, pre-imaging medications, and contrast administration.

Secondly, the government or relevant healthcare bureaus can organise regular public seminars or events to raise public awareness on radiological imaging including radiation protection, and oncological treatments including pros and cons when compared with other options. Experts from relevant fields can be invited to talk to the public and answer any questions they may have concerning imaging and treatment modalities.

Thirdly, interventional radiology (IR) is a field with long history is often not well understood by the public. The advent of IR clinics can ensure better communication between operators and patients considering interventional radiology treatments and may empower them to make more educated decisions about their treatment.

### In what ways can we best use evolving technology to meet the growing demands for imaging and radiotherapy?

The demand for diagnostic imaging has been escalating in recent years. One way to meet this demand is to employ purpose-built artificial intelligence (AI) programmes. These tools can help radiologists to screen large volumes of imaging data with a particular clinical question in mind: for example, detecting the presence of intracranial haemorrhage on CT brain scans or detecting nodules on CT thorax scans. The employment of AI can triage scans for early reporting, select patients indicated for early clinical management or referral, and prioritise patients for further diagnostic imaging. The demand for radiotherapy (RT) has also been growing quickly. RT planning systems employing AI can help contouring treatment targets and organs-at-risk, hence greatly improving the workflow. On the clinical side, genomics or radiomics could help identify a subgroup of low-risk patients who may benefit from omission of adjuvant radiotherapy or dose de-escalation of radical radiotherapy. Investing in such research has the potential to reduce the demand for radiotherapy and improve patient outcomes.

### What can we do to make the imaging and radiation oncology professions attractive to new recruits, including people from a wide range of backgrounds?

In order to attract talent from a wide range of backgrounds, our profession should embrace the value of diversity, equity and inclusion.

This can lead to better decision-making, increased employee engagement and lower turnover.

First, we should implement a flexible work culture. Work policies such as a compressed work week, remote work and flexible work hours can help retain employees who may otherwise have difficulty in committing to a full-time job with regular hours because of family responsibilities or other reasons. Remote image reporting or radiotherapy target contouring should be better developed.

Second, employees from diverse backgrounds should be well-represented in the hospital management and college level. Having diverse voices at the management level can ensure that the interests of minorities will never be ignored during policy enactment.

Third, we should support our trainees in research projects that examine diversity and equity in the workplace. Scholarships or grants can be established to encourage such research projects. We can empower our trainees, through well-structured workplace training, to intervene when a peer or a patient is affected by bias or discrimination.



# Ms Jennifer Grehan

President of the Irish Institute of Radiographers & Radiation Therapists, Lecturer, Section of Radiography and Diagnostic Imaging, University College Dublin



## Irish Institute of Radiographers & Radiation Therapists (IIRRT)

The Irish Institute of Radiographers and Radiation Therapists (IIRRT) is the professional body representing Radiographers and Radiation Therapists in Ireland. Our activities centre on supporting members through improving education, encouraging research and producing best practice guidelines. The IIRRT facilitate CPD for members and encourage role development to improve patient care and align with service need.

### How can we, in the professional imaging community, better communicate with the general public, to ensure patients and their carers have all the information they need about imaging or treatment?

We in the profession see communication as a key factor in patient care. We should educate our colleagues who are referring for imaging and treatment so they can give timely and accurate information at referral point.

We should be providing information on appointment letters, information leaflets and information on the institution website and social media, so patients have a good sense of what is ahead of them and can be involved in discussion when they are in the department.

Radiographers and Radiation Therapists play a vital role when meeting patients and carers in explaining the imaging or treatment process. They are also crucial in explaining the risks and the benefits, and specifically the role of these in the diagnosis and treatment they require. They also play a significant role in discussing with the patient and/or carer what the imaging will show and how this will help. The Radiographers and Radiation Therapists should also discuss the treatment regime and it's expected side effects and outcomes. We must ensure each patient and/or carer have all knowledge they require before leaving the room and know how to access their results in a timely fashion.

### In what ways can we best use evolving technology to meet the growing demands for imaging and radiotherapy?

The use of Artificial Intelligence (AI) will increase and we need to ensure it is used appropriately and to increase efficiency in departments. With an increased volume of referrals, use of electronic referral algorithms should aid in reducing the number of inappropriate or delayed referrals as patients can be referred for the more appropriate examination in a timely manner. AI can also speed up the justification and triaging workflow by filtering through referrals using pre-set criteria. AI is also coming along in terms of Computer Aided Diagnoses, while still requiring clinician overview, critical findings can be flagged earlier between imaging and reporting, leading to improved patient outcomes.

### What can we do to make the imaging and radiation oncology professions attractive to new recruits, including people from a wide range of backgrounds?

The key to attracting new recruits to the professions of diagnostic radiography and radiation therapy starts with accessibility to appropriate training at undergraduate level. For school leavers it is about ensuring there are sufficient spaces on courses at the correct level and for mature entry or other interested students that there are alternate routes available to engage with this education.

Following that, professions are attractive if they are considered to have appropriate career progression pathways, continuing professional development, and support. All professions are more attractive to applicants when they are well respected, resourced, and structured.

Visibility for all professions in healthcare outside of medicine and nursing is also vital so that recruits understand the variety of professions involved in the provision of healthcare services.

*“Radiographers and Radiation Therapists play a vital role when meeting patients and carers in explaining the imaging or treatment process”*



## Dr Pushpraj Bhatele

*President of the Indian Radiological & Imaging Association,  
Principle Radiologist & Head  
MRI Centre, Govt Medical College Campus,  
Jabalpur, Madhya Pradesh, India*

### Indian Radiological & Imaging Association (IRIA)

The 'Indian Radiological & Imaging Association' is a registered society (founded in 1931) with the aim to promote the study and practice of diagnostic radiological and imaging modalities, to educate practicing radiologists of the latest developments in the field of radiology, imaging and radiation medicine, to promote medical research in the said field and to propagate, impart and adopt methods of community welfare. It is a national level body having over 21,400 radiologists from all over India as its members.

### How can we, in the professional imaging community, better communicate with the general public, to ensure patients and their carers have all the information they need about imaging or treatment?

High quality care is heavily dependent on clear communication of procedure, outcomes and further management decisions. Radiologists should encourage communication and interaction with the patients – introducing oneself and other staff in the procedure room, detailed information about the procedure and taking consent, communicate test results with the patients and their carers, and maintain confidentiality.

We should follow the seven C's of effective communication; completeness, conciseness, consideration, concreteness, clarity, comparison, and correctness in our radiology reports. Effective communication is important not only in hospitals but also in virtual and teleradiology settings.

### In what ways can we best use evolving technology to meet the growing demands for imaging and radiotherapy?

This may be different for developing countries and countries which are already developed. For developing countries, accessibility and equity of services with availability of radiologists and teleradiology services may be a gamechanger. For developed countries, artificial intelligence and virtual augmented reality systems may drive the force and demand.

*“Effective communication is important not only in hospitals but also in virtual and teleradiology settings”*

### What can we do to make the imaging and radiation oncology professions attractive to new recruits, including people from a wide range of backgrounds?

We could organise social outreach programmes, delivering high quality consultancy services in an OPD setting, interacting with the clinicians and convincing them about procedures that can better satisfy patient needs.

The need of the hour is to project ourselves as Clinical Radiologists and not just as a person sitting in a computer doing reporting. Sub-specialisation in radiology in all clinical disciplines, and working as a team/unit with clinicians, will allow everyone to grow and will attract young generations to the profession.

# Dr Napapong Pongnapang

*President of International Society of Radiographers & Radiological Technologists, Assistant Professor, Department of Radiological Technology, Faculty of Medical Technology, Mahidol University, Bangkok, Thailand*



## International Society of Radiographers & Radiological Technologists (ISRTT)

The International Society of Radiographers and Radiological Technologists (ISRTT) was founded in 1962 as a non-profit organisation representing all disciplines of Medical Radiation Technologists internationally. ISRTT has over 90 Member Societies representing more than 86 countries, over 500,000 Society members and 18,000 Associate members. ISRTT is officially recognised as a Non-Government Organisation by the World Health Organisation.

### How can we, in the professional imaging community, better communicate with the general public, to ensure patients and their carers have all the information they need about imaging or treatment?

Communication with patients, their carers, and the general public is a crucial part of imaging and radiation therapy. Each profession has a unique role during each point of the patient journey through the imaging and radiation therapy pathways.

Awareness of the importance of communication is one of the most crucial parts of the profession. Radiographers and radiation therapists are the final contact point with the patients for their imaging and radiation therapy procedures. Effective communication is crucial between the staff and the patients to ensure optimal quality and safety. Clear and patient specific messages must be delivered to ensure the patient will cooperate and follow the tasks we perform.

A good example is the discontinuity of contact and fetal shielding in abdominal and pelvic examinations. Radiographers must communicate to the patient and their carers that based on scientific information, the need for shielding is no longer justified based upon radiation risks. This will alleviate the patients' and their carer's concern with regard to why we no longer use shielding during these specific radiographic examinations.

### In what ways can we best use evolving technology to meet the growing demands for imaging and radiotherapy?

Medical imaging and radiation therapy technology advance rapidly. Modern sophisticated machines need qualified professions to operate them at their maximum performance and capacity. Each profession in the multi-disciplinary team has their own unique roles in response to the evolving technology and education, training and professional development must be up to date.

Radiographers are the interface between technology and the patients. A good example is the evolving role of Artificial Intelligence (AI) in our practice. We must embrace, adopt and adapt technology, ensuring that practice is evidence-based and focused on the patient. We need to understand how AI works before using it in the clinical setting and ensure that AI will help improve the patient experience as well as our working conditions. This advanced technology, however, cannot replace the effective communication skills of the radiographers, who will use the evolving technology in a way that is best for their patients.

### What can we do to make the imaging and radiation oncology professions attractive to new recruits, including people from a wide range of backgrounds?

Modern medicine is heavily image centric. Radiation oncology also provides effective solutions for cancer treatment. There is no doubt about the importance of the imaging and radiation oncology professions, however, when recruiting students from different levels, depending on entry requirements of the multi-disciplinary professions, there are issues around the attractiveness of the profession. Clear professional pathway is one of the key advantages to attract new recruits. Moreover, licensing and established professional development tracks are also key areas. These factors will affect job satisfaction on top of the attractive salary scales.

Radiographers and radiation therapists are well established professions. However, education, training and professional development still vary from one country to another. Establishing cross-border education and professional competency requirements will pave the way to a global standard of the professions. This will also allow new recruits with different education backgrounds and degree of experience to fit themselves in the recruitment process.



## Professor Kei Yamada

*Chairperson of the International Committee,  
Professor (Kyoto Prefectural University of  
Medicine, Kyoto, Japan)*

### Japan Radiological Society

Japan Radiological Society is one of the oldest and largest radiological societies in Asia, founded in 1940, with over 10,000 members in good standing. This society includes medical personnel from two major fields, i.e. diagnostic/interventional radiology and radiation oncology.

### How can we, in the professional imaging community, better communicate with the general public, to ensure patients and their carers have all the information they need about imaging or treatment?

Direct communication between radiologists and patients is an ideal way to ensure that patients have the information they need. However, given the limited number of radiologists currently working in the hospitals, it would be virtually impossible to carry this out. In order to raise awareness within the general public, it is important to use the media. Japan is known for its comic (aka manga) culture. Starting from 2015, an ongoing weekly manga about a radiology department has been published. This story, which is called Radiation House, is about a technologist who is in love with a radiologist. This manga later became a TV drama in 2019 (season #1) and 2021 (season #2) that featured famous actors. Later, this drama was remade into a live-action film, which was released in May 2022. We, Japan Radiological Society, noticed that it is an opportunity to publicise our role in medicine. We spent about a quarter of a million USD to advertise in trains, newspapers, and social networking services, to communicate to the general public about our roles. We believe that this campaign helped us improve our visibility.

### In what ways can we best use evolving technology to meet the growing demands for imaging and radiotherapy?

Remote reading from home has started in Japan after the pandemic. This has certainly given us flexibility in terms of work style. This trend of remote reading may also lead to offshore radiology in the future; however, this will not be straightforward since there is a language barrier in Japan. Implementing artificial intelligence tools in our practice will also boost our ability to provide better service. To facilitate this move, recruiting radiologists who are digital natives is important. Continuing research in this field is also necessary and this cannot be achieved by MDs alone. We have to systematically create positions for engineers within the departments of radiology. To further enhance this trend, we should have tighter collaboration with our industrial partners.

### What can we do to make the imaging and radiation oncology professions attractive to new recruits, including people from a wide range of backgrounds?

Whether our jobs are attractive or not will partly depend on the law of supply and demand. The law of supply says that higher prices boost supply of an economic good. In Japan, there is a substantial shortage of radiologists, a situation that is similar to the UK. Details of this shortage have been published in the past: (<https://pubmed.ncbi.nlm.nih.gov/18975046/>). For those jobs with a shortage in personnel, the value of each member will naturally increase.

Based on this principle, radiologists should see an increase in salary. This, however, is not possible under a controlled environment such as socialised medicine. Thus, it is crucial to keep working on this issue from multiple different angles. Radiologists should be constantly communicating with different stakeholders, including but not limited to the government, medical associations, and hospital administrators. Radiologists with a wider viewpoint would help too and those who have a master's degree in public health would have important roles.

# Professor Valentin Sinitsyn

President of the Russian Society of Radiology, Head of Department and Chair of Radiology at University Hospital, Lomonosov Moscow State University



## Russian Society of Radiology (RSR)

Russian Society of Radiology (RSR) was founded in 1916. In 2022 the Society had 4,012 members. It unites radiologists, nuclear medicine specialists, radiographers, technicians. RSR organises annual and regional conferences. RSR cooperates with the Ministry of Health in fields of education and training, creation of professional standards, regulations and guidelines. RSR cooperates with ESR, BIR, ISR.

### How can we, in the professional imaging community, better communicate with the general public, to ensure patients and their carers have all the information they need about imaging or treatment?

The recent COVID-19 pandemic has increased visibility of radiologists and radiographers due to millions of chest X-rays and CT performed by them. I believe we should use this situation for further promotion of our specialty. Breast and lung cancer screening programmes are good examples of where radiologists save lives.

Other areas include emergency situations, and diagnosis of cardiovascular and oncological diseases. Professional Societies and radiologists are mostly communicating with each other and we have some contacts with patients and patient's societies but we should be more active in this direction. Perhaps a few famous radiologists ("stars" of our profession) could make an attractive and interesting interview and or presentations for mass media (TV and radio). Today, however, the social networks (Facebook, Twitter, Telegram etc.) provide probably the most attractive platforms for presenting our activities to benefit the general public. We should use our contacts with influential politicians, journalists and mass media influencers to be more visible. Progress of artificial intelligence (AI) in radiology gives an opportunity to attract a lot of public attention to modern radiology for a mutual benefit.

### In what ways can we best use evolving technology to meet the growing demands for imaging and radiotherapy?

We know that radiologists' workload is steadily increasing. At first glance, the answer – how to meet these growing demands is simple: Let's implement AI and machine learning in all fields of radiology. But there are many things to consider. Today it has become obvious that AI cannot replace radiologists, but it can help them if the right AI tools are selected and used in the proper way.

Another important direction is improvement and optimisation of clinical guidelines and indications for imaging, obviating unnecessary imaging examinations and promoting the use of the most efficient ones. Use of the best imaging modalities and abbreviated fast imaging protocols is another way to go.

### What can we do to make the imaging and radiation oncology professions attractive to new recruits, including people from a wide range of backgrounds?

Modern radiology is a hi-tech specialty. There are so many interesting and attractive fields in our specialty. Young people can find a lot of opportunities to realise their talents and knowledge in diagnostic and interventional radiology, and radiation oncology. But we have to present and promote all benefits of modern radiology and radiation oncology to the public. We can invite school children and students (not only medical students) to our hospitals and medical centers and present the highlights of our profession during specially organised public events. The use of computer science (AI and machine learning) in imaging and radiology will be the most attractive feature to recruit the most gifted young people to our profession.

Another appealing direction is the modern opportunity for treatment of multiple diseases provided with interventional radiology and radiation oncology. Some "hands-on" experience using different modern simulators can show new recruits the bright horizons of radiology, and of course communication with good mentors will be extremely beneficial too.

*"We should use our contacts with influential politicians, journalists and mass media influencers to be more visible"*



## Dr Ebrahim Kader

*Consultant Radiologist, Neuro and General Interventionalist, Morton & Partners Radiology, Dept of Neurosurgery, University of Cape Town, Faculty of Health Sciences, Stellenbosch University*

### **Radiological Society of South Africa (RSSA)**

The RSSA is the professional association of radiologists in both the public and private sectors in South Africa. We also have members from Zimbabwe, Namibia and Botswana.

**How can we, in the professional imaging community, better communicate with the general public, to ensure patients and their carers have all the information they need about imaging or treatment?**

Searchable internet resources, such as those provided by the ACR, should be the mainstay, and web-based and social media should be linked.

Patients should be provided with internet-based links when bookings and referrals to radiology occur. Professional associations should ensure that there is media coverage of major advances in radiology.

**In what ways can we best use evolving technology to meet the growing demands for imaging and radiotherapy?**

Computerised Clinical Decision Support (CDS) is essential for all radiology examinations to ensure appropriateness. AI must be used to manage and control radiology resources to make the process both efficient in case handling and reporting and assist the radiologist in identifying and categorising abnormalities. The radiologist role will change from a detector and commentator on pathology to having oversight of the whole process and dealing with problem cases, not categorised by AI.

**What can we do to make the imaging and radiation oncology professions attractive to new recruits, including people from a wide range of backgrounds?**

Exposure and awareness are the cornerstones. If you believe that entry into undergraduate training is due to a conscious decision to enter radiology eventually, the approach should be via the schools and their career guidance programmes.

If, as I do, you think awareness and decision making is made during undergraduate training, it is necessary to ensure that formal radiology modules are included in basic training.

*“Patients should be provided with internet-based links when bookings and referrals to radiology occur. Professional associations should ensure that there is media coverage of major advances in radiology”*

# Dr Asunción Torregrosa Andrés, MD

*President of the Spanish society of Radiology;  
chair of Abdominal Radiology Department in University  
and Polytechnic Hospital La Fe, Valencia, Spain*



## Spanish Society of Radiology (SERAM)

Spanish Society of Radiology (SERAM) is a medical-scientific and professional organisation dedicated to promoting, among its members, the teaching, development, defence, and research of all diagnostic and therapeutic aspects related to medical imaging, making its activities known to the general population.

### How can we, in the professional imaging community, better communicate with the general public, to ensure patients and their carers have all the information they need about imaging or treatment?

SERAM is working on a “patients’ corner” on our website with specific information about different radiological examinations, contrast administration, preparation and the importance of the radiological report. SERAM has also increased its presence on social media and in newspapers (general and medical) with interviews, news and events.

Another tool that gives information about imaging or treatment is the radiological report. This is one of the best ways to communicate with patients and physicians. That’s why we have to ensure that our reports contain specific and well-structured information about technique, contrast administration, relevant radiological findings and the conclusion that might answer the clinical question. The best report, the best information given to the patient.

Radiologists should be available for solving questions from patients, regardless of whether we are working on ultrasound, CT, MRI, mammography, or interventional radiology, and from the physicians, technicians and nurses. These are the best strategies for increasing our visibility and the quality of communication with patients.

### What can we do to make the imaging and radiation oncology professions attractive to new recruits, including people from a wide range of backgrounds?

Medical imaging is a very broad and varied discipline that attracts different profiles of students. It plays a transversal role in patient care: diagnosis, follow-up, prognosis and even treatment. This extensive activity favours different personalities and allows them to discover their vocation in one of the different possibilities of medical imaging.

In the case of Radiation Oncology, especially focused on treatment, it covers different lesions all over the body with an increasingly personalised and localised treatment, with fewer side effects.

We must present to university students the real importance of these specialties in clinical practice, to make them more attractive to students.

Both Imaging and Radiation Oncology play an active role in the multidisciplinary tumour boards and work together with other specialties to provide the best care for patients.

The working future is very attractive, and it is estimated that in the next few years the demand for specialists will continue to grow. Imaging and Radiation Oncology are modern and constantly evolving specialties. Technological advances favour constant updating. Technology, science, and research together with the human factor make the future bright.

### In what ways can we best use evolving technology to meet the growing demands for imaging and radiotherapy?

Technologies are here not to replace radiologists but to be steered to achieve best patient care including safety, diagnostic accuracy, diseases prognosis, therapy evaluation and efficiency. Some uses include:

- Increasing safety through employing lower radiation levels and designing fault-proof systems.
- Increasing efficiency by means of avoiding or speeding up lower value tasks such as protocol assignment, lesion measurement, or re-renderisation.
- Increasing the speed of image transfer and display.
- Decreasing interobserver measurement variability through automatic segmentation and key biomarker features extraction.
- Avoiding perceptual errors by speeding up reading for lung nodules or fracture detection.
- Improving training and recertification through wider example exposure of rare cases and statistic evaluation of performance developing personalised plans.



## Associate Professor Hong-Jen Chiou

*President of the Chinese Taipei Society of Radiology, Chief of Department of Radiology, Taipei Veterans General Hospital, Taipei, Taiwan*

### Chinese Taipei Society of Radiology (CTSR)

Founded in 1951, the Chinese Taipei Society of Radiology (CTSR) has been active in furthering research, education and clinical practice. TRS holds an annual meeting and the official journal is Journal of Radiological Science (JRS). In November 2022, there were 1,511 members including 1,295 active members and 216 associate members (205 residents).

### How can we, in the professional imaging community, better communicate with the general public, to ensure patients and their carers have all the information they need about imaging or treatment?

New technology in imaging has advanced hugely in the last few years. The active and evolutionary development of imaging technologies and artificial intelligence (AI) has promoted the vigorous development of imaging diagnosis and treatment. However, our patients and their carers may not be up to speed on the developments and have only a vague understanding about imaging technology. Furthermore, patients and their carers may have some incorrect assumptions and knowledge, learned from rumours or other source of media.

I think a good radiologist should well prepare their knowledge and technique to ensure they have good communication with patients and their carers, including providing the correct diagnosis and the best recommendation to the patient. If the patient needs image-guided intervention for further management, the benefit and risk and even alternative management should be explained to the patient and carers kindly and in detail. Good communication will mean that the patient is more assured and more likely to accept the imaging diagnosis and treatment, and could optimise the result of the management.

The cultivation of young radiologists is also very important. In addition to the inheritance of knowledge and technology, empathy for patients is even more important. We hope that our students can understand the tasks of radiologists, so that patients can get better care.

### In what ways can we best use evolving technology to meet the growing demands for imaging and radiotherapy?

Radiologists play a very important role in the clinical management of patients, and often need to attend meetings with the clinician. In addition to attending these meetings, we should actively participate in the patient's diagnosis and treatment process to understand the role of the clinician in the patient's treatment, and whether some radiographic techniques could help the patient.

Actively participating in the discussion and offering the advantages of image-guidance could even reduce unnecessary waiting time and suffering for patients. After all, the specialty of the clinician is limited to surgery or medical treatment, and they may not know as much about the convenience and safety of minimally-invasive image guidance. Radiologists could potentially treat certain specific diseases with some image-guided diagnosis and treatment techniques. Of course, it is necessary to seek the consent of the attending physician and the patient. Because radiologists have the technology of image interpretation and image-guided management, they should directly open outpatient clinics for certain specific patients, so that patients who need it can directly seek help in the radiologist's clinic.

### What can we do to make the imaging and radiation oncology professions attractive to new recruits, including people from a wide range of backgrounds?

In the past few years and even now, many medical students and young doctors still have doubts about the future of radiology, especially with the vigorous development of AI. Will radiologists be replaced by AI? They are very concerned about this point. Therefore, in addition to actively researching and developing the application of AI in the radiological field, we should explain to potential radiologists in the future that the role of AI is to promote image interpretation and reduce radiologist image interpretation errors, not to replace radiologists.

The role of radiologists, especially for minimally-invasive treatment has become more and more important recently, and image-guided (ultrasound, fluoroscopy, CT, MRI guided) treatment technology has become more and more mature. Radiologists play a very important role in this field. The role of radiologists has progressed from pure image diagnosis in the past to image-guided diagnosis and even treatment of diseases, and has become an indispensable and important role in clinical practice.





## Join our radiology community

The British Institute of Radiology welcomes everyone working in imaging and radiation oncology.

If you work in radiology, whatever your profession, or you would like your company to join the BIR, please contact [membership@bir.org.uk](mailto:membership@bir.org.uk)



## The World Partner Network is a growing international community.

We share information, occasionally meet in person and online, and sometimes work together on projects such as this publication.

Members of World Partner Network societies are currently entitled to special membership rates to join the BIR, giving them access to BJR and other publications, as well as online education and reduced rates to virtual events and video courses.

If you would like your society to be part of the network please contact [communications@bir.org.uk](mailto:communications@bir.org.uk)

# BIR WORLD PARTNER

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INDIAN RADIOLOGICAL & IMAGING ASSOCIATION





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