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Radiology in Japan



Dr. Hiroshi Honda, President

*****@**radiol.med.kyushu-
u.ac.jp

President - Japan Radiological
Society

In Japan, as in other countries, radiologists play a crucial role in high quality medical care in daily practice. This article summarises the current state of radiology in Japan, and describes the Japan Radiological Society (JRS), which is a leading society in the Japanese radiological field. Under the leadership of JRS, the radiology field in Japan focuses on globalisation. The last section introduces the current education and training system for developing board-certified radiologists in Japan.

Radiologists in Japan

The work of radiologists in Japan includes diagnostic reporting, imaging protocol management, radiation exposure control, interventional procedures, planning radiation therapy and patient care. In an era of rising demand for healthcare and an ageing population, radiology in Japan is suffering from a workforce shortage.

Radiology in Japan is characterised by a large number of imaging units and a relatively small number of radiologists.

The number of radiologists in Japan is 8,610 (board-certified diagnostic radiologists 4,753, radiation oncologists 927 (2012), which comprises three per cent of the number of total physicians. The number of both radiologists and physicians per million population is the lowest among 26 countries investigated in a 2007 survey (see Figure 1). The number of radiologists per million population in Japan is 36, which is only one-third of the average number of all countries. In contrast, the number is high in Greece, Denmark, Italy and France.

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In spite of the small number of radiologists, Japan has a dense distribution of imaging units, because there is no limit on the installation of expensive equipment and devices. This contributes to good accessibility for patients for advanced imaging technologies with relatively short waiting periods. The number of multi detector row CT (MDCT) in Japan has been increasing every year, and it reached approximately 8,000 in 2010. In particular, the proportion of MDCT equipped with more than 64 detectors has been rising in the last several years (see Figure 2).

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The number of MRI scanners in Japan is also increasing, but slowly in the last several years. A recent trend is that the number of MRI with low magnetic field strength (0.5T or 1T) is decreasing whereas those with high magnetic field strength (1.5T and 3T) are increasing. The total number of MRI scanners in Japan is around 6,300 (2011), and there are more than 300 3T MRI units (see Figure 3).

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The number of radiologists per CT/MR unit is 0.3, which is one-tenth of the average number of 3.3 among 26 countries. Only a quarter of institutions with MDCT scanners and MRI scanners hire board-certified radiologists. Consequently, radiologists interpret only 40 % of CT/MRI examinations.

When considering this demand for professional interpretation of advanced imaging, more radiologists and better healthcare insurance coverage for diagnostic imaging are necessary to bridge this large gap between the number of radiologists and imaging units.

Japan Radiological Society (JRS)

JRS was established in 1934 and is the leading official society in the field of radiological science in Japan. The main aim of the society is to promote radiological science in collaboration with various related societies. Two hundred and fifty representatives are elected by more than 8,600 members, and 16 board members of directors are elected from the representatives.

The main activities of the society are to:

1. Conduct scientific meetings in spring and autumn;
2. Publish scientific journals in English;
3. Operate the Japanese specialty board in order to certify radiologists;
4. Promote research in radiological science;
5. Support activities for protection against radiation hazards;
6. Collaborate with related societies or associations.

The annual JRS meeting is held in April in Yokohama. The 2012 meeting brought together 4,822 radiologists, 338 medical students, 3,749 technologists, 507 tech-students, 577 physicists, and 1,053 businesspersons. A total of 133 companies were involved. The programme comprised 14 special lectures, 4 international sessions, 6 symposiums, 4 workshops, 35 educational programs, 449 oral presentations, 110 educational exhibitions, 205 electronic exhibition, and 28 luncheon seminars. The Technical Exhibition at the JRS annual meeting remains the top healthcare exhibition in Japan. More than 20,000 people visited the exhibition hall during the meeting.

JRS is now focusing on the development of international cooperation for the mutual progress of radiological science. As a first step towards globalisation, JRS started to display all slides of oral presentations in English in the JRS meeting from 2012. Communication with the Radiological Society of North America (RSNA) and European Society of Radiology (ESR) was started, and collaborative sessions with those societies were held in the last meeting. The JRS also has started a cooperative relationship with the French Society of Radiology (SFR).

The Japanese Journal of Radiology (JJR) is the official journal published by the JRS. The scope of this journal encompasses, but is not restricted to, diagnostic radiology, interventional radiology, radiation oncology, nuclear medicine, radiation physics, and radiation biology. An exchange programme of free online journal access between Japan and other countries will be promoted as an activity for globalisation.

Japanese Board of Radiology Training Programme

The Japanese Board of Radiology was established in 1966 to promote formal radiologic training and to elevate the standard of radiologic practice. Today, there are 5,680 board-certified radiologists in Japan.

There are two periods of training, each followed by a board examination. For the first three years after the junior resident programme, the trainees must receive education and training to be a general radiologist in diagnostic radiology as well as in radiation oncology. After the first period, trainees must pass the first examination regarding basic knowledge on diagnostic radiology, including nuclear medicine, radiation oncology, physics and biology, in written form. The next two years after the first examination should be spent in training in more practical form in diagnostic radiology, nuclear medicine or radiation oncology. After this, trainees must pass the second examination, and choose either diagnostic radiology including nuclear medicine or radiation oncology for their board specialty. Examinations regarding clinical knowledge and skills for unsupervised clinical practice are given in both writing and oral form over two days.

All the successful trainees who have passed both the first and second examinations are given the certification of the Board of Diagnostic Radiology or Radiation Oncology.

The main training hospitals must be qualified in all diagnostic radiology, nuclear medicine and radiation oncology. These hospitals should be equipped with digital television, MDCT, MRI (> 1.5 T), angiography, mammography, SPECT, High-energy LINAC, CT-simulator, and PACS. There should be more than three board-certified diagnostic radiologists and one board-certified radiation oncologist, and 200 beds in the hospital. In order to improve the quality of board-certified radiologists in Japan, many efforts need to be made in human and technological aspects

The Future

The future of radiology in Japan depends on whether we can fill the large gap between the number of radiologists and imaging units. To attract future radiologists, it is necessary for us to maintain high-quality radiology practice. Education is the basis for developing outstanding human resources. The future of radiology in Japan depends on whether we can continue to utilise and further improve the training programme for the radiology board under the strong leadership of JRS. In future, globalisation is a key concept for radiology in Japan, and much more interest will be paid in cross-border communication and exchange of advanced knowledge and technical innovations.

Dr. Hiroshi Honda is President of Japan Radiological Society Congress 2013, Professor and Chairman, Department of Clinical Radiology, Graduate School of Medical Sciences, Kyushu University, Fukuoka, Japan
honda@radiol.med.kyushu-u.ac.jp

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