

## Volume 14 - Issue 4, 2014 - Management Matrix

### Radiology in Europe: A Snapshot



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#### Key Points

- Demand increasing for medical imaging
- Few unemployed radiologists
- Teleradiology and outsourcing lack national legislation
- Other healthcare professions are encroaching on radiology "turf"

Today, European radiology lies at the centre of the healthcare chain. Nevertheless, we don't know very much about how this profession may evolve: what will it be in the future? What is the European perspective? In this era of economic restraints as well as rapidly evolving geo-political factors, what viewpoints are there in different EU countries? For this article, the first author designed a questionnaire, which *HealthManagement* sent to member national associations and societies of the European Society of Radiology (ESR), to gauge the state of health of the radiological world, providing details as to the trends of medical imaging services in forthcoming years. What is likely to be the impact on this profession of new scenarios, such as teleradiology, outsourcing, robotic technologies and other professional competitors?

#### HealthManagement Survey

*HealthManagement* sent a 15-question survey to all institutional member societies of the European Society of Radiology, as well as to the radiological society in Iceland.

Fifteen national associations returned the survey: Belgium, Bosnia-Herzegovina, Bulgaria, Iceland, Ireland, Israel, Italy, Netherlands, Norway, Romania, Serbia, Slovak Republic, Slovenia, Spain, and the United Kingdom.

#### Results

The range of radiologists working in each distinct country varies from a minimum of 1 radiologist to 23,501 inhabitants in Bosnia-Herzegovina, up to a maximum of 1 radiologist vs. 3,972 inhabitants in Romania (see Figure 1).

Country	No. of Radiologists	Population	Ratio
Belgium	1,350	10,712,066 (2012)	1: 7,935
Bosnia-Herzegovina	160	5,765,143 (2012)	1: 23,501
Bulgaria	450	7,494,332 (2012)	1: 16,654
Iceland	40	321,957 (2013)	1: 8,046
Ireland	350	4,593,100 (2012)	1: 13,123
Israel	550	8,051,200 (2012)	1: 14,639
Italy	11,560	59,862,000 (2013)	1: 5,178
Netherlands	1,139	16,885,135 (2014)	1: 14,825
Norway	645	5,077,000 (2013)	1: 7,871
Romania	5,000	19,858,000 (2011)	1: 3,972
Serbia	600	7,205,000 (2012)	1: 12,005
Slovak Republic	400	5,413,000 (2015)	1: 13,532
Slovenia	175	2,062,000 (2014)	1: 11,783
Spain	5,000	46,610,000 (2013)	1: 9,322
United Kingdom	3,000	64,097,000 (2014)	1: 21,366

Figure 1.

#### 2. (Un)Employment

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The majority of the interviewed associations replied that there are no unemployed radiologists in their countries: in Bulgaria, moreover, they claim a shortage of radiologists. Unemployment was mentioned in Romania (less than 1%), in Spain (1-3%), in Italy (4%), in Belgium, and in the Netherlands (about 10%).

### 3. Demand for Medical Imaging Services

All the associations, except for Belgium, replied that there is a significant increase in demand.

### 4. Teleradiology

Teleradiology is widely used in the UK and in Belgium, whereas it has limited use in the remaining countries. Ranschaert and Barneveld published a survey in 2013, which looked at how teleradiology is used in Europe (see Table 1).

	Percentage	Number
Within hospital (cross-enterprise work list sharing)	71%	144
At home when on call	44%	90
Other	20%	40

**Table 1.** Use of Teleradiology

Note: 203 respondents answered the question; 167 skipped the question.

Source: Ranschaert ER and Barneveld FH (2013) European teleradiology now and in the future: results of an online survey. *Insights Imaging* (2013) 4(1): 93-102.

Our questionnaire asked if teleradiology was regulated by specific laws. The answer was no, there is a lack of specific laws in all of the involved countries. In a few cases (Belgium, Ireland and Italy), general guidelines have been provided. This appears to be a critical weak point.

### 5. Outsourcing

Outsourcing is performed only to a small extent in all the countries. In all the enrolled countries, public hospitals use radiology services outside the hospital very seldom. Private hospitals are inclined to use more often radiology services outside the hospital (particularly in countries such as Bosnia-Herzegovina, Israel and the UK, where this percentage exceeds 50%, but also in other places such as the Slovak Republic and Slovenia the range is quite high, between 33 and 50%). There are only a few national laws regulating the outsourcing practice: in Bosnia-Herzegovina, radiologists can have only 30% overtime working hours; in Bulgaria some restrictions apply; in Spain there are some regional and national laws on this matter.

Reasons for outsourcing to teleradiological services have recently been included in the survey by Ranschaert and Barneveld (2013) (see Table 2).

% of hospital US exams performed by radiologists	No. of radiology departments
≥ 90%	25 (20.32%)
70-90%	37 (30.09%)
10-70%	57 (46.35%)
≤10%	4 (3.25%)

Source: European Society of Radiology (ESR) (2013) Organisation and practice of radiological ultrasound in Europe: a survey by the ESR Working Group on Ultrasound. *Insights Imaging*, 4(4): 401-7.

**Table 3.** US Examinations Performed by Radiologists

### 6. Competition

Asked if radiologists in their country were currently threatened by other competitors, the large majority of the interviewed associations replied that radiologists feel currently threatened by other competitors, represented by vascular surgeons, cardiologists, gynaecologists, gastroenterologists, and less frequently by neurosurgeons, emergency physicians, urologists, paediatricians, rheumatologists, neurologists, general physicians, and nuclear physicians. Moreover, in Italy, there is also a turf battle with radiographers.

#### Who Performs Ultrasound Examinations?

Respondents were asked what percentage of the overall ultrasound examinations is performed by certified radiologists in their country. Here the range is very wide. The peaks are seen in Belgium and in Spain, where about 80% of overall US exams are performed by radiologists. On the other hand, in other countries such as Italy and Bulgaria, only about 40% of US exams are carried out by radiologists (this means that competitors handle the majority of the US workload). Table 3 shows responses to a survey by the ESR Working Group on Ultrasound.

#### Who Performs MRI Examinations?

Respondents were asked what percentage of the overall MRI exams is performed by certified radiologists in their country. MRI remains a radiological domain everywhere. In Spain and in Italy less than 5% of the exams are performed by nonradiologists. In the large majority of the respondent countries the percentage performed by radiologists rises up to 100%. Finally, the overall number of MRI exams that were performed in 2011 is shown in Figure 2.

**Figure 2.**  
MRI Exams by Country, 2011 or Nearest Year (OECD 2013)

	Percentage	Number
As part of regular workflow	49%	33
For a second or expert opinion	41%	28
When on call (nights)	40%	27
On a temporary basis (i.e. capacity problems)	19%	13
Other	6%	4

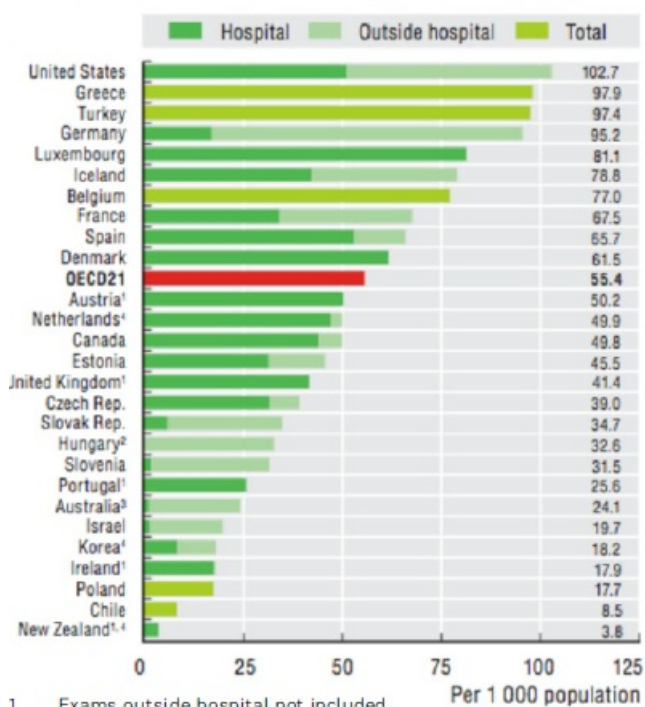
Note: 68 respondents answered the question; 302 skipped the question.  
Source: Ranschaert ER, and Barneveld FH (2013) European teleradiology now and in the future: results of an online survey. *Insights Imaging* (2013) 4(1): 93-102.

## Automation

Respondents were asked if robotisation/ automated scanning systems are being used in their country. These innovative systems are seldom used in Europe at the moment. There is limited use in Belgium, Israel, the UK and in Italy (as an example, computer-aided diagnosis (CAD) in mammographic screening).

## Future Trends

The questionnaire asked for the respondents' thoughts about the future trends of the radiological profession in Europe as well as in their own country. In general there is an optimistic view about the future of this discipline. In the last few decades, the radiological world has dramatically changed after the introduction of the Radiological Information System (RIS) and Picture Archiving and Communication System (PACS). Thus we have to perform an important role within different multidisciplinary teams. In order to succeed, a high scientific profile has to be kept, together with the ability to understand the evolving needs of the referring physicians.



**Figure 2.**  
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## Acknowledgements

HealthManagement thanks the officers and staff of the societies and associations of radiology for their time and efforts in answering the questionnaire, and Florian Demuth, European Society of Radiology for providing information from the ESR Observatory.

## Appendices

### Appendix 1: Respondent Associations and Societies

Royal Belgian Society of Radiology  
Association of Radiology of Bosnia & Herzegovina  
British Institute of Radiology  
Bulgarian Association of Radiologists  
Icelandic Society of Radiology  
Management in Radiology section, Italian Society of Radiology (SIRM)  
Faculty of Radiologists, Royal College of Surgeons, Ireland  
Israel Radiological Association  
Radiological Society of the Netherlands  
Norwegian Society of Radiology  
Romania – Prof. Adrian Santa, Univ of Medicine, Sibiu, Romania [personal views]  
Radiological Society of Serbia  
Slovak Association of Radiology  
Slovenian Association of Radiology  
Spanish Society of Diagnostic Radiology (SERAM)

### Appendix 2: Questionnaire - see bottom of the page

### Post-Publication Note on Turkey [added 10 June 2015]

Following publication, information was received from Turkey, as follows:

#### How many radiologists?

> 4000 members of the Turkish Society of Radiology; According to the Health Ministry recording system, registered radiologist numbers are reported as 3280.

#### Unemployed radiologists

In Turkey there have not been unemployed radiologist.

#### In this age of economic turbulence, is there still an increasing demand for medical imaging services in your country?

There is increasing demand for both of medical care service and medical imaging service despite the presence of economic turbulence all around the world.

#### To what extent is teleradiology used in your country?

Teleradiology has been used with a few types of applications. The Social Security Institution has tried to organise teleradiology systems in a few cities of Turkey. The General Secretary of the Office of Social Security Institution has started an application study in Istanbul.

#### Is teleradiology regulated by specific national laws?

There is no specific national law related to teleradiology in Turkey.

#### To what extent is outsourcing performed in your country?

Outsourcing performance of MR studies have been more preferred than the other studies. Up to 10% of MR studies have been obtained by own machines of corporation. Outsourcing performance of computed tomography is twice the institute's studies obtained by own machines. This style service has not been preferred to conventional radiology.

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**What percentage of public hospitals use radiology services outside the hospital and choose not to employ radiologists directly?**

More than 50% of public hospitals use radiology services outside the hospital although they employ radiologists directly.

**What percentage of private hospitals use radiology services outside the hospital and choose not to employ radiologists directly?**

Less than 33% of private hospitals use radiology services outside the hospital.

**Is outsourcing regulated by specific national laws? (please list the most relevant)**

Answer not provided.

**In your country, would you say that radiologists are currently threatened by other competitors? Who are they?**

Interventional radiologists are currently threatened by vascular surgery and neurosurgery in Turkey. However, there is cooperation and teamwork between radiologists and surgeons on interventional treatment procedures at some university centres.

**In your country, of the overall Ultrasound exams, what percentage is performed by certified radiologists?**

The overall ultrasound exams are performed by certified radiologists except transoesophageal and transvaginal US studies. Meanwhile gastroenterologists and gynaecologists perform abdominal or pelvic US studies to their inpatients as one part of systemic examination without reporting. According to these results qualifying patients have been sent to radiology departments for US examination.

**In your country, of the overall MRI exams, what percentage is performed by certified radiologists?**

Overall MRI exams are performed by certified radiologists.

**In your country, are robotization/automated scanning systems being used?**

There are no robotization and automated scanning systems in Turkey.

**Finally, in a few words, what are your thoughts about the future trends of the radiological profession in Europe as well as in your country?**

With the increase in number of radiological examinations all around the world day by day, waiting for appointment dates gets prolonged. Because of increasing daily examination numbers, the technical and radiological reporting quality needs high attention. Unfortunately, with more examination numbers in a day for CT or MRI, the technical unqualified study range was up to 30% in Turkey. Another reason for unqualified imaging can be seen as outsourcing performance. Probably outsourcing performance and teleradiology will increase in time. Under obligation specific laws should be prepared for outsourcing performance and teleradiology systems.

Another important problem is known as over radiation produced by CT machines. Leading companies have worked as competitors for producing low dose machines. In the future radiology departments will give ultrasound and MR services predominantly for diagnostic radiology and interventional radiology services for nonvascular and intravascular treatment.

Published on : Sat, 8 Nov 2014