

## MISE AU POINT/REVIEW 2006 LEBANESE RADIOLOGY WORKFORCE REPORT

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**RÉSUMÉ : Nous présentons dans cet article un exposé du statut des radiologues libanais en l'année 2006. Le Liban a une population peu nombreuse et un nombre adéquat de radiologues estimé à 54 radiologues par million d'habitants. Un surplus de radiologues est anticipé dans les prochaines années.**

### INTRODUCTION

The aim of this brief report is to study the current status of the Lebanese radiology workforce, compare it to international standards, establish a "numerus clausus" for radiologists working in this country, and recommend future projections.

### WORKFORCE DATA

In Lebanon, there are approximately 12000 doctors registered with the Lebanese Orders of Physicians in Beirut and Tripoli, representing a ratio of 315 doctors per 100000 people with a total Lebanese population estimated at 3.8 million people according to data of FAO (July 2005 estimate) [1]. When compared to other countries, there is a surplus or oversupply of physicians in Lebanon according to Kassak et al. [2] and Daher et al. [3].

Currently, there are 215 radiologists registered with the Lebanese Order of Physicians in Beirut ; among them 3 are retired, 7 are working abroad, and 205 are practising in Lebanon i.e. a ratio of 54 radiologists per 1 000000 population. No record for the number of unemployed radiologists is available to the author of this article. Table I shows that this figure represents an advantage when compared to neighboring Arab countries which suffer from a shortage in radiologists supply, and a balanced number for a developing country when compared to international standards if we consider an average of 70 radiologists per 1000000 people as an acceptable world standard [4-7].

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In a survey conducted at the Lebanese Order of Physicians in Beirut, 125 radiologists were registered between 1995 and 2005, with an average intake of 12 radiologists/year (range 8-24 radiologists/year). There were 42 radiologists with national qualifications from local universities and 83 radiologists with overseas or foreign qualifications i.e. a ratio of 1:2. The distribution of foreign qualifications is detailed in Table II, showing

**TABLE I**  
WORKFORCE DATA FOR SOME ARAB COUNTRIES  
AND INTERNATIONAL BENCHMARKING

ARAB COUNTRY	No. of radiologists/10 <sup>6</sup> population & International comparison
MAURITANIA	4
LIBYA	5
SUDAN	7
EGYPT	10
MOROCCO	15
PALESTINE	16
SAUDI ARABIA	19
	23 Turkey
SYRIA	24
JORDAN	24
TUNISIA	25
UAE	26
	27 Japan
	31 UK
QATAR	36
	47 Netherlands
KUWAIT	48
<b>LEBANON</b>	<b>54</b>
	55 New Zealand
BAHRAIN	56
	59 Australia
	60 Canada
	66 Germany
	69 Cyprus
	77 Denmark
	91 USA
	100 France
	105 Sweden
	130 Russia

Sources • Jones DN et al. [4] • Haddad MC et al. [5]  
• Royal College of Radiologists [6] • CAR FORUM [8]

**TABLE II**  
DISTRIBUTION OF FOREIGN QUALIFICATIONS

COUNTRIES	Radiologists Number	%
FRANCE	36	43.3%
RUSSIA & EASTERN EUROPE & CUBA	25	30.1%
SYRIA, JORDAN, IRAN	8	9.6%
UK, USA & CANADA	7	8.4%
GERMANY, BELGIUM, SPAIN & ITALY	7	8.4%
<b>Total</b>	<b>83</b>	

that 60% of registered radiologists graduated from Western Europe and North America and 40% from Eastern Europe and the Middle East i.e. a ratio of 3:2.

#### WORKLOAD AND STAFFING

Unfortunately there is no available data on the annual number of radiologic examinations performed per 1000 population in Lebanon. However, when considering the appropriate number of radiologists for a certain population, the estimate depends on a balance between workload i.e. demand and workforce i.e. supply as shown in Table III, with each of these variables depending on several factors or standard parameters as published in the literature [3, 6-7].

Currently, there are 28 residents in training distributed over five national universities for a 4-year period of specialty training, giving 7 graduates/year as a national trainee supply. Keeping a balanced number of employed radiologists at 54 per 1000000 population, the accept-

able number of national trainee supply would be 34 trainees (205:5.9). Considering that 28 trainees are currently in position in five local or national universities with training programs, the remaining allowed number of trainees from foreign universities would be 6 trainees only i.e a ratio of 4.6:1 (28:6).

However, the actual ratio of registered radiologists with the Lebanese Order of Physicians in Beirut is 1:2 which is not at all commensurate with the national trainee supply, indicating an excessive number of foreign graduates that will lead to a surplus of registered radiologists in the coming years.

Table IV shows a comparison of Lebanese radiology workforce, trainee supply, and workload to other developed countries [4, 8].

#### CONCLUSIONS

There are several conclusions that can be drawn from the above discussion :

1. There is a worldwide shortage of radiologists, more pronounced and severe in Arab countries.
2. The number of radiologists registered annually in Lebanon with foreign qualifications is almost twice that of our local graduates.
3. Future projection points towards a surplus of registered radiologists in Lebanon, especially foreign graduates, which is expected in the coming years.

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**TABLE III**  
RADIOLOGY WORKLOAD AND WORKFORCE

Demand	Supply
■ Population increase/year [In Lebanon 1.5%]	■ <i>Number of radiologists/10<sup>6</sup> population</i> <i>[Acceptable world standard 70 radiologists/10<sup>6</sup> population]</i>
■ Annual number of examinations/10 <sup>3</sup> population i.e. medical imaging utilization rate [Optimum 800-900/10 <sup>3</sup> population]	■ <i>Number of examinations/radiologist/year</i> <i>[RCR recommendations : 10.000-12.000 examinations/year]</i>
■ Departmental workload increase [2-5% according to RCR]	■ <i>Total number of trainees</i> <i>[1 trainee/5.9 FTE radiologists]</i>
■ Loss of radiologists [Attrition rate of 2.5%]	■ <i>Number of graduates/year</i>

RCR : Royal College of Radiologists, London    FTE : Full-time equivalent  
Sources : • Rosenquist CJ [7]    • Daher et al. [3]    • Royal College of Radiologists [6]

**TABLE IV**  
RADIOLOGY WORKFORCE, WORKLOAD AND TRAINEE SUPPLY

COUNTRY & Comment	Population 10 <sup>6</sup>	Procedures /annum /10 <sup>5</sup> population	Radiologists /10 <sup>6</sup> population	Procedures /annum /radiologist	Trainees /10 <sup>6</sup> population	Graduates /year
UNITED KINGDOM	59.8	525	31	4000-12000 (teaching hospitals) 10000-22500 (non-teaching hospitals)	13	
<i>Undersupply</i>						
JAPAN	127.5	1600	27			
<i>Undersupply (50% of imaging procedures are performed by non-radiologists)</i>						
NEW ZEALAND	4		55	10100-17500	15	
<i>Undersupply</i>						
CANADA	32.8	900-1000	60	18500	9.8	72
<i>Undersupply</i>						
DENMARK			77		13	100
<i>Appropriate</i>						
AUSTRALIA	20	800-900	59	15700	9.9	
<i>Appropriate • 30% of all ultrasound services are provided by non-radiologists • 93% of Australian radiologists are satisfied with radiological work • Low rate of unemployment of 1% suggesting no evidence of oversupply</i>						
USA	295	1000-1300	91	9200-14700 (average 11600) 11000 in non-academic & 8000 in academic	15	
<i>Oversupply</i>						
SWEDEN	9	570	105		21	
<i>Oversupply</i>						
LEBANON	3.8		54		7.3	7 from five local universities
<i>Optimum</i>						

Sources : • Campbell DR et al. [8] • Jones DN et al. [4]

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