International Perspectives on Radiology Practice Metrics: Australia, France, Germany, Japan, New Zealand, Spain, the UK and USA

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INTRODUCTION

The delivery of health care around the world is remarkably diverse in 2015. A comparison of the approximately 200 national entities on the planet reveals marked differences in national measures, both on the input side, such as health care spending, and in outcomes, such as life span. Using the percentage of gross domestic product as a metric for comparing health care spending, the current variation among nations is almost an order of magnitude, from the Marshall Islands and the United States at close to 20% to Myanmar at about 2% [1]. Outcomes are also highly variable, with an almost 2-fold difference in life span between the best and worst nations [2]. Within the nations represented in this report, the longest lived is Japan, and yet that nation spends significantly less of its gross domestic product on health care than the United States, which spends the highest fraction of gross domestic product of nations in this group [3]. This is a reminder that simplistic comparisons and correlations may miss important insights into how medical systems work.

Almost all nations struggle to some degree with challenges in managing their commitment to the health of their citizens. These challenges include deciding how much to spend on health care as well as how to measure outcomes (and the impact health care has on those outcomes). Other challenges include balancing health spending with expenditures on other social goods and balancing those expenses against higher levels of revenue collection and the consequences thereof through increased taxation and other means.

Imaging plays a central role in modern health care and has also found itself (for good and for ill) at the center of many current efforts in health planning and in reforms to try to limit those societal costs. Although the extremes may not lend themselves to useful comparisons that could lead to actionable results, it can be very helpful to start by looking at nations that are relatively similar and then to examine core issues in radiologic practice and to look for best practices. We hope to then be able to share best practices (and also pitfalls in radiologic service ideas) for the benefit of one another's nations.

Since 2012, the International Economics Committee of the ACR has carried out discussions both among its members and with outside experts to better understand the reality (and myths) regarding national differences in the practice of radiology. Our purpose is to help radiologists understand how health system practices differ among a selected set of nations. The goals of this enterprise are several. First, we aim to improve the exchange of information and understanding among radiologists across national boundaries. Second, we hope to examine the challenges our nations and others face, such as aging populations, budget limitations, and (in some cases) labor shortages, and to highlight the fact that these challenges are not unique; in fact, all nations face them in one form or another. Finally, and most important, our goal is to consider how best (or perhaps better) health care practices can be shared across national boundaries to improve the quality and lives of our patients as well as the lives and careers of our fellow radiologists during this era of challenge and change.

In this inaugural white paper from the International Economics Committee, we examine baseline structural and statistical differences among the nations in our comparison group. All of the nations in our group are members of the Organization for Economic Cooperation and Development (OECD) [4]. In the future, we will go into greater depth and explore a diverse set of vexing issues that affect radiologists around the globe from medical malpractice to utilization and other issues.

METHODOLOGY

We began our discussion with the members of the International Economics Committee. They were each sent an e-mail that requested information regarding 15 topics

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that have a direct bearing on the present and future conditions of radiologic practice in the members' nations. In addition to their own opinions, the members all consulted with peers and with their national radiology societies to gain additional insights and to obtain statistics. The authors of this report acknowledge that there is room for additional detail and potentially disagreement over the data presented. We have strived to provide a fair basis for the profiles provided, but we acknowledge that the experiences of radiologists within a nation can be very diverse, depending on many variables, such as the locations of their practices, public versus private versus academic or other practice as appropriate, and the ages and positions of the respondents. As an example, the annual salary in one of the nations presented here can vary by a factor of about 4, depending on practice setting (L. R. Muroff, personal correspondence, October 24, 2013). This type of experiential diversity and sampling variability is fully acknowledged. The purpose of the profiles in this report is to provide a starting point for understanding the national settings in which radiology is practiced, not to purport to be the final word on the statistical abstracts of national radiologic practice data.

We then analyzed the answers to evaluate for completeness and coherence in their value for reporting.

RESULTS: PROFILES OF THE NATIONS STUDIED AND THEIR CORE METRICS

After analyzing the results of the committee's discussion, it was decided that the answers to questions about annual salary and the cost and reimbursement for a head CT study did not merit reporting at this time. There were too many issues related to context and too much variability to make useful comparisons. Specifically, the local, regional, and national taxation schemes in each nation, the benefits provided through taxation (retirement, health care, and college tuition), and the work hours and content required to earn an annual salary all combine to make a meaningful comparison of the annual salary in this group of nations out of the scope of this report.

How many radiologists do you have in your country?

Table 1 lists the demographics from the various countries. The table shows substantial variation (approximately 4-fold) in the number of radiologists available on a per capita basis to provide care for their countries' populations. However, when this is compared with the question about whether these countries' representatives believed that there are enough radiologists to provide care, the number of radiologists per capita appears consistent with the experiences of the radiologists locally. The United Kingdom and Japan were the lowest of the nations examined. They reported severe shortages and the need for more radiologists in their workforces. Australia and Germany did not report shortages overall but did report that there is an imbalance of distribution within their countries, with too many radiologists in metropolitan areas and too few in rural areas.

How are radiologists split between generalists, specialists and interventionalists?

It is interesting that 7 of the 8 countries reported that most radiologists in their countries are general radiologists (Table 2). It was reported that all of these general radiologists do provide some interventional radiologic services. In most of the countries, radiologists are trained in subspecialties, but they are not recognized separately. The United States is unique among the nations in this report in that general radiology is a minority, with interventional radiologists and other specialty radiologists making up the majority. This could be because the United States has chosen to credential the

Table 1. Number of radiologists per 100,000 population

Country	Population (Millions)	Total Number of Radiologists	Full-Time Equivalent Radiologists per 100,000 Population
Australia	22.6†	1,761	7.79
France	63.7‡	8,338	13.09
Germany	81.9§	7,500*	9.2
Japan	126‖	6,300	5.00
New Zealand	4.4†	319	7.25
Spain	47.2¶	5,300	11.22
United Kingdom	63#	2,323	3.69
United States	313.9†	34,000	10.83

*Number of board-certified radiologists (without residents), but about 25% are not actively performing radiology. The number of residents is about 1,500.
†Data from the World Bank, accessed April 8, 2013, via Google Public Data Explorer (http://www.google.com/publicdata/).
‡Countrymeters. France population. Available at: http://countrymeters.info/en/France/. Accessed November 18, 2013.
§Countrymeters. Germany population. Available at: http://countrymeters.info/en/Germany/. Accessed February 20, 2013.
‖Countrymeters. Japan population. Available at: http://countrymeters.info/en/Japan/. Accessed February 20, 2013.
¶Countrymeters. Spain population. Available at: http://countrymeters.info/en/Spain/. Accessed February 20, 2013.
#The World Bank. Data: United Kingdom. Available at: http://data.worldbank.org/country/united-kingdom. Accessed February 24, 2014.