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Review

How much do cancer specialists earn? A comparison of physician fees and remuneration in oncology and radiology in high-income countries

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ABSTRACT

The main driver of higher spending on health care in the US is believed to be substantially higher fees paid to US physicians in comparison with other countries.

We aim to compare physician incomes in radiology and oncology considering differences in relation to fees paid, physician capacity and volume of services provided in five countries: the United States, Canada, Australia, France and the United Kingdom.

The fee for a consultation with a specialist in oncology varies threefold across countries, and more than fourfold for chemotherapy. There is also a three to fourfold variation in fees for ultrasound and CT scans.

Physician earnings in the US are greater than in other countries in both oncology and radiology, more than three times higher than in the UK; Canadian oncologists and radiologists earn considerably more than their European counterparts.

Although challenging, benchmarking earnings and fees for similar health care activities across countries, and understanding the factors that explain any differences, can provide valuable insights for policy makers trying to enhance efficiency and quality in service delivery, especially in the face of rising care costs.

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1. Introduction

Recent analysis has shown how aggregate data on physician incomes available in international databases are unreliable; for example, Kok et al. [1] note OECD physician income data are not based on a consistent application of the definition of gross physician income. To address this issue, researchers have tried to produce more accurate estimates focusing on a small selection of countries and on specific physician specialties. Laugesen and Glied [2] compared physician income in the United States (US) with that in five other high-income countries, producing estimates for two specialties: primary care physicians and orthopaedic surgeons. They concluded that the main driver of higher spending on health care

in the US was the substantially higher fees paid to US physicians in comparison with other countries, particularly in orthopaedics, rather than factors such as higher practice costs, a higher volume of services, or higher costs for physician training and education. In 2015, Kok et al. [1] compared all physician incomes across six European countries and found that levels of income were positively associated with a lower number of doctors per head of population.

This paper builds on the work of Laugesen and Glied [2] and Kok et al. [1] by comparing physician fees and incomes in two specialties – radiology and oncology – as they pertain to a particular area of medicine (cancer care). Cancer is one of the leading causes of death in high-income countries with significant implications for costs and health system resource utilisation. In the US, the American Society of Clinical Oncology (ASCO) reports that by 2030, cancer will be the leading cause of death with a projected 46% increase in absolute terms in new cancer cases, yet demand for oncology services will have outgrown the supply of oncologists [3]. Furthermore, ASCO reports the annual cost of treating cancer in the US is projected to increase from \$113 billion (2010 US\$) in 2006 to more than \$173

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billion (2010 US\$) in 2020. The evaluation of oncologic specialties, therefore, has practical relevance in high-income countries.

We compare and discuss differences in physician earnings for cancer services in five countries: the US, Canada (Ontario), Australia, France and the United Kingdom (UK, England). We hypothesize that in each country, physician earnings will depend on the interaction between a number of factors including the level of fees, the rate at which services are used (volume), different payment, tax and pension structures, and the level of competition between physicians, which depends on the supply of specialists and ease of entry to the market, which in turn suggests that set-up costs for the physician in terms of training and physical infrastructure may also be important.

1.1. Background

Health care coverage differs in fundamental ways across these five countries; as well as having a substantial impact on access to services, this may also affect how care is delivered and how much physicians earn. Table 1 sets out the key elements of cancer health care coverage by country. The most notable differences are between the US and the other countries; in particular, the US does not provide universal coverage for its population. Thus its publicly-financed health insurance is limited to the poor and older households, specific medical diagnoses and the veteran population; private insurers therefore play a significant role in covering other households. France and the UK are the only countries that do not require cancer patients to pay anything out-of-pocket at the point of use (when using publicly-covered services).

The structure of cancer care also differs from country to country, further complicating the task of comparison. Although the fundamentals of care provided remain the same, the way in which care is delivered and the nomenclature used to classify professionals differs. Table 2 outlines the different features of each system, describing the structure of clinical roles, physician practice, payment systems for clinicians, and training and education requirements. More detail on each is provided in an on-line appendix that provides additional information on all data sources. Each of these elements may affect the relative costs of providing oncology and radiology services across the five countries.

Canada is the only one of the five countries that does not allow physicians to engage in a mixture of publicly- and privately-financed work. In Canada, there is no private funding of specialist services for medical and radiation oncology. In the four other countries, specialists working in cancer care are likely to obtain a significant share of their income from privately-financed work.

Across the five countries, payment mechanisms generally vary depending on where a specialist is based: if hospital-based, a specialist is usually paid a salary; if in office-based practices, a specialist usually receives fee-for-service (FFS) payment. In Australia, France and the UK (England), however, the method of payment depends mainly on whether the service provided is publicly-financed (usually salary payment) or privately-financed (usually FFS). There are some country-specific differences in payment between specialties. In Canada, most radiologists are paid on an FFS basis, whereas in the US they mainly work as salaried employees in hospitals.

Like the other papers, our analysis raises questions about the possibility of achieving genuine comparisons across countries. The daily work routine of these specialists varies between countries, as do the services they provide, the associated expenses (which may also differ depending on the delivery setting), reimbursement methods and the payors. There is also variation in the income data used, eg whether it is net or gross of taxes and expenses, which often come from disparate sources even within the same country, resulting in a lack of consistency between countries.

2. Materials and methods

As Kok et al. [1] have pointed out, great care must be taken to ensure like is compared with like when discussing physician fees and earnings across different countries. Issues for consideration include: ensuring that each country has the same definition of physicians; that the same sources of income and work-related costs are included in each country; whether income is pre- or post-tax; the number of hours of work; and the inclusion of all relevant costs against which income must be offset.

Large sources of income can be missed; for example, where physicians operate in a mixed economy, private work is often excluded from national databases. In a similar way work-related costs must include everything relevant to the physician's performance of their work; for example payments for office space, administrative staff, etc. Comparisons also must account for differences in the quantity of physician time involved as well as differences in tax and pension regimes.

2.1. Data and definitions

In this paper we provide information on the fees paid to oncology and radiology specialists by public payers for selected services (or in the case of a country such as the UK, where most activity is in the public sector and physicians are most often salaried, the price paid per service). Ideally we would have included information on fees for all services provided by these specialists, and then summed these to generate estimates of total payments to physicians and thereby determine an approximate income per physician. However, producing comparable data for all services across all five countries was beyond the scope of this paper. Instead, we selected typical services or activities. The choice of typical unit of activity is key although not straightforward for oncology and radiology. We do not attempt a definitive answer to how activity should typically be measured: in practice, our choice of measure or measures has been guided by what is readily available in each country.

In most countries, it has been common to measure hospital activity by episodes of care or by the number of outpatient appointments or office visits. Although running the risk of oversimplification, for oncologists we use simple measures of two types of activity: 'first' outpatient appointments (new consultations with a specialist); and, the provision of a cycle of chemotherapy. Even these measures present complications when compared within and across countries.

Similarly, measuring activity in radiology is not straightforward. Various methods have been developed in recent years to measure the activity of clinical radiology specialists. All try to account for the fact that the workload involves a number of tasks, each of which represents different levels of time and complexity (see [4,5]). A mixture of a range of activity measures would probably encompass what radiology specialists do, but for the purposes of this paper we consider just two: the number of ultrasound scans and the number of CT scans.

Our main aim is to compare other countries with the position in the US as a whole, following the approach of Laugesen and Glied [2]. In the case of the US, Canada, the UK and France, our description of each system relies heavily on the knowledge and research of our authors from these countries, who are either cancer care clinicians themselves or researchers in the area, or both. In the case of Australia we worked with colleagues there to describe the system and to access and use appropriate data sources. We extracted information from the dominant fee schedules in each country as well as information on sources and levels of income for cancer care specialists. We provide prices for the four activities in Table 5 below, as well as utilisation rates for CT scans and ultrasound. We were

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