Fee-for-Service, Capitation and the Value of Matching Patients and Physicians

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Introduction

Traditionally, physicians have been compensated on a fee for service basis, in which they are paid a standard fee for each service performed. Recently, governments around the world have increased their use of capitation payments, in which physicians are paid an annual fee for every patient who agrees to see this physician as their regular family physician. This is in part because it has been believed that fee for service causes physicians to over-supply medical services. Another reason for the switch to capitation is that it provides cost certainty for the public insurer. However, under capitation physicians must bear the uncertainty. Their income is fixed under capitation, but their costs will vary, causing uncertainty in their net income. Under fee for service, each service has a known income and cost, and therefore, physician's do not bear uncertainty because net income can be controlled. To bear the uncertainty of a capitation payment scheme, we can expect physicians will charge a premium on their services to compensate for the added risk.

On December 5, 2011 the Ontario Auditor-General released a report suggesting physicians receiving payment under capitation are earning more than physicians paid by fee for service and that increased use of capitation was a reason behind the 32% increase in health care costs in the last 3 years.[2] This issue became public when the Globe and Mail published an article entitled "Ontario needs to do its health-care homework." [1]

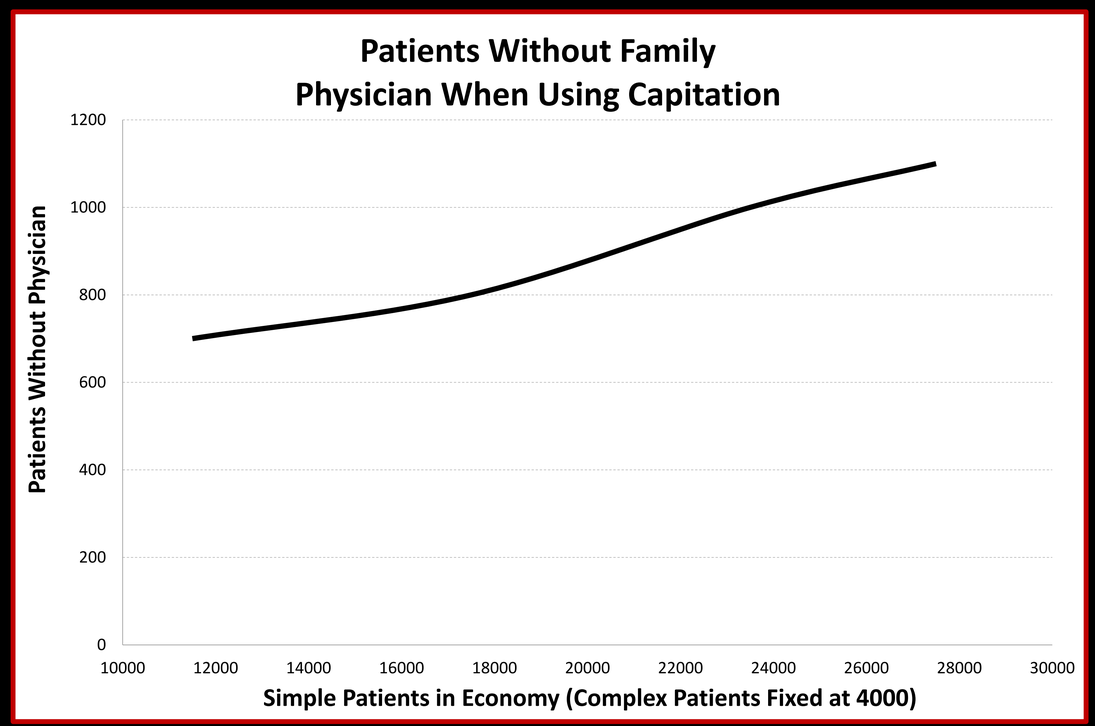
This research paper examines the choice between paying physicians by fee for service or by capitation. The mathematical simulation evaluates how many patients will receive family doctors, and the total cost to the public insurer involved with each payment scheme.

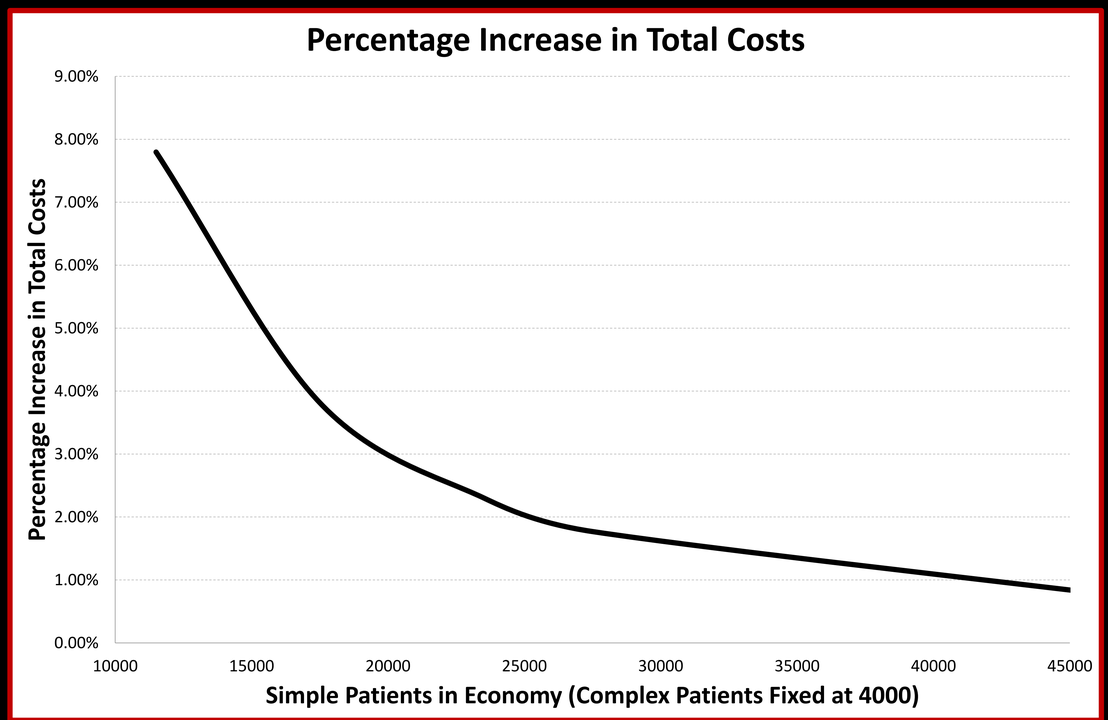
Methodology

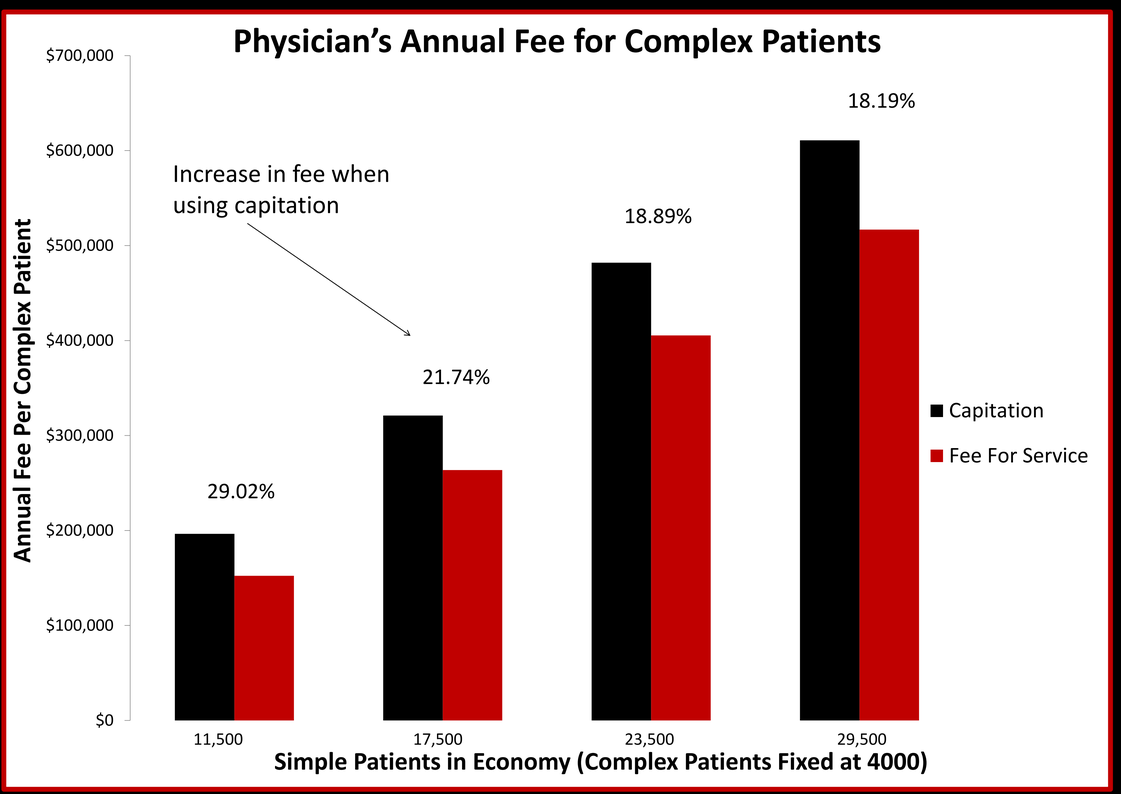
Using Mathematica, a simulation exercise was conducted that provides an explanation for the amount of patients served and the total cost of health care in the economy. The economy in the simulation consists of patients with complex problems, and patients with simple problems (eg. ear infection, sore throat). There are two types of physicians, high productivity and low productivity. The degree of productivity is measured by how quickly and effectively physicians perform complex procedures.

The model was set up so that demand is fixed, because each person in the population will seek a physician. Physicians in the simulation aim to maximize net income. Simple patients will need one visit with certainty, and no chance of a second visit. Complex patients will need one visit with certainty, with the potential need for a second visit. The probability of a second visit can be decreased by providing preventive care in the first visit.

The simulation was run many times, by varying each parameter value to simulate different economies. The parameter values varied were the amount of low productivity physicians, high productivity physicians, simple patients, and complex patients.







Results

After running the simulation many times, by varying all parameter values, the results show that fee for service is always the payment scheme that minimizes costs. As the ratio of simple patients to complex patients grows larger, the cost savings become smaller, but there are always savings. We can also see that when total spending in capitation is equal to that of fee for service, there are patients who will not get a family physician under a capitation payment scheme. The results also show that physicians will demand a higher fee per complex patient when they are forced to take all uncertainty of cost. To simulate a variety of economies, we have varied all parameter values and determined ranges for our results. Below are the ranges of results when varying amount of low productivity physicians, high productivity physicians, simple patients, and complex patients:

Total cost increase in capitation versus fee for service:
1% to 9%

Percentage of complex patients unable to find family physician when using capitation payments:
10% to 37.5%

Increase in annual fee per complex patient in capitation versus fee for service:
18% to 29%

Conclusions

The results confirm what is to be expected from the two different payment schemes. If physicians are to bear the cost uncertainty of a capitation payment scheme, they will need to be compensated for this risk. This is why physicians will demand a premium of 18% to 29% to bear the risk, otherwise they will not be willing to supply enough medical service to satisfy demand, leaving patients unable to find family physicians. Under a fee for service payment scheme, it is the public insurer that will bear the cost uncertainty, meaning physicians no longer need to charge a premium on the price of their services. This explains the cost savings that are experienced by using a fee for service payment scheme.

Public insurers around the world would be wise to examine the costs and benefits of each payment scheme before pushing capitation as the preferred method. It is likely that the cost savings associated with fee for service are worth accepting the year-to-year cost uncertainty.

References

[1] Radwanski, Adam. "Ontario needs to do its health care homework." The Globe and Mail 6 Dec. 2011
[2] Office of the Auditor General of Ontario. Annual Report. Toronto: Government of Ontario, 2011.

This research is a part of the research paper:
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