# The Impact of Physician Training on Health Costs and Outcomes in the United States

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**Sector(s):** Health

**Location:** United States of America

**Sample:** 72,366 inpatient stays (approximately 30,000 patients)

**Target group:** Health care providers

**Outcome of interest:** Mortality Service provider performance

**Intervention type:** Health care delivery

**AEA RCT registration number:** AEARCTR-0001614

**Research Papers:** Returns to physician human capital: Evidence from patients randomized to physic...

Physicians play a major role in determining the cost and quality of health care in the United States through their management of patient care. Researchers studied the impact of physician training on the cost and quality of care in a large hospital that randomly allocated patients to teams of physicians from residency programs affiliated with one of two different medical schools. Costs for patients treated by physicians affiliated with the higher-ranked medical school were 10 percent lower than for patients treated by physicians affiliated with the lower-ranked medical school, largely due to less extensive and more prompt ordering of diagnostic tests. Despite the difference in cost, patients treated by physician teams from the different residency programs had similar health outcomes.

## Policy issue

Health care spending varies substantially across the United States. Given the role of physicians in ordering procedures, diagnostic tests, and medications, and coordinating other costly elements of patient care, differences in the treatment decisions physicians make may explain some of the variation in cost. Physicians with different training may provide the same level of care at lower cost or may make different choices between cost and intensity of care.

However, since patients at the highest risk of negative health outcomes or who require the most expensive care may be referred to or seek out the highest-quality physicians, it can be difficult to determine whether differences in patient health outcomes and costs are due to differences in the physicians who treat them or differences in the patients themselves. The researchers capitalize on the random assignment of patients to teams of physicians from different residency training programs to distinguish the effects of physician training from differences in the patients they serve.

## Context of the evaluation

The United States spent nearly $3 trillion on health care in 2013, more than any other country in the world. Within the United States, high-spending areas incur costs that are 50 percent higher than low-spending areas. Previous research suggests that differences in the characteristics of physicians serving these different areas can explain up to half of this disparity.

Residency programs in the United States provide medical school graduates with 3-7 years of clinical training before they independently practice medicine. While in training, residents provide medical care as part of a clinical team comprised of medical students, other residents with varying levels of experience, and an attending physician, who supervises the team. The residents, medical students, and attending physician on a clinical team are all affiliated with the same medical school and teaching hospital.



Doctors and medical staff looking at documents in a hospital.

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### Details of the intervention

Researchers used a natural experiment to examine how the quality of medical training impacts the cost and quality of the medical care patients receive. A large urban hospital run by the United States Department of Veterans Affairs (VA) randomly assigned patients upon admission to clinical teams from one of two physician training programs. One of the programs was affiliated with one of the top five medical schools in the United States, while the other was affiliated with a medical school near the middle of the United States rankings.

Clinical teams from each program conducted independent rounds each day, the timing of which did not significantly differ by program. Each team had access to the same specialists for consultation and the same clinical laboratories and facilities.

Researchers found no evidence that the VA hospital treated the residency programs differently or that philosophies of care were substantially different.

Researchers used administrative data, including patient treatment records, census data, and cost data, to track the admissions, diagnoses, costs, and outcomes of the patients.

## Results and policy lessons

Patients of physicians in the residency program affiliated with the higher-ranked medical school had similar health outcomes to those of physicians in the residency program affiliated with the lower-ranked medical school. However, these outcomes were achieved at lower costs. These cost savings came from ordering fewer diagnostic tests and ordering diagnostic tests earlier in a patient's stay.

*Cost and Duration of Stay:* Patients assigned to physicians in the residency program affiliated with the higher-ranked medical school had, on average, a 10 percent shorter and 10 percent less expensive hospital stay than patients assigned to physicians in the residency program affiliated with the lower-ranked medical school. The disparity in the cost and duration of the hospital stay increased to up to 25 percent for some more complicated conditions, such as heart failure, and decreased for less serious conditions, for which treatment may be more standardized.

*Frequency and Timing of Diagnostic Procedures:* Physicians in the residency program affiliated with the higher-ranked medical school performed fewer diagnostic procedures, such as stress tests and X-rays, than physicians in the residency program affiliated with the lower-ranked medical school. When diagnostic tests were ordered, physicians in the residency program affiliated with the higher-ranked medical school ordered tests about 10 percent earlier in a patient's stay. As some of these tests are commonly used to provide evidence that a patient is safe to be discharged, quicker ordering of these tests is consistent with shorter patient hospital stays and lower costs.

*Health Outcomes:* Being assigned to a clinical team from a particular residency training program did not affect patient readmissions or mortality. Patient outcomes, both in general and related to specific common diagnoses, like heart failure and pneumonia, were not meaningfully different between the two programs.

*Physicians or Programs:* Are physicians from more highly regarded programs uniquely prepared to deliver more efficient treatment? Or can other physicians be trained to follow the practices of physicians trained in these programs to reduce diagnostic testing and order necessary tests earlier in a patient's stay, without compromising a patient's health. Further research is needed to answer these questions.

Doyle, Joseph J., Jr., Steven M. Ewer, and Todd H. Wagner. 2010. "Returns to Physician Human Capital: Evidence from Patients Randomized to Physician Teams." Journal of Health Economics 29(6): 866-882.