

Improving Outcomes in Our Hospitals and Communities

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Across a range of common medical and surgical conditions and almost all levels of patient severity, care provided at major teaching hospitals leads to better mortality outcomes for patients and communities.

According to a study published in *JAMA*, when it comes to mortality — a tangible quality measure that the public cares about — patients fare better at teaching hospitals.¹

- Overall and for almost all conditions — ranging from pneumonia to hip replacement to heart failure — a higher percentage of Medicare patients treated at major teaching hospitals survived after 30 days than those treated elsewhere. Similar patterns were seen after seven and 90 days.
- These patterns persist with adjustments for both hospital and patient characteristics, such as age, race and ethnicity, Medicaid eligibility, and comorbidities, reinforcing the conclusion that a hospital's teaching status affects mortality outcomes.

Another study, in *Health Affairs*, expanded on these results.² Contrary to conventional wisdom, which holds that only the most severely ill and medically complex patients benefit from care at teaching hospitals, these facilities offer a greater likelihood of survival for nearly all patients.

- The study found that Medicare patients treated at teaching hospitals have up to 20% higher odds of survival compared with those treated elsewhere.
 - ▶ For hospitalizations related to a medical condition, the sickest patients have 8% higher odds of survival at teaching hospitals, the moderately sick have 15% higher odds, and the healthiest patients have 20% higher odds of survival compared with patients treated at nonteaching hospitals.
 - ▶ Patients hospitalized for surgical procedures also benefit from being treated at a teaching hospital: the sickest patients have 20% higher odds of survival and the moderately sick have 11% higher odds.
- This data suggests that the positive impact associated with teaching hospitals extends beyond the most acutely ill. Limiting patients' access to teaching hospitals also may lead to less favorable outcomes.

Multiple studies have found that, compared with other facilities, care at teaching hospitals results in:

- Increased survival rates across a number of medical and surgical conditions and for a range of patients, not just the sickest.^{1-3, 5}
- Better value in terms of costs to Medicare.^{3, 5}

Using a novel approach, a study published in *Annals of Surgery* found Medicare patients requiring certain types of surgery had lower mortality rates at teaching hospitals compared with nonteaching hospitals, offering better value to the Medicare program.³

- The analysis found that mortality rates among patients requiring general or vascular surgery decreased within 30 days of being admitted to the hospital if that hospital was a teaching site.
 - ▶ Among the sickest of those groups, 30-day mortality rates were significantly lower for patients treated at teaching hospitals.
- Teaching hospitals also provide a good value for the extra resources used in these procedures. While costs to Medicare were higher for patients treated at teaching hospitals, those patients had a lower likelihood of mortality within 30 days of admission compared with patients treated at nonteaching sites.

A recent study from researchers at Beth Israel Deaconess Medical Center published in *JAMA Network Open* found⁴:

- The benefits of teaching hospitals for the broader community may be greater than traditionally recognized.
- Patients treated at nonteaching hospitals had lower mortality and a greater number of healthy days at home in markets with academic medical centers (AMCs).
- If all Hospital Referral Regions had the same 90-day mortality rate as those with high AMC presence, there would be 40,141 fewer deaths per year.

Teaching hospitals also may have a positive impact on neighboring community hospitals in other ways:

- Given that physicians tend to practice near where they trained, the presence of a teaching hospital may lead to a more robust supply of physicians and nurses per capita.
- Formal and informal affiliations between teaching and nonteaching hospitals may encourage the sharing of knowledge, innovations, process improvements, and clinicians.

NUMBER NEEDED TO TREAT

One way to analyze the relative value of clinical interventions is by examining the “number needed to treat” (NNT) — a statistical projection of the number of patients who have to be treated to save one person as the result of a given intervention. **The lower the NNT, the more beneficial the intervention.** According to data from these studies, the benefits associated with inpatient care at teaching hospitals compares favorably to other known clinical interventions.⁶



for aspirin taken immediately for a major heart attack



for warfarin to lower the risk of stroke for those with atrial fibrillation



for inpatient treatment at a major teaching hospital (note 90-day mortality)



for five years of statin therapy that lowers cholesterol levels



for spillover effects in markets with high academic medicine presence (note 90-day mortality)



for five years of blood pressure medication



for anti-clotting medication after a stroke or heart attack

Together, the data shows that the nation’s investment in teaching hospitals benefits a wide variety of patients by providing high-quality care, leading to better outcomes.

- Some, but not all, of the difference in outcomes may be accounted for by the expertise required to maintain ancillary and highly specialized services available almost exclusively at teaching hospitals, the use of more advanced technology, and the involvement of more clinicians in care.⁷
- Teaching hospitals are also the only places where patient care, medical education, and research converge. The intersection of these missions creates an environment that not only advances health care broadly but, as the studies suggest, also benefits individual patients.

“Efforts to limit care at academic medical centers have the potential to lead to worse outcomes.”

— Burke et al., *Health Affairs*²

Notes

1. Burke LG, Frakt AB, Khullar D, Orav EJ, Jha AK. Association between teaching status and mortality in US hospitals. *JAMA*. 2017;317(20):2105-2113. doi:10.1001/jama.2017.5702.
2. Burke L, Khullar D, Orav EJ, et al. Do academic medical centers disproportionately benefit the sickest patients? *Health Aff (Millwood)*. 2018;37(6):864-872. doi:10.1377/hlthaff.2017.1250.
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4. Burke LG, Burke RC, Orav EJ, Duggan CE, Figueroa JF, Jha AK. Association of academic medical center presence with clinical outcomes at neighboring community hospitals among Medicare beneficiaries. *JAMA Netw Open*. 2023;6(2):e2254559. doi:10.1001/jamanetworkopen.2022.54559.
5. Silber JH, Rosenbaum P, Niknam BA, et al. Comparing outcomes and costs of medical patients treated at major teaching and non-teaching hospitals: a national matched analysis [published online ahead of print Nov. 12, 2019]. *J Gen Intern Med*. doi:10.1007/s11606-019-05449-x.
6. The NNT. <https://thennt.com>. Accessed Aug. 1, 2023.
7. Khullar D, Frakt A. Can low-intensity care solve high health care costs? *The New York Times*. June 11, 2018. <https://www.nytimes.com/2018/06/11/upshot/can-low-intensity-care-solve-highhealth-care-costs.html>. Accessed Aug. 1, 2023.