Is More Medical Care Better Medical Care? Dartmouth Study Says Not Necessarily

Study of the implications of increased diagnostic and therapeutic capacity in health care

SUMMARY

Between 1997 and 2001 Investigators at the Center for Evaluative Clinical Sciences at Dartmouth Medical Center, Hanover, N.H, conducted two research projects that examined how the increasing availability of health care technology and specialist physicians influence the delivery of health care and health outcomes.

Key Findings

- There was little difference in the risk of death among newborns in regions with the lowest and highest levels of neonatal intensive care unit (NICU) beds. The risk was somewhat greater in regions with the lowest numbers of neonatologists compared with regions with somewhat higher numbers of neonatologists. However, little additional benefit in survival was seen with further increases in the supply of neonatologists.

- Medicare recipients in the highest spending regions received up to 60 percent more care than did those in the lowest spending regions.

- Increased Medicare spending is not associated with improved survival, ability to engage in daily activities, quality of care, or satisfaction with care.

Funding

The Robert Wood Johnson Foundation (RWJF) supported the project with a grant of $1,599,696.

THE PROBLEM

Previous research has documented that there are wide variations in access to health care and use of health care services among different regions of the United States. There have
been dramatic increases in the size of the physician work force and great advances in diagnostic and therapeutic technologies.

No one, however, has studied the implications for health of these increases in personnel and technology, in part because of a widely held assumption that more medical care means better medical care. But that assumption may be wrong. Better diagnostic technology, for example, may allow physicians to detect disease in patients that they may never have treated before. Patients with less serious illnesses may be receiving more intensive treatment than is necessary, possibly exposing them to potential risks that may exceed the potential benefits of the treatment.

In an earlier study funded by RWJF (Study to Understand Prognoses and Preferences for Outcomes and Risks of Treatments or SUPPORT, see the Foundation's 1997 Anthology To Improve Health and Health Care, chapter 8), researchers found that Medicare patients who lived in communities with a higher supply of hospital beds than average had significantly higher death rates than those living in regions with fewer beds.

Because the study was cross-sectional in design—meaning it examined one group of patients at a single point in time—there is no way of knowing if greater access to inpatient care exposed elderly patients to more intensive or unneeded care that ultimately harmed them. It remains possible that the greater capacity of hospital beds arose in these areas because the population of elderly and other patients was sicker than those living in other areas.

**THE PROJECT**

This grant from RWJF supported two research projects designed to examine how the increasing availability of health care technology and specialist physicians influences the delivery of health care as well as health outcomes. The project focused on newborns and Medicare patients.

In the first phase of the study, investigators assessed how regional variations in the numbers of neonatologists and neonatal intensive care beds influence the use of those services. They also examined whether increased availability of neonatal intensive care resources was associated with fewer infant deaths. For data on the regional distribution of low-birthweight newborns (defined as < 2500 grams or approximately 5.5 lbs.), investigators used a dataset from the National Center for Health Statistics, which recorded all births in 1995 and their respective birth weights.

Data on the numbers of neonatologists currently practicing in each region were collected from the American Medical Association and American Osteopathic Association "master files" of physicians in January 1996. Information on numbers of neonatal intensive care
unit (NICU) beds was taken from a 1999 survey of NICU directors conducted in conjunction with the American Academy of Pediatrics.

In the second phase of the study, the investigators examined whether greater levels of resources for Medicare patients lead to improved survival and health status. For this longitudinal study, investigators followed the health outcomes of nearly 1 million fee-for-service Medicare patients for as long as five years. The patients had been hospitalized between 1993 and 1995 for acute myocardial infarction, hip fracture, or colon cancer. Investigators chose these patients because they wanted to identify Medicare enrollees with chronic conditions that should be affected by the level of health care received.

In this second phase of the study, the investigators also examined how geographic differences in the availability of health care services influence how Medicare patients use services, their perceived access to services, and their satisfaction with the services they receive. The investigators examined responses from nearly 20,000 Medicare patients who participated in the Medicare Current Beneficiary Survey between 1992 and 1996. Participants are interviewed three times per year for up to three years; health and demographic information are available for each patient.

**FINDINGS**

**Neonatal Intensive Care**

- **The number of neonatologists per newborn differs more than four-fold across regions of the country.** Regions with the highest concentrations of neonatologists had the lowest number of low-birthweight infants (<2500 grams or 5.5 lbs.) per physician, with 66 low-birthweight infants per physician, on average. In contrast, regions with the lowest concentrations of neonatologists had the highest number of low-birthweight infants per physician (263). (This finding was published in *Effective Clinical Practice*. See the **Bibliography** for details.)

- **Regions of the country with the greatest neonatal intensive care resources (neonatologists and NICU beds) do not serve a proportionately larger share of newborns with the greatest need.** In regions with the highest levels of neonatal intensive care resources, 1.5 percent of births were very-low-birthweight infants (<1500 g or 3.3 lbs.). In regions with the lowest levels of neonatology intensive care resources, the percentage of births that were very-low-birthweight babies was similar, 1.3 percent. (This finding was published in *Pediatrics*. See the **Bibliography** for details.)

- **There was little difference in the risk of death among newborns in regions with the lowest and highest levels of NICU beds.** The risk was somewhat greater in regions with lowest numbers of neonatologists (2.7/10,000 births) compared with regions with somewhat higher numbers of neonatologists (4.3/10,000 births).
However, little additional benefit in survival was seen with further increases in the supply of neonatologists. The association between a very low supply of neonatologists and an increased risk of death was seen primarily in infants with the lowest birth weights (500-999 grams; 1.1–2.2 lbs.). (Published in the New England Journal of Medicine. See the Bibliography for details.)

- These findings suggest that, in the case of infants with extremely low birth weights, neonatal intensive care units in some regions may have an inadequate supply of neonatologists, whereas most other regions have an adequate supply or a surplus.

**Medicare**

- Residents of the highest spending regions received up to 60 percent more care than those in the lowest spending regions. Investigators found little or no difference in the underlying health or socioeconomic status of Medicare enrollees residing in regions of differing spending levels. (From Regional Variations in Spending and their Association with Access to Care, Satisfaction and Functional Status among Medicare Beneficiaries, unpublished.)

- About half of the variation in spending is explained by the supply of hospital beds and medical sub-specialists. The differences in spending across regions were almost completely explained by "supply-sensitive" services, where utilization tends to increase as more services or providers are available. Medicare patients in higher spending regions made greater use of hospitals, and had more frequent physician visits, more frequent visits to medical specialists, and more frequent minor procedures and tests. (From The Implications of Regional Variations in Medicare Spending: Part 1. Utilization of Services and the Quality of Care, unpublished.)

- Medicare spending is higher in areas served by for-profit hospitals than in areas served by not-for-profit hospitals. Spending was greatest in areas in which all hospitals were under for-profit ownership, intermediate in areas with both for-profit and not-for-profit hospitals, and lowest in areas in which all hospitals were under not-for-profit ownership. Increases in spending rates were also greater in regions served by for-profit hospitals compared with regions served by not-for-profits. (From the New England Journal of Medicine. See the Bibliography for details.)

- Increased spending is not associated with improved survival. Patients with hip fractures showed a small improvement in mortality in regions with a more intensive approach to acute care. However, patients with colon cancer and acute myocardial infarction had a slightly higher mortality in higher spending regions. (From The Health Implications of Regional Variations in Medicare Spending: Part 2. Outcomes of Care, unpublished.)

- Increased spending is not associated with improved ability to engage in daily activities. All Medicare enrollees, regardless of where they lived, had small average annual declines in functional status—as measured by their ability to carry out
activities such as walking or managing their financial affairs. There was no difference, however, in the rate of decline in function between higher and lower spending regions. (From *Regional Variations in Spending and their Association with Access to Care, Satisfaction and Functional Status among Medicare Beneficiaries*, unpublished.)

- **Increased spending is not associated with improved access to or quality of care.** On almost all measures, access to care was no better in higher spending than in lower spending regions. On some preventive care measures—such as waiting times at an appointment, immunization rates, and cancer screening in women—the quality of care was worse in the higher spending regions. (From *Regional Variations in Spending and their Association with Access to Care, Satisfaction and Functional Status among Medicare Beneficiaries*, unpublished.)

- **Increased spending is not associated with improved satisfaction in care.** On two of eight measures dealing with satisfaction with the health care system, satisfaction was significantly lower in the high spending regions, but the same in the remaining six measures. On 12 measures focusing on satisfaction with patients' usual physician, one measure was lower in high spending areas, three were higher, and eight were the same. (From *Regional Variations in Spending and their Association with Access to Care, Satisfaction and Functional Status among Medicare Beneficiaries*, unpublished.)

- **If Medicare spending levels were capped at the levels in the lowest spending areas, the Medicare program could save $40 billion (based on 1996 spending levels)—enough money to fund a prescription drug benefit for the elderly without any increase in taxes or Medicare premiums.** (From [www.healthaffairs.org](http://www.healthaffairs.org). See the Bibliography for details.).

**Limitations**

For the study of neonatal intensive care, the data on the number of neonatologists and NICU beds were not from the same year as the group of births studied. The investigators say it is unlikely that substantial changes would have occurred in the interval between these measurements and small differences would not be expected to affect the results significantly.

The Medicare spending study was not a randomized trial. Although investigators were able to control many more variables than in their earlier cross-sectional study, they could not control every source of variation in use of health services, including demand for health services by Medicare patients. It is possible, though the investigators believe it is unlikely, that patients receive more services in the higher-spending areas because they demand them.
Communications

The investigators have published 26 articles on their findings in journals including the *New England Journal of Medicine*, the *Journal of the American Medical Association*, and Pediatrics. In addition, the research received coverage in *The Wall Street Journal* and *The New York Times*.

AFTERWARD

The investigators received a five-year, $7-million grant from the National Institute of Aging to research the causes and consequences of geographic variations in the intensity of care provided to the elderly.

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BIBLIOGRAPHY

(Current as of date of the report; as provided by the grantee organization; not verified by RWJF; items not available from RWJF.)

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