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Health Policy Blog

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# Variations in Healthcare Charges:

# Does Anyone Know How Much It Will Cost?

## I. What is the issue?

Recent reports in healthcare journals, cited below, and articles in various lay magazines[1] have focused on the variations in prices charged by hospitals and other providers for common medical tests and procedures. These reports have demonstrated the wide and, for some, startling variations in prices charged for identical or similar services at the national and state levels. Does this variability also exist in Tennessee? Does it exist at the local level in, for example, Memphis and Shelby County? And what are the causes of these variations and what is their significance to consumers and other healthcare stakeholders?

## II. Background

The recent surge in interest in hospital pricing and price variations may result from several factors. First, public releases of hospital charges have expanded, increasing the awareness of variations in charges among providers. In addition to various state and local reports on charges, the Centers for Medicare and Medicaid Services (CMS) released in May 2013 details of the charges and payments for the 100 most common

[1] See, for example, O. Khazan, "The Hospitals That Overcharge Patients by 1000 Percent," *The Atlantic*, June 2015; and S. Brill, "Bitter Pill. Why Medical Bills are Killing Us," *Time Magazine*, April 4, 2013.

inpatient services provided to Medicare beneficiaries.[2] Second, the relevance of charges has intensified. Expanded enrollment in high-deductible health plans[3] has made more people responsible for more out-of-pocket costs and has promoted cost-driven choices in selecting healthcare providers. As described by Princeton University health economist Uwe Reinhardt, patients now have "more skin in the game."[4]

Healthcare researchers Ge Bai and Gerard Anderson[5] documented the variation in charge-to-cost ratios of hospitals, illustrating the disparities in the relation between hospital charges and Medicare allowable costs across the nation. Their results showed that the charge-to-cost ratios varied from less than 1.0 to over 12.0. Among the 50 hospitals with the highest charge-to-cost ratios (ranging from 9.2 to 12.6), 49 were for-profit facilities and three were in Tennessee.

Variations in charges for specific procedure-related hospital admissions have also been repeatedly documented. A national study of the cost of percutaneous coronary interventions (PCIs) in 86 of the 100 largest metropolitan statistical areas (MSAs) conducted by BlueCross BlueShield showed that charges for this life-saving procedure ranged from approximately $16,000 (in Birmingham, AL) to over $61,000 (in

[2] Centers for Medicare and Medicaid Services, *Medicare Provider Utilization and Payment Data*. (Baltimore, MD: Department of Health and Human Services, 2013).

[3] P. Fronstin and A. Elmlinger, "Findings from the 2014 EBRI/Greenwald & Associates Consumer Engagement in Health Care Survey," *EBRI Issue Brief*, no. 407, December 2014.

[4] U. E. Reinhardt, "The Disruptive Innovation of Price Transparency in Health Care," *JAMA* 310(18):1927-1920, 2013.

[5] G. Bai and G. F. Anderson, "Extreme Markup: The Fifty U.S. Hospitals with the Highest Charge-to-Cost Ratios," *Health Affairs* 34(6):922-928, 2014.

Sacramento, CA).[6] A similar study showed that the cost for total knee replacement without complications could cost as little as $11,317 in Montgomery, AL, and as much as $69,654 in New York City.[7]

Others have documented wide variations in the charges for individual tests. For example, a recent survey of 122 outpatient radiology centers in 43 cities showed that the charges billed for an outpatient non-contrast knee MRI varied from $259 to $2,042.[8] And, most surprisingly, the charges billed for 10 common blood tests in California varied by as much as 1,000 percent in 2011; the 5th to the 95th percentile range of charges for a complete blood count, the test with the smallest range of charges, was $259 to $2,042.[9]

Wide variations in charges also exist within a single healthcare market. For example, the BlueCross BlueShield study cited above reported that the variation in charges for a PCI within the Los Angeles/Long Beach market varied by 532.0 percent.[10]

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[6] The Health of America Report, *A Study of Cost Variation for Percutaneous Coronary Interventions (Angioplasties) in the U.S.* BlueCross BlueShield, July 16, 2015. Available at http://www.bcbs.com/healthofamerica/cardiac_cost_variation.pdf.

[7] The Health of America Report, *A Study of Cost Variations for Knee and Hip Replacement Surgeries in the U.S.* Blue Cross Blue Shield, January 21, 2015. Available at http://www.bcbs.com/healthofamerica/BCBS_BHI_Report-Jan-_21_Final.pdf.

[8] D. Pasalic, R. K. Lingineni, H. J. Cloft, and D. F. Kallmes, "Nationwide Price Variability for an Elective, Outpatient Imaging Procedure," *Journal of the American College of Radiology* 12(5):444-452, 2015.

[9] R. Hsia, Y. A. Antwi, and J. P. Nath, "Variation in Charges for 10 Common Blood Tests in California Hospitals: A Cross-sectional Analysis," *BMJ Open* 4:e005482, 2014.

[10] The Health of America Report, *A Study of Cost Variation for Percutaneous Coronary Interventions (Angioplasties) in the U.S.*

In Dallas, Texas, a total knee replacement could cost between $16,772 and $61,585 (a 267.0% cost variation) depending on the hospital.[11]

## III. Hospital Price Variations in Tennessee

Data were analyzed from *Tennessee Hospitals Charge Reports 2013* compiled by the Tennessee Department of Health.[12] These data included charges for the 50 most costly diagnostic categories for all Tennessee hospitals with more than a minimum number of reported cases. Cases were classified into one of four clinical severity groups—minor, moderate, major, and severe.[13] This risk adjustment sought to group patients with similar clinical needs who might be expected to require similar amounts of care.

### What is the Variation across Tennessee?

The charges for four common procedures among Tennessee hospitals are shown in Exhibit I. The data presented include the number of hospitals reporting charges for six or more cases and the median, maximum, and minimum charges for patients in the "minor," or least severe, category for those hospitals. We selected this category because it may be expected that the variation in clinical care would vary less among hospitals for the least complex cases than for more severe cases.

[11] The Health of America Report, *A Study of Cost Variations for Knee and Hip Replacement Surgeries in the U.S.*

[12] Tennessee Department of Health, *Tennessee Hospital Charge Reports 2013* (Nashville, TN: Tennessee Department of Health). Available at http://www.tn.gov/health/article/statistics-hdds. Accessed July 25, 2015.

[13] Risk adjustment was performed by the Tennessee Department of Health using a proprietary risk adjustment algorithm provided by 3M Health Information Systems.

**Exhibit I: Variation in Selected Hospital Charges Across Tennessee**

| | No. Hospitals | Median | Minimum | Maximum |
|---|---|---|---|---|
| Vaginal Delivery | 66 | $ 8,849 | $ 3,892 | $ 24,010 |
| Laparoscopic Cholecystectomy | 72 | $26,817 | $12,732 | $ 64,587 |
| Percutaneous CV Procedures (nonAMI) | 41 | $60,340 | $30,096 | $141,534 |
| Hip Joint Replacement | 48 | $49,783 | $26,006 | $220,153 |

Note: All data are for the "minor" risk category only.
Source: Authors' analysis of Tennessee Hospital Discharge Report 2013.

These data show that, as in the nation as a whole, self-reported hospital charges for common procedures vary widely in Tennessee. The difference between the lowest and the highest median charge ranged from $20,118 for vaginal deliveries (271.0% of the median charge) to $194,147 for hip replacements (442.0% of the median charge).

## What is the Variation in Shelby County?

Median charges for Shelby County hospitals for each of the same four common procedures are tabulated in Exhibit II utilizing the hospital identifier codes used by the Tennessee Department of Health. The data include only hospitals with six or more cases assigned to the “minor” risk category.

**Exhibit II: Variation in Selected Hospital Charges in Shelby County, Tennessee**

| Hospital Identifier Code | Vaginal Delivery | Laparoscopic Cholecystectomy | Percutaneous CV Procedures (nonAMI) | Hip Joint Replacement |
|---|---|---|---|---|
| 7921 | -- | $20,736 | $66,695 | $42,257 |
| 7923 | $ 8,631 | $31,063 | $71,433 | $54,705 |
| 7924 | $ 7,854 | $34,955 | -- | $61,762 |
| 7926 | $ 8,154 | $28,960 | $76,446 | -- |
| 7927 | -- | $ 29,802 | $65,442 | $59,557 |
| 7929 | -- | $26,117 | $72,302 | $47,095 |
| 7932 | -- | $23,633 | -- | $33,608 |
| 7939 | $14,878 | $64,587 | $81,469 | $66,932 |
| 7950 | $ 9,615 | -- | -- | -- |
| 7951 | $17,776 | $44,152 | $85,668 | $56,439 |
| | | | | |
| Variation* | $ 9,922 | $43,851 | $20,226 | $33,324 |

Notes: The symbol "--" indicates data not reported.
All data are for the "minor" risk category only.
*Variation is the difference between the highest and lowest charges.
Source: Authors' analysis of Tennessee Hospital Discharge Report 2013.

These data illustrate that wide variations in charges exist within the Shelby County market. Variations (differences between the lowest and highest charges) ranged from $9,922 (112.0% of the Tennessee median as shown in Exhibit I) for vaginal deliveries to over $43,000 for cholecystectomies (164.0% of the Tennessee median).

The inter-hospital variations for the other clinical severity groups among Shelby County hospitals for these four procedures were also large. For example, the variations among Shelby County hospitals for PCIs in patients without acute myocardial infarction ranged from $33,488 to $131,715 for the "moderate" group and from $42,974 to $149,441 for the "major" severity group based on the authors' examination of the data.

Examples of variations within other Tennessee healthcare markets are shown in Exhibit III. These data show that wide variations in charges for similar patients exist in all four major market areas and that the size of the variations differs widely across regional markets. The interhospital variation in all categories is greatest in Davidson County with, for example, the variation in charges for vaginal delivery being approximately twice as great in Davidson County as in Hamilton County.

Exhibit III: Selected Hospital Charge Variations in Regional Tennessee Markets

| | Davidson County | Hamilton County | Knox County | Shelby County |
|---|---|---|---|---|
| Vaginal Delivery | $10,602 | $ 4,388 | $ 4,598 | $ 9,922 |
| Laparoscopic Cholecystectomy | $18,429 | $ 5,568 | $17,836 | $43,851 |
| Percutaneous CV Procedures (nonAMI) | $64,773 | $37,932 | $27,826 | $20,226 |
| Hip Joint Replacement | $36,034 | $23,656 | $25,108 | $33,324 |

Notes: All data are for the "minor" risk category only.
Source: Authors' analysis of Tennessee Hospital Discharge Report 2013.

National reports also allow comparison of the variations within Tennessee markets to those within other parts of the nation. Based on data from the Blue Cross Blue Shield reports cited above, the variations in the four regions included in Exhibit III are moderate. For example, the Nashville (Davidson County) Metropolitan Statistical Area that has the greatest variation in charges among the four Tennessee regions ranked

11th nationally in the size of the variation in charges for PCIs among the 86 regions across the United States; Knoxville ranked 37th, and Memphis ranked 49th.[14]

## IV. Why Do Variations Exist?

To understand the causes and the significance of the variations in prices and charges, it is necessary to understand the basic determinants of hospital charges and payments. Hospital charges are based on a "chargemaster,"[15] a price list developed by each hospital of the charges for each billable service provided by the hospital. The final full-charge bill for a patient is then the sum of the charges for all services used by that patient during a hospital stay.

Many factors may lead to variations in charges for services. These include, among others, regional differences in labor costs, and inter-hospital differences in patient characteristics, staffing patterns, infrastructure fixed costs, the number of competing hospitals (and the resulting intensity of market competition), and physician practice patterns.

There is, however, little relation between the actual costs to the facility of providing a service and what is charged. In a survey of 238 hospitals, fewer than half of the hospitals used actual cost information in developing or updating their chargemasters.[16] Several studies have also shown that patient and population level differences in

[14] The Health of America Report, *A Study of Cost Variation for Percutaneous Coronary Interventions (Angioplasties) in the U.S.*

[15] U. E. Reinhardt, "The Pricing of U.S. Hospital Services: Chaos Behind a Veil of Secrecy," *Health Affairs* 25(1):57–69, 2006.

[16] A. Dobson, J. DaVanzo, J. Doherty, and M. Tanamor, *A Study of Hospital Charge Setting Practices* (Falls Church, VA: The Lewin Group, December 2005).

characteristics explain only a small portion of the variation in charges.[17,18] This is also suggested by the differences in charges for services that would seem to have nearly identical costs at different sites and to not be impacted by patient characteristics. These include, as examples, the wide differences in charges for common and standardized laboratory[19] and imaging[20] tests described earlier.

Other factors that impact charges may include the costs of other services that are not directly billable and are subsidized by other services, in addition to the external regulatory and legal constraints facing hospitals and the concern for how hospital pricing behaviors are perceived by the local community. Perversely, higher charges may reflect a higher rate of patient complications, with subsequent greater service use and costs. Methodologic issues may also impact the analysis of reported charges including, as examples, the imperfect methods for severity adjustment of patient populations and variations in coding and in the reporting of charges by hospitals to the state.

## V. Do These Variations Matter?

In addition to a lack of relationship between what is charged and the cost of providing care, another important concept in how hospital services are priced is that there is little relationship between what is charged and what is paid. Medicare and, in

[17] R. Y. Hsia, Y. A. Antwi, E. Weber, and J. B. Nath, "A Cross-sectional Analysis of Variation in Charges and Prices Across California for Percutaneous Coronary Intervention," *PLOS One* 9(9):1-9, 2014.

[18] J. D. Park, E. Kim, and R. M. Warner, "Inpatient Hospital Charge Variability of U.S. Hospitals," *Journal of General Internal Medicine* (epub ahead of print, May 1, 2015).

[19] Hsia, Antwi, Weber, and Nath, "A Cross-sectional Analysis of Variation in Charges."

[20] Pasalic, Lingineni, Cloft, and Kallmes, "Nationwide Price Variability for an Elective, Outpatient Imaging Procedure."

some states, Medicaid pay hospitals at a set rate based predominantly on a patient's diagnosis regardless of the actual charges that are billed. Private insurers negotiate heavy discounts with individual hospitals. These amounts vary from one insurer to another and within a given carrier based on the specific plan in which the patient is enrolled. Thus, the variations in charges may lead to little or no variation in payments. For example, information from the Center for Medicare and Medicaid Services (CMS) data release for 2013 demonstrated that for hospitalizations for "simple pneumonia or pleurisy" without complications, charges among Tennessee hospitals varied by $30,281 (from $4,537 to $34,918), whereas total payments varied by only $2,511, from $3,175 to $5,686.[21]

It is, therefore, often said that hospital charges and variations are largely irrelevant. What is important to hospitals and to payers, it is argued, is not what is charged but what is paid, and payments may have little direct relationship to what is charged.

However, charges are relevant to large groups of patients. Uninsured patients, that is, those without a payer to negotiate discounts on their behalf, may be billed the full charge for services. Indeed, data suggest that hospitals and other providers collect more from the uninsured than they do from third-party payers for insured patients.[22]

Many states, including Tennessee, have enacted laws and regulations that limit what a hospital may bill an uninsured patient. Tennessee law prohibits healthcare facilities "from requiring an uninsured patient to pay for services in an amount that exceeds one

[21] Centers for Medicare and Medicaid Services, *Medicare Provider Utilization and Payment Data*. (Baltimore, MD: Department of Health and Human Services, 2013).

[22] G. A. Melnick and K. Fonkych, "Hospital Pricing and the Uninsured: Do the Uninsured Pay Higher Prices?" *Health Affairs* 27(2):w116-w122, 2008.

hundred seventy-five percent of the cost for the services provided . . . ."[23] California limits the amount billed for residents with low to moderate incomes to what the provider may reasonably have expected to receive for a patient enrolled in a government-sponsored insurance program.[24]

The variations are also directly and indirectly relevant to the insured. As deductibles and coinsurance rates have increased, patients have become personally responsible for more out-of-pocket healthcare costs. In addition, patients may be subjected to the full costs for out-of-network services.

Data compiled by the Government Accountability Office illustrate the impacts of variations in charges on out-of-pocket expenses. For example, in the Indianapolis area, out-of-pocket costs for an MRI of the lower back at selected acute-care hospitals varied by over 850.0 percent, from $277 to $2,637.[25] In the Denver area, the estimated total out-of-pocket cost of a laparoscopic gallbladder surgery in selected ambulatory surgery centers varied by over 100.0 percent, from $3,281 to $6,954.

Finally, the full charge may be used by hospitals to report the amount of uncompensated or "charity" care they provide and the amount of unreimbursed care provided to Medicaid enrollees. A survey by the consulting firm of PricewaterhouseCoopers (PwC) indicated that three-fourths of hospitals use charges

[23] Tennessee Code Title 68, Chapter 11, Part 2, 68-11-262 - Limit on Amount of Charges for Services to An Uninsured Patient.

[24] G. Bai, "California's Hospital Fair Pricing Act Reduced the Prices Actually Paid by Uninsured Patients," *Health Affairs* 34(1):64-70, 2015.

[25] Government Accountability Office, *Health Care Transparency. Actions Needed to Improve Cost and Quality Information or Consumers* (Washington, DC: U.S. Government Accountability Office, October 2014).

rather than costs to compute charity care.[26] This may be important in substantiating claims for community benefits needed to maintain not-for-profit status under the Patient Protection and Affordable Care Act, may impact the amount of state funding from, for example, disproportionate share payments, and may influence the public's perception of the hospital's role in the community.

## VI. What Are the Implications?

The public release of hospital charges represents, as described by Uwe Reinhardt, "a disruptive change" in the healthcare system.[27] Information previously held as akin to "trade secrets" is now open to all. This change, and especially the information about the high variation in charges, suggests opportunities for health system change. First, the variations may drive hospitals to review the methods for developing and reporting charges to improve their accuracy, to promote their competitive advantage, and to project a better image to the public in a competitive and increasingly scrutinized market.

Second, the finding that some hospitals may provide a service at a substantially lower charge and with equivalent quality than others suggests that cost savings are possible (to the extent that the charges reflect actual costs). For example, Crystal Run Healthcare System in New York reduced cost variation (as well as costs) related to practice variation by emphasizing established clinical guidelines.[28] Acting on these differences will, however, be complex. Hospitals may be high cost for one service but

[26] The Price Waterhouse Coopers survey is available at: www.nonprofithealthcare.org/resources/Acts%20of%20Charity.pdf.

[27] Reinhardt, "The Disruptive Innovation of Price Transparency in Health Care."

[28] S. Hines, "Reducing Practice Variation at Crystal Run Healthcare," *Health Affairs Blog*, July 23, 2015.

lower for another, making isolating the factors driving high charges difficult (although, as suggested by the Shelby County data in Exhibit II, hospitals with high charges for one service tend to have high charges for others as well).

Finally, and perhaps most importantly, revealing charges allows for comparison shopping by patients for lower cost services, especially when combined with comparative data on quality of care. Evidence suggests that making charges available to patients can reduce healthcare costs. For example, a study of claims from 18 self-insured companies demonstrated that patients who searched for prices before a test had significantly lower claims for lab tests (13.9% lower) and advanced imaging procedures (13.2% lower) than did those who did not search.[29] States[30] as well as individual hospitals[31] have begun to publish their charges, although readily available and understandable data remain difficult to obtain.[32]

Without such information that consumers can understand and use, current and proposed efforts to reduce healthcare spending through consumer-directed options are unlikely to succeed. This situation was encapsulated by Princeton health economist Uwe Reinhardt:

[29] C. Whaley, J. Schneider Chafen, S. Pinkard, et al, "Association Between Availability of Health Service Prices and Payments for These Services," *JAMA* 312(16): 1670-1676, 2014.

[30] See, for example, *Hospital Chargemasters and Charges for 25 Common Outpatient Procedures.* State of California. Available at www.oshpd.ca.gov/Chargemaster/default.aspx.

[31] See, for example, *University Hospitals Case Medical Center Patient Pricing Information.* Available at www.uhhospitals.org.

[32] J. A. Rosenthal, X. Lu, and P. Cran, "Availability of Consumer Prices from U.S. Hospitals for a Common Surgical Procedure," *JAMA Internal Medicine* 173(6):427-432, 2013.

In virtually all other areas of commerce, consumers know the price and much about the quality of what they intend to purchase. The information makes comparison shopping relatively easy and is the sine qua non of properly functioning markets. By contrast, consumer-directed health care so far has led the newly minted consumers of US health care (formerly patients) blindfolded into the bewildering US health care marketplace . . . . Consequently, the much ballyhooed consumer-directed health care strategy so far has been more a cruel hoax than a smart and ethically defensible health policy.[33]

*** End of Blog ***

[33] Reinhardt, "Health Care price Transparency and Economic Theory," *JAMA* 312(16):1642-1643, 2014.

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