The Relationship Between Variations in Medicare Hospital Charges for Device-Intensive Hospital Admissions and the Variation in Charges for Other Admissions

An AdvaMed Research Report

Background and Findings

A March 4 article by Stephen Brill in *Time* magazine cited examples of wide variations among hospitals in the amounts charged for similar admissions. The article documented that there was little transparency about either the actual charges, the basis for the charges, or the reasons for the wide variation among hospitals. While most insured patients do not actually pay charges, many of the uninsured do, and the discrepancy between hospitals is puzzling.

Following the publication of the Brill article, the Centers for Medicare and Medicaid Services (CMS) posted data on actual average charges for the most common 100 MS-DRGs for each of 3,300 hospitals. MS-DRGs are a classification of admissions by illness, procedure, and severity that Medicare uses as the basis for its own payment system.

AdvaMed commissioned Christopher Hogan, Ph.D. President of Direct Research LLC, to analyze FY 2012 Medicare data to compare the variation in the prices hospitals charge for device intensive admissions to those charged for non-device intensive admissions. This comparison would indicate whether the variation in the purchase price for medical devices among hospitals was likely to be a significant contributor to the overall variation in hospital charges. Direct Research examined the variation among hospitals in charges for device-intensive MS-DRGs such as those involving hip and knee replacements, implantation of stents, implantation of pacemakers, and implantation of ICDs and compared the average variation in these admissions to the variation in other admissions.

When charges were normalized to a percent of the mean charge for each type of admission, so that the variation in charges of more or less costly types of admissions could be appropriately compared, the variation among hospitals for charges for device-intensive MS-DRGs was substantially less than the variation for other charges. The average difference between highest and lowest quartiles of hospital charges for the device-intensive admissions was 59 percentage points, while it was 72 percentage points for other admissions. In other
words, while there was considerable variation in charges for both types of admissions, the
variation was 22 percent greater for the admissions that were not device-intensive.

Direct Research found that this was also true when costs, as opposed to charges, were
examined. The same pattern occurred: there was considerable variation in costs for
both types of admissions, but the variation was 40 percent greater for the admissions that were
not device-intensive.

**Based on this analysis, we conclude that the variation in device prices paid by
hospitals was not a cause of the wide variation in hospital charges.**

These relationships are shown in the two figures below.
Variation in FY 2012 Medicare Hospital Charges: Device-Intensive Medicare Admissions vs. All Others

Interquartile Range as a Percent of the Mean

Device-Intensive: 59%
All Other: 72%
Variation in FY 2012 Medicare Hospital Costs: Device-Intensive Medicare Admissions vs. Other Admissions

Interquartile Range as a Percent of the Mean

Device-Intensive: 42%

All Other: 59%
Methodology

To compare the variation in hospital charges for different types of admissions, Direct Research looked at average charges for each of the types of Medicare admissions (MS-DRGs) for each of the 3,300 hospitals in the Medicare data base for FY 2012. Discharges were then classified into device-intensive or non-device-intensive discharges. Device-intensive discharges were those that involved hip or knee replacement, or implantation of an ICD, pacemaker, or stent. Overall, there were 29 device intensive MS-DRGs, as shown in the attachment.

Once charges were identified for each MS-DRG in the sample, charges for different MS-DRGs were normalized by expressing them as a percent of the mean charge for each DRG. Variation in charges between the device-intensive MS-DRGs and the other MS-DRGs were then compared.

To compare the variation in costs, the same classification of MS-DRGs was used. To calculate hospital specific costs for each MS-DRG discharge, Direct Research deflated hospital charges by the hospital average cost-to-charge ratio included in the Medicare IPPS “Impact” file. While this methodology does not account for variation in markups across departments, it is more accurate than using the other available data source, the CMS national average departmental cost-to-charge ratios, which mask wide variations in individual hospital markups. Once the costs were calculated for each discharge, variation was measured using the same technique described above for charges.
Appendix

Device-Intensive MS-DRGs

- MS-DRG 222 = CARDIAC DEFIBRILLATOR IMPLANT W CARDIAC CATHETERIZATION W ACUTE MYOCARDIAL INFARCTION/HEART FAILURE/SHOCK W MCC
- MS-DRG 223 = CARDIAC DEFIBRILLATOR IMPLANT W CARDIAC CATHETERIZATION W ACUTE MYOCARDIAL INFARCTION/HEART FAILURE/SHOCK W/O MCC
- MS-DRG 224 = CARDIAC DEFIBRILLATOR IMPLANT W CARDIAC CATHETERIZATION W/O ACUTE MYOCARDIAL INFARCTION/HEART FAILURE/SHOCK W MCC
- MS-DRG 225 = CARDIAC DEFIBRILLATOR IMPLANT W CARDIAC CATHETERIZATION W/O ACUTE MYOCARDIAL INFARCTION/HEART FAILURE/SHOCK W/O MCC
- MS-DRG 226 = CARDIAC DEFIBRILLATOR IMPLANT W/O CARDIAC CATHETERIZATION W MCC
- MS-DRG 227 = CARDIAC DEFIBRILLATOR IMPLANT W/O CARDIAC CATHETERIZATION W/O MCC
- MS-DRG 245 = AUTOMATIC IMPLANTABLE CARDOVERTER DEFIBRILLATORS GENERATOR PROCEDURES
- MS-DRG 265 = AUTOMATIC IMPLANTABLE CARDOVERTER DEFIBRILLATORS LEAD PROCEDURES
- MS-DRG 461 = BILATERAL OR MULTIPLE MAJOR JOINT PROCEDURES OF LOWER EXTREMITY W MCC
- MS-DRG 462 = BILATERAL OR MULTIPLE MAJOR JOINT PROCEDURES OF LOWER EXTREMITY W/O MCC
- MS-DRG 466 = REVISION OF HIP OR KNEE REPLACEMENT W MCC
- MS-DRG 467 = REVISION OF HIP OR KNEE REPLACEMENT W CC
- MS-DRG 468 = REVISION OF HIP OR KNEE REPLACEMENT W/O CC/MCC
- MS-DRG 469 = MAJOR JOINT REPLACEMENT OR REATTACHMENT OF LOWER EXTREMITY W MCC
- MS-DRG 470 = MAJOR JOINT REPLACEMENT OR REATTACHMENT OF LOWER EXTREMITY W/O MCC
- MS-DRG 242 = PERMANENT CARDIAC PACEMAKER IMPLANT W MCC
- MS-DRG 243 = PERMANENT CARDIAC PACEMAKER IMPLANT W CC
- MS-DRG 244 = PERMANENT CARDIAC PACEMAKER IMPLANT W/O CC/MCC
- MS-DRG 258 = CARDIAC PACEMAKER DEVICE REPLACEMENT W MCC
- MS-DRG 259 = CARDIAC PACEMAKER DEVICE REPLACEMENT W/O MCC
- MS-DRG 260 = CARDIAC PACEMAKER REVISION EXCEPT DEVICE REPLACEMENT W MCC
- MS-DRG 261 = CARDIAC PACEMAKER REVISION EXCEPT DEVICE REPLACEMENT W CC
- MS-DRG 262 = CARDIAC PACEMAKER REVISION EXCEPT DEVICE REPLACEMENT W/O CC/MCC
- MS-DRG 246 = PERCUTANEOUS CARDIOVASCULAR PROCEDURE W DRUG-ELUTING STENT W MCC OR 4+ VESSELS/STENTS
- MS-DRG 247 = PERCUTANEOUS CARDIOVASCULAR PROCEDURE W DRUG-ELUTING STENT W/O MCC
- MS-DRG 248 = PERCUTANEOUS CARDIOVASCULAR PROCEDURE W NON-DRUG-ELUTING STENT W MCC OR 4+ MS-DRG VES/STENTS
- MS-DRG 249 = PERCUTANEOUS CARDIOVASCULAR PROCEDURE W NON-DRUG-ELUTING STENT W/O MCC
- MS-DRG 250 = PERCUTANEOUS CARDIOVASCULAR PROCEDURE W/O CORONARY ARTERY STENT W MCC
- MS-DRG 251 = PERCUTANEOUS CARDIOVASCULAR PROCEDURE W/O CORONARY ARTERY STENT W/O MCC

NOTE: “W MCC” and “W/O MCC” refers to with or without Major Complication or Comorbidity