

## remarkable variation in ICU utilization among hospitals treating heart failure

Utilization of intensive care units (ICUs) and critical care units (CCUs) may vary among hospitals as a result of factors such as case mix severity and the medical diagnoses being treated. The extent of this variation is illustrated in the results of an analysis of Medicare ICU/CCU utilization patterns nationwide for heart failure, a frequent Medicare diagnosis representing nearly 5 percent of total Medicare admissions.

The analysis detected remarkably wide variations in utilization, which would indicate corresponding variations in the costs of care among hospitals. Specifically, the focus was on Medicare patients classified in three MS-DRGs, all representing heart failure and shock, but with differing levels of related complications or comorbidities. The exhibit below lists these MS-DRGs and shows the relative weights and national average length of stay (ALOS) for each as they appear in the *Federal Register* for FY15. The three MS-DRGs represent patients with uncomplicated heart failure, patients with complications, and patients with major complications. Because heart failure is a

common diagnosis and because the wide variations suggest variations in hospital costs, the statistics should be useful to hospitals wanting to determine whether they have opportunities for improvement or issues for study.

To examine ALOS in an ICU or CCU among claims involving the three MS-DRGs, the analysis looked at preliminary FY15 claims under the Medicare inpatient prospective payment system. HMO and Medicare-certified distinct part unit claims were excluded, as were deaths and transfers to and from other acute care hospitals and from facilities where no ICU days were reported. Facilities with 20 or fewer cases also were removed from the analysis. Charge data for these claims were paired with available Medicare cost reports for each facility that most closely matched the study period to examine estimated costs of care after applying departmental level ratios of costs to charges for each claim. Costs were deducted from Medicare payments to determine margins.

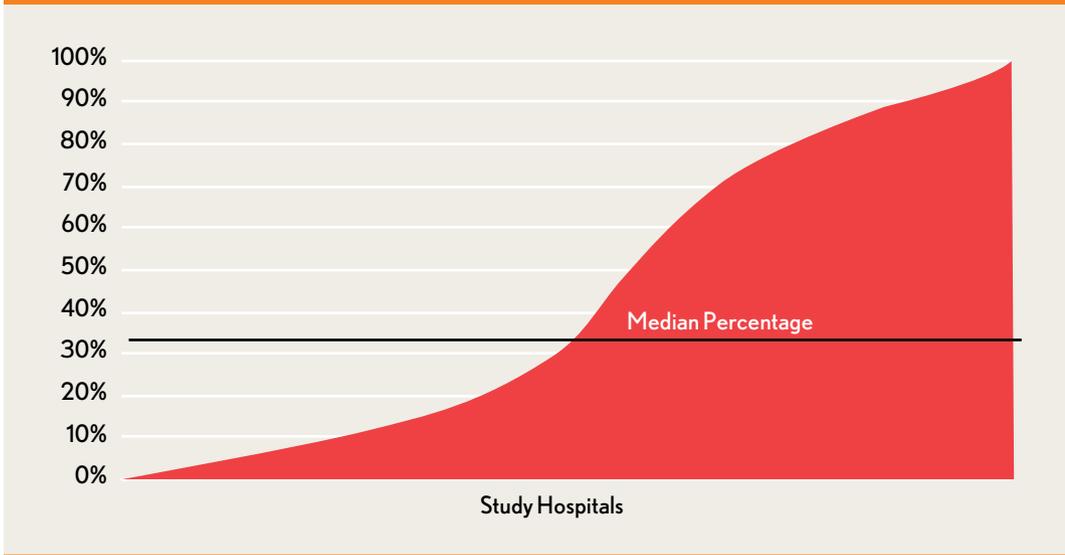
Hospitals were stratified according to their individual ratio of ICU days to total days for heart failure and shock. This ratio varied from 0.12 percent to 100 percent among the 2,766 facilities studied, with a median value for the group of 32.50 percent. The escalation of this ratio among hospitals warrants further examination and indicates profound differences among hospitals in the way heart failure and shock patients are treated nationwide. Possible explanations for these differences include the

### HEART FAILURE AND SHOCK DRG DEFINITIONS, FY15

DRG Description*	Relative Weight	Average Length of Stay
Heart Failure and Shock with MCC	1.5103	5.9298
Heart Failure and Shock with CC	0.9659	4.4800
Heart Failure and Shock Without CC/MCC	0.6716	3.0919

\* CC = Complication or Comorbidity; MCC = Major CC

**PERCENTAGE OF ICU AND CCU DAYS RELATIVE TO TOTAL DAYS (ALL 2,766 STUDY HOSPITALS)\***



\* ICU = Intensive care unit; CCU = Critical care unit

pursuit of population health management initiatives, variance in ICU/CCU availability, and variations in individual physician practice patterns.

To further examine the data, hospitals were divided into quartiles based on their ratios of ICU/CCU days to total days. Averages were then calculated for each quartile to demonstrate the effect ICU utilization may have on allocated costs, ALOS, and margins.

A particular observation based on these data warrants special consideration: A surprising number of hospitals have extremely high ICU utilization, with 336 hospitals (nearly half of the fourth quartile) showing 90 percent or more of total patient days spent in the ICU. This

comparatively high ICU/CCU utilization resulted in patient margins that are twice as low the margins associated with patients in the third quartile. The higher ICU utilization would be understandable if it reflected a need to treat patients with more severe conditions, but the case mix index (CMI) for the fourth quartile is equivalent to the CMI for the third quartile.

It is hoped that hospitals can use this information to gauge their own performance as compared with that of other hospitals nationwide. Facilities with exceptionally high rates of ICU/CCU usage may find considerable cost savings if they conclude that their ICU is being over-utilized. ■

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This analysis was performed by American Hospital Directory, Inc., Louisville, Ky. For more information, contact William Shoemaker at [wshoemaker@ahd.com](mailto:wshoemaker@ahd.com).

**UTILIZATION STATISTICS BY QUARTILE**

Quartile	Facility Count	Average Length of Stay (ALOS)	Intensive Care Unit (ICU) ALOS	Percentage ICU to Total Days	Percentage ICU to Total Cost	Per Case Margin	Case Mix Index
Q1	692	4.13	0.22	5.32%	5.29%	-\$472	1.1597
Q2	691	4.03	0.75	18.74%	14.83%	-\$684	1.1749
Q3	692	4.03	2.47	61.23%	41.20%	-\$699	1.1819
Q4	691	3.98	3.56	89.34%	56.93%	-\$1,430	1.1843