

## BRIEF REPORT

## Updating Threshold-Based Identification of Hospitalists in 2012 Medicare Pay Data

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In the absence of a unique identifier, it is difficult to assess the number of practicing hospitalists. We use a variety of thresholds of billing activity to identify hospitalists in a dataset of publicly released 2012 Medicare physician pay data. Our study updates previous estimates of the number of

hospitalists practicing nationwide in 2012 and suggests the field continues to grow. This research also highlights a need for a more precise system of identifying hospitalists. *Journal of Hospital Medicine* 2016;11:45–47. © 2015 Society of Hospital Medicine

A seminal 1996 *New England Journal of Medicine* article introduced the term “hospitalist” to describe the emerging trend of primary care physicians practicing in inpatient hospital settings.<sup>1</sup> Although physicians had practice patterns akin to hospitalists prior to the introduction of the term,<sup>2</sup> the field continues to grow and formalize as a unique specialty in medicine.

There is currently no board certification or specialty billing code associated with hospitalists. In 2009, the American Board of Internal Medicine and American Board of Family Medicine introduced a Focused Practice in Hospital Medicine optional recertification pathway.<sup>3</sup> However, absent a unique identifier, it remains difficult to identify the number of hospitalists practicing today. Issues with identification notwithstanding, published data consistently suggest that the number of hospitalists has grown dramatically over the last 2 decades.<sup>4–6</sup>

The Centers for Medicare and Medicaid Services (CMS), along with other payers, classify hospitalists based on their board certification—most commonly internal medicine or family practice. Other approaches for more precise assessment utilized billing data or hospital designation. Saint et al. identified hospital-based providers practicing in Washington State in 1994 using variable thresholds of billing for inpatient services.<sup>2</sup> In 2011, Welch et al. identified 25,787 hospitalists nationwide, using a 90% threshold of billing inpatient services in Medicare data.<sup>6</sup> That same year,

an American Hospital Association survey identified 34,411 hospitalists based on self-reporting.<sup>4</sup>

Building on the work of previous researchers, we applied an updated threshold of inpatient services in publicly available 2012 Medicare Provider Utilization and Payment Data to identify a range of hospitalists practicing in the United States. We also examine the codes billed by providers identified in different decile billing thresholds to assess the validity of using lower thresholds to identify hospitalists.

## METHODS

### Approach to Identifying Hospitalists

In April 2014, CMS publicly released Medicare Provider Utilization and Payment data from all 880,000 providers who billed Medicare Part B in 2012. The dataset included services charged for 2012 Medicare Part B fee-for-service claims. The data omitted claims billed by a unique National Provider Identifier (NPI) for fewer than 10 Medicare beneficiaries. CMS assigned a specialty designation to each provider in the pay data based on the Medicare specialty billing code listed most frequently on his or her claims.

We explored the number of hospitalists in the 2012 Medicare pay data using specialty designation in combination with patterns of billing data. We first grouped physicians with specialty designations of internal medicine and family practice (IM/FP), the most common board certifications for hospitalists. We then selected 4 Healthcare Common Procedure Coding System (HCPCS) code clusters commonly associated with hospitalist practice: acute inpatient (HCPCS codes 99221–99223, 99231–99233, and 99238–99239), observation (99218–99220, 99224–99226, and 99217), observation/inpatient same day (99234–99236), and critical care (99291–99292). We included observation services codes given the significant role hospitalists play in their use<sup>7,8</sup> and CMS’ incorporation of observation services for a threshold to identify and exempt hospital-based providers in meaningful use.<sup>9</sup>

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**TABLE 1.** Number of Hospitalists Identified

Threshold (%)	Unique NPIs	% of IM/FP Physicians	% of All Physicians
90	28,473	16.8	4.3
80	30,866	18.2	4.6
70	32,834	19.4	4.9
60	35,116	20.7	5.3
50	37,646	22.2	5.7

NOTE: Abbreviations: FP, family practice; IM, internal medicine; NPIs, National Provider Identifiers.

### Analysis of Billing Thresholds and Other Codes Billed by Hospitalists

We examined the numbers of hospitalists who would be identified using a 50%, 60%, 70%, 80%, or 90% threshold, and compared the level of change in the size of the group with each change in decile.

We then analyzed the services billed by hospitalists who billed our threshold codes between 60% and 70% of the time. We looked at all codes billed with a frequency of greater than 0.1%, grouping clusters of similar services to identify patterns of clinical activity performed by these physicians.

## RESULTS

The 2012 Medicare pay data included 664,253 physicians with unique NPIs. Of these, 169,317 had IM/FP specialty designations, whereas just under half (46.25%) of those physicians billed any of the inpatient HCPCS codes associated with our threshold.

Table 1 describes the range of number of hospitalists identified by varying the threshold of inpatient services. A total of 28,473 providers bill the threshold-associated inpatient codes almost exclusively, whereas each descending decile increases in size by an average of 7.29%.

We also analyzed billing patterns of a subset of physicians who billed our threshold codes between 60% and 70% of the time to better characterize the remainder of clinical work they perform. This group included 2282 physicians and only 56 unique HCPCS codes with frequencies greater than 0.1%. After clustering related codes, we identified 4 common code groups that account for the majority of the remaining billing beyond inpatient threshold codes (Table 2).

## DISCUSSION

Hospitalists make up approximately 5% of the practicing physicians nationwide, performing a critical role caring for hospitalized patients. Saint et al. defined a *pure hospitalist* as a physician who meets a 90% threshold of inpatient services.<sup>2</sup> This approach has been replicated in subsequent studies that used a 90% threshold to identify hospitalists.<sup>5,6</sup> Our results with the same threshold reveal more than 28,000 hospitalists with nearly uniform practice patterns, a 10% growth in the number of hospitalists from the Welch et al. analysis in 2011.<sup>6</sup>

A threshold is not a perfect tool for identifying groups of practicing physicians, as it creates an arbitrary cutoff within a dataset. Undoubtedly our analysis could include providers who would not consider themselves hospitalists, or alternatively, appear to have a hospital-based practice when they do not. Our results suggest that a 90% threshold may identify a majority of practicing hospitalists, but excludes providers who likely identify as hospitalists albeit with divergent practice and billing patterns.

A lower threshold may be more inclusive of the current realities of hospitalist practice, accounting for the myriad other services provided during, immediately prior to, or following a hospitalization. With hospitalists commonly practicing in diverse facility settings, rotating through rehabilitation or nursing home facilities, discharge clinics, and preoperative medicine practices, the continued use of a 90% threshold appears to exclude a sizable number of practicing hospitalists.

In the absence of a formal identifier, developing identification methodologies that account for the diversity of hospitalist practice is crucial. As physician payment transitions to value-based reimbursement, systems must have the ability to account for and allocate the most efficient mix of providers for their patient populations. Because provider alignment and coordination are structural features of these programs, these systems-based changes in effect require accurate identification of hospitalists, yet currently lack the tools to do so.

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**TABLE 2.** Common Codes Billed by Physicians in the 60% to 70% Decile

Clinical Service Cluster	HCPCS Codes Included	%
Threshold codes	99217, 99219, 99220, 99221, 99222, 99223, 99231, 99232, 99233, 99238, 99239, 99291	64.5
Office visit (new and established)	99203, 99204, 99205, 99211, 99212, 99213, 99214, 99215	15.3
SNF care (initial and subsequent)	99305, 99306, 99307, 99308, 99309, 99310, 99315	7.1
ECG-related codes	93000, 93010, 93042	2.5
Routine venipuncture	36415	1.0
Other codes with $f > 0.1\%$ *	25 codes	5.1
Codes with $f < 0.1\%$ †	439 codes	4.5
Total	495 codes	100.0

NOTE: Abbreviations: ECG, electrocardiograph; HCPCS, Healthcare Common Procedure Coding System; SNF, skilled nursing facility. \*These 25 codes vary in type and could not be linked into identified code clusters. On average, each code accounted for 0.2% of the billing total. †These remaining 439 codes were billed a trivial number of times, on average 0.01% per code, and represented a wide diversity of billable services.

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