Specialty Payment Model Opportunities and Assessment

Gastroenterology and Cardiology Model Design Report

A product of the **CMS Alliance to Modernize Healthcare (CAMH)**
Federally Funded Research and Development Center

Sponsored by the Centers for Medicare & Medicaid Services (CMS)

MITRE

Andrew W. Mulcahy, Chris Chan, Samuel Hirshman,
Peter J. Huckfeldt, Aaron Kofner, Jodi L. Liu,
Susan L. Lovejoy, Ioana Popescu, Justin W. Timbie,
Peter S. Hussey

Published by the RAND Corporation, Santa Monica, Calif. and The MITRE Corporation, McLean, Va.

For more information on this publication, visit **http://www.rand.org/pubs/research_reports/RR831.html**

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Preface

In August 2013, the Centers for Medicare and Medicaid Services (CMS) issued a task order to the MITRE Corporation, operator of the CMS Alliance to Modernize Healthcare (CAMH) federally funded research and development center. The goal of the task order was to inform the development of alternative payment models for specialty health care services. The results should be of interest to CMS, other payers, and health care providers interested in developing and testing alternative models for payment and delivery of health care. Mary Kapp and Claire Schreiber have served as the Government Task Leads for this work.

This report includes analyses of claims data to inform the development of payment models related to gastroenterology and cardiology services. The research addressed in this report was conducted in RAND Health, a division of the RAND Corporation, under a subcontract with MITRE. A profile of RAND Health, abstracts of its publications, and ordering information can be found at http://www.rand.org/health.

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Summary

This report describes research related to the design of payment models for ambulatory gastroenterology and cardiology services for possible testing by the Center for Medicare and Medicaid Innovation (CMMI) at the Centers for Medicare and Medicaid Services (CMS). Gastroenterology and cardiology services are common and costly among Medicare beneficiaries. Episode-based payment, which aims to create incentives for high-quality, low-cost care, has been identified as a promising alternative payment model (Calsyn and Emanuel, 2014; Miller et al., 2011; Mechanic, 2011; Mechanic and Altman, 2009).

Based on evidence from environmental scans of gastroenterology and cardiology care payment reform options (McClellan et al., 2014a; McClellan et al., 2014b) and feedback from stakeholder interviews and technical expert panels convened by the Brookings Institution and the MITRE Corporation (MITRE), CMS chose to investigate the possible development of episode-based payment models for outpatient gastroenterology and cardiology procedures. The models would be designed for testing in the traditional Medicare fee-for-service (FFS) program (Parts A and B). The details of the models have yet to be determined.

CMS asked MITRE and RAND to conduct analyses to inform design decisions related to episode-based gastroenterology and cardiology models for Medicare beneficiaries undergoing selected procedures. In particular, this report focuses on analyses of Medicare FFS claims data related to the care settings of gastrointestinal (GI) episodes for colonoscopy and upper endoscopy and cardiology episodes for percutaneous coronary intervention (PCI) and catheterization; patterns of spending during and surrounding the episodes; and the characteristics of patients receiving and practices providing the services. The analyses are intended to support decision-making related to model design and are not specific to any particular design or feature of a payment model.

CMS faces a series of decisions as it considers new payment models for gastroenterology and cardiology services. The premise of our study—informed by input from CMS—is that the payment models under consideration would take the form of an episode-based payment rather than a case management payment targeted to specialists or another approach. With this in mind, key CMS decisions include:

- Episode definition: Which gastroenterology and cardiology procedures will serve as index procedures that anchor an episode?
- Index procedure payment rate adjustments: To what extent should payment rates vary across service settings? How can the payment model accommodate multiple eligible index procedures?
- Payment model scope: Which services are included in the episode-based payment model?
- Provider eligibility for the payment model: Which providers should be eligible to participate in the payment model?

- Patient eligibility for the payment model: Which patients should be eligible to participate in the payment model?

Methods

The study population included Medicare FFS beneficiaries receiving at least one of the gastroenterology and cardiology study procedures identified by CMS and RAND, which included colonoscopy, upper GI endoscopy, cardiac catheterization, and PCI. The study sample was drawn from a 2012 100-percent sample of national Medicare FFS claims files, including the Carrier, Outpatient hospital, and Medicare Provider Analysis and Review (MedPAR) files. We defined a single study procedure per beneficiary as the "index procedure" that would potentially trigger an episode of care; for beneficiaries with more than one eligible index procedure during a nine-day window, we created a category for other "eligible procedures." We matched facility and professional claim lines for all index procedures and assigned a place of service based on the facility claim (or Carrier claim for office-based services). We identified the practice providing each index procedure using the Tax Identification Number (TIN) on the professional claim. The final analytic data sets included 3,333,814 gastroenterology index procedures and 453,843 cardiology index procedures.

We then identified health care services provided to patients in a nine-day episode around each index procedure. We classified all Carrier, Outpatient, and MedPAR claims provided during these episodes to categories including inpatient care, emergency department care, imaging, laboratory tests, pathology, anesthesiology, evaluation and management visits, and others. We calculated the number of claims and total payments in each service category for each episode, both totaled across the entire nine-day episode and for each day in the episode. We also calculated the proportion of episodes that experienced at least one claim in each service category, again over the entire nine-day episode and for each day individually. We selected a nine-day maximum episode duration in consultation with CMS and members of technical expert panels convened by the Brookings Institution. Most services related to the study procedures are expected to fall within these nine-day periods. We also report results by day in order to allow for calculations of spending and utilization over episode lengths varying from one to nine days.

Summary of Main Gastroenterology Results

Utilization Patterns

Colonoscopy procedures were more common than endoscopy procedures as index procedures. A significant share (18 percent) of colonoscopy index procedures were coded as screening procedures (as defined by the authors based on Healthcare Common Procedure Coding System [HCPCS] code), and an additional 15 percent were initiated as screening procedures but were

converted to diagnostic and therapeutic procedures, as indicated by the "-PT" HCPCS modifier on the diagnostic/therapeutic procedure claim.

We found that the majority of gastroenterology index procedures were delivered in the hospital outpatient (HOPD) and ambulatory surgical center (ASC) settings. On average, ASC payment rates were significantly lower than HOPD payment rates. We found that Medicare payments for gastroenterology index procedures would be about 16 percent lower overall if HOPD procedures were reimbursed at the lower ASC payment rates ($1.80 versus $2.15 billion). Some states used ASCs much less frequently than other states, and ASC use was less common in rural areas.

We described several patterns in the utilization of and payments for non-index procedure services in the days immediately before and following index procedures. One consistent observation is that utilization and payments for non-index services are concentrated on the date of service of the index procedure itself. We identified differences between the patterns of utilization of non-index services for episodes involving a single eligible gastroenterology procedure and multiple eligible gastroenterology index procedures. Payments for non-index services were lower for episodes with a single eligible index procedure. We also found differences in utilization patterns between screening and non-screening episodes. Screening episodes involved lower per-episode utilization and payments for non-index services and fewer non-index services other than anesthesiology. Episodes involving diagnostic and therapeutic index procedures involved higher utilization rates and payments for non-index services, including surgical pathology services.

Practice Characteristics

We identified 11,140 practices that provided gastroenterology index procedures. Many of these had low volumes; 7,808 practices provided at least 20 index procedures, and these accounted for 99.4 percent of total index procedures. In 60 percent of practices, a single physician provided all of the index procedures. Nearly 38 percent of practices used HOPDs exclusively, while fewer than 7 percent of practices provided these procedures entirely in non-hospital settings. There was substantial variation between practices in the average total payments for services during episodes (interquartile range for upper GI endoscopy, $989–$1,469; for colonoscopy, $921–$1,232). Larger practices tended to have lower average total episode payments.

Patient Characteristics

We found limited variation in payments for the index procedure and other multiple eligible index procedures occurring within an episode for colonoscopy and endoscopy episodes. However, Medicare payments for other services were considerably higher for certain subsets of beneficiaries included in the analysis—particularly, those with Medicare eligibility through end stage renal disease (ESRD) or ESRD and disability, as determined from the beneficiary summary

file. Such beneficiaries are likely to require more extensive health services due to ESRD and potentially other conditions and could be considered for exclusion from the payment model.

Summary of Main Cardiology Results

Utilization Patterns

We found that catheterization procedures were more common than PCI procedures as index procedures. While PCI index procedures accounted for only 20 percent of total index procedures by volume, they were associated with nearly 40 percent of spending on index procedures. Almost all cardiology index procedures were performed in the HOPD setting.

We described several patterns in the utilization of and payments for non-index procedure services in the days immediately before and following index procedures. As in our gastroenterology analysis, utilization and payments for non-index services were concentrated on index procedure dates of service. This suggests that a narrow episode definition is appropriate for an episode-based payment model for catheterization and PCI procedures.

We observed relatively high levels of non-index utilization and spending across a few service categories. Eligible (non-index) procedures, imaging, laboratory tests, ambulatory procedures not otherwise classified (NOC), and ambulatory non-procedural services NOC (such as physician-administered drugs) were the largest non-index payment categories on the index procedure date of service. Cardiology episodes were associated with higher rates and payments for emergency department care on the day before the index procedure compared with gastroenterology episodes, as might be expected with cardiac symptoms. The most noticeable difference in non-index utilization and spending in cardiology episodes compared with gastroenterology episodes was a significant spike in inpatient facility spending on the index procedure date of service, followed by a decline from 1 to 3 days after the index procedure, and then a marked increase from day 4 through day 7. We discuss the utilization of and payments for inpatient facility services separately from other non-index services.

Practice Characteristics

We identified 4,466 practices that provided cardiology index procedures, but many of these had low volumes; 2,868 practices provided at least 20 index procedures, and these accounted for 97 percent of total index procedures. In approximately one-third of practices, a single physician provided all of the index procedures. There was substantial variation between practices in the average total payments for services during episodes (interquartile range for catheterization, $2,851–$4,521; for PCI, $7,434–$9,409). Larger practices tended to have lower average total episode payments.

Patient Characteristics

We found that payments for non-index services during a catheterization episode varied by gender, race and ethnicity, age, and reason for current eligibility. Payments for the index procedure in PCI episodes varied across race and ethnicity. In addition, beneficiaries eligible for Medicare through ESRD incurred 30 to 50 percent higher payment for non-index services during PCI episodes relative to beneficiaries eligible through age or disability alone.

Discussion

Results of our analyses may inform CMS decisions regarding episode definition, patient and provider eligibility for potential gastroenterology and cardiology payment models, and payment rate adjustments.

Episode Definition

Our analyses highlighted several cases where special considerations may be needed in using index procedures to define an episode. First, for colonoscopy procedures, episode definitions would need to account for conversions from screening to diagnostic/therapeutic procedures. Second, procedures in an HOPD that lead directly to inpatient admission may not be identified as index procedures using the methods we applied, since the services may be billed on the inpatient claim. In contrast, a service initiated in an ASC leading directly to inpatient admission would be included.

Analyses of utilization patterns during episodes indicated that extending episode definitions beyond the day of the index procedure could increase administrative complexity and financial risk for potential model participants and would not include a substantial amount of additional services in the payment model. However, despite low frequency and payment, it may be important to monitor specific types of services, such as inpatient care, that could result from complications. This could be a component of quality measurement accompanying episode payment.

Eligibility

In analyses of practice characteristics, we found that a substantial percentage of practices that performed index procedures had a very low volume. CMS could impose a minimum practice volume threshold for participation and include most patients with relevant gastroenterology and cardiology procedures.

In analyses of patient characteristics, we found that patients with ESRD had much higher average payments than other patients; these patients could be excluded from the model or subject to payment adjustments. We did not analyze other types of patients with complex conditions; there may be other patient groups that would require either exclusion from the model or risk adjustment.

Payment Rate Adjustments

Payment differentials by service setting are relevant for gastroenterology procedures but not for the cardiology services we studied, which were provided almost exclusively in HOPDs. We found that the majority of gastroenterology index procedures were delivered in the HOPD and ASC settings. ASC payment rates were significantly lower than HOPD payment rates, which is an intended result of the design of the current ASC and HOPD Medicare payment systems. An episode-based payment model could preserve this payment differential to reflect the higher costs of providing hospital-based care. Alternatively, a new payment model could reduce or eliminate the differential, as recommended by MedPAC (Medicare Payment Advisory Commission, 2013). The argument for reduced differentials is that for some services, such as office visits, the costs are really not different. Much of the debate comes down to whether it is appropriate to pay for hospital overhead costs related to activities such as standby capacity, access for disadvantaged populations, and community outreach through higher prices for HOPD services (Medicare Payment Advisory Commission, 2013).

We also found some differences in utilization of services during episodes between settings. For example, anesthesiology services were used more frequently in ASCs than in HOPDs. Colonoscopy procedures that initiated as screening procedures were converted to diagnostic or therapeutic procedures more frequently in ASCs than in HOPDs or offices. These differences could be due to differences in patient characteristics between settings or differences in practice patterns.

We found that it was common for multiple eligible index procedures to be performed on the same day or in the same episode of care for both gastroenterology and cardiology. Episodes with multiple eligible index procedures had higher spending than episodes with a single index procedure, due to both the payments associated with the multiple eligible index procedures and higher payments for other, non-index services. Under current Medicare payment policy, multiple related procedures performed by the same provider during the same patient visit are subject to discounted payment. In an episode-based payment model, one option would be to develop a single payment rate that, on average, compensates providers for multiple index procedures and all non-index services provided in the episode. This would create incentives to reduce, on the margin, the frequency of additional index procedures and ancillary services. Another option is to develop separate payment rates for episodes with one or multiple index procedures.

Conclusion

The results of this study provide one source of information for consideration in the design of gastroenterology and cardiology payment models. Claims data can provide important information on patterns of health care utilization, but it is crucial to augment such analysis with clinical evidence and practice guidelines. The analyses presented in this report describe the

frequency and characteristics of gastroenterology and cardiology index procedures, the practices that delivered index procedures, and the patients that received index procedures. We also describe the volume and payments for services that are delivered in a nine-day episode anchored on index procedures. The results can be used to inform CMS decision-making about the definition of episodes in an episode-based payment model; payment adjustments for service setting, multiple procedures, or other factors; and eligibility for the payment model.

Acknowledgments

We thank Lee Hilborne of the University of California Los Angeles Health System and Paul Ginsburg of the University of Southern California, whose thoughtful reviews and comments greatly improved this report.

We also appreciate feedback on our analysis from Kavita Patel and Mark McClellan at the Brookings Institution and Claire Schreiber, Mary Kapp, and other members of the Patient Care Models Group at CMS. We are grateful to our colleagues at MITRE, particularly Heidi Giles, Ren Resch, Dan Speece, and Ken Hoffman, for their guidance and counsel. We thank Shawna Beck-Sullivan and Clare Stevens at RAND for project support.

Abbreviations

Acronym	Definition
ASC	ambulatory surgery center
BETOS	Berenson-Eggers Type of Service
CAMH	CMS Alliance to Modernize Healthcare
CBSA	Core Based Statistical Area
CMMI	Center for Medicare and Medicaid Innovation
CMS	Centers for Medicare and Medicaid Services
DRG	diagnosis-related group
ED	emergency department
E&M	evaluation and management
ESRD	end stage renal disease
FFRDC	federally funded research and development center
FFS	fee-for-service
GI	gastrointestinal
GTL	Government Task Lead
HCPCS	Healthcare Common Procedure Coding System
HOPD	hospital outpatient department
IDTF	independent testing facility
MedPAR	Medicare Provider Analysis and Review
NOC	not otherwise classified
OPPS	Outpatient Prospective Payment System
PCI	percutaneous coronary intervention
PMPM	per member per month
PPS	Prospective Payment System
RUC	Relative Value Scale Update Committee
SNF	skilled nursing facility
TIN	tax identification number

1. Background

This report describes research related to the design of payment models for outpatient gastroenterology and cardiology services for possible testing by the Center for Medicare and Medicaid Innovation (CMMI) at the Centers for Medicare and Medicaid Services (CMS). Gastroenterology and cardiology services are common and costly among Medicare beneficiaries. It is estimated that 60–70 million people are affected by digestive diseases in the United States, resulting in $141.8 billion in health care costs per year (National Digestive Diseases Information Clearinghouse, 2013). Despite technological advances that have decreased gastrointestinal (GI) procedure costs and increased quality of care (Dulai, Fisher, and Rothstein, 2012), significant variations in quality and cost persist (McClellan et al., 2014b). Cardiovascular disease is the leading cause of death, disability, and health care expenditures in the United States; the total cost of care is expected to triple by 2030 to $800 billion (Graham et al., 2012). Interventions to treat cardiovascular disease can be highly effective but may also be overutilized as a result of the incentives inherent in the fee-for-service (FFS) payment structure.

As described in Huckfeldt et al. (2014), episode-based payment includes a set of incentives that may improve quality and lower costs (Calsyn and Emanuel, 2014; Miller et al., 2011; Mechanic, 2011; Mechanic and Altman, 2009). Specifically, by providing a set payment for an episode of care, health care providers have a greater incentive to select the most effective and efficient treatment approaches, including services that Medicare does not pay for under FFS (Bach, Mirkin, and Luke, 2011). By decreasing or eliminating the additional payment to providers for additional services within an episode, episode-based payment discourages the provision of unnecessary services that provide little benefit. However, episode-based payment also has the potential to change health care provider behavior in unintended ways. For example, by reducing marginal payments to providers, episode-based payment may create incentives to underprovide, or "stint," on care. In addition, with a higher payment for an episode relative to individual services, episode-based payment creates incentives to increase the volume of episodes and unbundling to shift costs to services reimbursed separately. Anticipating such unintended incentives during the model design process may help to mitigate them. For example, incorporating quality monitoring may discourage stinting on care.

CMS asked the MITRE Corporation (MITRE) and RAND to conduct analyses to inform design decisions related to potential episode-based gastroenterology and cardiology models for Medicare beneficiaries undergoing selected procedures. In particular, this report focuses on analyses of Medicare claims data related to the settings of GI episodes for colonoscopy and upper endoscopy and cardiology episodes for percutaneous coronary intervention (PCI) and catheterization; patterns of spending during and surrounding the episodes; and the characteristics of patients receiving and practices providing the services.

This report informs the design of payment models for gastroenterology and cardiology through the analysis of claims data. Previous reports summarized comprehensive environmental scans of gastroenterology and cardiology care payment reform options (McClellan et al., 2014a; McClellan et al., 2014b). The environmental scans involved both a review of the literature and interviews with key stakeholders, including academic researchers, gastroenterology or cardiology providers, patient advocates, and payers. The scans sought to identify and describe potential alternative gastroenterology and cardiology payment models, garner stakeholder feedback on the benefits and challenges for each identified model, and describe models that commercial or public payers are testing.

Based on the literature and stakeholder interviews, the gastroenterology environmental scan report identified three potential models for payment reform consideration: (1) bundled payment—a lump sum for all services provided during an episode of care, (2) multidisciplinary care teams with a supplementary per member per month (PMPM) case management fee for chronic disease management, and (3) advanced mixed savings—a combination of payment reforms such as bundled payment or case management fees coupled with shared savings and focused on population health. Among these options, most stakeholders supported adoption of procedural bundles to limit variation in services delivered and the cost of care, and to incentivize care coordination. Stakeholders also emphasized the need to use appropriate performance measures as a component or adjunct to the payment model in order to ensure quality of care.

The cardiology environmental scan report identified a range of potential models for both stable chronic disease management and acute episode management. Models for stable chronic disease management may be primary-care-focused (e.g., patient-centered medical homes/ neighborhoods and accountable care organizations), cardiology-focused, or team-focused and may involve various types of payment reform such as add-on payments, shared savings, or capitation. Bundled payment was a model identified for acute care interventions.

In conjunction with the environmental scans, the Brookings Institution and MITRE convened technical expert panels to discuss these reform options and provide input on how to best design payment and delivery reform models. The technical expert panels considered each model in light of care delivery structure (such as practice size, organization, and geographic location), payment structure, requirements for provider groups, and potential undesirable consequences. The goal of the technical expert panels was not to reach consensus on what model to move forward but rather to provide guidance to CMS as it weighed the relative advantages and challenges associated with various models.

Based on evidence from the environmental scans and feedback from both the stakeholder interviews and the technical expert panels, CMS chose to move forward with analyses to support the possible development of episode-based payment models for outpatient gastroenterology and cardiology procedures. The models would be designed for testing in the traditional Medicare FFS

program (Parts A and B). The details of the model have yet to be determined. The analyses in this report are intended to generally support decision-making related to model design and are not specific to any particular design or feature of a payment model.

This report is organized as follows. In Chapter Two, we present methods used to identify the study population of Medicare beneficiaries receiving the designated GI and cardiology procedures through claims data and to classify their health care spending for analysis. In Chapter Three, we present the results of claims data analyses related to the initiation of episodes of colonoscopy and endoscopy procedures. In Chapter Four, we similarly present results for cardiology procedures. Chapter Five includes a discussion of key results from our gastroenterology and cardiology analyses and their relevance to CMS's future deliberations and decision-making regarding payment models.

2. Methods

Data Sources and Study Sample

The study population included Medicare FFS beneficiaries receiving at least one of the gastroenterology and cardiology study procedures listed in Table 2.1 between January 2 and December 24, 2012, allowing for a nine-day episode of analysis occurring entirely in calendar year 2012. We selected the Healthcare Common Procedure Coding System (HCPCS) procedure codes listed in Table 2.1 in consultation with CMS based on general procedure categories initially suggested by CMS (colonoscopy, upper GI endoscopy, cardiac catheterization, and PCI). We selected a nine-day maximum episode duration in consultation with CMS and members of technical expert panels convened by the Brookings Institution. Most services related to the study procedures are expected to fall within these nine-day periods. We also report results by day in order to allow for calculations of spending and utilization over episode lengths varying from one to nine days. The study sample was drawn from a 100-percent sample of national Medicare FFS claims files, including the Carrier, Outpatient hospital, and Medicare Provider Analysis and Review (MedPAR) files.

Table 2.1. Study Procedures: Selected Gastroenterology and Cardiology Procedure HCPCS Codes

Specialty	HCPCS Codes
Gastroenterology	44388, 44389, 44392, 44393, 44394, 45378, 45380, 45381, 45383, G0105, G0121, 44390, 44397, 45355, 45379, 45382, 45386, 45387, 45391, 45392, 45384, 45385, 43200, 43201, 43202, 43206, 43216, 43217, 43231, 43232, 43235, 43236, 43237, 43238, 43239, 43242, 43250, 43251, 43252, 43259, 43204, 43205, 43215, 43220, 43226, 43227, 43240, 43241, 43243, 43244, 43245
Cardiology*	93451, 93452, 93453, 93454, 93455, 93456, 93457, 93458, 93459, 93469, 93461, 92980, 92982, 92995, G0290

SOURCE: CMS input and authors' analysis.
NOTE: Descriptions of these procedures are provided in Tables 3.1.1 and 4.1.1.
*Several eligible procedure codes included in our study (specifically 92980, 92982, and 92995) were deleted in 2012 and replaced with new codes (92920, 92924, 92928, 92933, 92937, 92941, and 92943). Because we used 2012 Medicare claims data for our study, we used the now-deleted HCPCS codes.

We excluded denied claims using the Carrier Claim Payment Denial Code not equal to "0" or "D" (Carrier file) and Claim Medicare Non-Payment Reason Code not blank (outpatient files). We excluded denied claim lines using the Line Processing Indicator Code equal to "A" Allowed or "R" Reprocessed/"S" Secondary payer and the Line Allowed Charge Amount greater than $0 (Carrier file) and Revenue Center Non-Covered Charge Amount not equal to Revenue Center Total Charge Amount (Outpatient file).

Identifying Eligible HCPCS Procedure Codes

"Index procedures" are procedures from Table 2.1 that could hypothetically trigger an episode of care. Claim lines with these HCPCS codes appear in the Carrier and Outpatient files. The Carrier file collects professional claims across many provider types as well as facility claims from selected provider types, including ambulatory surgery centers (ASCs) and independent diagnostic testing facilities (IDTFs).

We used the place of service variable to identify a subset of claim lines with HCPCS codes from Table 2.1 as procedures that are eligible to be identified as index procedures. Not every eligible procedure is an index procedure as we describe below. We applied different rules to identify eligible professional and facility lines. For professional lines, we included

- carrier lines with line place of service equal to "11" as physician office-based eligible procedure professional lines
- carrier lines with line place of service equal to "24" and line type of service is *not* equal to "F" as ASC-based eligible procedure professional lines
- carrier lines with line place of service equal to "22" as hospital outpatient department (HOPD) eligible professional lines
- carrier lines with line place of service equal to "49" and provider specialty *not* equal to "47" as IDTF eligible professional lines.

For facility lines, we included

- carrier lines with line place of service equal to "24," line type of service equal to "F," and provider specialty equal to "49" as ASC-based eligible procedure facility lines
- carrier lines with line place of service equal to "49" and provider specialty equal to "47" as IDTF eligible procedure facility lines
- outpatient lines marked as "Hospital" in the Outpatient Base Claims file with NCH claim type code equal to "40" for outpatient claims and with an Outpatient Base Claims file type code not equal to "Inpatient," "Inpatient Part B Only," "Other," Intermediate Care," "Sub acute Inpatient," "Swing Beds," or "Reserved for National Assignment." These are outpatient hospital-based eligible procedure facility lines.

We excluded from consideration as an eligible procedure Carrier claim lines with places of service other than physician office, ASC, HOPD, or IDTF. We also excluded from consideration as an eligible procedure all inpatient, durable medical equipment, or any other claims from files other than the Carrier or Outpatient files.

Defining Reporting Categories

Gastroenterology and Cardiology Procedure Categories

We categorized eligible gastroenterology procedures as either "colonoscopy" or "upper GI endoscopy" as indicated below:

- *Colonoscopy:* HCPCS 44388; 44389; 44390; 44392; 44393; 44394; 44397; 45355; 45378; 45379; 45380; 45381; 45382; 45383; 45386; 45387; 45391; 45392; 45384; 45385; G0105; and G0121.
- *Upper GI endoscopy:* HCPCS 43200; 43201; 43202; 43204; 43205; 43206; 43215; 43216; 43217; 43219; 43220; 43226; 43227; 43228; 43231; 43232; 43235; 43236; 43237; 43238; 43239; 43240; 43241; 43242; 43243; 43244; 43245; 43246; 43247; 43248; 43249; 43250; 43251; 43252; 43255; 43256; 43257; 43258; 43259; 43456; and 43458.

Similarly, we categorized eligible cardiology procedures as either "percutaneous coronary intervention" or "catheterization" as follows:

- *Cardiac catheterization:* HCPCS 93451; 93452; 93453; 93454; 93455; 93456; 93457; 93458; 93459; 93460; and 93461.
- *PCI:* HCPCS 92980; 92982; 92995; and G0290.

Gastroenterology Procedure Disposition

For gastroenterology procedures, we also distinguished between screening, diagnostic, and therapeutic procedures as follows:

- *Screening or diagnostic colonoscopy:* HCPCS 44388; 44389; 44392; 44393; 44394; 45378; 45380; 45381; 45383; G0105; and G0121.
- *Therapeutic colonoscopy:* HCPCS 44390; 44397; 45355; 45379; 45382; 45386; 45387; 45391; 45392; 45384; and 45385.
- *Screening upper GI endoscopy:* HCPCS 43200; 43201; 43202; 43206; 43216; 43217; 43231; 43232; 43235; 43236; 43237; 43238; 43239; 43242; 43250; 43251; 43252; and 43259.
- *Therapeutic upper GI endoscopy:* HCPCS 43204; 43205; 43215; 43220; 43226; 43227; 43240; 43241; 43243; 43244; 43245; 43246; 43247; 43248; 43249; 43255; 43257; 43219; 43228; 43256; 43258; 43456; and 43458.

For some analyses, we distinguished between gastroenterology procedures that were initiated by providers as screening procedures and those that were not. The two HCPCS Level II "G" codes (G0105 and G0121) apply to procedures that were initiated and ultimately billed as screening procedures. Other procedures could have been started as screening procedures but ultimately billed at a higher rate if an appropriate diagnostic or therapeutic procedure code applied. Providers bill for these diagnostic and therapeutic procedures with the "PT" modifier to signify that they began as screening services. Finally, diagnostic and therapeutic procedures without the "PT" modifier were not initiated as screening procedures based on information available in the claims.

Procedure Place of Service

Many of the tables below report results separately for procedures delivered in one of four places of service: HOPD, ASC, IDTF, and physician office. The matching procedure that we describe in the following section introduces some ambiguity in terms of place of service because for some

matches between facility and professional lines there are discrepancies between the place of service on the facility and professional claims lines. We assigned each episode to a setting using information on the procedure facility claim; episodes with Carrier physician office procedure claims are assigned the physician office setting.

Matching Procedure Claims

We expected to identify both facility and professional claim lines for services provided in ASC, HOPD, and IDTF settings because facilities and physicians bill Medicare for payment separately. We developed a hierarchical process to link matching facility and professional lines and assign a single identifier to each set of related procedure lines.

The matching process was hierarchical, designed to make the most straightforward matches first and then relaxing criteria to identify additional matches in the remaining, unmatched claim lines. Once a facility or professional line was matched, it was not considered in later match tiers. We used several pieces of information from the claims data—including beneficiary identifier, HCPCS code, date of service, and place of service—to identify matches. Table 2.2 defines the six matching tiers used.

Table 2.2. Criteria Used to Define Tiers for Matching Facility and Professional Claims

Tier	Beneficiary Identifier	HCPCS Code	Date of Service	Place of Service
Tier 1	Exact match	Exact match	Exact match	Exact match
Tier 2	Exact match	Exact match	Within three days of facility claim date of service	Exact match
Tier 3	Exact match	Exact match	Exact match	Not considered
Tier 4	Exact match	Exact match	Within three days of facility claim date of service	Not considered
Tier 5	Exact match	Same category	Exact match	Not considered
Tier 6	Exact match	Same category	Within three days of facility claim date of service	Not considered

SOURCE: Authors' categorization developed in consultation with CMS.

We observed four kinds of matches in each tier. First, in one-to-one matches we found that a single facility line matched to a single professional line. Second, in one-to-many matches we found that a single facility line matched to two or more professional lines. Third, in many-to-one matches we found that multiple facility lines matched to the same single professional line. Finally, in many-to-many matches we found that multiple facility lines simultaneously matched to multiple professional lines. As we describe below, one-to-one matches were by far the most common match type. One-to-one matches are also more straightforward to describe and analyze.

We focus on one-to-one matches for most of our analyses below. Any analyses of other match types are explicitly labeled as such.

Gastroenterology Match Results

We used HOPD and ASC facility lines as the denominator when we describe match rates; for example, a reported match rate of 90.1 percent conveys that 90.1 percent of facility claims were matched to at least one professional claim. Table 2.3 summarizes the gastroenterology match results for HOPD and ASC facility procedure lines. Gastroenterology matches were concentrated in Tiers 1 and 5 and included mostly one-to-one matches.

For HOPD procedures, the most restrictive match criteria (i.e., Tier 1) resulted in one-to-one matches for 74.5 percent of facility lines. Tier 5 relaxed the specific HCPCS match requirement and resulted in one-to-one matches for an additional 9.5 percent of facility lines. Tier 3 relaxed the place of service match requirement and resulted in one-to-one matches for an additional 3.9 percent of facility lines. All "other" match types, including one-to-many, many-to-one, and many-to-many match types, collectively resulted in matches for less than 2 percent of facility lines. Relaxing the date of service match criteria in Tiers 2, 4, and 6 led to very few additional matches over Tiers 1, 3, and 5 where we required an exact date of service match.

At the end of the matching process, we were left with 9.9 percent of outpatient facility lines without a professional claim match. We checked whether the match rate would improve if we allowed matching with replacement of professional claims. In other words, we allowed more than one facility claim to match to the same professional claim. This resulted in an additional 1.7 percent of HOPD facility lines matching to professional lines. We did not include these additional matches with replacement in our analysis because the professional claims are already matched and included in the analysis. There are many possible reasons that multiple facility claims per professional claim exist in the claims data; we did not seek to identify these reasons in this analysis.

Gastroenterology ASC match rates and patterns resembled the HOPD results, with over 85 percent of ASC facility lines matching one-to-one with the most stringent match criteria in Tier 1. Less than 1 percent of ASC facility lines were involved in many-to-one, one-to-many, or many-to-many matches with professional lines. Relaxing the exact date of service match (in Tiers 2, 4, and 6) resulted in matches for less than 0.5 percent of facility lines.

Table 2.3. Gastroenterology Match Results by Tier (number and percentage of total)

Setting Type	HOPD All Matches	HOPD One-to-One	HOPD Other Matches	HOPD All Matches	ASC One-to-One	ASC Other Matches
Total facility claims	2,495,173 [100%]			2,076,979 [100%]		
Tier 1 matches		1,859,046 [74.5%]	7,876 [0.3%]		1,773,781 [85.4%]	2,367 [0.1%]
Tier 2 matches		8,074 [0.3%]	86 [<0.1%]		3,262 [0.2%]	10 [<0.1%]
Tier 3 matches		97,629 [3.9%]	656 [<0.1%]		126,493 [6.1%]	136 [<0.1%]
Tier 4 matches		2,755 [0.1%]	42 [<0.1%]		426 [<0.1%]	2 [<0.1%]
Tier 5 matches		238,118 [9.5%]	32,907 [1.3%]		101,861 [4.9%]	8,628 [0.4%]
Tier 6 matches		1,496 [0.1%]	550 [<0.1%]		426 [<0.1%]	62 [<0.1%]
Total match rate	All HOPD: 90.1%			All ASC: 97.1%		

Cardiology Match Results

We found a very small number (n=230) of IDTF facility lines. Because of this low frequency, we excluded IDTF procedures for analyses in this report. Overall, the pattern of cardiology match rates mirrored the gastroenterology results (Table 2.4). One-to-one, Tier 1 matches were very common, followed in frequency by one-to-one Tier 5 and Tier 3 matches, respectively. As in the gastroenterology results, relaxing the exact date of service match criteria produced few new matches. There were, however, more one-to-many, many-to-one, and many-to-many matches in cardiology than in gastroenterology, especially in Tier 5 where we relaxed the specific HCPCS match requirement.

Table 2.4. Cardiology Match Results by Tier (number and [percent of total])

Setting Type	HOPD All Matches	HOPD One-to-One	HOPD Other Matches
Total facility claims	577,061 [100%]		
Tier 1 matches		381,350 [66.1%]	1,068 [0.2%]
Tier 2 matches		3,217 [0.6%]	15 [<0.1%]
Tier 3 matches		31,760 [5.5%]	117 [<0.1%]
Tier 4 matches		828 [0.1%]	7 [<0.1%]
Tier 5 matches		95,671 [16.6%]	29,927 [5.2%]
Tier 6 matches		1,027 [0.2%]	557 [0.1%]
Total match rate	94.5%		

Identifying Index Procedures

We found that a relatively small but significant share of beneficiaries received multiple gastroenterology or cardiology procedures over a short period of time, and often on the same date of service. For these analyses, we defined a single procedure as the "index procedure" and defined other procedures from Table 2.1 occurring within a nine-day episode as "other eligible procedures."

We applied the following decision rules sequentially to define index procedures:

1. If multiple eligible procedures for a beneficiary occurred on different dates of service, we defined the earliest occurring procedure as the index procedure.
2. If there were multiple eligible procedures with the same date of service, and if all eligible procedures but one had the -51 multiple procedure HCPCS modifier, we flagged the

procedure without the -51 modifier as the index procedure. Providers use the multiple procedure HCPCS modifier to report to Medicare and other payers that more than one related procedure were performed on the same visit. Medicare pays a discounted rate for the multiple procedures.

3. If there were multiple procedures with the same date of service without the -51 HCPCS modifier, we flagged the procedure with the higher Medicare paid amount as the index procedure.
4. In all remaining cases we randomly selected one of the multiple eligible procedures to be the index procedure.

Gastroenterology

We identified 4,204,076 total eligible gastroenterology procedures with dates of service between January 2, 2012, and December 24, 2012. We excluded a small number (29,447) of 2012 eligible procedures with dates of service outside that date range because we could not observe a full nine-day episode for these services.

About half of the eligible procedures were specific to a beneficiary ID and a discrete nine-day episode. All of these meet our criteria for index procedures. The other half of procedures overlapped, either because they occurred for the same beneficiary on the same date of service or because they had dates of service that were close enough that their nine-day episodes overlapped. We used the decision rules listed above to identify a single index procedure in these cases.

Most Common Multiple Procedure Scenarios

We investigated the most common gastroenterology index procedure HCPCS combinations when the same beneficiary had exactly two eligible procedures on the same date of service. Table 2.5 reports the frequency of different combinations of eligible procedure types. We identified the index procedure following the rules described above. The most common scenario involved a diagnostic upper GI endoscopy procedure paired with a diagnostic or screening colonoscopy procedure. This scenario accounted for 36.1 percent of episodes with multiple eligible procedures. Other common scenarios involved a diagnostic or screening colonoscopy procedure paired with a therapeutic colonoscopy procedure (22.9 percent of total) and a diagnostic upper GI endoscopy procedure paired with a therapeutic upper GI endoscopy procedure (12.4 percent of total). Other scenarios—including scenarios involving multiple procedures from the same category—were relatively rare.

Table 2.5. Frequency of Multiple Gastroenterology Eligible Procedure Scenarios

Index Procedure	Other Eligible Procedure: Colonoscopy – *Diagnostic or Screening*	Other Eligible Procedure: Colonoscopy – *Therapeutic*	Other Eligible Procedure: Upper GI Endoscopy – *Diagnostic*	Other Eligible Procedure: Upper GI Endoscopy – *Therapeutic*
Colonoscopy				
Diagnostic or Screening	1.9%	22.9%	6.4%	0.1%
Therapeutic	0.8%	2.9%	0.6%	<0.1%
Upper GI Endoscopy				
Diagnostic	36.1%	9.5%	2.9%	12.4%
Therapeutic	0.9%	0.3%	1.7%	0.7%

Table 2.6 lists the top 20 specific combinations of HCPCS codes for eligible procedures occurring in overlapping nine-day episodes. The first listed HCPCS code ("HCPCS 1") is the procedure flagged as the index procedure after our selection rules. The most common combination was a diagnostic colonoscopy procedure (45380, colonoscopy with biopsy) paired with a therapeutic colonoscopy code (45385, colonoscopy with removal by snare technique). The second most common combination was a diagnostic endoscopy procedure (43239, endoscopy with biopsy) paired with a diagnostic colonoscopy code (45380, colonoscopy with biopsy). Most pairs involved either two diagnostic codes (one colonoscopy and one upper GI endoscopy) or a combination of diagnostic and therapeutic codes (both colonoscopy or both upper GI endoscopy). The combinations that are not included in Table 2.6 accounted for 15.8 percent of the total. HCPCS modifiers -59 (distinct procedure), -51 (multiple procedures), -SG (ambulatory surgery center), and -PT (initiated as a screening procedure) were relatively common (each with about 10 percent of total combinations).

Table 2.6. Frequency of Specific Gastroenterology Eligible Procedure Combinations

HCPCS 1	HCPCS 2	HCPCS 1 Category	HCPCS 2 Category	Percent of Multiple Eligible Procedures
45380	45385	Diag./Scr. Col.	Ther. Col.	17.4%
43239	45380	Diag. Endo.	Diag./Scr. Col.	14.7%
43239	45378	Diag. Endo.	Diag./Scr. Col.	11.6%
43239	45385	Diag. Endo.	Ther. Col.	6.3%
43239	43248	Diag. Endo.	Ther. Endo.	5.6%
43239	43249	Diag. Endo.	Ther. Endo.	4.8%

HCPCS 1	HCPCS 2	HCPCS 1 Category	HCPCS 2 Category	Percent of Multiple Eligible Procedures
43235	45378	Diag. Endo.	Diag./Scr. Col.	3.0%
45381	45385	Diag./Scr. Col.	Ther. Col.	2.6%
45384	45385	Ther. Col.	Ther. Col.	2.5%
45378	43239	Diag./Scr. Col.	Diag. Endo.	2.1%
43239	G0121	Diag. Endo.	Diag./Scr. Col.	2.1%
43239	G0105	Diag. Endo.	Diag./Scr. Col.	1.7%
45380	45384	Diag./Scr. Col.	Ther. Col.	1.6%
43239	45384	Diag. Endo.	Ther. Col.	1.5%
43235	45380	Diag. Endo.	Diag./Scr. Col.	1.5%
45380	43239	Diag./Scr. Col.	Diag. Endo.	1.3%
43235	45385	Diag. Endo.	Ther. Col.	1.3%
G0121	43239	Diag./Scr. Col.	Diag. Endo.	1.0%
45380	45381	Diag./Scr. Col.	Diag./Scr. Col.	0.9%
43239	43259	Diag. Endo.	Diag. Endo.	0.8%
All others	All others	N/A	N/A	15.8%

NOTE: “Diag.” is diagnostic. “Scr.” is screening. “Col.” is colonoscopy. “Endo.” is endoscopy. “Ther.” is therapeutic.

Gastroenterology Index Procedure File

The final analytic file contained a set of 3,333,814 index procedures and episodes. The number of study index procedures and episodes are identical by design. In the remainder of this report, we refer to “index procedures” or “episodes” depending on whether or not we are focusing on the trigger procedure or the full nine-day episode surrounding the index procedure. Other procedures with eligible HCPCS codes (i.e., potential index procedures that occurred in the same nine-day episode as an index procedure) are referred to as “other eligible procedures.” The remainder of this report focuses on index procedures unless otherwise specified.

Cardiology

We identified 510,845 cardiology eligible procedures with dates of service between January 2, 2012, and December 24, 2012. We excluded a small number (4,509) of 2012 eligible procedures with dates of service outside that date range because we could not observe a full nine-day

episode for these services. About one-third of these eligible procedures occurred in overlapping nine-day episodes for a unique beneficiary.

Most Common Multiple Eligible Procedure Scenarios

We investigated the most common cardiology index procedure HCPCS combinations when the same beneficiary had exactly two eligible procedures on the same date of service. Table 2.7 reports the frequency of different combinations of eligible procedure types (either catheterization or PCI). The most common scenario involved a PCI index procedure paired with a catheterization procedure. This scenario accounted for 73.6 percent of multiple cardiology eligible procedures.

Table 2.7. Frequency of Multiple Cardiology Eligible Procedure Scenarios

Index Procedure	Other Eligible Procedure: *Catheterization*	Other Eligible Procedure: *PCI*
Catheterization	6.3%	19.9%
PCI	73.6%	0.3%

Table 2.8 lists the top 20 specific combinations of cardiology eligible procedures with overlapping episodes. The first listed HCPCS code ("HCPCS 1") is the eligible procedure flagged as the index procedure. The five most common combinations were multiple catheterization procedures (93458, 93460, 93459, 93454, and 93451). Several common combinations involved HCPCS Level II code G0290 (transcatheter placement of a drug eluting intracoronary stent(s), percutaneous, with or without other therapeutic intervention). This code was deleted in 2013 (after the end of our study timeframe). Overall, the top 20 specific combinations accounted for 91 percent of all combinations of multiple procedures with overlapping episodes.

Table 2.8. Frequency of Specific Cardiology Index Procedure Combinations

HCPCS 1	HCPCS 2	HCPCS 1 Category	HCPCS 2 Category	Percentage of Multiple Index Procedures
G0290	93458	PCI	Cath.	36.5%
G0290	93459	PCI	Cath.	9.4%
92980	93458	PCI	Cath.	8.4%
93458	G0290	Cath.	PCI	5.7%
G0290	93454	PCI	Cath.	4.7%
93454	G0290	Cath.	PCI	3.8%

HCPCS 1	HCPCS 2	HCPCS 1 Category	HCPCS 2 Category	Percentage of Multiple Index Procedures
93458	93458	Cath.	Cath.	3.3%
92982	93458	PCI	Cath.	3.0%
93459	G0290	Cath.	PCI	2.3%
G0290	93460	PCI	Cath.	2.1%
92980	93459	PCI	Cath.	1.9%
93458	92980	Cath.	PCI	1.7%
92980	93454	PCI	Cath.	1.6%
G0290	93455	PCI	Cath.	1.5%
92982	93459	PCI	Cath.	1.3%
93455	G0290	Cath.	PCI	1.1%
93454	92980	Cath.	PCI	0.9%
93459	93459	Cath.	Cath.	0.7%
92980	93460	PCI	Cath.	0.7%
93458	92982	Cath.	PCI	0.6%
All	All	N/A	N/A	8.8%

Cardiology Index Procedure File

The final analytic file contained a set of 453,843 cardiology index procedures, each of which was associated with a distinct episode of care. We focus on these cardiology index procedures and episodes for our analyses in Chapter Four. As with gastroenterology, cardiology procedures with eligible HCPCS codes that were not identified as index procedures but that occur during nine-day episodes are referred to as "other eligible procedures" in the remainder of this report.

Identifying and Categorizing Services Related to Index Procedures

This section describes our approach to identify health care services provided to patients in a nine-day episode around each index procedure. We used the index procedures identified above to define nine-day date ranges including the date of service for the index procedure (specifically, the facility line date of service in the case of ASC, HOPD, and IDTF index procedures) as time $t = 0$, the day prior to the index procedure date of service as $t = -1$, and the seven days following the index procedure as $t = 1$ through $t = 7$.

We identified all claims in the Carrier, Outpatient, and MedPAR files matching to the same beneficiary identifier on the index procedure claim and within the nine-day episode. For the MedPAR match, we included all inpatient stays with an admission date within the nine-day

episode. We included only claims with non-zero payment amounts. Services that were packaged into the payment for an index procedure and therefore had zero payment amount on Medicare claim lines were not included in the analysis.

We categorized each claim line that matched these criteria into two categories. The first indicates whether the service was provided in the inpatient setting, the emergency department (ED) setting, or another ambulatory setting (including physician office, ASC, HOPD, and IDTF, or any other place of service). The second category splits services delivered in the ambulatory setting further by type of service. The criteria we used for each source file are listed in Table 2.9. We used a combination of place of service information, Berenson-Eggers Type of Service (BETOS) codes, HCPCS codes, and our analysis specifications to categorize each line into one of the mutually exclusive categories listed in Table 2.9.

We calculated the number of claims and total payments in each service category for each episode, both totaled across the entire nine-day episode and for each day in the episode. We also calculated the proportion of episodes that experienced at least one claim in each service category, again over the entire nine-day episode and for each day individually.

Table 2.9. Categories of Services Used in Analysis of Utilization during Episodes

Category I	Category II	Criteria (applies to carrier and outpatient files unless otherwise noted)
Emergency department	All Services	Carrier: Place of service = Emergency department Outpatient: Revenue codes observation unit or 0760, 0762, 0450-0459, 0981
Inpatient	Facility	MedPAR: MedPAR claims with short stay/long stay/skilled nursing facility indicator code = “short stay or long stay hospital”
Inpatient	Professional	Carrier: Place of service = Inpatient hospital
Ambulatory	Index procedures	HCPCS listed in the methods section Index procedure lines only
Ambulatory	Eligible procedures	HCPCS listed in the methods section Excludes index procedure lines
Ambulatory	Surgical pathology	HCPCS 88300-88399
Ambulatory	Evaluation and Management (E&M)	Not previously categorized BETOS M*
Ambulatory	Imaging	Not previously categorized BETOS I*
Ambulatory	Laboratory tests	Not previously categorized BETOS T1*

Category I	Category II	Criteria (applies to carrier and outpatient files unless otherwise noted)
Ambulatory	Other Tests	Not previously categorized BETOS T2*
Ambulatory	Anesthesiology	Not previously categorized BETOS P0
Ambulatory	Ambulatory Procedures Not Otherwise Classified (NOC)	Not previously categorized BETOS P*
Ambulatory	Ambulatory Services NOC	Not previously categorized

3. Results: Gastroenterology Analyses

This chapter describes the results from our analyses in five topic areas: (1) summary of index procedures, (2) considerations regarding setting of service/care delivery, (3) utilization of other services during episodes of care, (4) practice characteristics, and (5) patient characteristics. Analyses of utilization of index procedures, differences between service settings, and related services during episodes of care can inform CMS decisions about episode definition, payment adjustments, and the scope of the payment model. Analyses of practice and patient characteristics can inform decisions about eligibility for payment models.

(1) Summary of Index Procedures

This section includes descriptive data on the volume of gastroenterology index procedures. Table 3.1.1 reports the volume of eligible and index procedures by HCPCS procedure code. Every instance in the claims data of a HCPCS code listed in Table 2.1 is an eligible procedure. Only some of these instances meet our criteria as index procedures (as described in the "Identifying Index Procedures" section in the previous chapter). For most HCPCS codes, the majority of HCPCS instances in the Medicare data met our criteria as study index procedures. For example, of the 2,178,517 instances of HCPCS 43239, "Egd biopsy single/multiple," that we identified in the claims data, 64 percent met our criteria as index procedures. The remaining 36 percent were provided within nine-day episodes anchored on another eligible procedure. The ten highest-volume index procedures included a range of diagnostic, screening, and therapeutic procedures, and a mix of endoscopy and colonoscopy procedures.

Table 3.1.1. Volume of Gastroenterology Eligible and Index Procedures

HCPCS Code	HCPCS Description	Procedure Type	Count of Eligible Procedures	Count of Index Procedures	% Eligible that are Index
43239	Egd biopsy single/multiple	Diagnostic Endoscopy	2,178,517	1,398,164	64%
45380	Colonoscopy and biopsy	Diag./Screen Colonoscopy	1,527,115	1,287,581	84%
45385	Lesion removal colonoscopy	Therapeutic Colonoscopy	1,159,039	944,949	82%
45378	Diagnostic colonoscopy	Diag./Screen Colonoscopy	941,626	897,342	95%
G0105	Colorectal scr.; pt high risk	Screening Colonoscopy	427,937	386,033	90%
G0121	Colorectal scr.; pt not high risk	Screening Colonoscopy	426,976	375,179	88%
43235	Egd diagnostic brush wash	Diagnostic Endoscopy	392,854	295,374	75%
45384	Lesion remove colonoscopy	Therapeutic Colonoscopy	261,495	205,935	79%
43249	Esoph egd dilation <30 mm	Therapeutic Endoscopy	156,677	145,767	93%

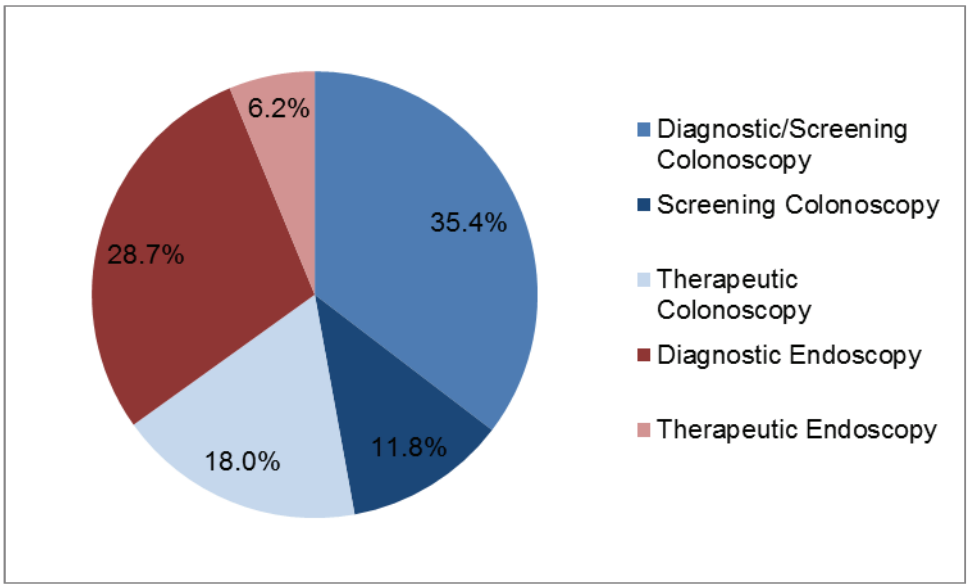
HCPCS Code	HCPCS Description	Procedure Type	Count of Eligible Procedures	Count of Index Procedures	% Eligible that are Index
43248	Egd guide wire insertion	Therapeutic Endoscopy	176,883	104,411	59%
45383	Lesion removal colonoscopy	Diag./Screen Colonoscopy	77,976	60,142	77%
43259	Egd us exam duodenum/jejunum	Diagnostic Endoscopy	53,099	48,105	91%
43242	Egd us fine needle bx/aspir	Diagnostic Endoscopy	38,908	37,673	97%
43246	Egd place gastrostomy tube	Therapeutic Endoscopy	36,724	35,448	97%
43251	Egd remove lesion snare	Diagnostic Endoscopy	40,522	34,886	86%
45381	Colonoscopy submucous inj	Diag./Screen Colonoscopy	102,977	29,240	28%
43247	Egd remove foreign body	Therapeutic Endoscopy	36,074	27,731	77%
43258	Operative upper gi endoscopy	Therapeutic Endoscopy	23,760	20,230	85%
43244	Egd varices ligation	Therapeutic Endoscopy	18,760	18,149	97%
43255	Egd control bleeding any	Therapeutic Endoscopy	19,579	16,130	82%
43200	Esophagoscopy flexible brush	Diagnostic Endoscopy	14,948	14,450	97%
43245	Egd dilate stricture	Therapeutic Endoscopy	16,150	13,787	85%
43236	Uppr gi scope w/submuc inj	Diagnostic Endoscopy	18,111	10,936	60%
45382	Colonoscopy/control bleeding	Therapeutic Colonoscopy	15,974	8,145	51%
43228	Esoph endoscopy ablation	Therapeutic Endoscopy	7,308	7,192	98%
44388	Colonoscopy	Diag./Screen Colonoscopy	6,630	6,304	95%
43250	Egd cautery tumor polyp	Diagnostic Endoscopy	8,001	6,173	77%
43202	Esophagoscopy flex biopsy	Diagnostic Endoscopy	3,991	3,287	82%
43226	Esoph endoscopy dilation	Therapeutic Endoscopy	3,457	3,069	89%
44389	Colonoscopy with biopsy	Diag./Screen Colonoscopy	3,251	2,832	87%
43220	Esophagoscopy balloon <30mm	Therapeutic Endoscopy	3,027	2,684	89%
43256	Uppr gi endoscopy w/stent	Therapeutic Endoscopy	2,805	2,367	84%
44394	Colonoscopy w/snare	Diag./Screen Colonoscopy	2,218	1,852	83%
45386	Colonoscopy dilate stricture	Therapeutic Colonoscopy	2,983	1,742	58%
43458	Dilate esophagus	Therapeutic Endoscopy	1,773	1,406	79%
43215	Esophagoscopy flex remove fb	Therapeutic Endoscopy	1,434	1,322	92%
43237	Endoscopic us exam esoph	Diagnostic Endoscopy	1,246	1,084	87%
43456	Dilate esophagus	Therapeutic Endoscopy	1,716	883	51%
43241	Egd tube/cath insertion	Therapeutic Endoscopy	1,177	730	62%

HCPCS Code	HCPCS Description	Procedure Type	Count of Eligible Procedures	Count of Index Procedures	% Eligible that are Index
43231	Esophagoscop ultrasound exam	Diagnostic Endoscopy	785	723	92%
44392	Colonoscopy & polypectomy	Diag./Screen Colonoscopy	805	708	88%
43232	Esophagoscopy w/us needle bx	Diagnostic Endoscopy	720	696	97%
45379	Colonoscopy w/fb removal	Therapeutic Colonoscopy	963	694	72%
43238	Egd us fine needle bx/aspir	Diagnostic Endoscopy	742	655	88%
43243	Egd injection varices	Therapeutic Endoscopy	922	596	65%
43201	Esoph scope w/submucous inj	Diagnostic Endoscopy	640	559	87%
45391	Colonoscopy w/endoscope us	Therapeutic Colonoscopy	1,110	465	42%
43219	Esophagus endoscopy	Therapeutic Endoscopy	410	346	84%
45355	Surgical colonoscopy	Therapeutic Colonoscopy	342	303	89%
43205	Esophagus endoscopy/ligation	Therapeutic Endoscopy	266	255	96%
44393	Colonoscopy lesion removal	Diag./Screen Colonoscopy	221	184	83%
45387	Colonoscopy w/stent	Therapeutic Colonoscopy	195	172	88%
43257	Egd w/thrml txmnt gerd	Therapeutic Endoscopy	130	126	97%
43217	Esophagoscopy snare les remv	Diagnostic Endoscopy	165	121	73%
43240	Egd w/transmural drain cyst	Therapeutic Endoscopy	182	96	53%
43227	Esophagoscopy control bleed	Therapeutic Endoscopy	105	94	90%
45392	Colonoscopy w/endoscopic fnb	Therapeutic Colonoscopy	158	85	54%
43216	Esophagoscopy lesion removal	Diagnostic Endoscopy	81	73	90%
43204	Esoph scope w/sclerosis inj	Therapeutic Endoscopy	23	18	78%
44390	Colonoscopy for foreign body	Therapeutic Colonoscopy	27	15	56%
44397	Colonoscopy w/stent	Therapeutic Colonoscopy	3	3	100%

SOURCE: Authors' analysis of Medicare Outpatient and Carrier claims data for Medicare FFS beneficiaries, 2012.
"Eligible procedures" include all claim lines with the indicated HCPCS in the Carrier and Outpatient files for 2012.
"Index procedures" include only those claim lines that meet the index procedure criteria as described in Chapter Two.

Figure 3.1.1 describes the distribution of gastroenterology index procedures across categories. Nearly two-thirds of the gastroenterology index procedures were colonoscopy procedures. Of these, 11.8 percent were screening colonoscopies.

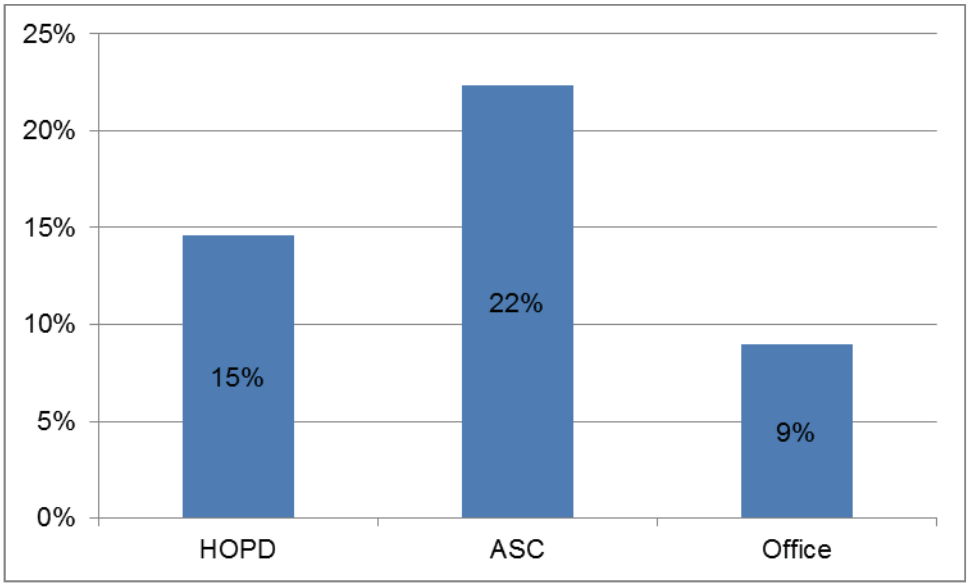
Figure 3.1.1. Volume of Gastroenterology Index Procedures, by Type



SOURCE: Authors' analysis of Medicare Outpatient and Carrier claims data for Medicare FFS beneficiaries, 2012.

We used the "-PT" HCPCS modifier to identify the proportion of index procedures in each category that were initiated as screening procedures by providers but converted to diagnostic or therapeutic procedures (for example, a polypectomy following detection and removal of a polyp during a screening procedure). A very small fraction (<0.1 percent) of diagnostic and therapeutic endoscopy procedures were billed with the "-PT" modifier to signify that the procedure began as a screening procedure. A significant share (18 percent) of diagnostic and therapeutic colonoscopy index procedures were billed with the "-PT" modifier. The proportion of diagnostic and therapeutic colonoscopy index procedures billed with the "-PT" modifier varied by episode place of service (Figure 3.1.2), ranging from a low of 9 percent in the office setting to a high of 22 percent in the ASC setting.

Figure 3.1.2. Proportion of Diagnostic and Therapeutic Colonoscopy Index Procedures That Initiated as Screening, by Index Procedure Setting



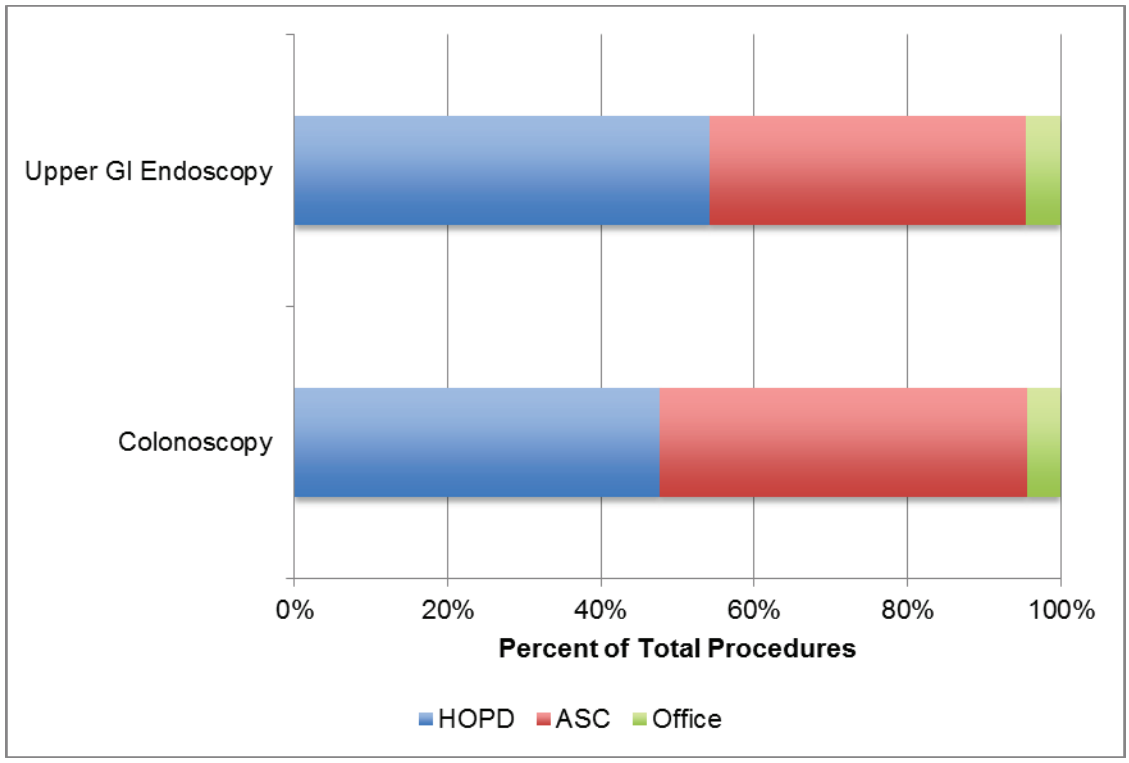
SOURCE: Authors' analysis of Medicare Outpatient and Carrier claims data for Medicare FFS beneficiaries, 2012

(2) Setting

CMS payment rates differ across settings for the same procedure. The Medicare Payment Advisory Commission and others (Wynn, Hussey, and Ruder, 2011; Medicare Payment Advisory Commission, 2013) have questioned whether these differences in payments are warranted. Medicare payment policy could address these setting-related differences in payments, either as a standalone policy or as part of an episode-based payment model. Potential policy approaches include paying on a "least cost alternative" basis—i.e., eliminating payment differentials between settings—or reducing the amount of differentials, recognizing that some justifiable cost differences may exist that should be recognized by Medicare payment policy. This section describes the distribution of index procedures across settings and the average per-procedure payment differential for index procedures performed in different settings. These analyses provide information about the potential impact of a policy that would reduce or eliminate payment differentials.

Colonoscopy and upper GI endoscopy index procedures were performed primarily in HOPDs and ASCs; a small percentage was performed in physician offices (Figure 3.2.1). A slightly higher percentage of procedures were performed in HOPDs than in ASCs.

Figure 3.2.1. Volume of Colonoscopy and Upper GI Endoscopy Index Procedures, by Setting



SOURCE: Authors' analysis of Medicare Outpatient and Carrier claims data for Medicare fee-for-service beneficiaries, 2012

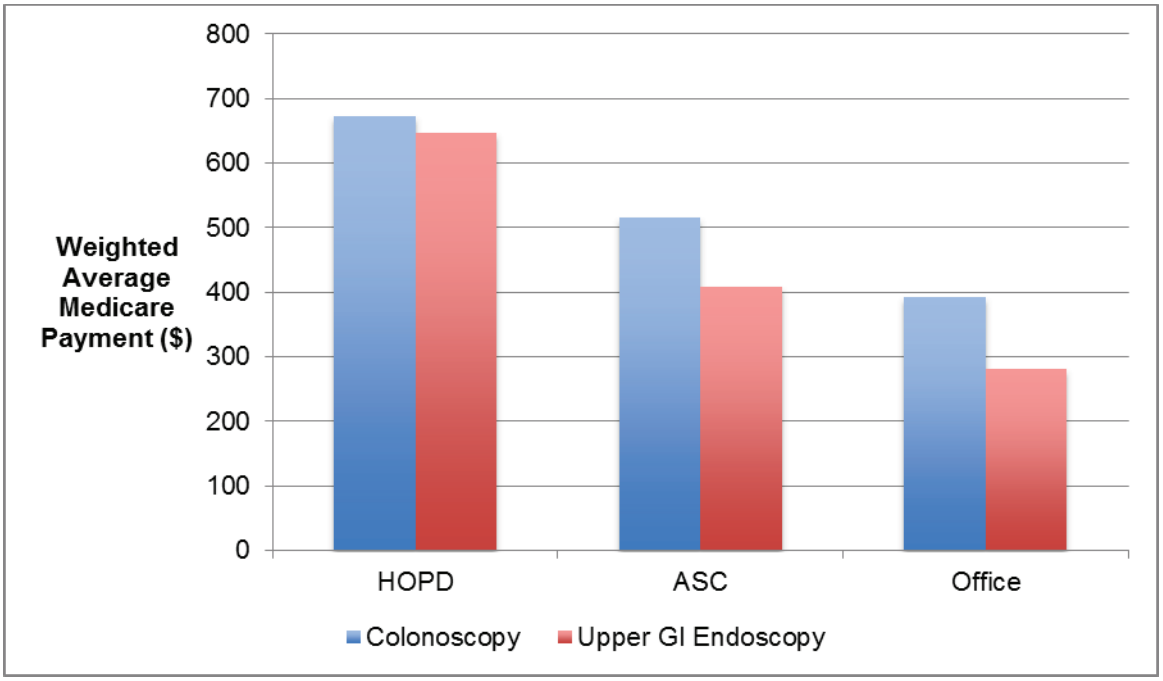
Medicare payment rates for professional services (e.g., physician work) do not vary across settings, but payment rates for the facility-related components of care (e.g., equipment and buildings) do. Hospitals and ASCs are paid separately for facility and professional services. Physician offices receive a single payment per service that includes a "practice expense" component for office space, staff, supplies, and equipment; a "work" component for physician labor; and a "professional liability insurance" component for malpractice insurance costs. Practice expense payment rates are determined by the Medicare Physician Fee Schedule, which is developed, based on recommendations from the Relative Value Scale Update Committee (RUC), for the most part without reference to HOPD or ASC payment rates (there are some exceptions, such as limits on payments for some office-based services at the hospital payment rate). HOPD payment rates are set prospectively, based on cost analyses across hospitals, by CMS and include payment for some "packaged" services that are integral to the main procedure and would be separately paid for in office settings. Medicare uses the same unit of payment for both ASCs and HOPDs for most procedures, but applies a different payment rate for the same procedure in each setting.

Figure 3.2.2 shows the weighted average of the amount that Medicare paid for colonoscopy and upper GI endoscopy index procedures (including both facility and professional claims) in each of

the three settings in 2012. Procedure-specific average payment rates and volumes are shown in Appendix Table A.1. The average payment amount for each procedure in each setting was weighted by the volume of that service in that setting. These weighted averages reflect differences in the mix of procedures provided in each setting as well as differences in payment rates between settings. The weighted average payment amount for procedures provided in the ASC was 73 percent of the HOPD payment amount, and the weighted average payment amount for physician office procedures was 53 percent of the HOPD payment amount.

The total amount that Medicare paid for all of the index procedures in our sample was $2.15 billion. If Medicare had paid HOPDs no more than ASCs, total payments would have been approximately $1.80 billion. This estimate is based on the product of the average ASC payment rate for each procedure and the volume of the procedure in HOPDs. These calculations provide a sense of the size of the difference in payments between settings; an actual change to Medicare payment policy could also consider the resources required to provide the services in each setting and any differences in patient mix or other factors (for example geographic adjustment) between settings (Medicare Payment Advisory Commission, 2013).

Figure 3.2.2. Medicare Payment Amounts for Colonoscopy and Upper GI Endoscopy Procedures, by Setting



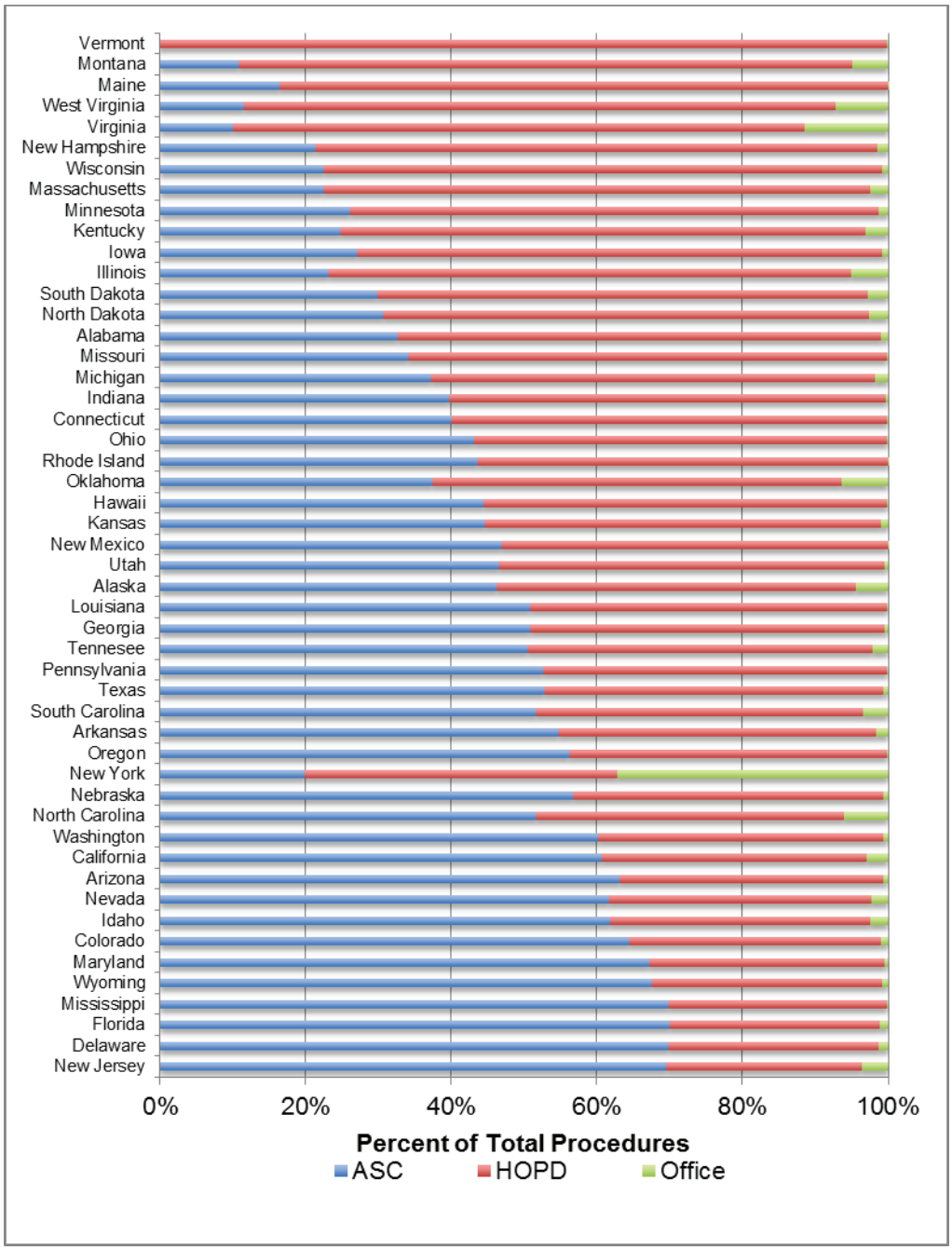
SOURCE: Authors' analysis of Medicare Outpatient and Carrier claims data for Medicare fee-for-service beneficiaries, 2012.

NOTE: Procedure-specific payment amounts were weighted by the volume of each procedure in each setting. The payment amounts reflect actual Medicare payment amounts including geographic and all other payment adjustments, but not including the beneficiary's responsibility for payment. The payment amounts also do not adjust for differences in packaging/bundling of ancillary services between settings.

We investigated how the settings in which procedures were performed varied across states and between urban and rural areas of the country. These analyses may help CMS identify different patterns in regulation, managed care penetration, and other health care system characteristics that have the potential to influence the implementation of an episode-based payment system.

Figure 3.2.3 shows the percentage of index procedures in each of the three settings in each state. There is considerable variation between states. New York is an outlier in the percentage of procedures performed in physician offices. ASC utilization varied widely across states; it was most common in Florida, Delaware, and Mississippi and least common in Vermont (no ASC procedures), Virginia, and Montana. Regulations related to the establishment of new ASCs (Certificate of Need) and licensure vary by state. In 2013, 26 of 50 states had Certificate of Need regulations in place for ASCs (Reimbursement Principles, 2013); the mean percentage of index procedures in ASCs was 37 percent in these states, compared with 49 percent in the other 24 states. These data indicate that the effects of changes to Medicare payment policy based on setting payment differentials would vary widely by state.

Figure 3.2.3. Settings of Colonoscopy and Upper GI Endoscopy Procedures, by State

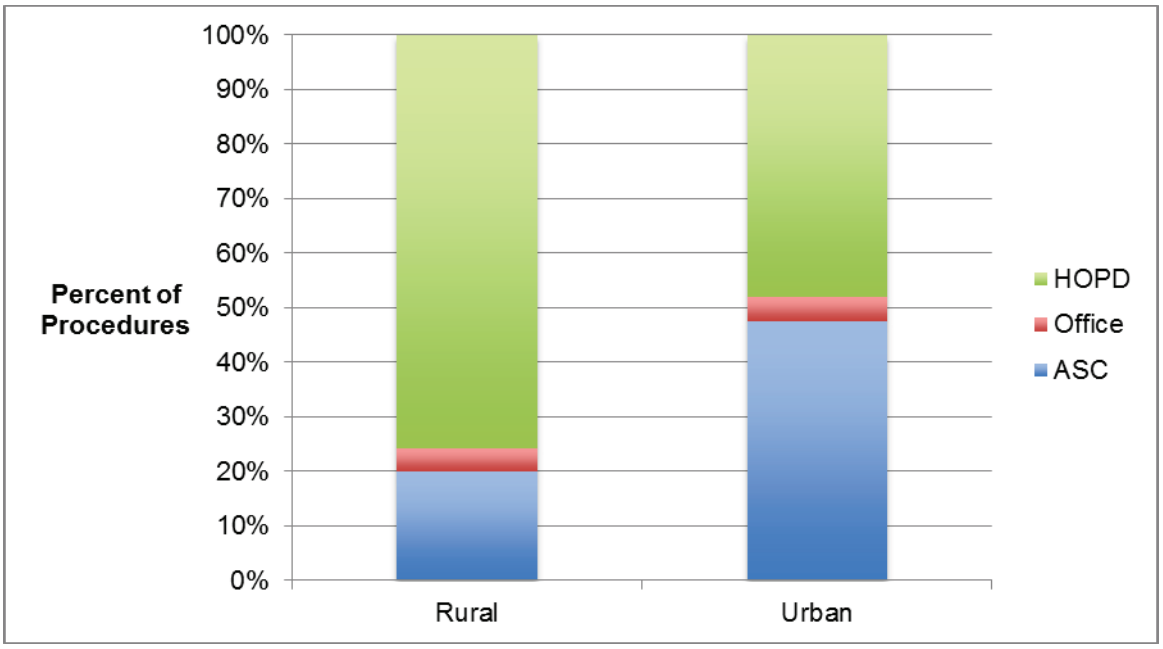


SOURCE: Authors' analysis of Medicare Outpatient and Carrier claims data for Medicare FFS beneficiaries, 2012.

NOTE: Stats are sorted by the percentage of index procedures performed in the HOPD setting.

Figure 3.2.4 shows the percentage of index procedures in each of the three settings in urban and rural areas. In rural areas, index procedures were much more likely to have been performed in the HOPD setting. A Medicare payment policy addressing payment differentials by setting would likely have a greater impact on providers and patients in rural areas.

Figure 3.2.4. Settings of Colonoscopy and Upper GI Endoscopy Procedures in Rural and Urban Counties



SOURCE: Authors' analysis of Medicare Outpatient and Carrier claims data for Medicare fee-for-service beneficiaries, 2012. "Urban" is defined as in a Metropolitan Statistical Area, and "Rural" is defined as not in a Metropolitan Statistical Area.

(3) Utilization of Other Services during Episodes of Care

As discussed in Chapter One, episode-based payment creates incentives for reduced utilization and cost of care provided during the episodes. Ideally, this would result in a minimization of care with limited or no clinical benefit; however, other types of care could be affected as well. In this section, we identify the services that were provided in nine-day episodes around index procedures. These are the services that would most likely be affected by an episode-based payment model. The data presented here, which are based on claims, do not allow for definitive clinical judgments as to whether the services were clinically appropriate, discretionary, or related to the index procedure. However, data on the frequency and spending for these services provide a bound for the potential effects of an episode-based payment model. As an extreme example, if no separately paid services were provided in episodes around index procedures, an episode-based payment model could not result in any savings for the Medicare program; in contrast, the greater the provision of separately paid services, the greater the potential savings. Some types of utilization, such as inpatient care, are more likely to be due to complications of care that could be related to quality and therefore should be considered in model design as a quality monitoring target. Variations in utilization between settings of care, practices, or patient groups provide additional information on practice patterns that could inform the design of a payment model.

One important set of non-index procedures are the eligible gastroenterology procedures that were not identified as index procedures, usually because we found multiple eligible procedures on the

same date of service and identified another procedure as the index procedure. We included these eligible procedures as a separate category to facilitate discussion on different payment approaches for episodes with multiple eligible procedures. Payments for episodes with multiple index procedures (for example a colonoscopy and upper GI endoscopy procedure on the same date of service) could differ from payments for episodes with only a single index procedure.

All of the results discussed in this section focus on utilization and spending (i.e., the amount that Medicare paid) on services other than the index procedure itself ("non-index" services). As a hypothetical example, 20 percent higher non-index spending amount for HOPD episodes relative to ASC episodes means that on average Medicare paid 20 percent more for non-index services throughout the nine-day episodes for episodes with an HOPD index procedure.

Table 3.3.1 summarizes the frequency, volume, and paid amounts for non-index services. The table is organized into panels by date of service relative to the index procedure date of service (ascending vertically), and by panels of episode setting (HOPD, ASC, and physician office, in that order, horizontally). The cells report rates of utilization and per-episode payments for services in different categories including evaluation and management services, anesthesiology, eligible procedures, etc. (see Chapter Two for definitions). The rate of utilization (or "share of episodes" in the table) reports the proportion of episodes with at least one claim in the category on the indicated date.

We focus on per-episode spending and report two complementary sets of spending results. In the first set, we calculate per-episode spending as total payments for a service category divided by the total number of gastroenterology episodes, including those with and without utilization in the specific service category and day. In the second set, we calculate per-episode spending as total payments for a service category divided by the number of gastroenterology episodes with utilization in the specific service category and day. We refer to per-episode spending statistics calculated using the first approach as "unconditional" because the denominator does not depend on whether or not episodes utilized non-index services. Spending results calculated using the first approach are "conditional" because the denominator changes in response to the proportion of episodes with utilization in each service category. The two approaches provide complementary information about Medicare payments for services provided during episodes. We report unconditional outcomes in Table 3.3.1 and other figures in this section. We report conditional payment amounts (i.e., payments per episode with utilization in each category) in Appendix Table A.2.

As an example, we found $223.8 million in spending on surgical pathology services on the day of ASC index procedures. We divided this total by the total number of episodes with ASC index procedures (n=1,519,810), including those episodes with and without surgical pathology services, to calculate an unconditional per-episode payment of $147.28 for surgical pathology services on the date of service of the index procedure (see Table 3.3.1). Table 3.3.1 reports that

66.2 percent of episodes with ASC index procedures (i.e., 1,006,115 of 1,519,810 episodes) included surgical pathology services on the date of service of the index procedure. The conditional per-episode payment for day-of surgical pathology services is $223.8 million divided by 1,006,115, or $222.56 (see Appendix Table A.2). There are large differences between unconditional and conditional per-episode payments when utilization rates are low. For example, payments for day-of imaging for episodes with ASC index procedures are $123.28, although day-of imaging services occur in just over one percent of episodes. Unconditional day-of imaging payments for episodes with ASC index procedures are just $1.32 because the relatively small imaging payments are spread overall episodes with ASC index procedures, not just those episodes with day-of imaging services.

For the inpatient facility services category, the table reports the total paid amount for inpatient visits with an admission date that matched the episode date in question. For example, an inpatient admission with payments of $20,000 that began on the fifth day after the date of service of the index procedure would be assigned to day 5, along with the entire $20,000 paid amount.

The most frequently occurring non-index services were surgical pathology, anesthesiology, laboratory tests, and eligible procedures (multiple index procedures). The highest payments were for surgical pathology, anesthesiology, and eligible procedures. Inpatient facility payments were large despite low incidence, reflecting the high cost of inpatient care. We address inpatient facility payments separately in the next section.

Table 3.3.1. Frequency and Medicare Payments for Services Provided During Gastroenterology Episodes

Place of Service	Service Type	HOPD (n=1,665,353): *Share of Episodes*	HOPD (n=1,665,353): *Payments per HOPD Episode*	ASC (n=1,519,810): *Share of Episodes*	ASC (n=1,519,810): *Payments per ASC Episode*	Office (n=148,651): *Share of Episodes*	Office (n=148,651): *Payments per Office Episode*
1 DAY BEFORE INDEX PROCEDURE DATE							
Ambulatory excluding ED	E&M	6.0%	$5.31	4.7%	$3.66	5.7%	$4.68
Ambulatory excluding ED	Imaging	2.4%	$4.26	1.0%	$1.32	1.2%	$1.96
Ambulatory excluding ED	Laboratory Tests	4.0%	$2.73	1.7%	$0.97	2.3%	$1.46
Ambulatory excluding ED	Surgical Pathology	0.3%	$0.36	0.2%	$0.44	0.4%	$0.80
Ambulatory excluding ED	Other Tests	1.7%	$0.66	0.5%	$0.26	0.7%	$0.54
Ambulatory excluding ED	Anesthesiology	0.2%	$0.19	0.1%	$0.12	0.2%	$0.19
Ambulatory excluding ED	Eligible Procedures	0.1%	$0.23	0.0%	$0.11	0.0%	$0.03
Ambulatory excluding ED	Ambulatory Proc. NOC	1.8%	$3.32	1.1%	$1.27	1.6%	$1.67
Ambulatory excluding ED	Ambulatory Svcs. NOC	2.5%	$2.95	0.7%	$1.00	0.8%	$0.93
Inpatient	All Facility Services	0.0%	$1.21	0.0%	$0.25	0.2%	$16.11
Inpatient	All Professional Services	1.4%	$2.03	0.0%	$0.03	0.8%	$1.40
ED	All Services	1.5%	$6.22	0.1%	$0.12	0.3%	$0.35
DAY OF INDEX PROCEDURE							
Ambulatory excluding ED	E&M	4.3%	$3.32	2.0%	$1.29	14.0%	$10.28
Ambulatory excluding ED	Imaging	3.8%	$5.33	1.1%	$1.32	1.5%	$2.73
Ambulatory excluding ED	Laboratory Tests	22.9%	$7.94	3.3%	$2.02	7.6%	$4.63
Ambulatory excluding ED	Surgical Pathology	62.4%	$82.93	66.2%	$147.28	61.8%	$175.53
Ambulatory excluding ED	Other Tests	4.3%	$1.36	0.2%	$0.10	0.8%	$0.36
Ambulatory excluding ED	Anesthesiology	49.8%	$60.56	65.8%	$75.56	64.6%	$82.49
Ambulatory excluding ED	Eligible Procedures	27.6%	$102.94	25.4%	$59.61	13.5%	$16.31
Ambulatory excluding ED	Ambulatory Proc. NOC	4.1%	$15.21	0.8%	$2.09	3.4%	$3.72
Ambulatory excluding ED	Ambulatory Svcs. NOC	95.0%	$10.72	0.7%	$0.82	15.5%	$1.27
Inpatient	All Facility Services	0.1%	$6.87	0.2%	$35.42	0.2%	$28.88

Place of Service	Service Type	HOPD (n=1,665,353): *Share of Episodes*	HOPD (n=1,665,353): *Payments per HOPD Episode*	ASC (n=1,519,810): *Share of Episodes*	ASC (n=1,519,810): *Payments per ASC Episode*	Office (n=148,651): *Share of Episodes*	Office (n=148,651): *Payments per Office Episode*
Inpatient	All Professional Services	4.0%	$5.02	0.3%	$0.81	1.1%	$2.87
ED	All Services	2.0%	$4.30	0.3%	$0.46	0.3%	$0.46
1 DAY AFTER INDEX PROCEDURE DATE							
Ambulatory excluding ED	E&M	4.8%	$3.60	3.8%	$2.74	4.4%	$3.38
Ambulatory excluding ED	Imaging	1.8%	$3.57	1.4%	$1.80	1.5%	$2.54
Ambulatory excluding ED	Laboratory Tests	2.8%	$1.54	1.3%	$0.77	1.5%	$1.00
Ambulatory excluding ED	Surgical Pathology	1.3%	$1.20	1.9%	$3.16	2.6%	$5.53
Ambulatory excluding ED	Other Tests	0.8%	$0.51	0.5%	$0.30	0.6%	$0.58
Ambulatory excluding ED	Anesthesiology	0.3%	$0.39	0.3%	$0.38	0.5%	$0.62
Ambulatory excluding ED	Eligible Procedures	0.3%	$1.86	0.3%	$1.33	0.6%	$2.09
Ambulatory excluding ED	Ambulatory Proc. NOC	1.9%	$4.94	1.4%	$2.08	2.0%	$2.58
Ambulatory excluding ED	Ambulatory Svcs. NOC	2.9%	$2.77	0.9%	$1.56	1.1%	$1.19
Inpatient	All Facility Services	0.1%	$15.09	0.2%	$36.95	0.2%	$21.48
Inpatient	All Professional Services	1.1%	$1.62	0.4%	$1.94	1.1%	$2.76
ED	All Services	0.6%	$1.17	0.3%	$0.39	0.2%	$0.31
2 DAYS AFTER INDEX PROCEDURE DATE							
Ambulatory excluding ED	E&M	3.7%	$2.83	3.3%	$2.37	4.0%	$3.05
Ambulatory excluding ED	Imaging	1.4%	$2.81	1.1%	$1.52	1.4%	$2.46
Ambulatory excluding ED	Laboratory Tests	2.0%	$1.12	1.1%	$0.67	1.4%	$0.99
Ambulatory excluding ED	Surgical Pathology	0.4%	$0.41	0.6%	$1.32	1.7%	$3.33
Ambulatory excluding ED	Other Tests	0.6%	$0.41	0.4%	$0.28	0.6%	$0.42
Ambulatory excluding ED	Anesthesiology	0.1%	$0.20	0.2%	$0.21	0.3%	$0.36
Ambulatory excluding ED	Eligible Procedures	0.1%	$0.87	0.2%	$0.67	0.5%	$1.94
Ambulatory excluding ED	Ambulatory Proc. NOC	1.5%	$4.03	1.2%	$2.03	1.7%	$2.53
Ambulatory excluding ED	Ambulatory Svcs. NOC	1.7%	$2.26	0.8%	$1.35	0.9%	$1.03

Place of Service	Service Type	HOPD (n=1,665,353): *Share of Episodes*	HOPD (n=1,665,353): *Payments per HOPD Episode*	ASC (n=1,519,810): *Share of Episodes*	ASC (n=1,519,810): *Payments per ASC Episode*	Office (n=148,651): *Share of Episodes*	Office (n=148,651): *Payments per Office Episode*
Inpatient	All Facility Services	0.1%	$12.15	0.1%	$19.47	0.2%	$21.03
Inpatient	All Professional Services	0.6%	$1.00	0.4%	$1.23	0.9%	$2.37
ED	All Services	0.4%	$1.03	0.3%	$0.32	0.2%	$0.29
3 DAYS AFTER INDEX PROCEDURE DATE							
Ambulatory excluding ED	E&M	3.5%	$2.66	3.0%	$2.16	3.7%	$2.81
Ambulatory excluding ED	Imaging	1.2%	$2.52	1.0%	$1.35	1.2%	$2.17
Ambulatory excluding ED	Laboratory Tests	1.9%	$1.02	1.0%	$0.63	1.2%	$0.89
Ambulatory excluding ED	Surgical Pathology	0.3%	$0.40	0.6%	$1.01	1.4%	$2.69
Ambulatory excluding ED	Other Tests	0.5%	$0.36	0.4%	$0.24	0.6%	$0.50
Ambulatory excluding ED	Anesthesiology	0.1%	$0.17	0.1%	$0.19	0.2%	$0.34
Ambulatory excluding ED	Eligible Procedures	0.1%	$0.72	0.1%	$0.59	0.3%	$1.12
Ambulatory excluding ED	Ambulatory Proc. NOC	1.3%	$3.69	1.1%	$1.77	1.5%	$1.99
Ambulatory excluding ED	Ambulatory Svcs. NOC	1.5%	$2.09	0.7%	$1.16	0.8%	$0.89
Inpatient	All Facility Services	0.1%	$10.44	0.1%	$20.63	0.1%	$15.56
Inpatient	All Professional Services	0.5%	$0.98	0.5%	$1.24	0.9%	$2.04
ED	All Services	0.4%	$0.97	0.2%	$0.29	0.2%	$0.26
4 DAYS AFTER INDEX PROCEDURE DATE							
Ambulatory excluding ED	E&M	3.6%	$2.75	3.0%	$2.22	3.8%	$2.94
Ambulatory excluding ED	Imaging	1.2%	$2.49	1.0%	$1.32	1.1%	$2.07
Ambulatory excluding ED	Laboratory Tests	1.9%	$1.03	1.1%	$0.63	1.3%	$0.86
Ambulatory excluding ED	Surgical Pathology	0.2%	$0.28	0.4%	$0.87	1.2%	$2.27
Ambulatory excluding ED	Other Tests	0.5%	$0.36	0.4%	$0.26	0.6%	$0.52
Ambulatory excluding ED	Anesthesiology	0.1%	$0.16	0.1%	$0.18	0.2%	$0.34
Ambulatory excluding ED	Eligible Procedures	0.1%	$0.63	0.1%	$0.51	0.3%	$0.97
Ambulatory excluding ED	Ambulatory Proc. NOC	1.3%	$3.77	1.1%	$1.84	1.6%	$2.16

Place of Service	Service Type	HOPD (n=1,665,353): *Share of Episodes*	HOPD (n=1,665,353): *Payments per HOPD Episode*	ASC (n=1,519,810): *Share of Episodes*	ASC (n=1,519,810): *Payments per ASC Episode*	Office (n=148,651): *Share of Episodes*	Office (n=148,651): *Payments per Office Episode*
Ambulatory excluding ED	Ambulatory Svcs. NOC	1.4%	$2.11	0.7%	$1.26	0.8%	$0.83
Inpatient	All Facility Services	0.2%	$20.45	0.1%	$20.86	0.1%	$13.85
Inpatient	All Professional Services	0.6%	$1.47	0.5%	$1.28	0.8%	$2.01
ED	All Services	0.4%	$0.99	0.2%	$0.29	0.2%	$0.24
5 DAYS AFTER INDEX PROCEDURE DATE							
Ambulatory excluding ED	E&M	4.2%	$3.20	3.6%	$2.66	4.1%	$3.19
Ambulatory excluding ED	Imaging	1.3%	$2.64	1.1%	$1.46	1.3%	$2.34
Ambulatory excluding ED	Laboratory Tests	2.0%	$1.13	1.2%	$0.72	1.4%	$0.90
Ambulatory excluding ED	Surgical Pathology	0.2%	$0.30	0.4%	$0.73	1.2%	$2.24
Ambulatory excluding ED	Other Tests	0.6%	$0.43	0.4%	$0.27	0.6%	$0.43
Ambulatory excluding ED	Anesthesiology	0.1%	$0.19	0.2%	$0.20	0.2%	$0.31
Ambulatory excluding ED	Eligible Procedures	0.1%	$0.67	0.1%	$0.61	0.3%	$0.90
Ambulatory excluding ED	Ambulatory Proc. NOC	1.5%	$4.53	1.2%	$2.06	1.6%	$2.19
Ambulatory excluding ED	Ambulatory Svcs. NOC	1.5%	$2.53	0.8%	$1.38	0.9%	$1.41
Inpatient	All Facility Services	0.2%	$21.07	0.1%	$22.83	0.1%	$17.42
Inpatient	All Professional Services	0.7%	$1.91	0.5%	$1.42	0.8%	$1.87
ED	All Services	0.4%	$0.97	0.2%	$0.29	0.2%	$0.23
6 DAYS AFTER INDEX PROCEDURE DATE							
Ambulatory excluding ED	E&M	5.8%	$4.43	5.1%	$3.70	5.6%	$4.32
Ambulatory excluding ED	Imaging	1.6%	$3.32	1.4%	$1.93	1.6%	$2.90
Ambulatory excluding ED	Laboratory Tests	2.6%	$1.45	1.6%	$0.97	1.7%	$1.20
Ambulatory excluding ED	Surgical Pathology	0.2%	$0.37	0.4%	$0.75	1.0%	$1.93
Ambulatory excluding ED	Other Tests	0.7%	$0.54	0.6%	$0.36	0.8%	$0.61
Ambulatory excluding ED	Anesthesiology	0.2%	$0.25	0.2%	$0.25	0.3%	$0.38
Ambulatory excluding ED	Eligible Procedures	0.1%	$0.83	0.2%	$0.69	0.3%	$0.92

Place of Service	Service Type	HOPD (n=1,665,353): *Share of Episodes*	HOPD (n=1,665,353): *Payments per HOPD Episode*	ASC (n=1,519,810): *Share of Episodes*	ASC (n=1,519,810): *Payments per ASC Episode*	Office (n=148,651): *Share of Episodes*	Office (n=148,651): *Payments per Office Episode*
Ambulatory excluding ED	Ambulatory Proc. NOC	1.9%	$5.78	1.6%	$2.84	2.2%	$3.36
Ambulatory excluding ED	Ambulatory Svcs. NOC	1.8%	$3.03	1.0%	$1.84	1.1%	$1.30
Inpatient	All Facility Services	0.2%	$24.04	0.1%	$24.47	0.1%	$15.20
Inpatient	All Professional Services	0.8%	$2.36	0.6%	$1.59	0.8%	$2.05
ED	All Services	0.4%	$0.95	0.2%	$0.27	0.2%	$0.25
7 DAYS AFTER INDEX PROCEDURE DATE							
Ambulatory excluding ED	E&M	7.4%	$5.54	6.6%	$4.76	7.6%	$5.76
Ambulatory excluding ED	Imaging	2.0%	$4.12	1.8%	$2.47	1.9%	$3.59
Ambulatory excluding ED	Laboratory Tests	3.2%	$1.76	2.1%	$1.20	2.2%	$1.49
Ambulatory excluding ED	Surgical Pathology	0.4%	$0.61	0.7%	$1.47	1.5%	$3.79
Ambulatory excluding ED	Other Tests	0.9%	$0.65	0.7%	$0.45	1.0%	$0.81
Ambulatory excluding ED	Anesthesiology	0.3%	$0.48	0.5%	$0.64	1.0%	$1.40
Ambulatory excluding ED	Eligible Procedures	0.4%	$2.75	0.6%	$2.80	1.1%	$4.27
Ambulatory excluding ED	Ambulatory Proc. NOC	2.3%	$7.58	1.9%	$3.43	2.5%	$3.51
Ambulatory excluding ED	Ambulatory Svcs. NOC	2.3%	$3.44	1.2%	$1.93	1.3%	$1.58
Inpatient	All Facility Services	0.2%	$27.12	0.1%	$29.82	0.1%	$21.45
Inpatient	All Professional Services	0.9%	$2.93	0.6%	$1.91	0.8%	$2.29
ED	All Services	0.4%	$0.95	0.2%	$0.28	0.2%	$0.27

SOURCE: Authors' analysis of Medicare Outpatient, Carrier, and MedPAR claims data for Medicare FFS beneficiaries, 2012.

NOTE: "Proc." is procedure and "Svcs." is services. The denominator included 3,333,814 gastroenterology episodes, including 1,665,353 episodes with HOPD index procedures, 1,519,810 episodes with ASC index procedures, and 148,651 episodes with office index procedures.

Inpatient services

Inpatient hospitalizations are rare; they occur in no more than 0.25 percent of episodes on any day across all three index procedure places of service. However, due to high per-admission payment amounts, inpatient facility payments are a significant portion of total Medicare payments within episodes. Due to differences in the way that inpatient admissions are recorded in claims data, and due to the fact that Medicare pays for inpatient hospitalizations under a

separate prospective payment system, we exclude inpatient facility services from estimates of per-episode spending throughout the remainder of this chapter.[1]

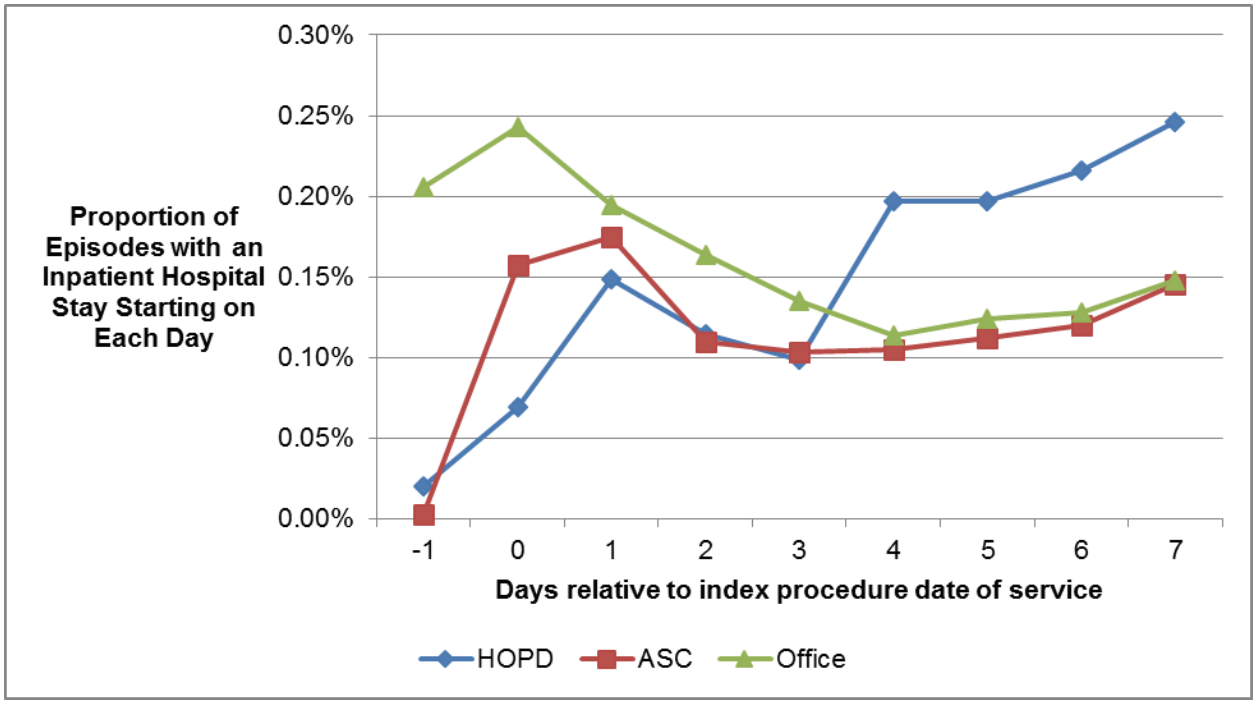
The episode used in these analyses extended seven days after the index procedure date of service. While this date range is relatively short, it does allow us to track inpatient hospital utilization that is potentially related to complications from gastroenterology index procedures. Figure 3.3.1 plots the proportion of episode-days with an inpatient hospitalization, with episodes split by index procedure place of service. Inpatient hospitalization rates increased over time for episodes with HOPD index procedures, decreased over time for episodes with office index procedures, and were relatively level from day zero to 7 for episodes with ASC index procedures. We found that inpatient facility payments increased gradually over time for episodes with index procedures in the HOPD setting and were relatively flat over time for episodes with index procedures in the ASC and office settings. Inpatient facility payments are the only payment category with significant payments in days 1 through 7 relative to the index procedure date of service.

Several important limitations must be kept in mind before interpreting these inpatient utilization patterns as proxies for post-procedure complications. First, inpatient procedures may follow gastroenterology index procedures to remove newly discovered tumors or polyps. Second, due to Medicare payment rules, an inpatient hospitalization related to an outpatient procedure is bundled into the inpatient payment. As we discuss further in the next chapter, this means that some gastroenterology procedures resulting in serious complications that lead to admission are missing from our study of index procedures. Third, complications arising later than seven days after the date of service of the index procedure are not considered in our analyses.

Over the nine-day episode period, we observed a steady frequency of inpatient hospital visits and average inpatient payment amount for episodes with index procedures in the office setting. Inpatient hospitalization rates and spending increased gradually over time for episodes with HOPD index procedures. Inpatient hospital rates increased on the day of and the day after ASC index procedures but then returned to lower levels through the end of the episode.

[1] Professional services delivered in the inpatient hospital setting and all services delivered in the emergency department setting remain included.

Figure 3.3.1. Proportion of Episodes with an Inpatient Hospital Stay Starting on Each Episode Day, by Episode Index Procedure Place of Service



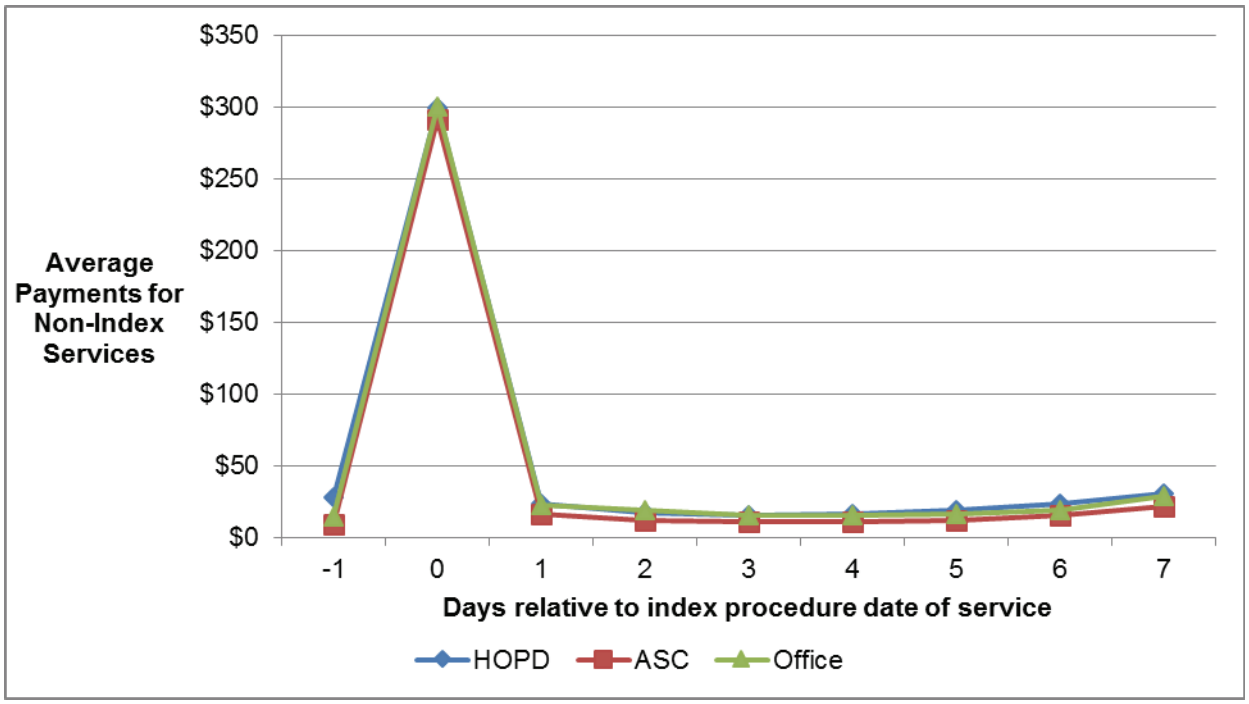
Ambulatory Services

Figure 3.3.2 plots average per-episode payments (averaged over all episodes, including those with zero payments for non-index services) for non-index services by episode day and by the setting of the index procedure. Payments for non-index services were concentrated on the index procedure date of service for all three settings. There were very minor differences in the pattern of average spending over time during the episode by index procedure setting. Payments in days 2 through 7 were small and relatively level in all three settings, although they increased slightly more over time for episodes with HOPD index procedures compared to episodes with ASC and office index procedures. Average day-of-index-procedure payments were similar for episodes with HOPD index procedures ($300) compared to those with ASC ($291) or office ($301) index procedures. Some of the differences between HOPD and office payments may be related to greater packaging in the HOPD setting (ASCs and HOPDs use the same packaging rules for these services). Average total per-episode non-index payments were $472 in the HOPD setting, $399 in the ASC setting, and $451 in the physician office setting.[2] Average payments for index procedures were $649, $481, and $349 for episodes with index procedures in the HOPD, ASC,

[2] Total per-episode payments were $611, $609, and $622 for episodes with HOPD, ASC, and office index procedures, respectively.

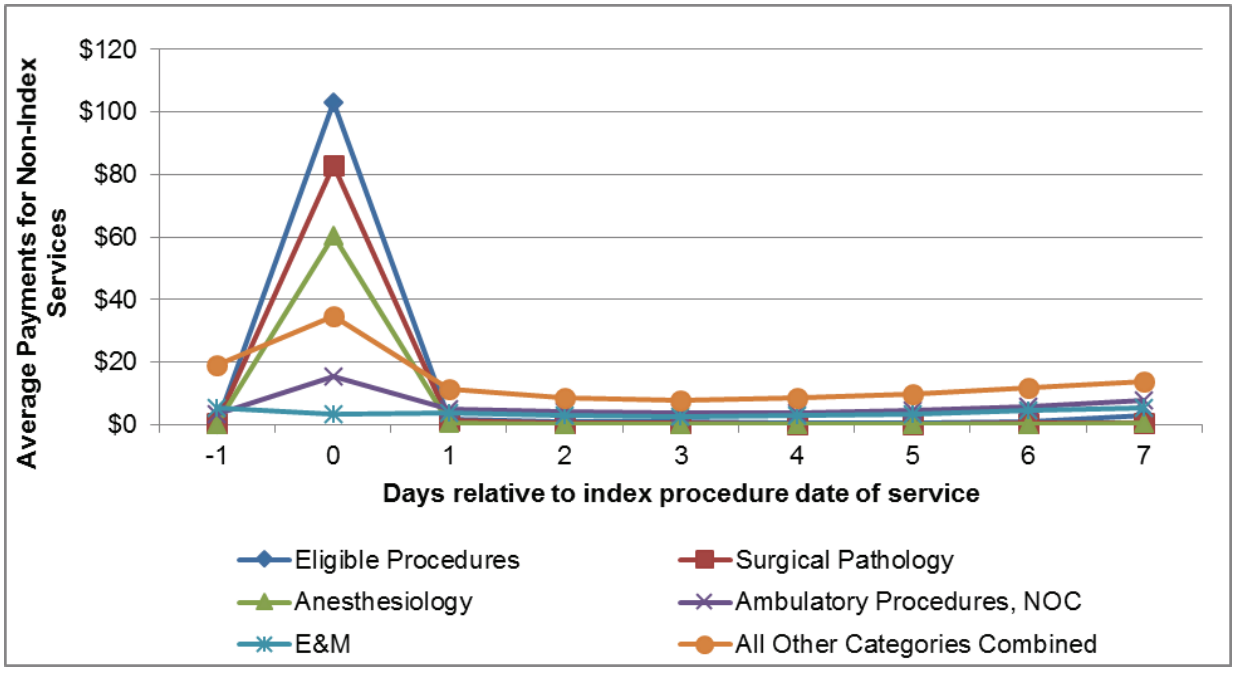
and Office settings, respectively. Non-index payments therefore accounted for on average 42.1, 45.4, and 56.4 percent of total episode payments for episodes with HOPD, ASC, and Office index procedures, respectively.

Figure 3.3.2. Average Medicare Payments for Non-Index Services, by Index Procedure Setting and Date of Service



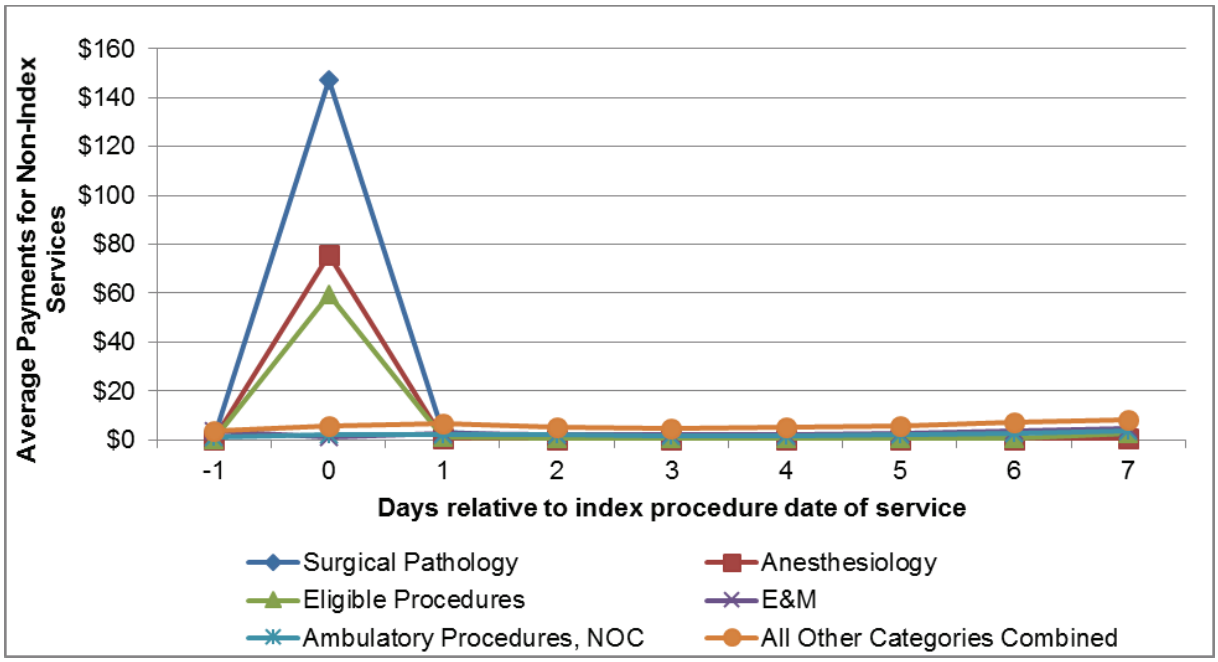
Payment patterns for specific categories of non-index services varied by index procedure setting. For episodes with HOPD index procedures, payments for eligible procedures, surgical pathology, and anesthesiology spiked at day 0 (Figure 3.3.3). Figures 3.3.4 and 3.3.5 report a similar breakdown for episodes with ASC and office index procedures, respectively. Payments for eligible procedures were lower on day 0 for these episodes; multiple procedures were less common in ASC and office settings, and when performed, were paid at lower rates. While the rank order of surgical pathology, anesthesiology, and eligible procedures differ between episodes with HOPD and ASC index procedures, these categories are consistently amongst the highest in terms of non-index spending. Payments for (and frequency of) anesthesiology services were higher for episodes with index procedures in the ASC and office settings than in HOPDs; 49.8 percent of ASC index procedures had separately billed anesthesia services on the same day, versus 65.8 percent of HOPD index procedures (Table 3.3.1).

Figure 3.3.3. Average Medicare Payments for Non-Index Services, by Category: Episodes with HOPD Index Procedures



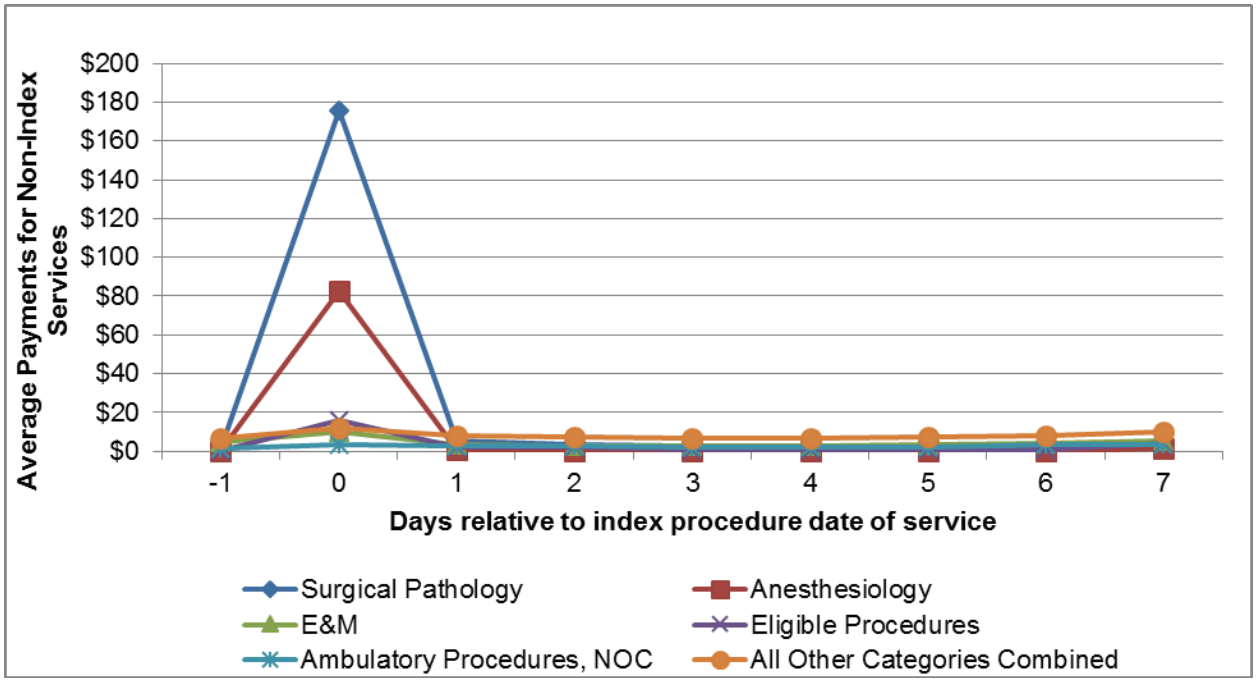
NOTE: "All Other Categories Combined" includes: Other Ambulatory Services; Imaging; Laboratory Tests; Inpatient Professional; and ED.

Figure 3.3.4. Average Medicare Payments for Non-Index Services, by Category: Episodes with ASC Index Procedures



NOTE: "All Other Categories Combined" includes: Imaging; Ambulatory Services, NOC; Inpatient Professional; Laboratory Tests; ED; and Other Tests.

Figure 3.3.5. Average Medicare Payments for Non-Index Services, by Category: Episodes with Office Gastroenterology Index Procedures

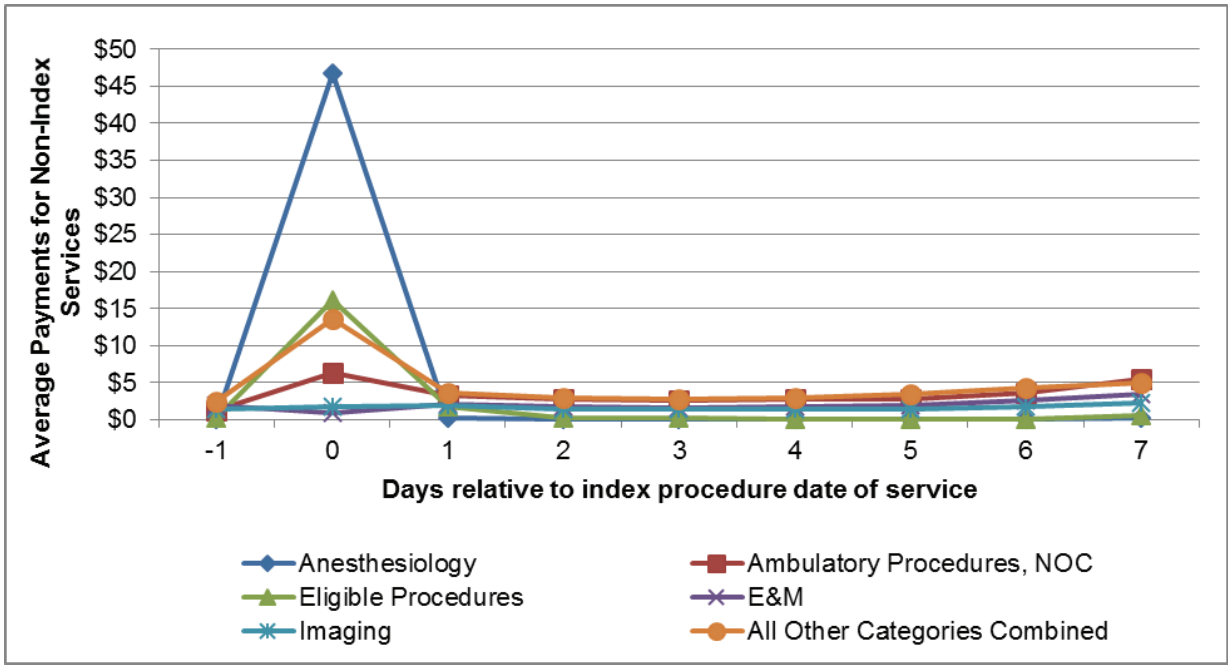


NOTE: "All Other Categories Combined" includes: Imaging; Inpatient Professional; Laboratory Tests; Ambulatory Services, NOC; Other Tests; and ED.

Tracking Utilization of Other Services for Screening versus Other Episodes

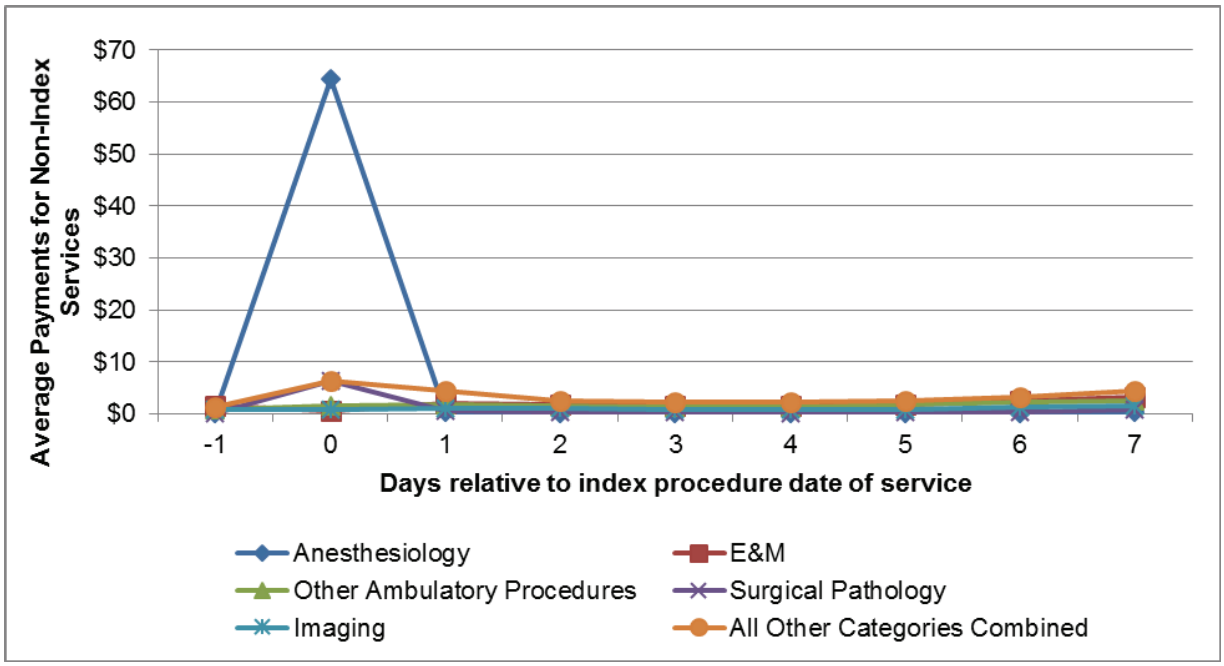
Episodes involving screening index procedures had different utilization patterns compared to episodes involving diagnostic or therapeutic index procedures. For screening episodes (i.e., episodes with a HCPCS Level II "G" code as an index procedure), the only substantial utilization and spending on non-index services was for anesthesiology services on the day of the index procedure. Figure 3.3.6 illustrates the day-by-day average per-episode payments across non-index service categories for episodes with HOPD screening index procedures. On average, these episodes were associated with $47 in anesthesiology payments and smaller payments for multiple eligible index procedures and other ambulatory procedures, all on the day of the index procedure. Per-episode spending was $174 overall, with $86 in average spending on the day of the index procedure. The overall pattern was similar for screening episodes with office index procedures (not shown). Screening episodes with ASC index procedures were associated with higher day-of anesthesiology payments ($65 on average) but lower spending in other categories compared to screening episodes with HOPD or office index procedures (Figure 3.3.7). Per-episode spending on episodes with ASC screening index procedures was $144, with $80 in payments on the day of the index procedure.

Figure 3.3.6. Average Medicare Payments for Non-Index Services, by Category: Episodes with HOPD Screening Index Procedures



NOTE: "All Other Categories Combined" includes: Ambulatory Services, NOC; Surgical Pathology; Laboratory Tests; Inpatient Professional; ED; and Other Tests.

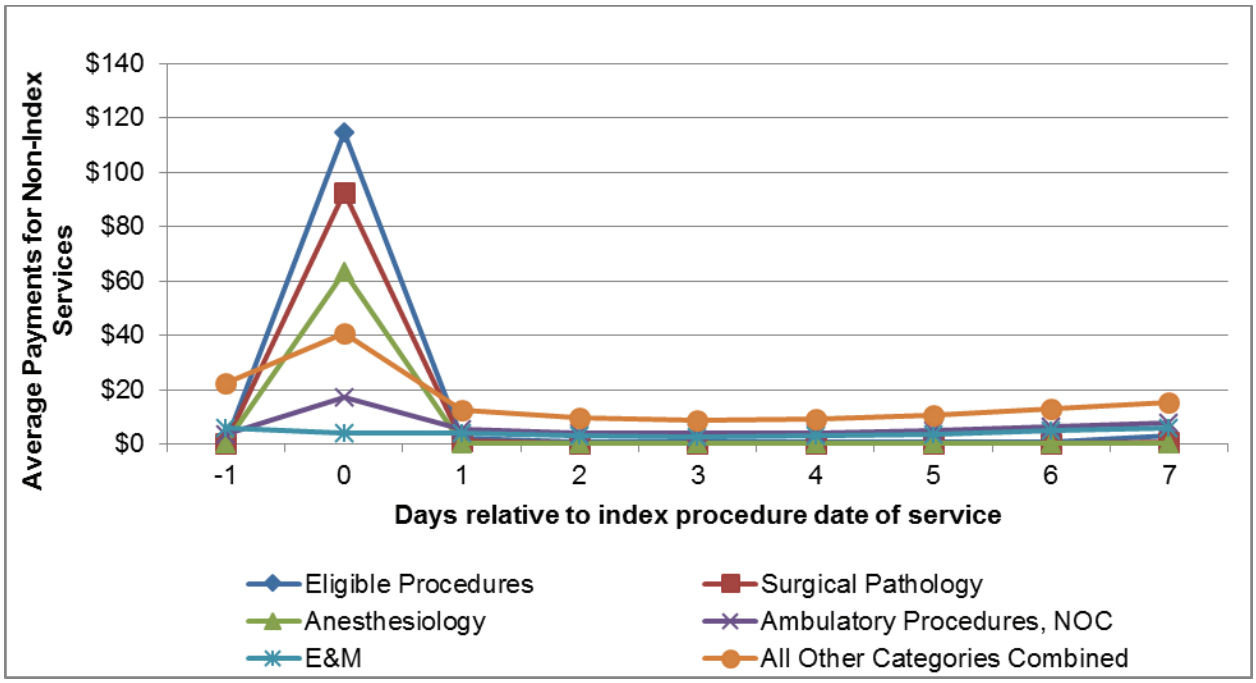
Figure 3.3.7. Average Medicare Payments for Non-Index Services, by Category: Episodes with ASC Screening Index Procedures



NOTE: "All Other Categories Combined" includes: Eligible Procedures; Other Ambulatory Services; Inpatient Professional; Laboratory Tests; Other Tests; and ED.

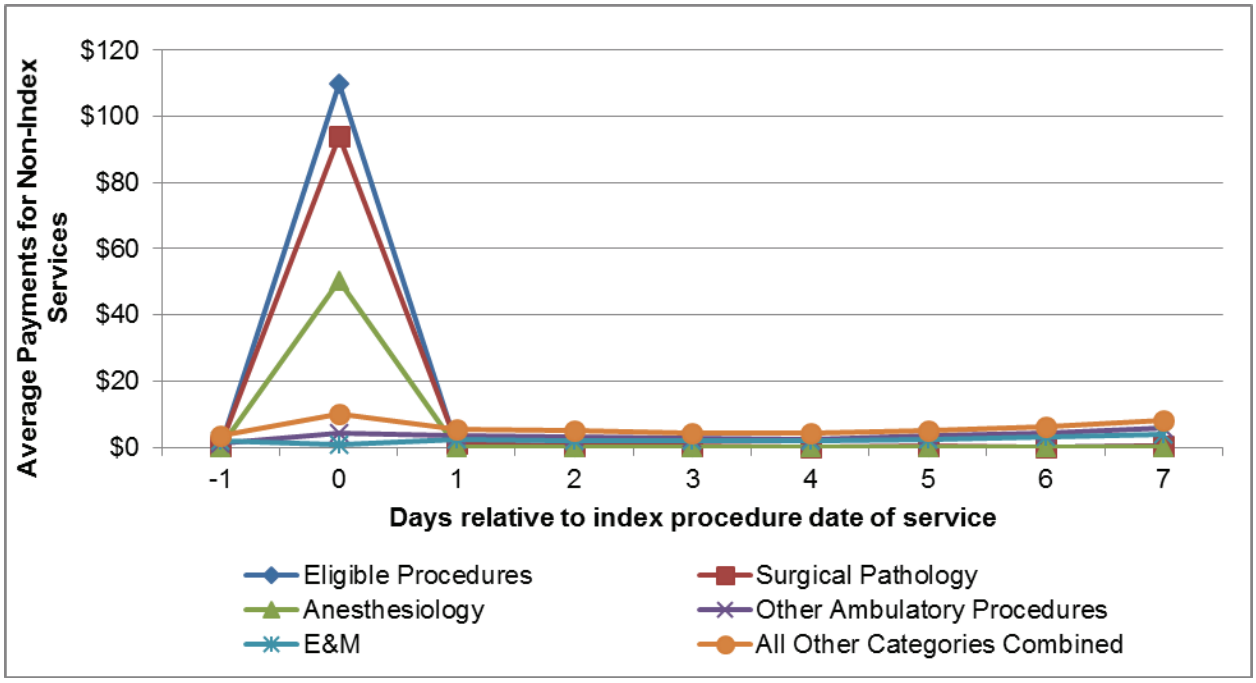
In contrast to screening episodes, episodes anchored on diagnostic or therapeutic index procedures had higher rates of utilization and spending on eligible procedures and on surgical pathology services, again centered on the date of service of the index procedure. Figure 3.3.8 reports per-episode spending across service categories for episodes anchored on HOPD diagnostic or therapeutic index procedures where the episode was not initiated as a screening procedure. These episodes were associated with $64 in anesthesiology payments, $93 in surgical pathology payments, and $114 in eligible procedure payments on the date of service of the index procedure, on average. The overall pattern was similar for episodes where the HOPD index procedure was begun as a screening procedure but physicians ultimately billed a more expensive diagnostic or therapeutic procedure (Figure 3.3.9). For these episodes, average multiple index procedure and anesthesiology payments were lower ($110 and $50, respectively) and surgical pathology payments were slightly higher ($94) compared to episodes that did not begin with a screening procedure. These general patterns hold for episodes with ASC and office index procedures. Please see Appendix Tables A.3 through A.5 for specific utilization rates and payments by category and day for these episodes.

Figure 3.3.8. Average Medicare Payments for Non-Index Services, by Category: Episodes with HOPD Diagnostic and Therapeutic Index Procedures



NOTE: "All Other Categories Combined" includes: Ambulatory Services, NOC; Imaging; Inpatient Professional; Laboratory Tests; ED; and Other Tests.

Figure 3.3.9. Average Medicare Payments for Non-Index Services, by Category: Episodes with HOPD Diagnostic and Therapeutic Index Procedures That Began as Screening Procedures



NOTE: "All Other Categories Combined" includes: Imaging; Other Ambulatory Services; Laboratory Tests; Inpatient Professional; ED; and Other Tests.

Tracking Utilization of Single Versus Multiple Index Procedure Episodes

Appendix Table A.6 reports utilization of non-index services across categories and by day for episodes with only one eligible index procedure during the nine-day time episode and for episodes that were anchored on a single index procedure but that had multiple eligible procedures. Excluding inpatient services, average payments for non-index services over the nine-day episode was $783 for episodes with multiple eligible procedures and $310 for episodes with a single eligible procedure.[3] However, the multiple eligible index procedures themselves accounted for over half of non-index spending for episodes with multiple eligible procedures. When payments for multiple eligible procedures were removed, non-inpatient spending on other non-index service categories was $310 per episode with a single index procedure (as before) and $459 per episode with multiple eligible procedures. In other words, episodes with multiple eligible procedures were associated with a 25 percent increase in non-index spending in addition to the additional payment for the multiple eligible procedures themselves. A significant fraction of the additional non-index, non-inpatient payments were for surgical pathology; average per-

[3] Including inpatient payments increased average payments for non-index services to $1,081 for episodes with multiple eligible procedures compared to $473 in payments for episodes with a single index procedure.

episode spending for pathology was more than twice as high in episodes with multiple eligible procedures compared to episodes with a single eligible procedure ($211 vs. $91).

Common Non-Index Procedures and Other Services

Tables 3.3.2 through 3.3.4 report total non-index payments by service category and separate payments for the top five individual health care services in each category. These tables also report the percent of all gastroenterology episodes with at least one paid claim for specific procedures and services. The three tables report separate results for claims from the Carrier, Outpatient, and MedPAR files, respectively.

Eighty-seven percent of all gastroenterology episodes involved at least one professional claim for HCPCS 88305, tissue exam by pathologist. The five surgical pathology services listed in Table 3.3.2 accounted for over 99 percent of total surgical pathology spending in gastroenterology episodes. Other common professional services included anesthesiology HCPCS 00810 and 00740 (paid in 46 and 28 percent of gastroenterology episodes, respectively), and E&M visits including 99214 and 99213 (paid in 11 and 13 percent of gastroenterology episodes, respectively). Some very low-volume services had significant paid amounts per claim and therefore had a significant impact on total non-index spending. Some Level II HCPCS codes listed under "All other Carrier services" are physician-administered drugs that providers happened to have billed in the nine-day episode surrounding an index procedure. For example, HCPCS J1745, infliximab injection, was associated with average payments of $2,413 but occurred in less than 0.1 percent of episodes.

Eligible procedures other than index procedures contributed significantly to total non-index payments. Other sections of this report describe the frequency of specific combinations of multiple eligible procedures.

Surgical pathology procedures (especially HCPCS 88305) were less common in the Outpatient file. Aside from HCPCS 88305, another surgical pathology procedure (HCPCS 88312, Special stains group 1), and a single eligible procedure (HCPCS 43239, Upper GI endoscopy biopsy), no single procedure code had paid Outpatient claims in more than five percent of gastroenterology episodes. Many of the services in Table 3.3.2 were clearly unrelated to the index services (e.g., cataract surgery and administration of infliximab, a biologic drug used to treat autoimmune disorders).

Inpatient non-index spending was concentrated in short stay hospital visits under PPS. The two DRGs associated with the highest total payments (330 and 329) are for surgical bowel procedures. Two DRGs in the top ten (by paid amount), DRG 871 and 920, indicate possible complications from other procedures. Each individual DRG occurred in fewer than 0.1 percent of total episodes. However due to a high per-DRG payment, and due to the fact that we include the

total payment associated with an inpatient visit in our data as described above, these few inpatient services contribute significantly to total non-index payments.

Table 3.3.2. Specific Services Provided During Gastroenterology Episodes, Carrier File

Non-Index Category	HCPCS	Description	Paid Amount ($)	% Episodes
Anesthesiology	**-**	**Total, all services**	**235,203,700**	**-**
Top 5 Services	-	*Total, top five services*	231,998,846	-
	00810	Anesth low intestine scope	145,117,891	45.7%
	00740	Anesth upper gi visualize	84,711,243	28.4%
	00320	Anesth neck organ 1yr/>	875,066	0.2%
	00790	Anesth surg upper abdomen	727,323	0.1%
	00902	Anesth anorectal surgery	567,323	0.2%
Surgical Pathology	**-**	**Total, all services**	**351,870,568**	**-**
Top 5 Services	-	*Total, top five services*	348,847,472	-
	88305	Tissue exam by pathologist	248,963,817	87.5%
	88342	Immunohistochemistry	40,691,507	14.3%
	88312	Special stains group 1	34,076,888	16.6%
	88313	Special stains group 2	24,301,848	13.5%
	88360	Tumor immunohistochem/manual	813,412	0.2%
Eligible Procedures	**-**	**Total, all services**	**160,852,456**	**-**
Top 5 Services	-	*Total, top five services*	115,288,879	-
	43239	Upper gi endoscopy biopsy	50,686,191	17.4%
	45385	Lesion removal colonoscopy	28,897,335	3.9%
	45380	Colonoscopy and biopsy	21,458,308	6.3%
	G0121	Colon ca scrn not hi rsk ind	7,541,904	1.1%
	G0105	Colorectal scrn; hi risk ind	6,705,141	1.0%
E&M	**-**	**Total, all services**	**95,153,432**	**-**
Top 5 Services	-	*Total, top five services*	66,830,682	-
	99214	Office/outpatient visit est	27,450,432	10.6%

Non-Index Category	HCPCS	Description	Paid Amount ($)	% Episodes
	99213	Office/outpatient visit est	22,722,924	12.9%
	99204	Office/outpatient visit new	7,464,590	1.9%
	99215	Office/outpatient visit est	5,086,180	1.5%
	99203	Office/outpatient visit new	4,106,556	1.6%
All other carrier procedures	**-**	**Total, all services**	**65,332,569**	**-**
Top 5 Services	-	*Total, top five services*	10,658,695	-
	66984	Cataract surg w/iol 1 stage	3,915,582	0.2%
	97110	Therapeutic exercises	2,845,582	2.0%
	77418	Radiation tx delivery imrt	1,343,619	0.1%
	97140	Manual therapy 1/> regions	1,283,099	1.4%
	90960	Esrd srv 4 visits p mo 20+	1,271,235	0.2%
Imaging	**-**	**Total, all services**	**44,879,879**	**-**
Top 5 Services	-	*Total, top five services*	13,065,833	-
	74177	Ct abd & pelv w/contrast	3,711,944	0.9%
	78815	Pet image w/ct skull-thigh	2,751,805	0.2%
	93306	Tte w/doppler complete	2,310,690	0.6%
	78452	Ht muscle image spect mult	2,291,018	0.3%
	91110	Gi tract capsule endoscopy	2,000,376	0.1%
All other Carrier services	**-**	**Total, all services**	**50,930,853**	**-**
Top 5 Services	-	*Total, top five services*	19,060,373	-
	A0427	Als1-emergency	5,763,107	0.5%
	A0428	Bls	4,823,521	0.8%
	A0425	Ground mileage	3,414,410	1.7%
	A0429	Bls-emergency	2,646,533	0.3%
	J1745	Infliximab injection	2,412,802	<0.1%
Laboratory tests	**-**	**Total, all services**	**35,736,126**	**-**
Top 5 Services	-	*Total, top five services*	5,690,503	-
	85025	Complete cbc w/auto diff wbc	1,394,289	3.8%

Non-Index Category	HCPCS	Description	Paid Amount ($)	% Episodes
	88173	Cytopath eval fna report	1,263,120	0.6%
	80053	Comprehen metabolic panel	1,149,080	2.9%
	84443	Assay thyroid stim hormone	1,068,560	1.4%
	80061	Lipid panel	815,454	1.7%
ED	**-**	**Total, all services**	**15,051,139**	**-**
Top 5 Services	-	*Total, top five services*	12,447,986	-
	99285	Emergency dept visit	7,608,858	1.7%
	99284	Emergency dept visit	2,862,833	1.0%
	99291	Critical care first hour	873,118	0.2%
	99283	Emergency dept visit	705,020	0.5%
	74177	Ct abd & pelv w/contrast	398,157	0.2%
Inpatient Hospital	**-**	**Total, all services**	**52,506,709**	**-**
Top 5 Services	-	*Total, top five services*	20,972,192	-
	99223	Initial hospital care	7,478,315	1.4%
	99232	Subsequent hospital care	4,633,961	2.4%
	99222	Initial hospital care	3,698,707	1.1%
	99233	Subsequent hospital care	2,992,818	1.1%
	00740	Anesth upper gi visualize	2,168,391	0.7%

Table 3.3.3: Specific Services Provided During Gastroenterology Episodes, Outpatient File

Non-Index Category	HCPCS	Description	Paid Amount ($)	% Episodes
Surgical Pathology	**-**	**Total, all services**	**60,871,446**	**-**
Top 5 Services	-	*Total, top five services*	60,271,245	-
	88305	Tissue exam by pathologist	49,704,646	33.1%
	88342	Immunohistochemistry	5,899,509	4.4%
	88312	Special stains group 1	2,772,930	5.6%
	88313	Special stains group 2	1,653,771	3.1%
	88304	Tissue exam by pathologist	240,388	0.2%

Non-Index Category	HCPCS	Description	Paid Amount ($)	% Episodes
Eligible Procedures			**130,795,568**	**-**
Top 5 Services	-	*Total, top five services*	91,727,375	-
	43239	Upper gi endoscopy biopsy	46,703,287	6.1%
	45385	Lesion removal colonoscopy	20,167,392	2.5%
	45380	Colonoscopy and biopsy	13,363,300	0.9%
	43235	Uppr gi endoscopy diagnosis	6,854,842	0.9%
	43450	Dilate esophagus	4,638,554	0.8%
E&M			**5,701,935**	**-**
Top 5 Services	-	*Total, top five services*	4,163,603	-
	99213	Office/outpatient visit est	1,158,369	0.6%
	99214	Office/outpatient visit est	1,144,328	0.4%
	99212	Office/outpatient visit est	908,216	0.5%
	99211	Office/outpatient visit est	730,704	0.5%
	99215	Office/outpatient visit est	392,063	0.1%
All other Carrier procedures			**55,716,655**	**-**
Top 5 Services	-	*Total, top five services*	3,286,716	-
	47562	Laparoscopic cholecystectomy	2,174,048	<0.1%
	36561	Insert tunneled cv cath	2,095,004	<0.1%
	31535	Laryngoscopy w/biopsy	1,465,475	<0.1%
	96361	Hydrate iv infusion add-on	1,450,868	0.4%
	36430	Blood transfusion service	1,105,647	0.2%
Imaging			**32,277,656**	**-**
Top 5 Services	-	*Total, top five services*	8,306,367	-
	74177	Ct abd & pelv w/contrast	5,822,205	0.5%
	71260	Ct thorax w/dye	2,595,192	0.2%

Non-Index Category	HCPCS	Description	Paid Amount ($)	% Episodes
	78815	Pet image w/ct skull-thigh	2,051,970	<0.1%
	93306	Tte w/doppler complete	1,476,952	0.1%
	74176	Ct abd & pelvis	1,451,323	0.2%
All other Carrier services			**22,420,464**	**-**
Top 5 Services	-	*Total, top five services*	6,798,273	-
	J1610	Glucagon hydrochloride/1 mg	2,132,868	0.7%
	J0585	Injection, onabotulinumtoxina	2,049,526	0.1%
	J1745	Infliximab injection	988,518	<0.1%
	J9310	Rituximab injection	677,941	<0.1%
	J9263	Oxaliplatin	453,699	<0.1%
Laboratory tests			**25,459,518**	**-**
Top 5 Services	-	*Total, top five services*	5,680,267	-
	93005	Electrocardiogram tracing	1,929,878	2.6%
	85025	Complete cbc w/auto diff wbc	1,504,599	4.0%
	P9016	Rbc leukocytes reduced	1,421,444	0.2%
	80053	Comprehen metabolic panel	1,190,058	2.6%
	80048	Metabolic panel total ca	825,875	2.3%
ED			**18,674,179**	**-**
Top 5 Services	-	*Total, top five services*	16,129,659	-
	99285	Emergency dept visit	8,660,396	0.7%
	99284	Emergency dept visit	5,165,237	0.7%
	99283	Emergency dept visit	1,399,093	0.4%
	G0378	Hospital observation per hr	471,489	1.0%
	G0379	Direct refer hospital observ	437,917	<0.1%

Table 3.3.4: Specific Services Provided during Gastroenterology Episodes, MedPAR File

Non-Index Category	DRG	Description	Paid amount ($)	% Episodes
Total Inpatient	**-**	**Total, all services**	**576,203,813**	**-**
Short stay hospital, PPS	-	*Total, top ten DRGs*	159,617,783	-
	330	Major small & large bowel procedures w CC	36,526,812	<0.1%
	329	Major small & large bowel procedures w MCC	30,943,155	<0.1%
	907	Other O.R. procedures for injuries w MCC	15,926,346	<0.1%
	470	Major joint replacement or reattachment of lower extremity w/o MCC	14,710,767	<0.1%
	331	Major small & large bowel procedures w/o CC/MCC	11,758,969	<0.1%
	871	Septicemia w/o MV 96+ hours w MCC	11,645,760	<0.1%
	003	ECMO or trach w MV 96+ hrs or PDX exc face, mouth & neck w maj O.R.	11,004,806	<0.1%
	326	Stomach, esophageal & duodenal proc w MCC	10,437,872	<0.1%
	920	Complications of treatment w CC	8,681,761	<0.1%
	378	G.I. hemorrhage w CC	7,981,535	<0.1%
Short stay hospital, non-PPS	**-**	**Total, all services**	37,223,932	0.1%
Long stay	**-**	**Total, all services**	15,001,142	<0.1%
SNF	**-**	**Total, all services**	37,223,932	0.1%

SOURCE: Authors' analysis of Medicare Outpatient, Carrier, and MedPAR claims data for Medicare FFS beneficiaries, 2012.

(4) Practice Characteristics

In this section, we describe the characteristics of physician practices that provided gastroenterology index procedures. We used Tax Identification Numbers (TINs) to identify practices—an approach commonly used in health services research for analyses using claims data. One disadvantage of TINs is the extreme heterogeneity in how they relate to practices. TINs might represent either individual brick-and-mortar practices or practices that operate in

multiple settings and share a financial relationship. Physicians associated with a practice may provide services in one or more facilities—e.g., they may treat some patients in an HOPD and others in an ASC.

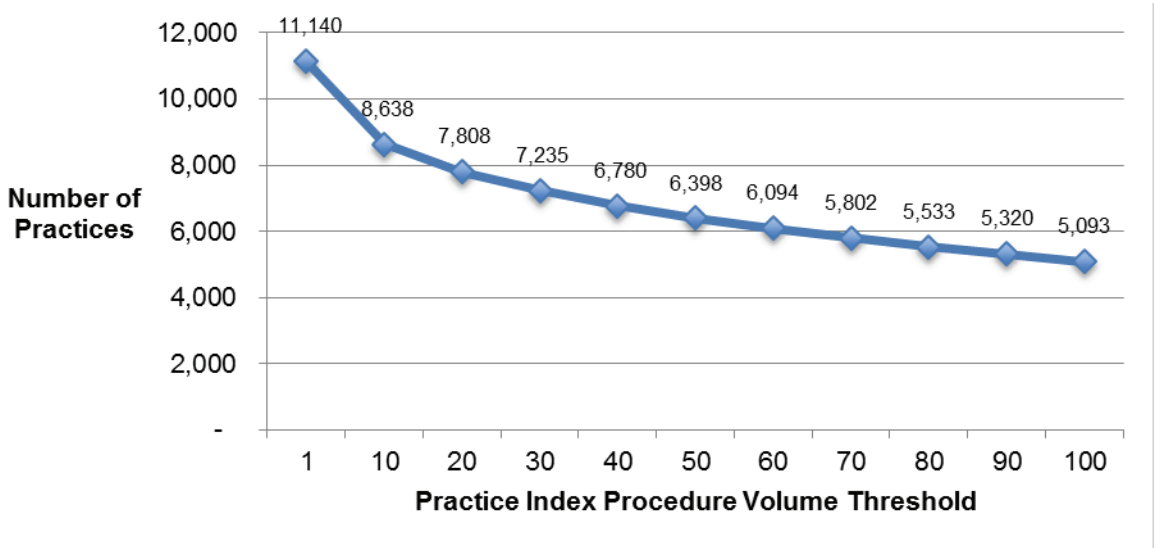
We begin by summarizing characteristics of practices according to possible minimum volume thresholds—to better illustrate the implications of different eligibility criteria for potential payment models. We then describe practices that provided more than 20 index procedures, including the number of physicians providing at least one index procedure per practice, the volume of index procedures associated with the practice, the specialties of clinicians and practices that provided gastroenterology index procedures, and the percentage of index procedures that were rendered by each practice in HOPDs as compared with other settings. We then examine episode volume and mean payment amounts by practice. Finally, we stratify practices according to key practice characteristics and examine the extent to which episode volumes and mean payment amounts vary across different types of practices.

Characteristics of Practices with Attributed Gastroenterology Index Procedures

Figures 3.4.1 through 3.4.3 display summaries of the number of practices, number of index procedures, and number of physicians per practice that performed gastroenterology index procedures. We display these results using ten possible procedure volume thresholds—recognizing that CMS might consider implementing a minimum volume criterion (based on historical utilization data) for participation in a payment model to focus the program on practices that are most likely to undertake practice redesign and other quality improvement strategies in pursuit of savings. On the other hand, small practices may be less likely to choose to participate in a gastroenterology payment model because of limited potential for large savings due to low index procedure volume. These volume thresholds combine both colonoscopy index procedures and upper GI endoscopy index procedures.

We identified a total of 11,140 practices that provided at least one index procedure (Figure 3.4.1). A substantial reduction in the number of participating practices would be expected if a ten-procedure threshold was implemented. Each additional ten-procedure increase in the volume threshold has a smaller effect on the number of practices excluded from the payment model.

Figure 3.4.1. Number of Practices Potentially Eligible for Participation in a Gastroenterology Payment Model, by Practice Index Procedure Volume Threshold



SOURCE: Authors' analysis of 2012 CCW Medicare claims data for patients with colonoscopy or upper endoscopy episodes.

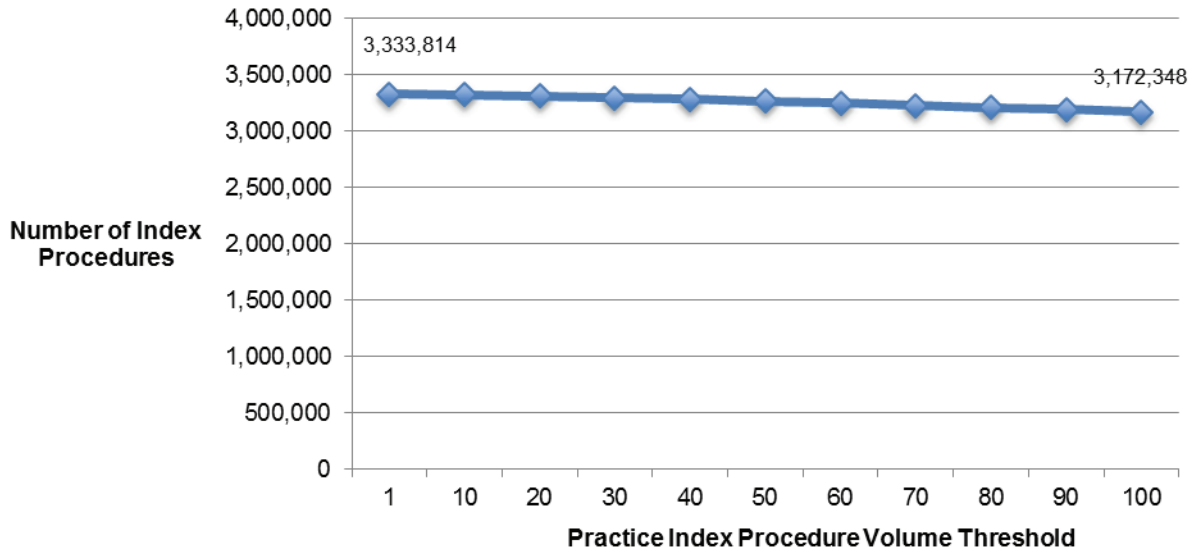
The aggregate number of index procedures provided by practices likely to participate in the payment model is not sensitive to a volume threshold less than 100 index procedures (Figure 3.4.2). This finding is due to the skewed distribution of index procedure volume across practices. For example, using a threshold of ten procedures would reduce the sample of practices participating in the program by 22 percent, but because gastroenterology index procedures are clustered in higher volume practices, the ten-procedure threshold entails an exclusion of only 0.25 percent of index procedures from the analysis.

To further illustrate the skew in the distribution of index procedure volume per practice, we present mean and median index procedure volumes for practices meeting each volume threshold in Figure 3.4.3. As expected, these estimates change dramatically when using a ten-procedure threshold, but then increase to a far lesser extent for volume thresholds beyond ten procedures.

The mean number of physicians that provided gastroenterology index procedures at each practice increases as the volume threshold is raised (Figure 3.4.4) in a pattern that mimics the practice level episode volume distribution displayed in Figure 3.4.3.

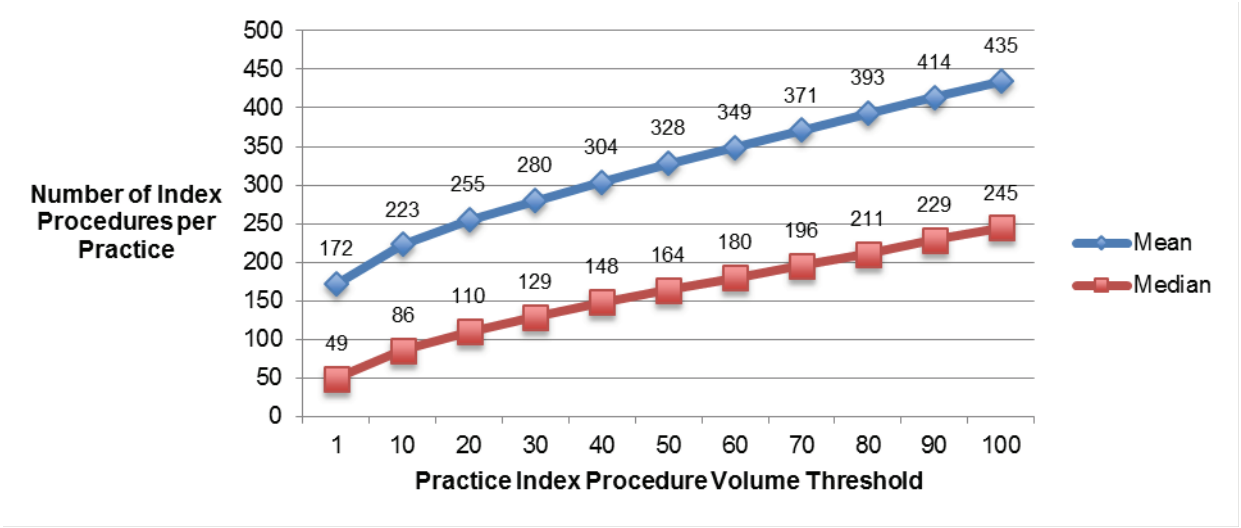
We selected a threshold of 20 index procedures for all remaining analyses whose results are displayed in this section to provide a profile of the practices most likely to participate in the payment model.

Figure 3.4.2. Number of Index Procedures Included, by Practice Index Procedure Volume Threshold



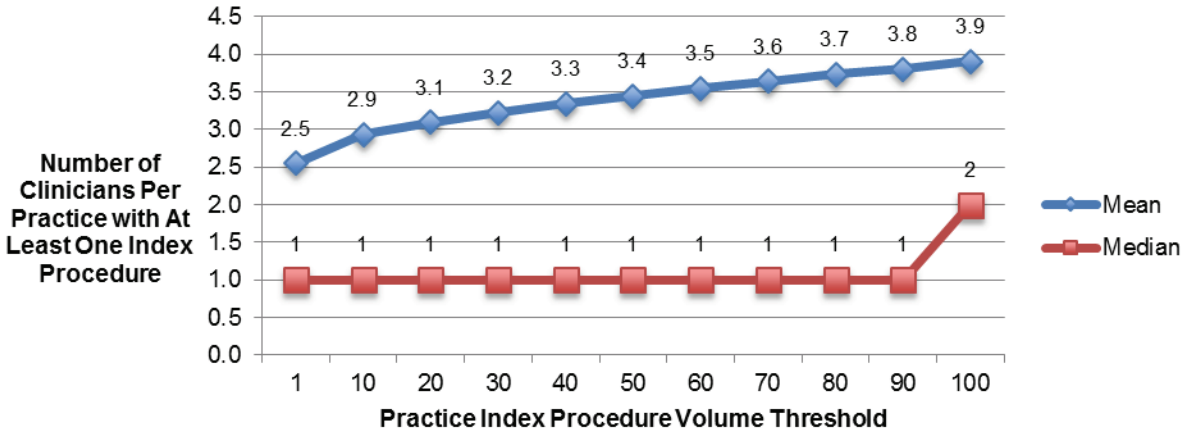
SOURCE: Authors' analysis of 2012 CCW Medicare claims data.

Figure 3.4.3. Number of Index Procedures per Practice, by Practice Index Procedure Volume Threshold



SOURCE: Authors' analysis of 2012 CCW Medicare claims data.

Figure 3.4.4. Number of Physicians per Practice Who Provide at Least One Index Procedure, by Practice Index Procedure Volume Threshold



SOURCE: Authors' analysis of 2012 CCW Medicare claims data.

Among practices that provided at least 20 gastroenterology index procedures, nearly 60 percent were practices in which a single physician rendered these procedures (Table 3.4.1). Practices in which five or more physicians provided at least one index procedure were in the minority (16 percent of all practices). Just over one-third of practices performed fewer than 100 index procedures, whereas one in five practices performed 500 or more index procedures. Practices varied in the setting in which these procedures were rendered. Nearly 38 percent of practices used HOPDs exclusively, while just under 7 percent of practices provided these procedures entirely in non-hospital settings. Approximately 70 percent of practices were single-specialty practices while 30 percent were multi-specialty practices.

Table 3.4.1. Characteristics of Practices Providing at Least 20 Gastroenterology Index Procedures

Characteristic	Number of practices (%)
Number of physicians	
1	4,550 (58.2)
2–4	1,983 (25.4)
5+	1,275 (16.3)
Number of index procedures	
<100	2,715 (34.8)
100–199	1,522 (19.5)
200–499	1,893 (24.2)
≥500	1,678 (21.5)
Percentage of index procedures rendered in HOPDs	
0%	527 (6.7)
>0% and <50%	2,641 (33.8)
≥50% and <100%	1,684 (21.5)
100%	2,956 (37.9)
Practice specialty	
Single Specialty	4,936 (69.8)
Multi-Specialty	2,138 (30.2)

SOURCE: Authors' analysis of 2012 CCW Medicare claims data.

NOTE: The number of physicians corresponds to the number of physicians at each practice who submitted a claim for one or more index procedures. Single specialty practices were defined as practices for which at least 75% of physicians in the practice shared the same specialty. We used the Medicare Data on Physician Practice and Specialty Database (MD-PPAS) to associate physicians with practices, and to identify each physician's specialty. For 734 practices (9.4 percent) we were unable to define practice specialty because the practice's Tax Identification Number was not available in MD-PPAS.

Index Procedure Volume Summaries

Tables 3.4.2 and 3.4.3 provide summaries of the number of colonoscopy index procedures and upper GI endoscopy index procedures, respectively, that were provided by practices with various characteristics. These tables also display the percentage of episodes with multiple eligible procedures during nine-day episodes. We examined the extent to which the prevalence of episodes with multiple procedures varied across types of practices and across different delivery settings (i.e., HOPD, ASC, and physician offices).

Table 3.4.2 indicates that, overall, episodes with colonoscopy index procedures rendered in HOPD settings were associated with a higher rate of episodes with multiple eligible procedures, while episodes with index procedures rendered in office settings were least likely to involve multiple eligible procedures. Larger practices, measured either in terms of the number of physicians that perform colonoscopies or a practice's index procedure volume, were associated with a higher rate of multiple eligible procedures in HOPD and office settings, while a strong pattern did not exist for procedures rendered in ASCs. Practices that provided colonoscopies exclusively in HOPDs were less likely to have multiple eligible procedures than practices that used a mixture of settings. Index procedures performed by surgeons were far less likely to involve multiple eligible procedures across all three practice settings.

Episodes with upper GI endoscopy HOPD and ASC index procedures were far more likely to involve multiple eligible procedures than were episodes with office index procedures. Larger practices, measured according to index procedure volume, had a higher rate of use of multiple eligible procedures across all three settings. We did not observe any clear patterns in the rate of multiple index procedures between practices that perform upper endoscopy procedures exclusively in HOPDs and those that use a mix of settings or between single-specialty practices and multi-specialty practices. Episodes with index procedures rendered by gastroenterologists were generally more likely to involve multiple index procedures across all settings, however the much smaller volume of procedures rendered by non-gastroenterologists suggests that these comparisons across physician specialties should be made cautiously.

Table 3.4.2. Volume of Colonoscopy Index Procedures and Episodes with Multiple Eligible Procedures, by Setting and Practice Characteristics

Characteristic	**ASC –** Number of Index Procedures	**ASC –** Percentage of Episodes with Multiple Index Procedures	**Office –** Number of Index Procedures	**Office –** Percentage of Episodes with Multiple Index Procedures	**HOPD –** Number of Index Procedures	**HOPD –** Percentage of Episodes with Multiple Index Procedures
Practice Size (# physicians)						
1	204,838	24.4	35,477	20.5	287,588	26.7
2-4	218,020	22.9	25,918	17.1	268,492	26.7
≥5	613,037	24.2	32,781	24.5	470,151	28.0
Colonoscopy Index Procedure Volume						
0-49	10,763	22.6	5,898	12.9	39,525	23.3
50-99	29,052	24.1	8,845	18.4	69,020	24.5
100-199	78,481	25.1	15,396	17.6	138,257	26.7
≥200	917,599	23.9	64,037	22.9	779,429	27.8
Practice % HOPD Index Procedures						
0%	38,593	24.2	18,218	15.8	-	-
>0% and <50%	927,735	24.0	64,985	22.1	176,239	30.9
≥50% and <100%	69,567	23.5	10,973	22.9	365,988	27.5
100%	-	-	-	-	484,004	25.8
Physician Specialty						
Gastroenterology	898,727	24.7	72,933	22.3	721,133	29.5
General Surgery	35,833	18.8	4374	18.3	164,114	22.6
Internal Medicine	55,074	24.9	10467	20.0	70,336	27.4
Colorectal Surgery	36,988	10.6	3669	6.8	50,118	11.8
Other	9,273	21.2	2733	11.5	20,530	22.6
Practice Specialty						
Single Specialty	775,879	24.2	53,889	22.0	525,232	27.4
Multi-Specialty	237,303	23.3	31,485	20.0	465,884	27.2

SOURCE: Authors' analysis of 2012 CCW Medicare claims data.

NOTE: This analysis was limited to practices with at least 20 gastroenterology index procedures.

Table 3.4.3. Volume of Upper Endoscopy Index Procedures and Episodes with Multiple Eligible Procedures, by Setting and Practice Characteristics

Characteristic	**ASC –** Number of Index Procedures	**ASC –** Percentage of Episodes with Multiple Index Procedures	**Office –** Number of Index Procedures	**Office –** Percentage of Episodes with Multiple Index Procedures	**HOPD –** Number of Index Procedures	**HOPD –** Percentage of Episodes with Multiple Index Procedures
Practice Size (# physicians)						
1	102,741	24.4	27,042	9.6	158,655	23.7
2-4	105,258	24.2	12,989	8.8	139,409	23.2
≥5	272,828	24.3	11,770	8.9	326,680	23.3
Endoscopy Index Procedure Volume						
0-24	4,517	20.7	2,594	6.8	18,329	18.8
25-49	10,888	19.7	4,906	6.9	32,682	20.1
50-99	27,837	21.2	8,619	9.2	62,542	22.0
≥100	437,585	24.7	35,682	9.7	511,191	23.9
Practice % HOPD Index Procedures						
0%	18,564	20.9	14,301	10.5	-	-
>0% and <50%	408,071	24.5	30,924	8.7	121,915	23.5
≥50% and <100%	54,192	24.4	6,576	8.7	248,054	24.0
100%	-	-	-	-	254,775	22.7
Physician Specialty						
Gastroenterology	437,193	24.6	40,403	9.4	497,779	24.0
Internal Medicine	28,776	22.5	6,860	7.6	45,121	22.2
General Surgery	10,603	19.2	1,441	11.5	65,294	20.2
Other	4,255	20.6	3,097	9.6	16,550	19.3
Practice Specialty						
Single Specialty	362,876	24.6	31,771	9.6	323,894	24.1
Multi-Specialty	106,582	23.4	13,976	8.7	280,989	22.5

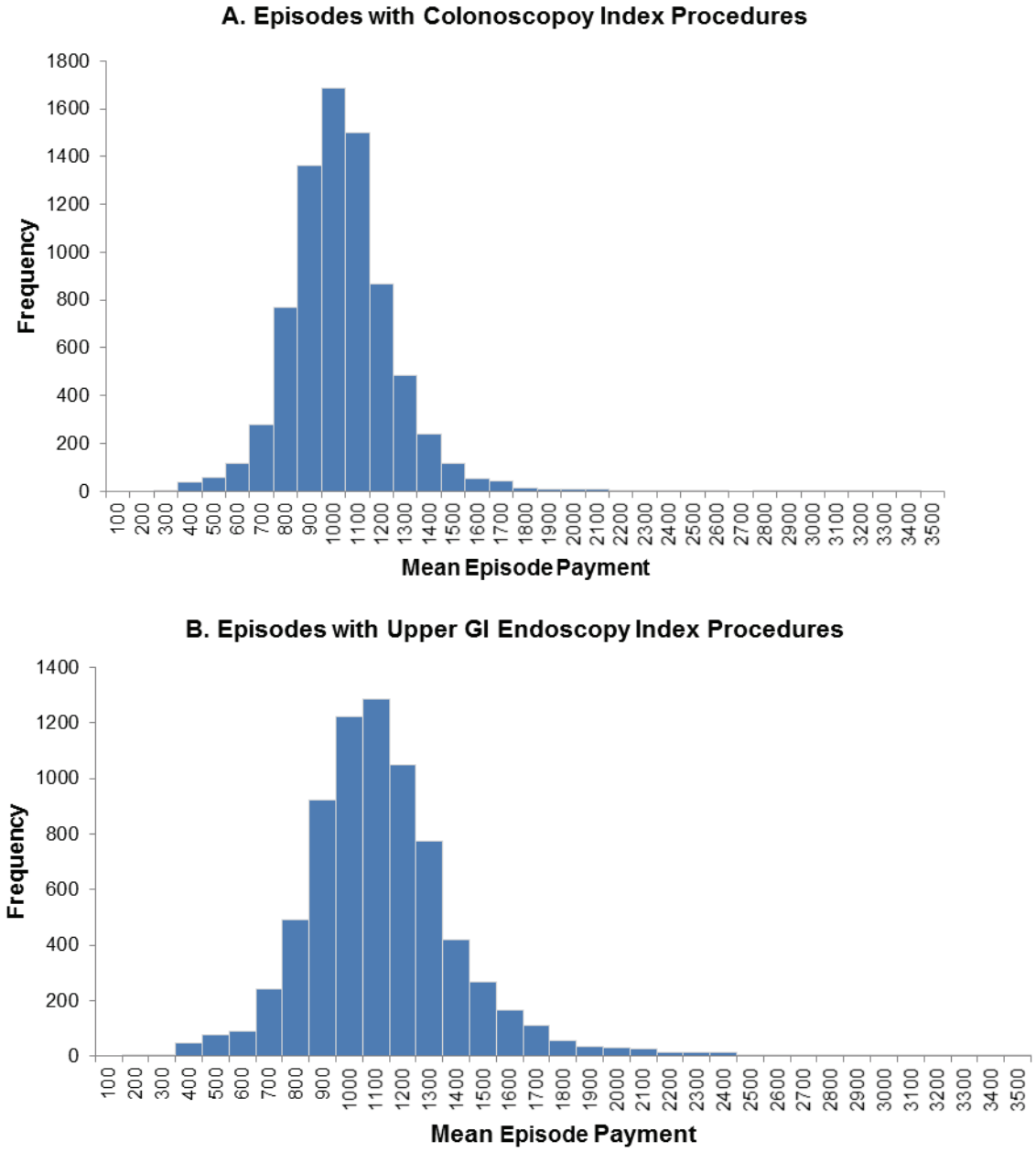
SOURCE: Authors' analysis of 2012 CCW Medicare claims data.
NOTE: This analysis was limited to practices with at least 20 gastroenterology episodes.

Episode Payment Summaries

Figure 3.4.5 displays distributions of mean total episode payments per practice (including index procedures and non-index services) for the subset of practices that were attributed 20 or more gastroenterology index procedures. There was substantial variation across practices in the mean total payment for services provided during the episode for both types of episodes. The median of the practice mean episode payment for episodes with colonoscopy index procedures was $971 (interquartile range $854–$1,096). The median of the practice mean episode payment for

episodes with upper GI endoscopy index procedures was $1044 (interquartile range $899–$1,214).

Figure 3.4.5. Distribution of Mean Episode Payment for Practices Attributed at Least 20 Index Procedures



SOURCE: Authors' analysis of 2012 CCW Medicare claims data.

NOTE: Each episode spans 9 days and excludes inpatient facility payments. 2 practices had mean payments for episodes with colonoscopy index procedures exceeding $3,500 and are not displayed in Panel A, while 11 practices had mean payments for episodes with upper GI endoscopy index procedures exceeding $3500 and are not displayed in Panel B.

Table 3.4.4. Mean Total Payments per Episode, by Index Procedure Category, Setting, and Practice Characteristics

Characteristic	(A) Colonoscopy Index Procedure: HOPD	(A) Colonoscopy Index Procedure: ASC	(A) Colonoscopy Index Procedure: Office	(B) Upper GI Endoscopy Index Procedure: HOPD	(B) Upper GI Endoscopy Index Procedure: ASC	(B) Upper GI Endoscopy Index Procedure: Office
Practice Size (# physicians)						
1	$1,070	$889	$783	$1,163	$936	$925
2-4	$1,058	$861	$749	$1,164	$917	$934
≥5	$1,079	$863	$729	$1,234	$887	$787
Practice Index Procedure Volume*						
<50	$1,064	$896	$657	$1,165	$936	$684
50 – 99	$1,079	$908	$769	$1,197	$964	$776
100 – 199	$1,075	$905	$818	$1,183	$948	$925
≥200	$1,070	$863	$747	$1,204	$899	$920
Practice % HOPD Index Procedures						
0%	.	$905	$740	.	$1,002	$928
>0% and <50%	$1,154	$869	$780	$1,310	$908	$917
≥50% and <100%	$1,070	$823	$632	$1,197	$837	$724
100%	$1,042	.	.	$1,151	.	.
Physician Specialty						
Gastroenterology	$1,092	$875	$773	$1,203	$905	$935
General Surgery	$1,008	$778	$604	$1,133	$787	$681
Internal Medicine	$1,074	$868	$778	$1,190	$923	$839
Colorectal Surgery	$1,002	$794	$651	$1,423	$924	$608
Other	$991	$804	$573			
Practice Specialty						
Single Specialty	$1,075	$878	$782	$1,197	$917	$921
Multi-Specialty	$1,067	$832	$728	$1,207	$859	$870

SOURCE: Authors' analysis of 2012 CCW Medicare claims data.
NOTE: This analysis was limited to practices with at least 20 gastroenterology index procedures. Each episode spans 9 days and excludes inpatient facility payments
*The volume categories displayed for upper endoscopy procedures (for Panel B) are: 0-24 episodes, 25-49 episodes, 50-99 episodes, and ≥100 episodes.

Table 3.4.4 displays mean total payments stratified by setting and practice characteristics for episodes with colonoscopy index procedures (Panel A) and episodes with upper GI endoscopy index procedures (Panel B). Episodes with HOPD and ASC colonoscopy index procedures had much higher episode payments compared to episodes with office colonoscopy index procedures.

For colonoscopy index procedures rendered in physician's offices we observed a positive correlation between practice size (measured by episode volume) and mean total payments per episode, although the largest practices had slightly lower episode payments. By contrast, for ASC and HOPD colonoscopy index procedures there was little relationship between practice size and mean episode payments. Single specialty practices had slightly higher mean episode payments compared to multi-specialty practices for episodes initiated in ASCs and physician offices.

Among episodes with upper GI endoscopy index procedures, we also observed a much higher mean episode payment for episodes initiated in HOPDs (Table 3.4.4 Panel B). Similar to colonoscopy episodes, we found a strong positive correlation between practice size (measured by index procedure volume) and mean payment per episode for index procedures performed in physician offices.

Tables 3.4.5 and 3.4.6 disaggregate mean total episode payments into three components—the index procedure, other eligible procedures performed during the same episode, and all other services rendered during the episode. Table 3.4.5 summarizes payments for episodes with colonoscopy index procedures while Table 3.4.6 includes only episodes with upper GI endoscopy index procedures. The clearest pattern that emerges from our analysis of episodes with colonoscopy index procedures is the relationship between practice size (measured either by the number of clinicians performing index procedures or a practice's episode volume) and mean non-index services per episode. We found an inverse relationship for index procedures rendered in all three settings although the pattern was somewhat inconsistent for office colonoscopy procedures and the magnitude of the effect was rather modest across all three settings. Meanwhile, for episodes initiated in HOPDs, mean spending for multiple eligible procedures (i.e., eligible procedures excluding the index procedure) increased consistently as practice index procedure volume increased.

Among episodes with upper GI endoscopy index procedures (Table 3.4.6), two of the most notable findings were that larger practices (measured by index procedure volume) tended to have the lowest spending on non-index services for episodes with HOPD upper GI endoscopy procedures but the highest spending on non-index services for episodes with office index procedures, and that practices that had higher use of HOPDs tended to have much lower spending on non-index services.

Table 3.4.5. Mean Payments per Episode with Colonoscopy Index Procedures, by Payment Category

Characteristic	**ASC –** Index Proc. (Mean)	**ASC –** Eligible Proc. (Mean)	**ASC –** Other Non-Index (Mean)	**Office –** Index Proc. (Mean)	**Office –** Eligible Proc. (Mean)	**Office –** Other Non-Index (Mean)	**HOPD –** Index Proc. (Mean)	**HOPD –** Eligible Proc. (Mean)	**HOPD –** Other Non-Index (Mean)
Practice Size									
1	$519	$246	$303	$395	$156	$361	$663	$388	$293
2 - 4	$510	$246	$288	$393	$138	$334	$656	$385	$289
≥5	$514	$239	$284	$394	$135	$303	$665	$404	$289
Colonoscopy Index Procedure Volume									
0 - 49	$519	$247	$315	$362	$170	$277	$652	$355	$321
50 - 99	$522	$252	$319	$391	$171	$355	$667	$367	$313
100 - 199	$522	$250	$313	$409	$159	$387	$662	$384	$299
≥200	$514	$241	$285	$394	$136	$323	$662	$400	$285
Practice % HOPD Index Procedures									
0%	$523	$252	$315	$391	$162	$329	-	-	.
>0% and <50%	$514	$242	$291	$398	$142	$352	$662	$390	$359
≥50% and <100%	$513	$238	$248	$377	$128	$228	$666	$400	$283
100%	-	-	.	-	-	.	$659	$392	$271
Physician Specialty									
Gastroenterology	$516	$242	$293	$397	$142	$346	$666	$405	$294
General Surgery	$489	$223	$242	$357	$124	$230	$635	$334	$289
Internal Medicine	$516	$242	$286	$400	$165	$348	$672	$399	$281
Colorectal Surgery	$515	$243	$250	$387	$132	$255	$676	$409	$272
Other	$499	$243	$248	$350	$122	$210	$649	$360	$251
Practice Specialty									
Single Specialty	$515	$242	$299	$399	$147	$354	$660	$389	$298
Multi-Specialty	$512	$240	$258	$395	$136	$307	$664	$401	$282

SOURCE: Authors' analysis of 2012 CCW Medicare claims data.
NOTE: "Proc." is procedure. Each episode spans 9 days and excludes inpatient facility payments.

Table 3.4.6. Mean Payments per Episode with Upper GI Endoscopy Index Procedures, by Payment Category

Characteristic	ASC – Index Proc. (Mean)	ASC – Eligible Proc. (Mean)	ASC – Other Non-Index (Mean)	Office – Index Proc. (Mean)	Office – Eligible Proc. (Mean)	Office – Other Non-Index (Mean)	HOPD – Index Proc. (Mean)	HOPD – Eligible Proc. (Mean)	HOPD – Other Non-Index (Mean)
Practice Size									
1	$415	$285	$443	$287	$358	$611	$610	$388	$452
2 - 4	$406	$273	$438	$282	$240	$633	$608	$378	$459
5+	$405	$262	$411	$272	$167	$501	$652	$384	$483
Endoscopy Episode Volume									
0-24	$407	$323	$456	$251	$282	$417	$580	$390	$506
25-49	$415	$320	$478	$268	$304	$494	$599	$388	$513
50-99	$416	$305	$460	$288	$373	$608	$607	$386	$483
≥100	$407	$266	$419	$285	$267	$614	$639	$383	$464
Practice % HOPD Episodes									
0%	$423	$337	$501	$289	$360	$606	-	-	.
>0% and <50%	$407	$266	$429	$284	$275	$614	$645	$373	$570
≥50% and <100%	$406	$275	$357	$258	$156	$454	$639	$380	$457
100%	-	-	.	-	-	.	$618	$392	$434
Physician Specialty									
Gastroenterology	$408	$268	$424	$287	$282	$626	$643	$385	$458
Internal Medicine	$414	$283	$438	$290	$313	$531	$634	$403	$458
General Surgery	$391	$286	$335	$241	$137	$431	$567	$365	$484
Other	$382	$296	$474	$217	$399	$353	$548	$342	$802
Practice Specialty									
Single Specialty	$407	$271	$436	$287	$295	$610	$623	$377	$474
Multi-Specialty	$407	$260	$385	$281	$242	$569	$642	$391	$468

SOURCE: Authors' analysis of 2012 CCW Medicare claims data.
NOTE: "Proc." is procedure. Each episode spans 9 days and excludes inpatient facility payments.

(5) Patient Characteristics

In this section, we investigate the characteristics of beneficiaries receiving gastroenterology index procedures and describe average Medicare payments across an episode of care by beneficiary characteristics. The purpose of these analyses was twofold: first, to provide estimates of who would be potentially affected by an episode-based payment model; and second, to identify patient characteristics that should be considered as potential exclusion criteria or adjustment factors in a Medicare payment model. We use definitions of episodes, index

procedures, and payment categories defined in the prior sections. The unit of analysis is a colonoscopy or endoscopy episode.

Characteristics of Beneficiaries with Colonoscopy and Upper GI Endoscopy Episodes

In Table 3.5.1, we examine the characteristics of beneficiaries with episodes anchored on colonoscopy or upper GI endoscopy index procedures, separately by whether the index procedure occurred in an ASC, a physician's office, or in a HOPD. Each column in Table 3.5.1 represents an index procedure category and setting combination. Each cell displays the volume and percentage of episodes, with different index procedure categories and settings characterized by a given beneficiary attribute. We examine the distribution of gender, race and ethnicity, age, urban and rural residency (measured by residence in a Core Based Statistical Area (CBSA)), Medicaid eligibility, and reason for current Medicare eligibility. We contrast the characteristics of beneficiaries with episodes anchored on colonoscopy or upper GI endoscopy index procedures with Medicare beneficiaries overall, calculated by the Medicare Payment Advisory Commission (2014).

Table 3.5.1 shows that the majority of beneficiaries with colonoscopy and upper GI endoscopy episodes were women, including 55 percent of colonoscopy episodes and 59 to 62 percent of upper GI endoscopy episodes across sites of care. Black beneficiaries comprised 8 to 12 percent of episodes across index procedures and site of care, similar to the percentage of black beneficiaries among all Medicare beneficiaries (estimated to be 10 percent of Medicare beneficiaries). The white/non-Hispanic percentage of episodes ranged from 84 to 86 percent in ASCs and HOPDs and was higher than the overall Medicare representation (estimated to be 77 percent); the white/non-Hispanic percentage for office-based episodes was only 79 percent for colonoscopy and 71 percent for upper GI endoscopy, but this represents a small proportion of episodes. In addition, the Hispanic percentage of episodes ranged from 2 to 4 percent across sites of care, which was lower than the 8 percent of Medicare beneficiaries estimated to be Hispanic, which may represent mismeasurement of ethnicity in the Master Beneficiary Summary File (Eicheldinger and Bonito, 2008).

Beneficiaries aged 65–69 or 70–74 made up the majority of colonoscopy episodes, while endoscopy episodes were spread more evenly across age ranges. HOPDs were more likely to see younger Medicare patients (<65) than other sites of care and see a higher percentage of rural patients. Between 12 and 20 percent of colonoscopy episodes and 18 to 29 percent of upper GI endoscopy episodes were for beneficiaries eligible for Medicaid. The most common reason for current Medicare eligibility across procedures and sites of care was age, ranging from 76 to 87 percent of episodes across sites of care and index procedures, compared with 83 percent for Medicare beneficiaries overall. Between 12 and 23 percent of episodes were for beneficiaries eligible for Medicare through disability, compared with 16 percent for all Medicare beneficiaries.

A small remaining percentage of episodes was for beneficiaries with Medicare eligibility because of end stage renal disease (ESRD) or ESRD paired with disability, compared to ESRD patients representing 1 percent of all Medicare patients.

Table 3.5.1. Patient Characteristics by Index Procedure and Setting, Gastroenterology

Characteristic	Colonoscopy – ASC	Colonoscopy – Office	Colonoscopy – HOPD	Upper GI Endoscopy – ASC	Upper GI Endoscopy – Office	Upper GI Endoscopy – HOPD
Total, N	1,037,745	95,363	1,033,978	482,065	53,288	631,375
Gender, N (%)						
Male	467,546 (45%)	43,384 (45%)	467,246 (45%)	184,996 (38%)	21,028 (39%)	261,189 (41%)
Female	570,211 (55%)	51,978 (55%)	566,683 (55%)	297,046 (62%)	32,260 (61%)	370,219 (59%)
Race/ethnicity, N (%)						
Black (non-Hispanic)	85,275 (8%)	11,047 (12%)	110,829 (11%)	37,794 (8%)	5,485 (10%)	61,426 (10%)
White (non-Hispanic)	893,252 (86%)	74,974 (79%)	868,437 (84%)	409,407 (85%)	37,721 (71%)	533,370 (84%)
Hispanic	16,041 (2%)	2,016 (2%)	17,500 (2%)	11,363 (2%)	1,932 (4%)	13,837 (2%)
Asian	17,437 (2%)	3,582 (4%)	13,717 (1%)	11,762 (2%)	5,451 (10%)	9,400 (1%)
Other	19,598 (2%)	2,860 (3%)	17,916 (2%)	9,653 (2%)	2,249 (4%)	11,009 (2%)
Unknown	6,154 (1%)	883 (1%)	5,530 (1%)	2,063 (0%)	450 (1%)	2,366 (0%)
Age categories, N (%)						
<65	112,787 (11%)	11,204 (12%)	176,018 (17%)	72,701 (15%)	8,109 (15%)	136,742 (22%)
65-69	323,956 (31%)	30,442 (32%)	284,855 (28%)	115,796 (24%)	13,213 (25%)	128,744 (20%)
70-74	278,979 (27%)	25,615 (27%)	248,136 (24%)	110,983 (23%)	12,596 (24%)	123,943 (20%)
75-79	190,276 (18%)	16,758 (18%)	177,803 (17%)	86,350 (18%)	9,524 (18%)	101,817 (16%)
>79	131,759 (13%)	11,343 (12%)	147,117 (14%)	96,212 (20%)	9,846 (18%)	140,162 (22%)
Urban/rural, N (%)						
In a CBSA	966,340 (95%)	87,282 (96%)	912,208 (90%)	445,428 (94%)	48,528 (96%)	557,672 (90%)

Characteristic	Colonoscopy – ASC	Colonoscopy – Office	Colonoscopy – HOPD	Upper GI Endoscopy – ASC	Upper GI Endoscopy – Office	Upper GI Endoscopy – HOPD
Not in a CBSA	52,352 (5%)	4,039 (4%)	101,760 (10%)	27,533 (6%)	1,800 (4%)	61,320 (10%)
Dual eligibility, N (%)						
Not	910,638 (88%)	80,743 (85%)	829,911 (80%)	392,941 (82%)	38,016 71%)	466,580 (74%)
Dual	127,119 (12%)	14,619 (15%)	204,018 (20%)	89,101 (18%)	15,272 (29%)	164,828 (26%)
Current eligibility, N (%)						
Old age	906,372 (87%)	82,057 (86%)	834,159 (81%)	399,022 (83%)	43,997 (83%)	479,749 (76%)
Disability	127,258 (12%)	12,928 (14%)	191,600 (19%)	80,531 (17%)	9,007 (17%)	145,798 (23%)
ESRD	1,889 (0%)	196 (0%)	3,586 (0%)	1,051 (0%)	141 (0%)	2,463 (0%)
Disability and ESRD	2,238 (0%)	181 (0%)	4,584 (0%)	1,438 (0%)	143 (0%)	3,398 (1%)

NOTES: Table displays average characteristics of Medicare FFS beneficiaries with colonoscopy or upper GI endoscopy episodes occurring in 2012. Due to small numbers of episodes with missing demographic information, the sum of subgroup volumes may be less than the total. Estimates are based on 2012 Medicare FFS claims data and the Master Beneficiary Summary File.

Differential Medicare Spending by Beneficiary Characteristics for GI Episodes

Table 3.5.2 displays average Medicare payments for nine-day GI episodes by beneficiary characteristics, separately for colonoscopy and upper GI endoscopy. We investigate four categories of payments: (1) payments for the initial, or "anchor" index procedure (either colonoscopy or upper GI endoscopy), (2) payments for other eligible procedures that occurred during the episode of care, (3) all Medicare payments for other services that occurred during the episode, and (4) total Medicare payments for the episode (the sum of 1–3) excluding inpatient facility payments. We estimate subgroup means by gender, race and ethnicity, age, urban/rural status, dual eligible status, and current reason for eligibility. We find little variation in Medicare payments for the index procedure for colonoscopy episodes, with Medicare payments for the index procedure ranging between $571 and $600 across the subgroups we examined. Payments for other eligible procedures vary slightly more (in percentage terms), ranging from $79 to $111. In contrast, payments for other services are more varied, from over $500 for beneficiaries eligible for Medicare through ESRD or ESRD and disability, relative to $286 and $315 for beneficiaries eligible through age or disability alone. Variation in total payments follows a similar pattern as payments for other services, with higher payments for beneficiaries eligible through ESRD or disability and ESRD. In addition, inpatient hospital payments (data not shown) are approximately four times higher for beneficiaries eligible through ESRD or disability and

ESRD. Patterns of Medicare payments by patient characteristics for upper GI endoscopy episodes are similar to those for colonoscopy, with little variation for the initial "anchor" index procedure and other eligible index procedures, but higher payments for other services for beneficiaries eligible for Medicare through ESRD or ESRD and disability. These results suggest that while payments for the anchoring index procedure and other index procedures do not vary across patient characteristics, payments for other services vary across eligibility categories, with beneficiaries eligible through ESRD exhibiting higher payments than other beneficiaries. An episode model may need to risk adjust appropriately to account for such variation, or alternatively exclude certain unrelated services from the model.

Table 3.5.2. Average Episode Payments by Index Procedure and Setting, Gastroenterology ($)

Characteristic	Colonos. Index Proc.	Colonos. Eligible Proc.	Colonos. Other Services	Colonos. Total Episode Payments	Upper GI Endoscopy Index Proc.	Upper GI Endoscopy Eligible Proc.	Upper GI Endoscopy Other Services	Upper GI Endoscopy Total Episode Payments
Gender								
Male	580	91	295	966	533	86	484	1,104
Female	578	87	288	954	514	84	443	1,041
Race/ethnicity								
Black (non-Hispanic)	585	82	292	959	522	77	487	1,086
White (non-Hispanic)	577	89	291	957	522	86	455	1,064
Hispanic	600	104	319	1,023	527	79	485	1,092
Asian	600	111	301	1,011	497	67	479	1,043
Other	593	99	287	978	522	79	464	1,066
Unknown	590	78	265	932	513	86	486	1,086
Age bands								
<65	586	103	323	1,013	521	76	465	1,062
65-69	578	79	266	923	510	91	451	1,052
70-74	578	84	283	945	516	88	458	1,062
75-79	577	90	295	962	523	87	462	1,072
80+	579	102	327	1,008	540	80	463	1,084
Urban/rural								
In a CBSA	580	89	293	963	522	84	465	1,072
Not in a CBSA	571	92	270	933	521	92	406	1,018
Dual eligibility								
Not	576	85	284	945	595	111	453	1,059
Dual	595	111	330	1,036	531	78	481	1,090

Characteristic	Colonos. Index Proc.	Colonos. Eligible Proc.	Colonos. Other Services	Colonos. Total Episode Payments	Upper GI Endoscopy Index Proc.	Upper GI Endoscopy Eligible Proc.	Upper GI Endoscopy Other Services	Upper GI Endoscopy Total Episode Payments
Current eligibility								
Old age	578	86	286	950	522	87	458	1,067
Disability	585	103	315	1,003	520	77	456	1,053
ESRD	595	115	513	1,223	539	73	680	1,293
Disability and ESRD	597	111	524	1,233	528	70	687	1,285

NOTES: Table displays average payments in dollars by subgroups defined by beneficiary characteristics for colonoscopy or upper GI endoscopy episodes among Medicare FFS beneficiaries occurring in 2012. Estimates are based on 2012 Medicare FFS claims and Master Beneficiary Summary File.

Figure 3.5.1 displays average Medicare payments for nine-day colonoscopy episodes by state of residence. In this stacked bar graph, the initial blue section indicates the average payment for the colonoscopy index procedure, the middle red section represents the average payment for other colonoscopies or upper GI endoscopies, and the third green section shows payments for other services. The states are sorted by the average total payment for episodes. The estimates show some variation in total episode payments across states, with colonoscopy episodes in Alaska, Maryland,[4] Connecticut, Alaska, Massachusetts, and Florida receiving more than $1,050 per episode compared to episodes in Arkansas, Idaho, Mississippi, Utah, and Nebraska, which received less than $850 per episode (for example). Figure 3.5.2 is a similar presentation for 9-day upper GI endoscopy episodes. While the overall payments were higher, the range across states was similar.

[4] Maryland is exempt from the inpatient PPS and is subject to different payment rates for hospital stays.

Figure 3.5.1. Medicare Payments for Colonoscopy Episodes, by Beneficiary State of Residence

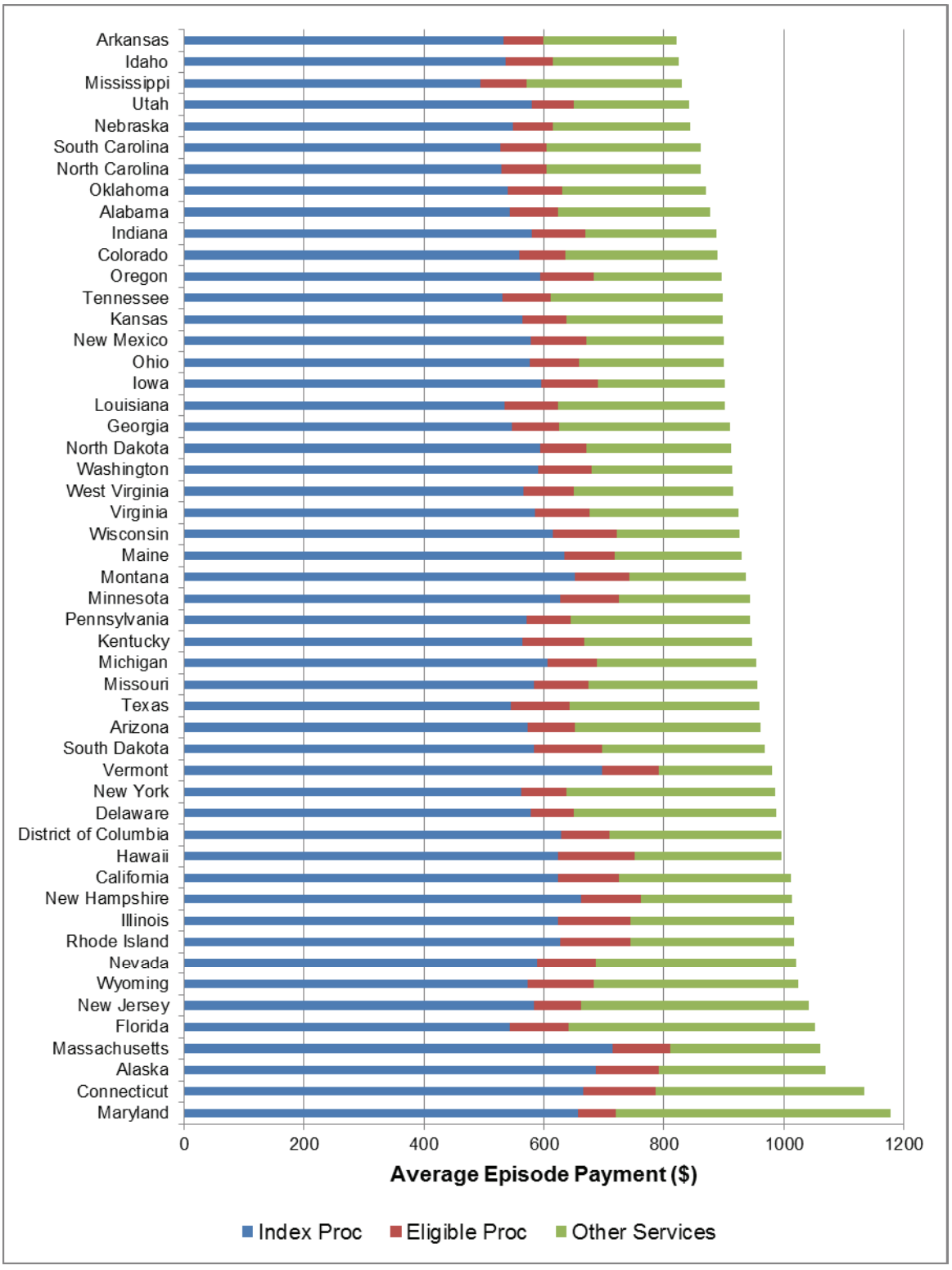
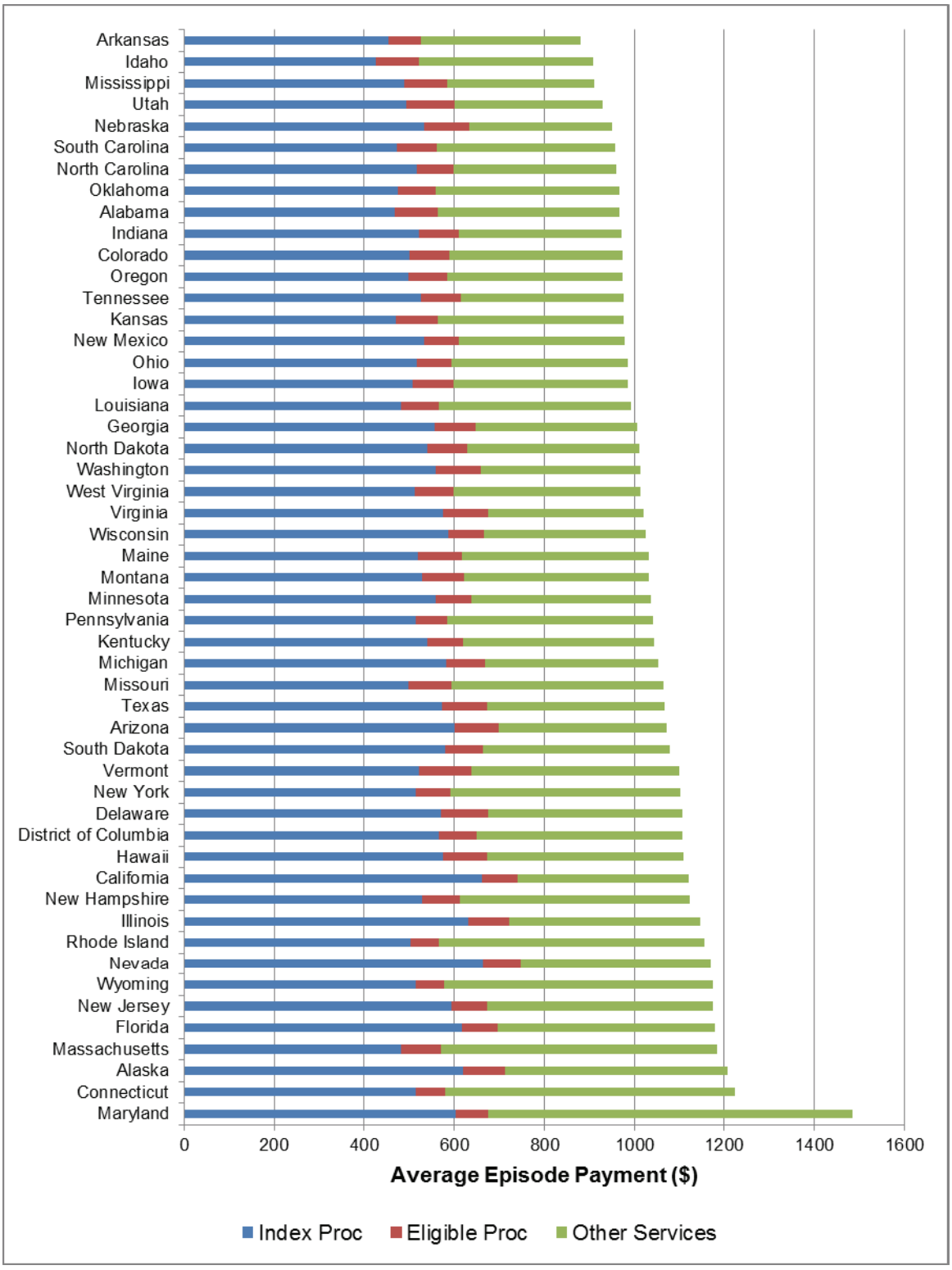


Figure 3.5.2. Medicare Payments for Upper GI Endoscopy Episodes, by Beneficiary State of Residence



4. Results: Cardiology Analyses

This chapter describes the results from our analyses related to new payment approaches for episodes anchored on cardiology index procedures. As in Chapter Three, analyses of utilization of index procedures, differences between service settings, and related services during episodes of care can inform CMS decisions about episode definition, payment adjustments, and the scope of the payment model. Analyses of practice and patient characteristics can inform decisions about eligibility for payment models.

(1) Summary of Index Procedures

Table 4.1.1 reports the total volume of eligible cardiology HCPCS codes in the Medicare data and the number of index procedures identified for our study. The highest volume procedures include a mix of cardiac catheterization and PCI procedures. For most HCPCS codes, the majority of HCPCS instances in the Medicare data meet our criteria as study index procedures.

Table 4.1.1. Volume of Cardiology Eligible and Index Procedures

HCPCS Code	HCPCS Description	Procedure Type	Eligible HCPCS	Study Index Procedures	% Eligible That Are Index
93458	L hrt artery/ventricle angio	Cath.	245,004	219,127	89%
G0290	Transcath plcmnt DE stent	PCI	50,676	50,676	100%
93460	R&l hrt art/ventricle angio	Cath.	49,472	47,639	96%
93459	L hrt art/grft angio	Cath.	52,102	45,041	86%
92980	Transcath plcmnt stent, single	PCI	39,624	37,298	94%
93454	Coronary artery angio s&i	Cath.	23,631	19,195	81%
93451	Right heart cath	Cath.	12,085	11,943	99%
93461	R&l hrt art/ventricle angio	Cath.	8,910	8,415	94%
93455	Coronary art/grft angio s&i	Cath.	6,813	5,442	80%
93456	R hrt coronary artery angio	Cath.	4,647	4,522	97%
93452	Left hrt cath w/ventrclgrphy	Cath.	3,562	3,376	95%
92982	Coronary artery dilation	PCI	3,491	3,217	92%
93453	R&l hrt cath w/ventriclgrphy	Cath.	1,876	1,851	99%
93457	R hrt art/grft angio	Cath.	995	933	94%
92995	Coronary atherectomy	PCI	130	116	89%

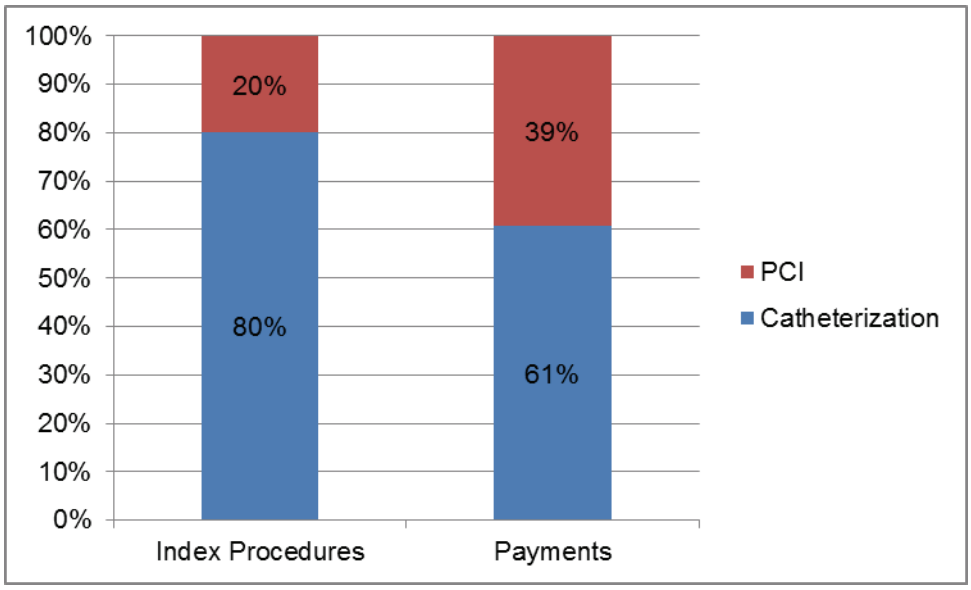
SOURCE: Authors' analysis of Medicare Outpatient and Carrier claims data for Medicare FFS beneficiaries, 2012.

NOTE: "Eligible procedures" include all claim lines with the indicated HCPCS in the Carrier and Outpatient files for 2012. "Index procedures" include only those claim lines that meet the index procedure criteria as described in Chapter Two.

Figure 4.1.1 describes the distribution of cardiology index procedures and payments across catheterization and PCI categories. While PCI procedures made up 20 percent of study index procedures by volume, they accounted for nearly 40 percent of payments.

While our study sample includes all 2012 instances of cardiac catheterization in the Medicare population, it's important to note that there is likely a large degree of heterogeneity in these procedures. For example, some procedures may be related to coronary artery disease, some may be related to cardiomyopathy/heart failure, and some may have been done to evaluate transplant patients for rejection. We do not differentiate between these subgroups of procedures.

Figure 4.1.1. Volume of Cardiology Index Procedures by Type



SOURCE: Authors' analysis of Medicare Outpatient and Carrier claims data for Medicare FFS beneficiaries, 2012.

Setting Differentials

We found a very small number (n=205) of IDTF index procedures, and a small share (n=15,541) of office index procedures. Since PCI and catheterization procedures are not performed in the office setting under usual care, these cases may be a result of miscoding on claims. Due to the small number of IDTF index procedures, and to the small share and concerns about appropriateness of office index procedures, we focused our cardiology analyses on HOPD index procedures. As a result, there is no setting section analogous to that in Chapter Three.

(2) Utilization of Other Services During Episodes of Care

We identified the full range of professional, outpatient facility, and inpatient services that were provided to beneficiaries within a nine-day episode around each cardiology index procedure. These analyses help describe the services that are typically part of an episode of care anchored on an index procedure.

Table 4.2.1 summarizes the frequency, volume, and paid amounts for these other services. The table is organized into panels by date of service relative to the index procedure date of service (ascending vertically). We report results for episodes with HOPD index procedures only due to the very small number of office and IDTF index procedures. The cells report rates of utilization and payments for services in different categories including evaluation and management services, anesthesiology, eligible procedures (i.e., eligible procedures excluding the index procedure), etc. (see Chapter Two for definitions). The rate of utilization (or "share of episodes" in the table) describes the proportion of episodes with at least one claim in the category on the indicated date. Payments per-episode are the sum of Medicare paid amounts for services in each category divided by the total number of cardiology episodes (i.e., they are "unconditional" per-episode payments as described in Chapter Three, Section 3). Appendix Table A.7 reports "conditional" per-episode payments calculated as total payments in each category divided by the number of episodes with utilization in each category. The remainder of this chapter focuses on unconditional per-episode payments.

For the inpatient services category, the table reports the total paid amount for inpatient admissions with a start date that matched the episode date in question. For example, an inpatient stay with payments of $20,000 that began on the fifth day after the date of service of the index procedure would be assigned to day 5, along with the entire $20,000 paid amount.

Table 4.2.1. Services Provided in Cardiology Episodes

Place of Service	Service Type	HOPD: *Share of Episodes*	HOPD: *Payments per Cardiology Episode*
1 Day Before Index Procedure Date			
Ambulatory excluding ED	E&M	13.2%	$13.33
Ambulatory excluding ED	Imaging	10.5%	$16.37
Ambulatory excluding ED	Laboratory Tests	14.4%	$10.69
Ambulatory excluding ED	Surgical Pathology	0.1%	$0.16

Place of Service	Service Type	HOPD: *Share of Episodes*	HOPD: *Payments per Cardiology Episode*
Ambulatory excluding ED	Other Tests	11.7%	$4.58
Ambulatory excluding ED	Anesthesiology	0.1%	$0.08
Ambulatory excluding ED	Eligible Procedures	0.1%	$0.68
Ambulatory excluding ED	Ambulatory Proc. NOC	2.7%	$4.45
Ambulatory excluding ED	Ambulatory Svcs. NOC	6.6%	$11.55
Inpatient	All Facility Services	0.3%	$10.17
Inpatient	All Professional Services	4.4%	$5.10
ED	All Services	5.6%	$25.76
Day-of Index Procedure Date			
Ambulatory excluding ED	E&M	16.6%	$17.17
Ambulatory excluding ED	Imaging	80.2%	$42.91
Ambulatory excluding ED	Laboratory Tests	66.7%	$32.53
Ambulatory excluding ED	Surgical Pathology	1.1%	$1.93
Ambulatory excluding ED	Other Tests	45.4%	$13.81
Ambulatory excluding ED	Anesthesiology	0.7%	$1.42
Ambulatory excluding ED	Eligible Procedures	16.6%	$187.09
Ambulatory excluding ED	Ambulatory Proc. NOC	25.6%	$152.51
Ambulatory excluding ED	Ambulatory Svcs. NOC	91.2%	$148.64
Inpatient	All Facility Services	0.9%	$177.87
Inpatient	All Professional Services	12.7%	$17.69
ED	All Services	8.0%	$9.40
1 Day After Index Procedure Date			
Ambulatory excluding ED	E&M	16.0%	$10.08
Ambulatory excluding ED	Imaging	3.5%	$6.87

Place of Service	Service Type	HOPD: *Share of Episodes*	HOPD: *Payments per Cardiology Episode*
Ambulatory excluding ED	Laboratory Tests	20.1%	$8.77
Ambulatory excluding ED	Surgical Pathology	0.1%	$0.18
Ambulatory excluding ED	Other Tests	13.6%	$4.07
Ambulatory excluding ED	Anesthesiology	0.1%	$0.21
Ambulatory excluding ED	Eligible Procedures	0.3%	$16.01
Ambulatory excluding ED	Ambulatory Proc. NOC	3.2%	$26.29
Ambulatory excluding ED	Ambulatory Svcs. NOC	15.0%	$6.47
Inpatient	All Facility Services	0.3%	$44.15
Inpatient	All Professional Services	7.7%	$12.66
ED	All Services	2.3%	$1.84
2 Days After Index Procedure Date			
Ambulatory excluding ED	E&M	4.4%	$3.39
Ambulatory excluding ED	Imaging	1.6%	$2.46
Ambulatory excluding ED	Laboratory Tests	3.5%	$1.93
Ambulatory excluding ED	Surgical Pathology	0.1%	$0.15
Ambulatory excluding ED	Other Tests	1.8%	$0.86
Ambulatory excluding ED	Anesthesiology	0.1%	$0.14
Ambulatory excluding ED	Eligible Procedures	0.1%	$5.06
Ambulatory excluding ED	Ambulatory Proc. NOC	1.2%	$8.64
Ambulatory excluding ED	Ambulatory Svcs. NOC	2.2%	$2.51
Inpatient	All Facility Services	0.2%	$23.29
Inpatient	All Professional Services	2.0%	$6.79
ED	All Services	0.8%	$1.79

Place of Service	Service Type	HOPD: *Share of Episodes*	HOPD: *Payments per Cardiology Episode*
3 Days After Index Procedure Date			
Ambulatory excluding ED	E&M	4.2%	$3.28
Ambulatory excluding ED	Imaging	1.5%	$2.21
Ambulatory excluding ED	Laboratory Tests	3.0%	$1.42
Ambulatory excluding ED	Surgical Pathology	0.1%	$0.15
Ambulatory excluding ED	Other Tests	1.4%	$0.73
Ambulatory excluding ED	Anesthesiology	0.1%	$0.13
Ambulatory excluding ED	Eligible Procedures	0.1%	$4.64
Ambulatory excluding ED	Ambulatory Proc. NOC	1.0%	$7.20
Ambulatory excluding ED	Ambulatory Svcs. NOC	1.6%	$2.30
Inpatient	All Facility Services	0.2%	$25.91
Inpatient	All Professional Services	1.4%	$5.83
ED	All Services	0.7%	$1.71
4 Days After Index Procedure Date			
Ambulatory excluding ED	E&M	4.7%	$3.66
Ambulatory excluding ED	Imaging	1.5%	$2.28
Ambulatory excluding ED	Laboratory Tests	2.8%	$1.41
Ambulatory excluding ED	Surgical Pathology	0.1%	$0.19
Ambulatory excluding ED	Other Tests	1.4%	$0.82
Ambulatory excluding ED	Anesthesiology	0.1%	$0.18
Ambulatory excluding ED	Eligible Procedures	0.1%	$4.84
Ambulatory excluding ED	Ambulatory Proc. NOC	1.1%	$6.63
Ambulatory excluding ED	Ambulatory Svcs. NOC	1.4%	$2.77

Place of Service	Service Type	HOPD: *Share of Episodes*	HOPD: *Payments per Cardiology Episode*
Inpatient	All Facility Services	0.6%	$121.31
Inpatient	All Professional Services	1.8%	$13.07
ED	All Services	0.7%	$1.75
5 Days After Index Procedure Date			
Ambulatory excluding ED	E&M	5.6%	$4.46
Ambulatory excluding ED	Imaging	1.7%	$2.51
Ambulatory excluding ED	Laboratory Tests	2.8%	$1.54
Ambulatory excluding ED	Surgical Pathology	0.1%	$0.20
Ambulatory excluding ED	Other Tests	1.6%	$0.90
Ambulatory excluding ED	Anesthesiology	0.1%	$0.22
Ambulatory excluding ED	Eligible Procedures	0.1%	$4.47
Ambulatory excluding ED	Ambulatory Proc. NOC	1.3%	$7.64
Ambulatory excluding ED	Ambulatory Svcs. NOC	1.5%	$2.73
Inpatient	All Facility Services	0.6%	$138.25
Inpatient	All Professional Services	2.1%	$15.25
ED	All Services	0.7%	$1.65
6 Days After Index Procedure Date			
Ambulatory excluding ED	E&M	7.8%	$6.19
Ambulatory excluding ED	Imaging	2.1%	$3.31
Ambulatory excluding ED	Laboratory Tests	3.3%	$1.82
Ambulatory excluding ED	Surgical Pathology	0.2%	$0.29
Ambulatory excluding ED	Other Tests	2.1%	$1.16
Ambulatory excluding ED	Anesthesiology	0.1%	$0.27
Ambulatory excluding ED	Eligible Procedures	0.1%	$6.58

Place of Service	Service Type	HOPD: *Share of Episodes*	HOPD: *Payments per Cardiology Episode*
Ambulatory excluding ED	Ambulatory Proc. NOC	1.6%	$9.31
Ambulatory excluding ED	Ambulatory Svcs. NOC	1.8%	$3.05
Inpatient	All Facility Services	0.8%	$165.42
Inpatient	All Professional Services	2.7%	$19.11
ED	All Services	0.6%	$1.54
7 Days After Index Procedure Date			
Ambulatory excluding ED	E&M	10.5%	$8.17
Ambulatory excluding ED	Imaging	2.6%	$4.28
Ambulatory excluding ED	Laboratory Tests	4.3%	$2.39
Ambulatory excluding ED	Surgical Pathology	0.2%	$0.39
Ambulatory excluding ED	Other Tests	2.7%	$1.40
Ambulatory excluding ED	Anesthesiology	0.2%	$0.36
Ambulatory excluding ED	Eligible Procedures	0.3%	$12.89
Ambulatory excluding ED	Ambulatory Proc. NOC	1.9%	$14.50
Ambulatory excluding ED	Ambulatory Svcs. NOC	2.2%	$3.87
Inpatient	All Facility Services	0.9%	$197.56
Inpatient	All Professional Services	3.2%	$22.82
ED	All Services	0.6%	$1.47

SOURCE: “Proc.” is procedure and “Svcs.” is services. Authors’ analysis of Medicare Outpatient, MedPAR, and Carrier claims data for Medicare FFS beneficiaries, 2012.

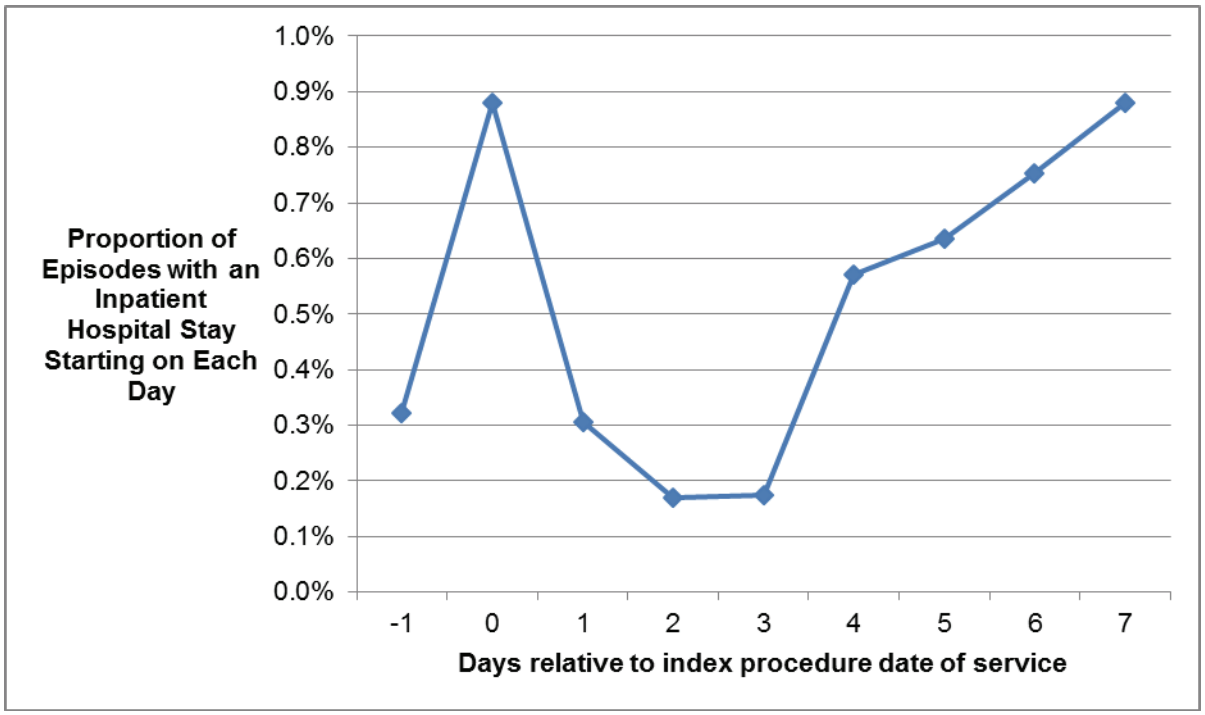
Inpatient Services

We found that inpatient hospitalizations are more common during cardiology episodes than in gastroenterology episodes. However, the overall rate of inpatient hospital admissions was relatively low. Less than 5 percent of all cardiology episodes included the start of an inpatient hospital stay. As in the previous chapter, due to differences in the way that inpatient admissions

are recorded in claims data, and due to the fact that Medicare pays for these stays under a separate prospective payment system, we exclude inpatient facility services from estimates of per-episode spending throughout the remainder of this chapter.[5]

The episode used in these analyses extended seven days after the index procedure date of service. While this date range is relatively short, it does allow us to track inpatient hospital utilization that is potentially related to complications from cardiology index procedures. Figure 4.2.1 plots the proportion of episode-days that was the start date for an inpatient hospital stay, with episodes split by index procedure place of service. As in the gastroenterology analyses, several important limitations must be kept in mind before interpreting these inpatient utilization patterns as proxies for post-procedure complications.

Figure 4.2.1. Proportion of Cardiology Episodes with an Inpatient Hospital Stay Starting on Each Episode Day, by Episode Index Procedure Place of Service



Less than 0.9 percent of episodes include an inpatient hospital stay that starts on the date of service of the episode index procedure. Based on our understanding of Medicare payment rules, cardiology index procedures should not be separately billed or paid if they are related to an inpatient hospitalization at the same hospital on the same day. It is possible that the inpatient

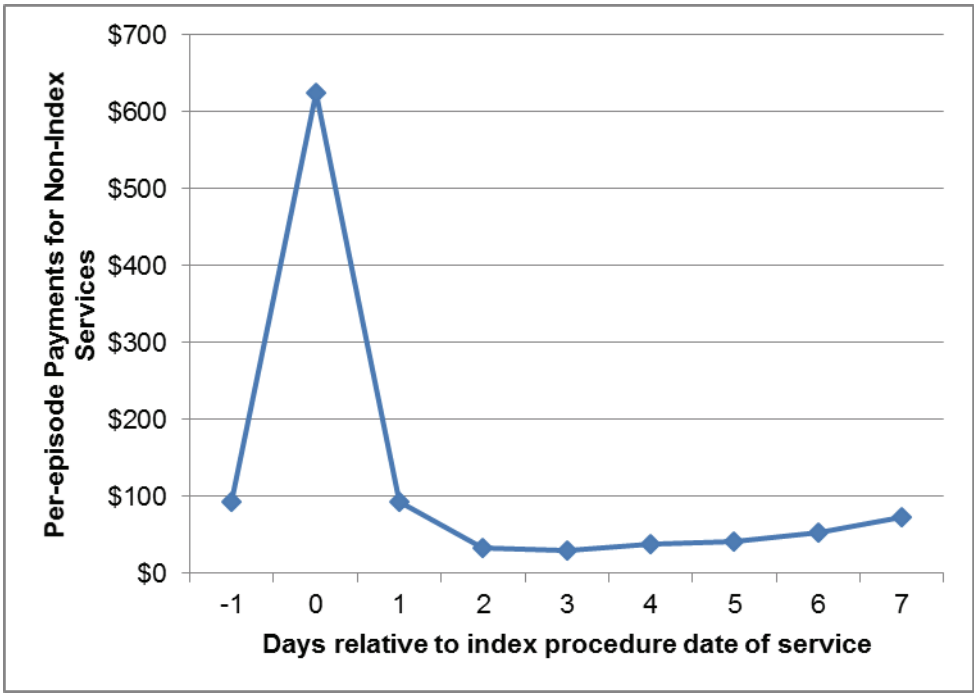
[5] Professional services delivered in the inpatient hospital setting and all services delivered in the emergency department setting remain included.

visits appearing in Table 4.2.1 and Figure 4.2.2 were unrelated to cardiology index procedures or were performed at different facilities. Inpatient hospitalization rates are lower in days 1 through 3, followed by steady increases in days 4 through 7. The additional inpatient payments for visits on days 4 through 7 could reflect planned hospitalizations resulting from cardiology index procedures.

Ambulatory Services

Figure 4.2.2 plots per-episode payments for non-index services by episode day. Episode payments were concentrated on the date of service for the anchor index procedure. Payments in days 2 through 7 were relatively small. Average total payments during the day of the index procedure were $625, and average total payments during the entire nine-day episode were $1,079.[6] Average payments for cardiology index procedures were $2,618. Non-index payments were therefore 29.2 percent of total episode payments on average for cardiology episodes.

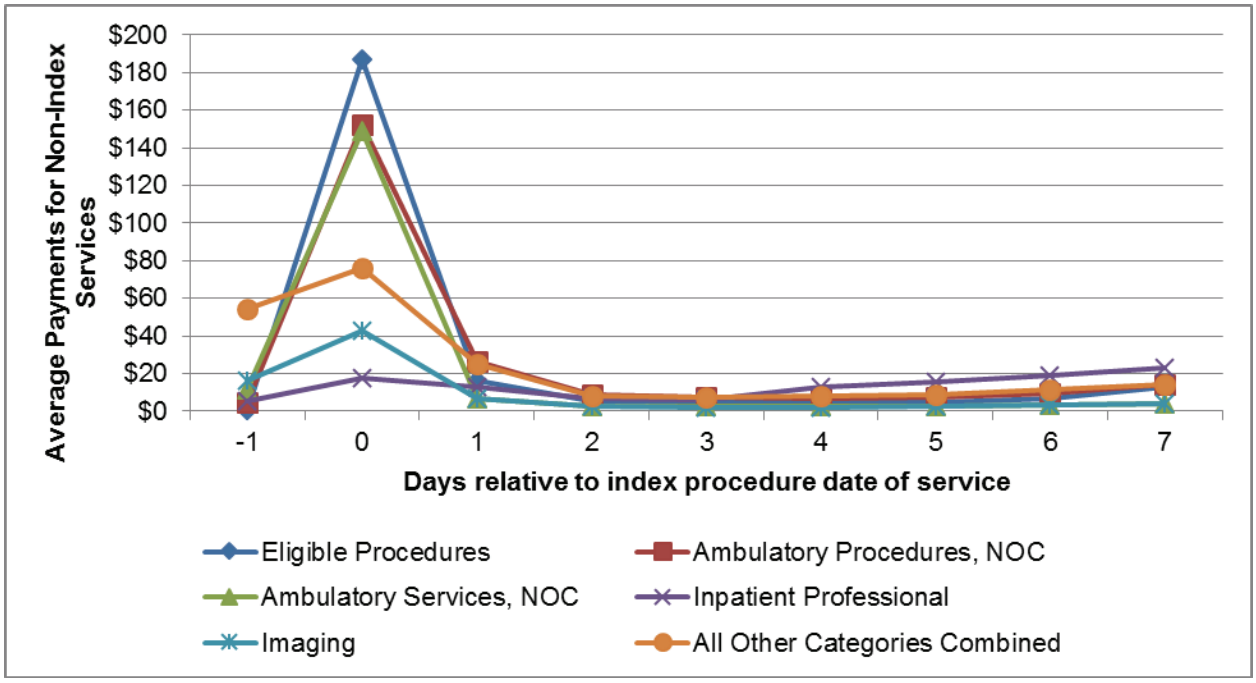
Figure 4.2.2. Average Medicare Payments for Non-Index Services, by Date of Service



[6] Payments were higher when inpatient hospital payments were included. Day-of payments were $803, and payments during the nine-day episode were $1,983. Per-episode payments for inpatient hospitalizations increased rapidly from days 4 through 7.

Payments for multiple index procedures, other ambulatory procedures, and other ambulatory (non-procedure) services were the largest payment categories on day 0 (Figure 4.2.3). Imaging, laboratory tests, and evaluation and management services had modest increases on day 0.

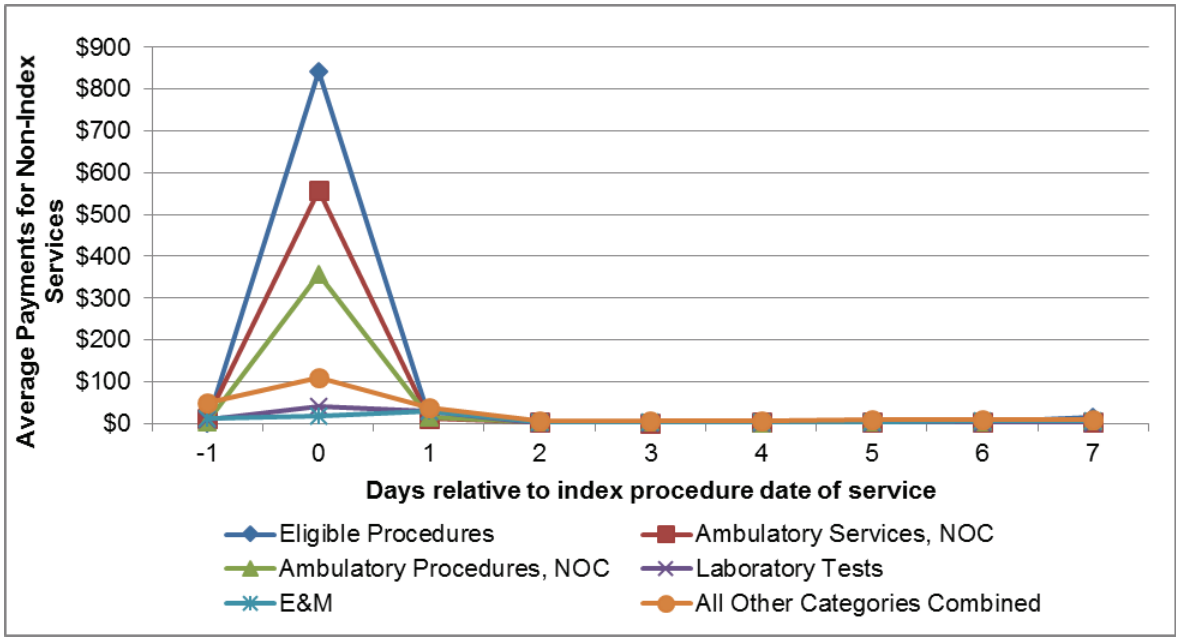
Figure 4.2.3. Cardiology Total Payments for Non-Index Services by Category, HOPD Index Procedures



NOTE: "All Other Categories Combined" includes: E&M; Laboratory Tests; ED; Other Tests; Surgical Pathology; and Anesthesiology.

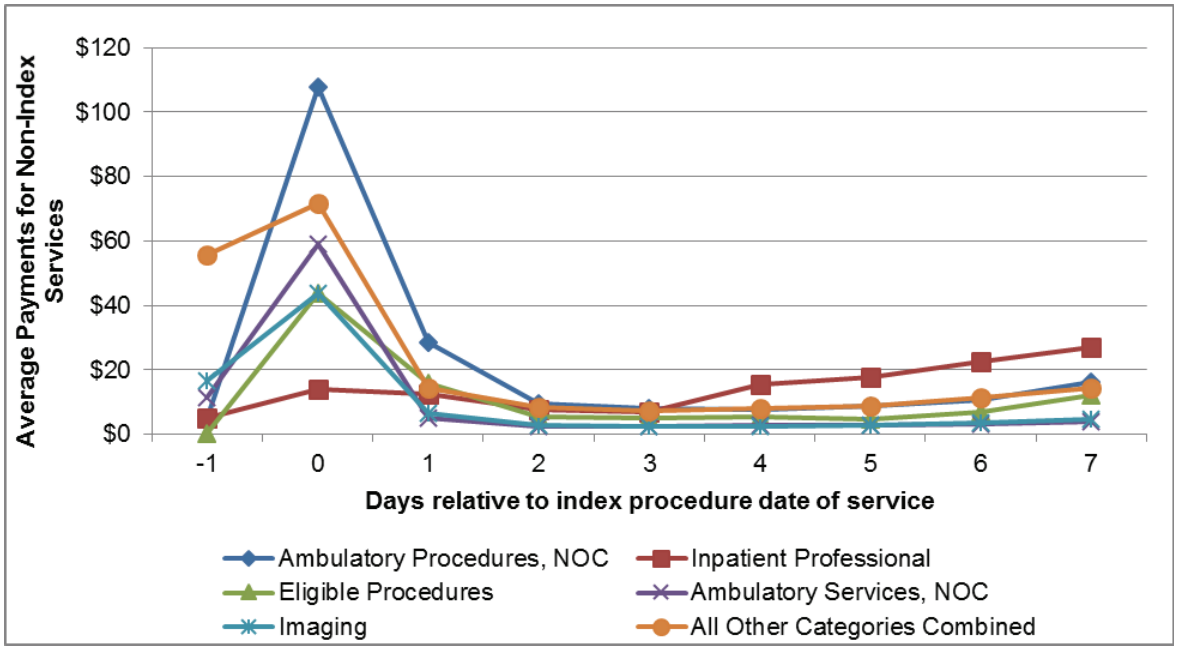
Per-episode payments for non-index services were about 75 percent higher for episodes with PCI index procedures, compared with episodes with catheterization index procedures (see Figures 4.2.4 and 4.3.5). Procedures and other services that were not classified in one of our specific service categories accounted for a significant share of non-index spending regardless of the index procedure type. Other eligible procedures were the single largest category of payments in episodes with PCI index procedures (with average payments of $894 over the nine-day episode). Episodes with catheterization index procedures had higher rates of inpatient professional and imaging spending than episodes with PCI index procedures. See Appendix Table A.8 for detailed results by cardiology index procedure category.

Figure 4.2.4. Cardiology Total Payments for Non-Index Services by Category, Episodes with PCI Index Procedures



NOTE: "All Other Categories Combined" includes: Imaging; Inpatient Professional; ED; Other Tests; Anesthesiology; and Surgical Pathology.

Figure 4.2.5. Cardiology Total Payments for Non-Index Services by Category, Episodes with Catheterization Index Procedures



NOTE: "All Other Categories Combined" includes: E&M; Laboratory Tests; ED; Other Tests; Surgical Pathology; and Anesthesiology.

As in our gastroenterology analysis, we found that cardiology episodes with multiple eligible procedures had higher per-episode spending than episodes with a single eligible procedure ($2,877 versus $713, respectively, omitting inpatient payments).[7] Payments for multiple eligible procedures accounted for a large share of this difference. However, even after payments for these services were omitted, the $713 in payments for episodes with a single eligible procedure remained significantly lower than $1,488 in payments for episodes with multiple eligible procedures. See Appendix Table A.9 for detailed results.

Common Non-Index Procedures and Other Services

Tables 4.2.2 through 4.2.4 report non-index payments across all cardiology episodes, first by non-index service category and then for the top five individual procedures in each category. These tables also report the percentage of all cardiology episodes with at least one paid claim for specific procedures and services. The three tables report separate results for claims from the Carrier, Outpatient, and MedPAR files, respectively.

Nearly half of all cardiology episodes included at least one professional claim for HCPCS 93010, electrocardiogram report. Other common professional services delivered during cardiology episodes were various E&M visits (including HCPCS 99213, 99214, and 99217, each with paid claims in more than 10 percent of episodes). Emergency department professional procedures were relatively common in cardiology episodes. More than 7 percent of episodes had at least one claim for HCPCS 99285, emergency department visit. As we found in our gastroenterology analyses, eligible cardiology procedures other than index procedures contributed significantly to total non-index payments during cardiology episodes. Other sections of this report describe the frequency of specific combinations of multiple eligible procedures.

Laboratory tests were common in the HOPD. More than half of all cardiology episodes had at least one Outpatient claim for HCPCS 93005 (electrocardiogram tracing) and HCPCS 80048 (basic metabolic panel). Specific device and drug Level II HCPCS codes were common and associated with significant payments. For example, more than 13 percent of all cardiology episodes had at least one Outpatient claim for the anticoagulant bivalirudin, with an average cost of $700 per episode.

Inpatient non-index spending was concentrated in short stay hospital visits under PPS. The five DRGs associated with the highest total payments (236, 219, 220, 235, and 247) were all cardiology surgical procedures. Each individual DRG occurred in less than 1 percent of total episodes. However, due to a high per-DRG payment, and due to the fact that we include the total

[7] Total per-episode payments were $3,363 versus $1,763 for episodes with multiple and one eligible procedure, respectively, with inpatient payments included.

payment associated with an inpatient visit in our data as described above, these few inpatient services contributed significantly to total non-index payments.

Table 4.2.2. Specific Services Provided during Cardiology Episodes, Carrier File

Non-Index Category	HCPCS	Description	Paid Amount ($)	% Episodes
Anesthesiology	**-**	**Total, all services**	**1,370,132**	**-**
Top 5 Services	-	*Total, top five services*	762,508	-
	01920	Anesth catheterize heart	329,077	0.5%
	01922	Anesth cat or mri scan	171,796	0.3%
	00537	Anesth cardiac electrophys	127,961	0.1%
	00740	Anesth upper gi visualize	77,035	0.2%
	01925	Anes ther interven rad card	56,638	<0.1%
Surgical Pathology	**-**	**Total, all services**	**1,097,061**	**-**
Top 5 Services	-	*Total, top five services*	710,509	-
	88305	Tissue exam by pathologist	296,775	1.1%
	88307	Tissue exam by pathologist	205,996	0.7%
	88342	Immunohistochemistry	136,962	0.5%
	88346	Immunofluorescent study	49,009	0.1%
	88313	Special stains group 2	21,767	0.3%
Eligible Procedures	**-**	**Total, all services**	**14,534,313**	**-**
Top 5 Services	-	*Total, top five services*	13,560,444	-
	93458	L hrt artery/ventricle angio	6,329,802	9.6%
	92980	#N/a	3,881,734	1.4%
	93459	L hrt art/grft angio	1,852,065	2.6%
	93454	Coronary artery angio s&i	867,252	1.7%
	93460	R&I hrt art/ventricle angio	629,591	0.7%
E&M	**-**	**Total, all services**	**29,104,007**	**-**
Top 5 Services	-	*Total, top five services*	18,446,083	-
	99214	Office/outpatient visit est	6,738,408	20.4%
	99213	Office/outpatient visit est	3,946,042	17.8%
	99220	Initial observation care	2,871,900	4.8%
	99217	Observation care discharge	2,869,108	12.3%
	99205	Office/outpatient visit new	2,020,626	3.3%

Non-Index Category	HCPCS	Description	Paid Amount ($)	% Episodes
All other Carrier procedures	**-**	**Total, all services**	**19,881,033**	**-**
Top 5 Services	-	*Total, top five services*	6,212,430	-
	36252	Ins cath ren art 1st bilat	2,475,636	1.6%
	92981	#N/a	1,342,022	1.7%
	93567	Inject suprvlv aortography	995,481	5.5%
	93505	Biopsy of heart lining	770,364	1.1%
	36216	Place catheter in artery	628,927	0.7%
Imaging	**-**	**Total, all services**	**15,912,637**	**-**
Top 5 Services	-	*Total, top five services*	6,188,231	-
	93306	Tte w/doppler complete	1,959,978	6.2%
	93571	Heart flow reserve measure	1,279,051	4.0%
	78452	Ht muscle image spect mult	1,194,355	1.7%
	92978	Intravasc us heart add-on	987,943	3.1%
	36245	Ins cath abd/l-ext art 1st	766,904	0.8%
All other Carrier services	**-**	**Total, all services**	**17,166,060**	**-**
Top 5 Services	-	*Total, top five services*	12,178,473	-
	A0427	Als1-emergency	4,669,761	3.3%
	A0425	Ground mileage	3,803,122	6.1%
	A0431	Rotary wing air transport	1,483,992	<0.1%
	A0426	Als 1	1,298,015	1.4%
	A0434	Specialty care transport	923,584	0.4%
Laboratory tests	**-**	**Total, all services**	**8,626,107**	**-**
Top 5 Services	-	*Total, top five services*	3,575,066	-
	93010	Electrocardiogram report	1,372,785	45.5%
	86849	Immunology procedure	679,843	<0.1%
	83914	#N/a	666,301	0.3%
	93229	Remote 30 day ecg tech supp	440,879	0.1%
	93000	Electrocardiogram complete	415,257	6.5%

Non-Index Category	HCPCS	Description	Paid Amount ($)	% Episodes
ED	**-**	**Total, all services**	**6,463,821**	**-**
Top 5 Services	-	*Total, top five services*	5,646,707	-
	99285	Emergency dept visit	4,034,270	7.1%
	99291	Critical care first hour	669,883	0.9%
	99284	Emergency dept visit	616,296	1.6%
	93010	Electrocardiogram report	187,211	6.3%
	99283	Emergency dept visit	139,047	0.7%
Inpatient Hospital	**-**	**-**	**55,835,769**	**-**
Top 5 Services	-	*Total, top five services*	21,836,085	-
	33533	Cabg arterial single	8,566,007	2.1%
	99223	Initial hospital care	4,743,101	7.0%
	33405	Replacement of aortic valve	3,501,840	0.7%
	00567	Anesth cabg w/pump	2,760,751	1.2%
	99232	Subsequent hospital care	2,264,385	8.9%

Table 4.2.3. Specific Services Provided during Cardiology Episodes, Outpatient File

Non-Index Category	HCPCS	Description	Paid Amount ($)	% Episodes
Surgical Pathology	**-**	**Total, all services**	**535,073**	**-**
Top 5 Services	-	*Total, top five services*	483,333	-
	88307	Tissue exam by pathologist	233,456	1.1%
	88342	Immunohistochemistry	123,638	0.4%
	88305	Tissue exam by pathologist	63,900	0.4%
	88346	Immunofluorescent study	39,217	0.1%
	88313	Special stains group 2	23,123	0.3%
Eligible Procedures	**-**	**-**	**93,798,388**	**-**
Top 5 Services	-	*Total, top five services*	84,279,467	-
	93458	L hrt artery/ventricle angio	37,072,644	9.1%
	G0290	Place drug elut stent, single	25,574,292	1.0%
	93459	L hrt art/grft angio	9,818,589	2.4%
	93454	Coronary artery angio s&i	6,964,294	1.6%
	92980	Place intracoronary stent, single	4,849,647	0.3%
E&M	**-**	**-**	**2,112,249**	**-**
Top 5 Services	-	*Total, top five services*	1,323,392	-
	99214	Office/outpatient visit est	367,850	1.1%
	99213	Office/outpatient visit est	276,232	1.0%
	99212	Office/outpatient visit est	258,657	0.9%
	99211	Office/outpatient visit est	235,266	1.1%
	99215	Office/outpatient visit est	185,388	0.4%
All other Carrier procedures	**-**	**-**	**89,053,753**	**-**
Top 5 Services	-	*Total, top five services*	52,457,983	-
	G0291	Place drug elut stent, addtl vsl	19,600,910	1.4%
	33249	Nsert pace-defib w/lead	18,538,815	0.2%
	33208	Insrt heart pm atrial & vent	5,951,632	0.2%
	37205	Transcath iv stent percut	4,656,062	0.2%
	93620	Electrophysiology evaluation	3,710,564	0.1%

Non-Index Category	HCPCS	Description	Paid Amount ($)	% Episodes
Imaging	**-**	**-**	**22,817,453**	**-**
Top 5 Services	-	*Total, top five services*	13,323,813	-
	93306	Tte w/doppler complete	6,203,518	4.6%
	93312	Echo transesophageal	2,654,895	1.4%
	78452	Ht muscle image spect mult	1,714,472	0.7%
	71020	Chest x-ray 2vw frontal&latl	1,481,894	9.6%
	71010	Chest x-ray 1 view frontal	1,269,034	8.3%
All other Carrier services	**-**	**-**	**63,880,967**	**-**
Top 5 Services	-	*Total, top five services*	50,026,351	-
	J0583	Bivalirudin	40,962,317	13.4%
	J1327	Eptifibatide injection	4,529,179	2.4%
	J0152	Adenosine injection	2,727,491	2.6%
	C1874	Stent, coated/cov w/del sys	1,051,335	13.8%
	J0130	Abciximab injection	756,028	0.1%
Laboratory tests	**-**	**-**	**31,545,900**	**-**
Top 5 Services	-	*Total, top five services*	13,690,098	-
	93005	Electrocardiogram tracing	6,041,372	58.5%
	80048	Metabolic panel total ca	2,466,159	53.9%
	85025	Complete cbc w/auto diff wbc	2,082,330	42.8%
	84484	Assay of troponin quant	1,748,930	23.1%
	80061	Lipid panel	1,351,306	22.3%
ED	**-**	**-**	**14,218,018**	**-**
Top 5 Services	-	*Total, top five services*	12,765,320	-
	99285	Emergency dept visit	9,125,521	5.6%
	99284	Emergency dept visit	2,246,605	1.9%
	G0378	Hospital observation per hr	590,449	11.7%
	99291	Critical care first hour	434,266	0.2%
	99283	Emergency dept visit	368,479	0.8%

SOURCE: Authors' analysis of Medicare Outpatient and Carrier claims data for Medicare FFS beneficiaries, 2012.

Table 4.2.4: Specific Services Provided during Cardiology Episodes, MedPAR File

Non-Index Category	DRG	Description	Paid Amount ($)	% Episodes
Total Inpatient	**-**	**Total, all services**	**576,203,813**	**-**
Short stay hospital, PPS	-	*Total, top ten DRGs*	159,617,783	-
	236	Coronary bypass w/o cardiac cath w/o MCC	90,748,338	0.9%
	219	Cardiac valve & oth maj cardiothoracic proc w/o card cath w MCC	53,916,233	0.2%
	220	Cardiac valve & oth maj cardiothoracic proc w/o card cath w CC	52,522,935	0.3%
	235	Coronary bypass w/o cardiac cath w MCC	44,827,785	0.3%
	247	Perc cardiovasc proc w drug-eluting stent w/o MCC	18,809,695	0.5%
	003	ECMO or trach w MV 96+ hrs or PDX exc face, mouth & neck w maj O.R.	14,921,731	<0.1%
	221	Cardiac valve & oth maj cardiothoracic proc w/o card cath w/o CC/MCC	9,437,140	<0.1%
	470	Major joint replacement or reattachment of lower extremity w/o MCC	5,968,794	0.1%
	246	Perc cardiovasc proc w drug-eluting stent w MCC or 4+ vessels/stents	5,914,617	<0.1%
	229	Other cardiothoracic procedures w CC	4,717,313	<0.1%
Short stay hospital, non-PPS	**-**	**Total, all services**	12,785,360	0.2%
Long stay	**-**	**Total, all services**	3,182,946	<0.1%
SNF	**-**	**Total, all services**	7,250,985	0.2%

SOURCE: Authors' analysis of Medicare Outpatient and Carrier claims data for Medicare FFS beneficiaries, 2012.

Individual cardiology index procedures often involve a single stent placement, angioplasty, or other intervention. Providers bill for additional services (for example, placing a stent in a second blood vessel) using a set of HCPCS add-on codes that cannot be billed separately. Table 4.2.5 lists nine specific add-on codes that can apply to cardiology index procedures. The "paid amount" column reports the combined Carrier and OPPS Outpatient payments for each HCPCS code. The "percent episodes" column reports the proportion of cardiology episodes with a professional claim for each HCPCS code. These add-on procedures were uncommon in relation to all cardiology episodes. The two add-on codes with the largest in-episode paid amounts were HCPCS G0291 (transcatheter placement of drug eluting stent, each additional vessel) and

HCPCS 92981 (transcatheter placement of stent, each additional vessel) and were paid in 1.4 and 2.0 percent of cardiology episodes, respectively. HCPCS 92978 (intravascular ultrasound) and HCPCS 92984 (angioplasty, each additional vessel) were paid in 3.5 and 0.4 percent of cardiology episodes each, respectively. However, these add-on procedures were more common when compared with the number of cardiology episodes with related index procedures. For example, HCPCS G0291 (transcatheter placement of drug eluting stent, each additional vessel) was paid in 12.1 percent of cardiology episodes with index procedure HCPCS G0290 (transcatheter placement of drug eluting stent). Likewise, Medicare paid at least one claim for the add-on procedure HCPCS 92981 (transcatheter placement of stent, each additional vessel) during 22.3 percent of episodes with index procedure HCPCS 92980 (transcatheter placement of stent).

Table 4.2.5. Add-On Procedures Billed During Cardiology Episodes

HCPCS	Description	Paid Amount ($)	% Episodes
G0291	Transcath plcmt des addtl vsl	19,604,296	1.4%
92981	Stent placement add vessel	5,014,159	2.0%
92984	Angioplasty additional vessel	2,547,403	0.4%
92978	Intravasc us heart add-on	1,413,319	3.5%
92973	Prq coronary mech thrombect	439,083	0.1%
93462	L hrt cath trnsptl puncture	383,589	0.2%
93463	Drug admin & hemodynmic meas	377,017	1.0%
92996	Atherectomy additional vessel	53,666	<0.1%
93464	Exercise w/hemodynamic meas	39,758	0.1%
92974	Cath place cardio brachytx	26,740	<0.1%

(3) Practice Characteristics

The contents of this section are analogous to those of Chapter Three, Section 4. We summarize characteristics of practices according to possible index procedure volume thresholds. We selected a volume threshold of 20 index procedures and summarize characteristics of the resulting sample of practices. We then stratify practices according to key practice characteristics and examine the extent to which index procedure and episode volumes and mean payment amounts vary across different types of practices.

Characteristics of Practices with Attributed Cardiology Index Procedures

Figures 4.3.1 through 4.3.3 display summaries of the number of practices, number of index procedures, and number of physicians per practice with cardiology index procedures among all index procedures meeting our eligibility criteria (see Chapter Two). We display these results using ten possible volume thresholds. These volume thresholds combine both cardiac catheterization and PCI index procedures.

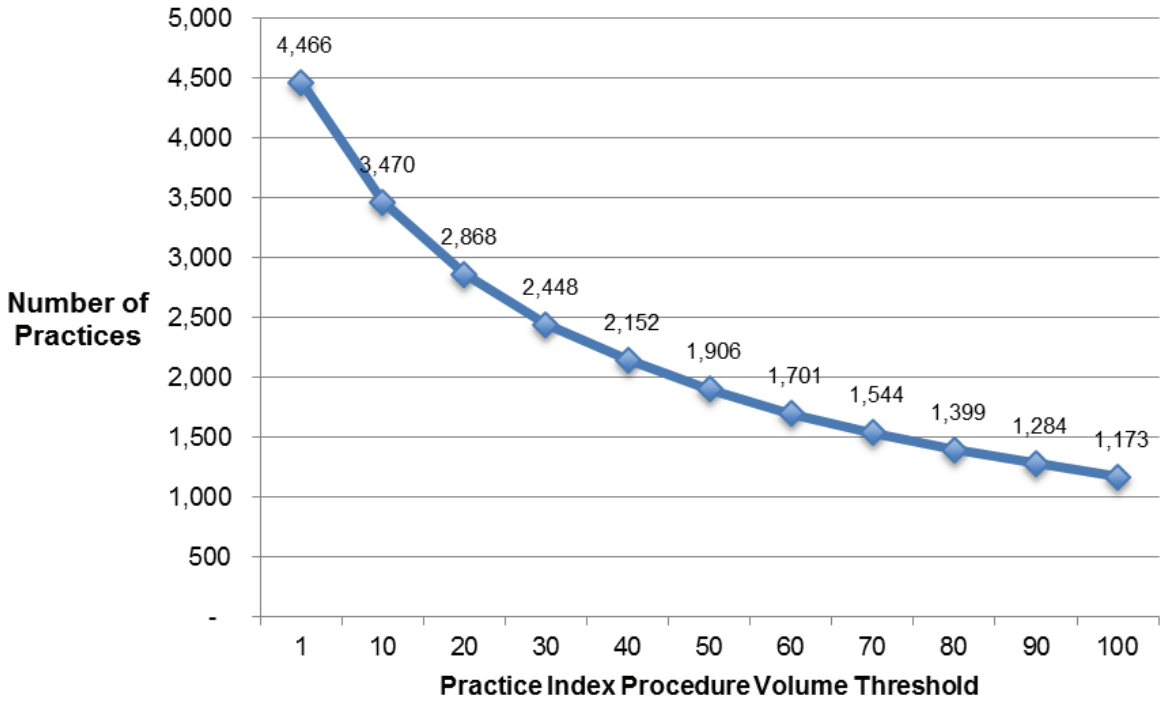
Assuming no volume threshold, we estimate that a total of 4,466 practices would be eligible to participate in a cardiology payment model by virtue of providing at least one index procedure in 2012 (Figure 4.3.1). A substantial reduction in the number of participating practices would be expected if a ten-index procedure threshold was implemented. Each additional ten procedure increase in the volume threshold has a smaller effect on the number of practices excluded from the analysis.

The aggregate number of index procedures provided by practices likely to participate in the payment model is only moderately sensitive to a practice volume threshold less than 100 index procedures (Figure 4.3.2). For example, using a threshold of ten index procedures entails an exclusion of only 1 percent of episodes from the analysis, and each ten-procedure increase in the threshold has a roughly proportional effect on the number of episodes excluded from the analysis through a threshold of 100 procedures.

In Figure 4.3.3 we display the mean and median index procedure volumes for practices meeting each index procedure volume threshold. As expected, these estimates increase substantially when using progressively higher volume thresholds. Among practices with at least 20 cardiology index procedures, the average practice was responsible for 108 index procedures while the median practice was responsible for 58 index procedures. The mean number of physicians that provided cardiology index procedures at each practice increases as the practice volume threshold is raised in a similar pattern (Figure 4.3.4).

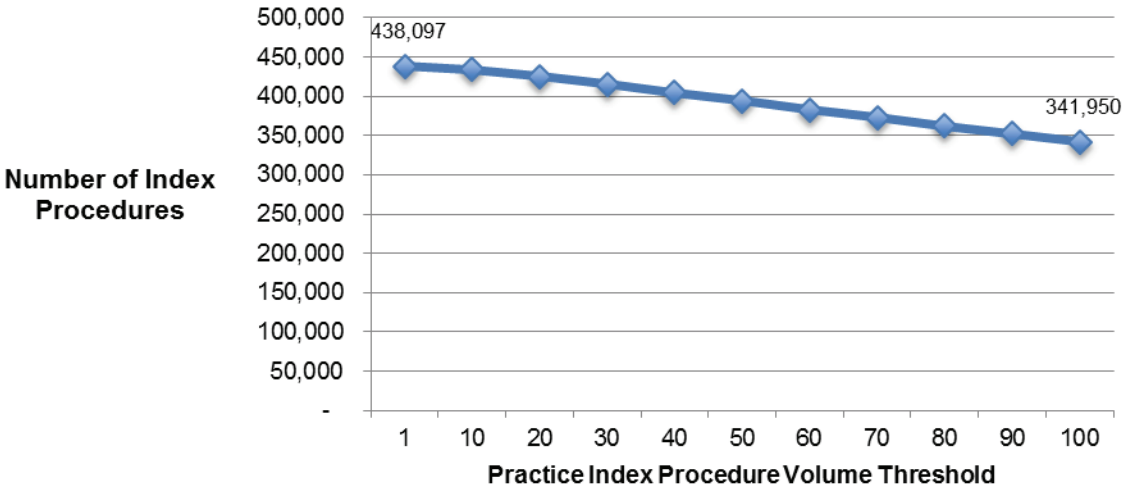
We selected a threshold of 20 index procedures for all remaining analyses, for which the results are displayed in this section to provide a profile of the practices most likely to participate in the payment model.

Figure 4.3.1. Number of Practices Potentially Eligible for Participation in a Cardiology Payment Model, by Practice Index Procedure Volume Threshold



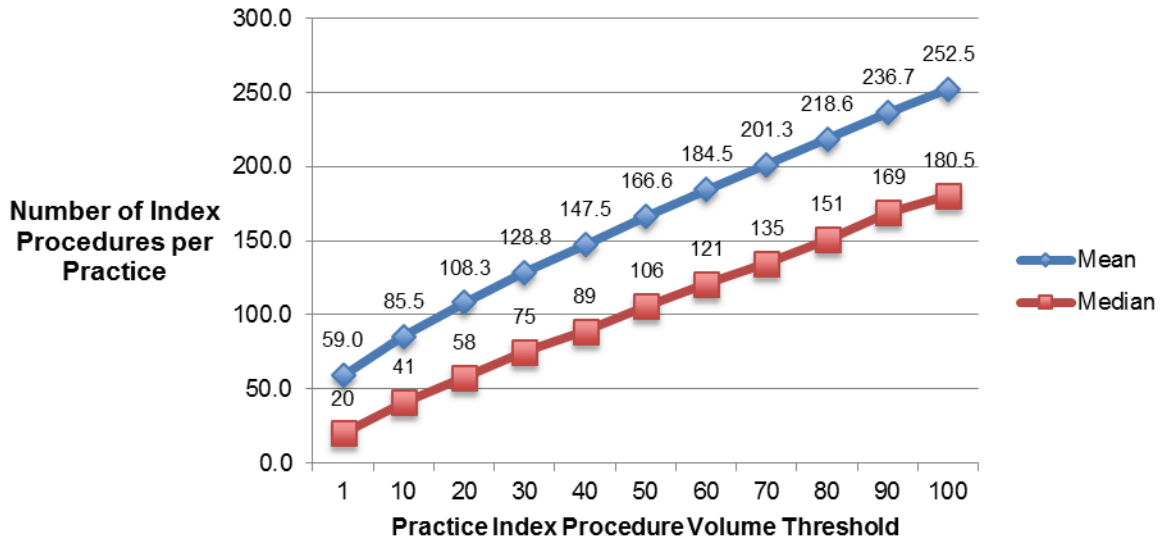
SOURCE: Authors' analysis of 2012 CCW Medicare claims data.

Figure 4.3.2. Number of Index Procedures Included, by Practice Index Procedure Volume Threshold



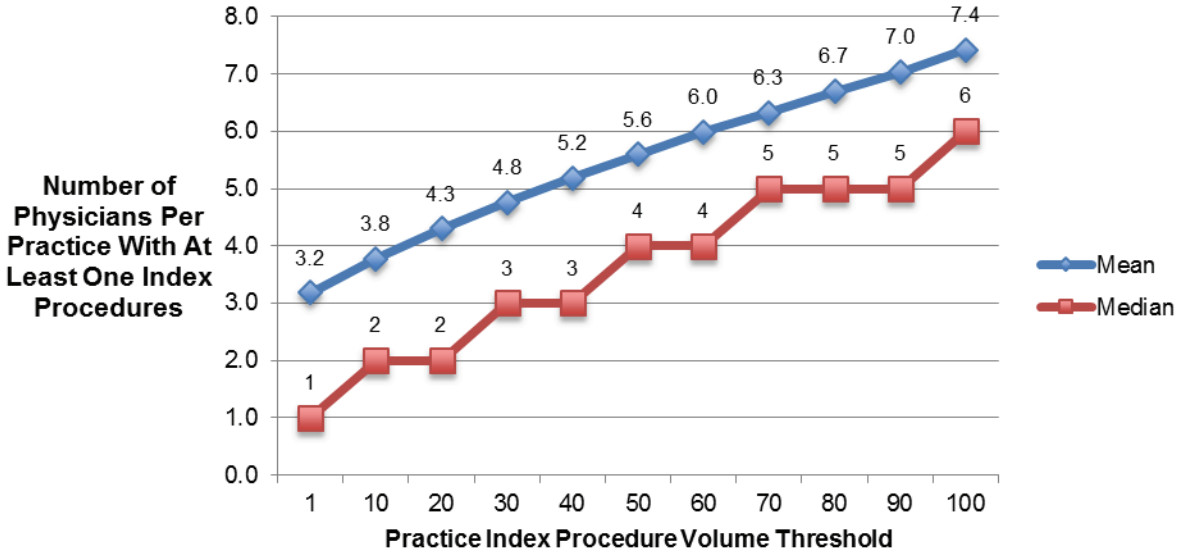
SOURCE: Authors' analysis of 2012 CCW Medicare claims data.

Figure 4.3.3. Number of Index Procedures per Practice, by Practice Index Procedure Volume Threshold



SOURCE: Authors' analysis of 2012 CCW Medicare claims data.

Figure 4.3.4. Number of Physicians per Practice Who Provide at Least One Index Procedure, by Practice Index Procedure Volume Threshold



SOURCE: Authors' analysis of 2012 CCW Medicare claims data.

Among practices that provided at least 20 cardiology index procedures, only 34 percent were practices in which a single physician rendered these procedures. Nearly 30 percent of practices had five or more physicians who initiated cardiology index procedures. All index procedures took place in HOPD settings, and just over 60 percent of practices were single specialty practices.

Table 4.3.1. Characteristics of Practices Providing at Least 20 Cardiology Index Procedures

Category	Characteristic	Number of Practices (%)
Number of Physicians	1	980 (34.17)
Number of Physicians	2-4	1026 (35.77)
Number of Physicians	≥5	862 (30.06)
Number of Index Procedures	<50	962 (33.54)
Number of Index Procedures	50-99	733 (25.56)
Number of Index Procedures	100-199	570 (19.87)
Number of Index Procedures	≥200	603 (21.03)
Percentage of index procedures rendered in HOPDs	0%	-
Percentage of index procedures rendered in HOPDs	>0% and <50%	-
Percentage of index procedures rendered in HOPDs	≥50% and <100%	-
Percentage of index procedures rendered in HOPDs	100%	2868 (100)
Practice specialty	Single Specialty	1693 (61.0)
Practice specialty	Multi-Specialty	1084 (39.0)

SOURCE: Authors' analysis of 2012 CCW Medicare claims data.
NOTE: The number of physicians corresponds to the number of unique physicians at each practice who submitted a claim for one or more index procedures. Single specialty practices were defined as practices for which at least 75% of physicians shared the same specialty. We used the Medicare Data on Physician Practice and Specialty Database (MD-PPAS) to associate physicians with practices, and to identify each physician's specialty. For 91 practices (3.2 percent) we were unable to define practice specialty because the practice's Tax Identification Number was not available in MD-PPAS (Medicare Data on Physician Practice and Specialty Database).

Index Procedure Volume Summaries

Tables 4.3.2 and 4.3.3 provide summaries of the number of cardiac catheterization and PCI index procedures, respectively, that are provided by practices with various characteristics. These tables also display the percentage of index procedures with multiple eligible procedures. Because all cardiac procedures in our sample were rendered in HOPD settings, we did not stratify these results by setting as in Chapter Three, Section 4.

Table 4.3.2 indicates that approximately 2.2 percent of cardiac catheterization episodes were associated with multiple eligible procedures. Larger practices, measured either in terms of the number of physicians who perform catheterization procedures or a practice's episode volume, were associated with a lower rate of multiple eligible procedures. Among PCI episodes, the rate at which episodes included multiple eligible procedures is far higher—nearly 78 percent—owing to the fact that catheterization and PCI are commonly performed sequentially on the same day or within a short interval of time. Larger practices, measured according to either index procedure volume or number of physicians, were somewhat more likely to perform multiple eligible procedures.

Table 4.3.2. Volume of Cardiac Catheterization Index Procedures and Episodes with Multiple Eligible Procedures, by Practice Characteristics

Characteristic	Number of Index Procedures	Percentage of Index Procedures with Multiple Eligible Procedures
Practice size		
1	45,788	3.0
2–4	82,695	2.4
5+	219,345	1.9
Cardiac catheterization index procedure volume		
0–24	7,421	2.8
25–49	28,092	2.8
50–99	50,810	2.3
100–199	74,194	2.4
200+	187,311	2.0
Practice specialty		
Multi-specialty	178,215	2.1
Single specialty	165,101	2.3

SOURCE: Authors' analysis of 2012 CCW Medicare claims data.
NOTE: This analysis was limited to practices with at least 20 cardiology index procedures.

Table 4.3.3. Volume of PCI Index Procedures and Episodes with Multiple Eligible Procedures, by Practice Characteristics

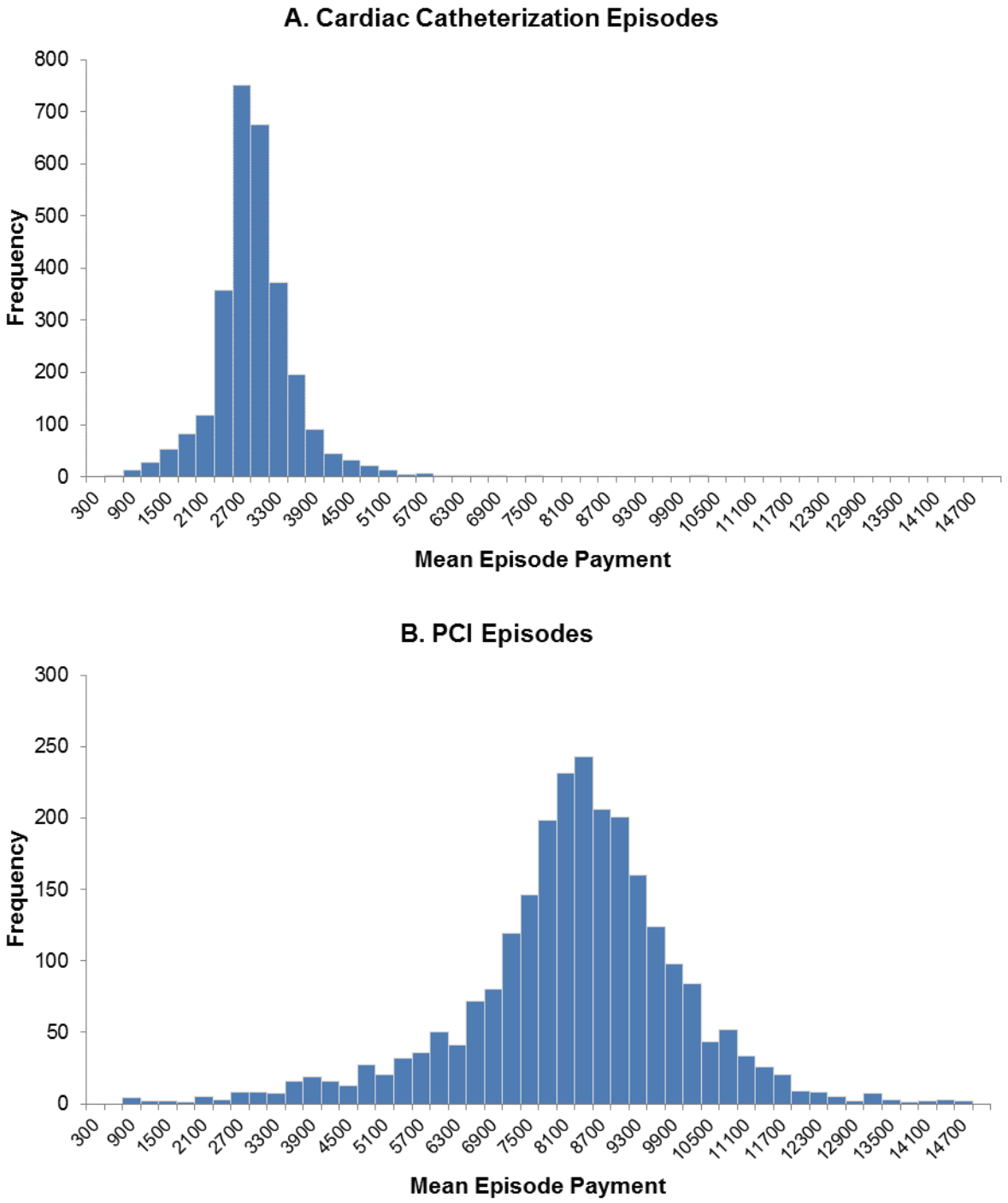
Characteristic	Number of Index Procedures	Percentage of Index Procedures with Multiple Eligible Procedures
Practice size		
1	12,908	75.8
2–4	26,717	78.1
5+	37,889	78.5
PCI index procedure volume		
0–4	1,073	74.8
5–9	3,165	73.0
10–24	11,292	77.7
25–49	16,052	79.0
50+	45,932	77.9
Practice specialty		
Multi-specialty	38,242	78.2
Single specialty	38,151	77.6

SOURCE: Authors' analysis of 2012 CCW Medicare claims data.
NOTE: This analysis was limited to practices with at least 20 cardiology index procedures.

Episode Payment Summaries

Figure 4.3.5 displays distributions of mean episode payments per practice, by index procedure category, for the subset of practices that were attributed 20 or more cardiology episodes. The between-practice median of the mean episode payment for cardiac catheterization episodes was $2710 (inter quartile range $2,429–$3,047). The between-practice median of the mean episode payment for PCI episodes was $8214 (inter quartile range $7,288–$9,113).

Figure 4.3.5. Distribution of Mean Episode Payment for Practices Attributed at Least 20 Episodes



SOURCE: Authors' analysis of 2012 CCW Medicare claims data.

NOTE: Each episode spans nine days and excludes inpatient facility payments. Four practices had mean payments for PCI episodes exceeding $15,000 and are not displayed in Panel B.

Table 4.3.4 displays mean total payments stratified by practice characteristics for cardiac catheterization episodes and PCI episodes. The mean payment for catheterization episodes exhibits an inverse relationship with practice size (measured by a practice's episode volume), suggesting that practices that perform more catheterization procedures might be more efficient at doing so. The difference in mean payments between the highest-volume practices and the lowest-volume practices was approximately $62 on average. We observed a similar but stronger pattern for PCI episodes, where the difference in mean payments between the highest-volume practices and the lowest-volume practices was approximately $269 on average. Multi-specialty practices had catheterization episodes that were approximately $106 higher, on average, than those of single specialty practices, and PCI episode payments that were $337 higher on average than those of specialty practices.

Tables 4.3.5 and 4.3.6 disaggregate mean episode payments into three components: the anchor index procedure, other eligible procedures performed during the same episode, and all other non-index services rendered during the episode. Table 4.3.5 summarizes payments for episodes with catheterization index procedures, while Table 4.3.6 summarizes payments for episodes with PCI index procedures. We observed few clear patterns in our analysis of cardiac catheterization episodes. However, among PCI episodes, we observed a strong inverse relationship between practice episode volume and mean payments for non-index services in which high-volume practices have a lower mean payment for non-index services as compared with low-volume practices. The difference in mean payments per episode for non-index services between the highest and lowest volume practices is $127, on average.

Table 4.3.4. Mean Total Payments per Episode for Catheterization and PCI Episodes, by Practice Characteristics

Characteristic	Mean Total Payment per Episode with Catheterization Index Procedures	Mean Total Payment per Episode with PCI Index Procedures
Practice size		
1	$2,756	$8,049
2–4	$2,731	$8,034
5+	$2,737	$8,076
Practice episode volume*		
0–24	$2,783	$8,310
25–49	$2,764	$8,108
50–99	$2,763	$8,152
100–199	$2,752	$8,008
200+	$2,721	$8,041
Practice specialty		
Multi-specialty	$2,787	$8,215
Single specialty	$2,681	$7,878

SOURCE: Authors' analysis of 2012 CCW Medicare claims data.
NOTE: This analysis was limited to practices with at least 20 cardiology episodes. Each episode spans nine days and excludes inpatient facility payments.
* The episode volume categories displayed for PCI procedures are 0–4 episodes, 5–9 episodes, 10–24 episodes, 25–49 episodes and ≥50 episodes.

Table 4.3.5. Mean Payments per Episode of Cardiac Catheterization, by Payment Category

Characteristic	Anchor Index Procedure Payments (Mean)	Other Eligible Procedure Payments (Mean)	Other Non-Index Service Payments (Mean)
Practice size			
1	$1,907	$4,025	$728
2–4	$1,906	$3,922	$725
5+	$1,952	$4,152	$698
Cardiac catheterization index procedure volume			
0–24	$1,988	$4,056	$679
25–49	$1,946	$3,689	$713
50–99	$1,936	$4,050	$730
100–199	$1,933	$4,070	$717
200+	$1,932	$4,154	$700
Practice specialty			
Multi-specialty	$1,972	$3,958	$725
Single specialty	$1,893	$4,158	$690

SOURCE: Authors' analysis of 2012 CCW Medicare claims data.
NOTE: Each episode spans 9 days and excludes inpatient facility payments.

Table 4.3.6. Mean Payments per Episode with a PCI Index Procedure, by Payment Category

Characteristic	Anchor Index Procedure Payments (Mean)	Other Eligible Procedure Payments (Mean)	Other Non-Index Service Payments (Mean)
Practice size			
1	$5,708	$1,064	$1,471
2–4	$5,712	$1,047	$1,427
5+	$5,792	$1,026	$1,397
PCI index procedure volume			
0–4	$5,891	$1,126	$1,512
5–9	$5,698	$1,054	$1,569
10–24	$5,785	$1,024	$1,497
25–49	$5,697	$1,025	$1,428
50+	$5,761	$1,045	$1,385
Practice specialty			
Multi-specialty	$5,885	$1,057	$1,424
Single specialty	$5,597	$1,015	$1,419

SOURCE: Authors' analysis of 2012 CCW Medicare claims data.

NOTE: Each episode spans 9 days and excludes inpatient facility payments.

(4) Patient Characteristics

In this section, we investigate the characteristics of beneficiaries receiving cardiology procedures including catheterization and PCI. We also examine average Medicare payments across an episode of care by beneficiary characteristics. We use definitions of episodes of care, index procedures, and payment categories defined in the prior sections. The unit of analysis is a nine-day episode with either a catheterization or PCI index procedure.

Characteristics of Beneficiaries with Catheterization and PCI Episodes

In Table 4.4.1, we investigate the characteristics of beneficiaries with cardiology episodes. We examine only episodes occurring in HOPDs. Female beneficiaries made up 48 percent of catheterization episodes and 36 percent of PCI episodes. White beneficiaries made up 85 percent of catheterization episodes, followed by black beneficiaries with 10 percent of episodes. In contrast, only 6 percent of PCI episodes were for black beneficiaries. We observe beneficiaries

with catheterization and PCI episodes across the age distribution. The majority of beneficiaries with catheterization and PCI episodes lived in CBSAs, were not dual-eligible, and were eligible for Medicare by age.

Table 4.4.1. Patient Characteristics by Index Procedure for Index Procedures occurring in HOPD, Cardiology

Characteristic	Catheterization	PCI
Total, N	359,410	78,687
Gender, N (%)		
Male	187,196 (52%)	60,652 (64%)
Female	172,218 (48%)	28,035 (36%)
Race/ethnicity, N (%)		
Black (non-Hispanic)	34,465 (10%)	5,067 (6%)
White (non-Hispanic)	307,238 (85%)	69,910 (89%)
Hispanic	6,211 (2%)	1,056 (1%)
Asian	4,207 (1%)	966 (1%)
Other	5,970 (2%)	1,355 (2%)
Unknown	1,313 (0%)	333 (0%)
Age bands, N (%)		
<65	65,365 (18%)	10,488 (13%)
65–69	82,534 (23%)	18,979 (24%)
70–74	80,439 (22%)	18,855 (24%)
75–79	65,530 (18%)	15,131 (19%)
>79	65,536 (18%)	15,223 (19%)
Urban/rural, N (%)		
In a CBSA	309,284 (88%)	66,817 (87%)
Not in a CBSA	43,115 (12%)	10,313 (13%)
Dual eligibility, N (%)		
Not	285,831 (80%)	65,684 (83%)
Dual	75,573 (20%)	13,003 (17%)
Current eligibility, N (%)		
Old age	283,053 (79%)	65,713 (84%)

Characteristic	Catheterization	PCI
Disability	70,602 (20%)	11,943 (15%)
ESRD	2,400 (1%)	426 (1%)
Disability and ESRD	3,349 (1%)	605 (1%)

NOTES: Table displays average characteristics of Medicare FFS beneficiaries with catheterization or PCI episodes occurring in 2012. Due to small numbers of episodes with missing demographic information, the sum of subgroup volumes may be less than total. Estimates are based on 2012 Medicare FFS claims data and Master Beneficiary Summary File.

Differential Medicare Spending by Beneficiary Characteristics for Cardiology Episodes

Table 4.4.2 displays average Medicare payments across subgroups defined by beneficiary characteristics, separately for catheterization and PCI episodes. As before, we examine Medicare payments for the index procedure, other eligible procedures, other services, and total episode payments. Anchor index procedure payments for catheterization varied moderately across subgroups, ranging from $1,862 to $2,152. Payments for other eligible catheterization procedures during the episode were very low, ranging from $68 to $126. Payments for other services also varied moderately across subgroups, ranging from $631 to $874. The total episode payment ranges from $2,599 for black beneficiaries to $2,994 for Asian beneficiaries, with an average of $2,741.[8] Inpatient facility payments are notably higher (more than a two-fold difference) for beneficiaries with Medicare eligibility through ESRD than beneficiaries eligible through disability.

Payments for the index procedure for PCI varied across subgroups, ranging from $5,458 for black beneficiaries to $6,467 for beneficiaries of Asian descent. There was little variation in Medicare spending for other PCIs within an episode across subgroups. Payments for other services for beneficiaries eligible for Medicare through ESRD were $1,720 relative to $1,413 for beneficiaries eligible because of age and $1,448 for beneficiaries eligible for Medicare through disability. There was less variation in payments for other services across other subgroups, with the exception of higher payments for beneficiaries of unknown race/ethnicity. For comparison, the inpatient facility payments for PCI (data not shown) are more than three-fold higher for beneficiaries with Medicare eligibility through ESRD or disability/ESRD than beneficiaries eligible through age or disability.

[8] For comparison, the average overall episode payment including inpatient facility payments for catheterization is $3,791, ranging from $3,280 to $4,357 (data not shown).

Table 4.4.2. Average Episode Payments by Patient Characteristics, Cardiology (US$)

Characteristic	Cath. Index Proc.	Cath. Eligible Proc.	Cath. Other Services	Cath. Total Episode Payments	PCI Index Proc.	PCI Eligible Proc.	PCI Other Services	PCI Total Episode Payments
Gender								
Male	1,947	126	780	2,853	5,772	897	1,443	8,111
Female	1,917	71	631	2,619	5,703	890	1,383	7,978
Race/ethnicity								
Black	1,862	72	666	2,599	5,458	830	1,423	7,714
White	1,934	102	714	2,749	5,747	898	1,422	8,067
Hispanic	2,017	101	713	2,831	6,022	918	1,416	8,360
Asian	2,152	126	715	2,994	6,467	929	1,359	8,755
Other	2,023	106	690	2,820	6,021	906	1,403	8,331
Unknown	2,032	100	706	2,838	6,197	927	1,684	8,818
Age bands								
<65	1,882	68	694	2,644	5,601	883	1,480	7,965
65-69	1,929	101	674	2,704	5,806	908	1,409	8,123
70-74	1,936	106	697	2,740	5,808	905	1,413	8,127
75-79	1,946	107	721	2,774	5,746	893	1,416	8,054
80+	1,969	114	767	2,850	5,702	874	1,415	7,991
Urban/rural								
In a CBSA	1,939	99	711	2,748	5,763	894	1,415	7,997
Not in a CBSA	1,901	103	692	2,696	5,677	904	1,390	7,770
Dual eligibility								
Not	1,938	104	714	2,756	5,757	897	1,416	8,070
Dual	1,911	81	688	2,680	5,699	883	1,450	8,033
Current eligibility								
Old age	1,944	107	712	2,764	5,774	896	1,413	8,083
Disability	1,883	73	683	2,638	5,603	889	1,448	7,941
ESRD	1,989	65	874	2,928	5,653	845	1,720	8,219
Disability and ESRD	1,956	61	803	2,822	5,774	823	1,673	8,264

NOTES: Table displays average payments in dollars by subgroups defined by beneficiary characteristics for catheterization or PCI episodes among Medicare FFS beneficiaries occurring in 2012. Estimates are based on 2012 Medicare FFS claims and Master Beneficiary Summary File.

Finally, Figures 4.4.1 and 4.4.2 show average Medicare payments for catheterization and PCI episodes by state of residence. Figure 4.4.1 shows that there was variation in episode payments for catheterization across states. Medicare episode payments were approximately $2,200 for Louisiana and Nevada; in contrast, episode payments were over $3,200 in Massachusetts and the District of Columbia (a 45 percent difference). Figure 4.4.2 shows some variation in episode payments for PCI across states. PCI episodes received $9,992 in Medicare payments in Connecticut, compared with $6,477 in Louisiana.

Figure 4.4.1. Medicare Payments for Catheterization Episodes, by Beneficiary State of Residence

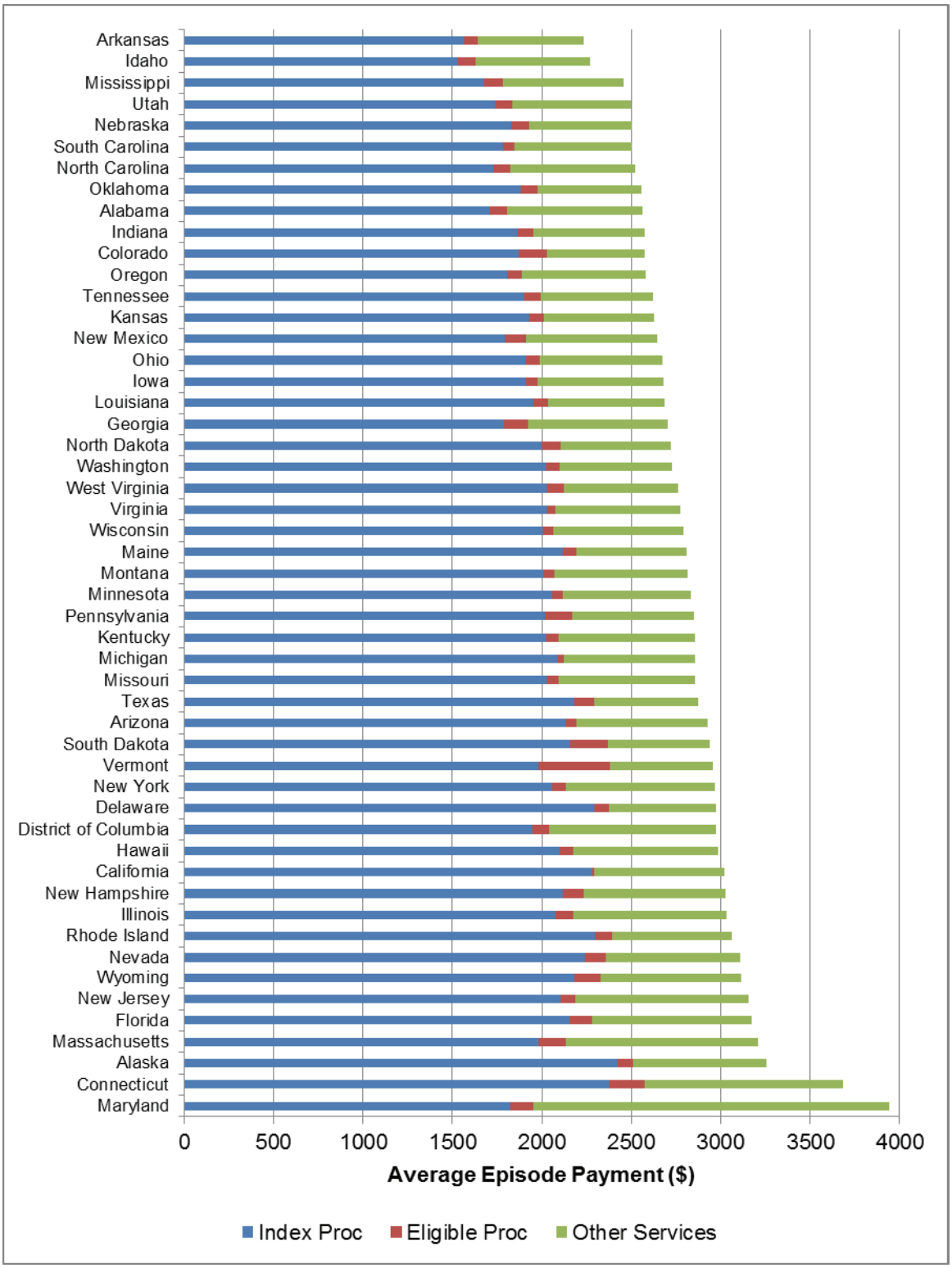
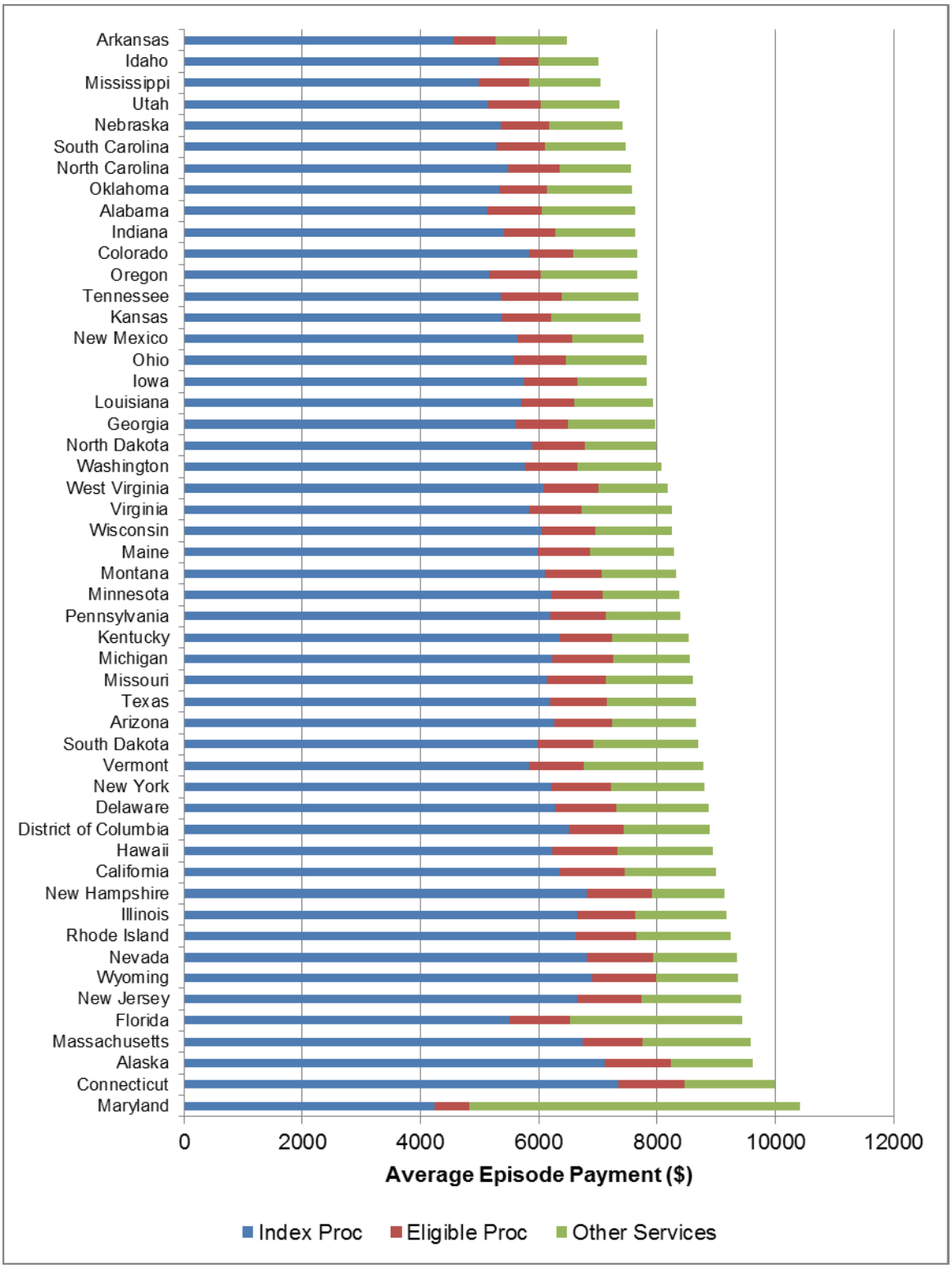


Figure 4.4.2. Medicare Payments for PCI Episodes, by Beneficiary State of Residence



5. Discussion

Overview

Our analyses in Chapters Three and Four respond to specific questions from CMS that relate to the design and implementation of episode-based payment approaches for select gastroenterology and cardiology procedures. In this chapter, we summarize key results and discuss the implications of our analyses on episode-based payment models. We highlight how our results could factor into CMS's future deliberations and decision-making related to new payment models. We close with a separate discussion on model monitoring.

Implications for Payment Model Design

CMS faces a series of decisions as it considers new payment models for gastroenterology and cardiology services. The premise of our analyses—informed by input from CMS—is that the payment models would take the form of an episode-based payment rather than a case management payment targeted to specialists or another approach. With this in mind, key CMS decisions include

- Episode definition: Which gastroenterology and cardiology procedures will serve as index procedures that anchor an episode, which services are included in episodes, and how long the episode should last relative to the trigger procedure
- Eligibility for the payment model: Which patients and providers to include or exclude in the payment model
- Payment rate adjustments: the extent to which payment rates should vary across service settings and how the payment model accommodates multiple eligible procedures.

Episode Definition

Index procedures were frequent and readily identified using claims data. Our analyses highlighted several cases where special consideration may be needed in using index procedures to define an episode. First, for colonoscopy procedures, many screening procedures were converted to diagnostic or therapeutic procedures. Episode definitions that would differ between screening and diagnostic/therapeutic procedures would need to account for these conversions. Total episode payments were higher for diagnostic/therapeutic procedures than screening procedures. Second, procedures in an HOPD that lead directly to inpatient admission would not be identified as index procedures using the methods we applied, since the services would be billed on the inpatient claim under current Medicare payment rules (see Chapter Three). In contrast, a service initiated in an ASC leading directly to inpatient admission would be included.

In analyses of utilization patterns during episodes, we consistently found that utilization and payments for non-index services were concentrated on the date of service of the index procedure itself. An episode-based payment model that included only services provided on the day of the

index procedure would capture the majority of episode spending. Extending episode definitions beyond the day of the index procedure could increase administrative complexity and financial risk for the payment recipient and would not include a substantial amount of additional services in the payment model. However, despite low frequency and payment, it may be important to monitor specific types of services, such as inpatient care, that could result from complications. This could be a component of quality measurement accompanying episode payment.

Eligibility for the Payment Model

In analyses of practice characteristics, we found that a substantial percentage of practices that performed index procedures had a very low volume. The majority of index procedures were performed by a subset of higher-volume practices. CMS could impose a minimum practice volume threshold for participation (based on historical data on volume) and include most patients with relevant gastroenterology and cardiology procedures.

In analyses of patient characteristics, we found that patients with ESRD had much higher average payments than other patients; these patients could be excluded from the model or subject to payment adjustments. We did not analyze other types of patients with complex conditions; there may be other patient groups that would require either exclusion from the model or risk adjustment.

Payment Adjustments

Payment differentials by service setting are relevant for gastroenterology procedures but not the cardiology services we studied, which were provided almost exclusively in HOPDs. We found that the majority of gastroenterology index procedures were delivered in the HOPD and ASC settings. ASC payment rates were significantly lower than HOPD payment rates, which is an intended result of the design of the current ASC and HOPD Medicare payment systems. CMS could preserve this payment differential in order to reflect the higher costs of providing hospital-based care. Alternatively, a new payment model could reduce or eliminate the differential, as recommended by MedPAC. This policy could be implemented independently or in conjunction with an episode-based payment model. We found that Medicare payments for gastroenterology index procedures would have been about 16 percent lower overall if HOPD procedures were reimbursed at the lower ASC payment rates ($1.80 versus $2.15 billion). Since some states and rural areas have more frequent use of HOPDs for gastroenterology procedures, this policy would have an uneven geographic impact.

We also found some differences in utilization of services during episodes between settings. For example, anesthesiology services were billed more frequently in ASCs than in HOPDs. Payments to gastroenterologists for colonoscopy and upper GI endoscopy index procedures include a payment for sedation. If an anesthesiologist provides the sedation (which allows for deeper sedation or general anesthesia, compared with moderate sedation provided by a

gastroenterologist), a separate payment is made for these services, with no change to the gastroenterologist payment. A previous study found that the use of anesthesia services for endoscopy services has increased over time, with substantial regional variation in utilization rates, and that anesthesia services are frequently used for low-risk patients (Liu et al., 2012). There are several potential explanations for differences in rates of anesthesia utilization between settings, including patient and physician preferences, patient characteristics and risk factors, regulation, and payment policy (Fleisher, 2012; Liu et al., 2012). It is possible that differences in some or all of these factors between settings explain the differences in utilization we observed. An episode-based payment model could potentially change utilization of anesthesia by changing the financial incentives related to gastroenterologist-administered versus anesthesiologist-administered sedation (Fleisher, 2012).

Colonoscopy procedures that initiated as screening procedures were converted to diagnostic or therapeutic procedures more frequently in ASCs than in HOPDs or offices. These differences could be due to differences in patient characteristics between settings or differences in practice patterns. Other factors that may potentially contribute to the observed variations are differences in patient findings across settings (i.e., more patients are found during a screening colonoscopy to have polyps or other suspicious lesions that need biopsy and/or intervention in the ASC setting than in the HOPD setting), but these differences are highly unlikely.

We found that it was common for multiple eligible index procedures to be performed on the same day or in the same episode of care for both gastroenterology and cardiology. Episodes with multiple eligible index procedures had higher spending than episodes with a single index procedure, due to both the payments associated with the multiple eligible index procedures and higher payments for other, non-index services. Under current Medicare payment policy, multiple related procedures performed in the same visit are subject to discounted payment. In an episode-based payment mode, one option would be to develop a single payment rate that, on average, compensates providers for multiple index procedures and all non-index services provided in the episode. This would create incentives to reduce, on the margin, the frequency of additional index procedures and ancillary services. Another option is to develop separate rates for episodes with one or multiple index procedures.

Model Monitoring for Unintended Consequences of Episode-Based Payment

The key desired outcome of the payment model is a shift to practice patterns that offer high-quality care, but with lower costs. However, as with any payment reform, an episode-based payment for gastroenterology or cardiology procedures may produce unintended incentives for providers. One possible unintended consequence of an episode-based payment arrangement is "unbundling," meaning shifting either the setting or the timing of services so that they fall outside the scope of the payment bundle and generate a separate payment. A second possible unintended consequence is a reduction in the quality of care due to providers stinting on

clinically beneficial, but costly, services. A third possibility is that the promise of a larger episode payment (relative to the prior FFS payment) will induce providers to perform more procedures (e.g., screening colonoscopies), or alternatively if payments are too low, providers may reduce the number of procedures.

CMS may be able to monitor some of the intended and unintended effects of episode-based payment using claims data. For example, claims data can be used to measure whether procedures are occurring in lower cost settings such as moving from HOPDs to freestanding facilities or physician offices, or an increase in lower-cost types of anesthesia or nurse-administered anesthesia. Claims data can also be used to measure unintended effects of episode-based payment, such as unbundling (by measuring the frequency of services just before or after the episode) or the incentive to provide more or fewer procedures (by measuring the overall volume of procedures). Quality of care is better measured in clinical rather than claims data, but inpatient hospitalization following procedures provides a negative, if extreme, indicator of quality.

Conclusion

The results of this study provide one source of information for consideration in the design of gastroenterology and cardiology payment models. Claims data can provide important information on patterns of health care utilization, but it is crucial to augment such analysis with clinical evidence and practice guidelines. The claims analyses presented in this report describe the frequency and characteristics of gastroenterology and cardiology index procedures, the practices that delivered index procedures, and the patients that received index procedures. We also described the volume and payments for services that are delivered in a nine-day episode anchored on index procedures. The results can be used to inform CMS decision-making about the definition of episodes in an episode-based payment model; payment adjustments for service setting, multiple procedures, or other factors; and eligibility for the payment model.

Appendix

Table A.1. Volume and Mean Payment for Colonoscopy and Upper GI Endoscopy Index Procedures

HCPCS	Volume: HOPD	Volume: Ambulatory Surgery Center	Volume: Physician Office	Mean Observed Medicare Payment Amount (Facility and Professional, $): HOPD	Mean Observed Medicare Payment Amount (Facility and Professional, $): Ambulatory Surgery Center	Mean Observed Medicare Payment Amount (Facility and Professional, $): Physician Office
43200	5,177	1,215	2,542	369	259	174
43201	243	14	3	698	456	211
43202	1,211	494	296	494	337	232
43204	13	1	1	690	485	106
43205	106	14	2	864	566	152
43215	628	34	15	676	452	125
43216	26	8	1	1,031	646	180
43217	47	22	2	806	505	369
43219	179	6	7	1,574	836	132
43220	1,331	307	28	688	452	96
43226	1,289	431	10	672	475	104
43227	44	8	5	832	577	184
43228	3,442	602	5	1,327	963	175
43231	276	9	3	813	514	158
43232	211	36	1	888	580	216
43235	91,440	55,308	4,763	556	369	243
43236	5,035	382	63	584	395	314
43237	509	21	2	858	576	197
43238	295	43	1	894	572	231
43239	339,364	345,241	43,732	575	397	295
43240	37	8	0	915	663	-
43241	448	29	11	675	394	120
43242	18,333	812	10	1,035	735	315
43243	331	35	6	725	486	235
43244	7,804	1,357	45	902	621	235
43245	5,183	1,799	48	771	521	142
43246	16,538	1,221	324	857	582	197
43247	12,469	1,261	141	611	424	159
43248	19,757	32,956	328	590	402	141
43249	49,011	23,462	183	777	512	132
43250	1,499	1,512	69	745	521	153

HCPCS	Volume: HOPD	Volume: Ambulatory Surgery Center	Volume: Physician Office	Mean Observed Medicare Payment Amount (Facility and Professional, $): HOPD	Mean Observed Medicare Payment Amount (Facility and Professional, $): Ambulatory Surgery Center	Mean Observed Medicare Payment Amount (Facility and Professional, $): Physician Office
43251	10,023	7,552	377	810	551	185
43255	6,463	1,977	85	882	609	219
43256	1,187	12	5	1,768	943	206
43257	31	11	0	1,338	993	-
43258	7,948	1,674	34	911	593	215
43259	22,510	1,973	38	922	644	254
43456	459	108	99	714	399	534
43458	619	107	3	804	515	302
44388	1,892	1,079	69	604	420	248
44389	818	459	28	605	438	308
44390	7	0	0	804	-	-
44392	277	103	9	633	461	355
44393	58	33	3	689	507	342
44394	490	411	17	655	495	389
44397	2	0	0	1,425	-	-
45355	153	43	11	658	457	162
45378	234,365	198,334	27,922	649	469	331
45379	250	113	11	672	503	420
45380	335,875	290,454	24,783	647	501	401
45381	11,312	3,464	87	497	342	390
45382	2,935	1,397	227	727	556	515
45383	14,306	16,489	2,680	725	567	465
45384	56,304	46,567	3,568	638	503	385
45385	189,170	279,178	23,678	683	541	449
45386	516	358	15	659	488	583
45387	78	18	3	1,667	659	268
45391	204	25	2	677	510	238
45392	36	5	0	776	592	0
G0105	89,198	110,415	5,797	743	544	407
G0121	95,591	88,803	6,453	769	548	395

SOURCE: Authors' analysis of Medicare Outpatient and Carrier claims data for Medicare fee-for-service beneficiaries, 2012.

Table A.2. Frequency and Medicare Payments for Services Provided During Gastroenterology Episodes, Payments Conditional on Utilization in Each Service Category

Place of Service	Service Type	HOPD (n=1,665,353): *Share of Episodes with Utilization*	HOPD (n=1,665,353): *Payments per Episode with Utilization*	HOPD (n=1,665,353): *Share of Episode with Utilization*	HOPD (n=1,665,353): *Payments per Episode with Utilization*	Office (n=148,651): *Share of Episodes with Utilization*	Office (n=148,651): *Payments per Episode with Utilization*
1 DAY BEFORE INDEX PROCEDURE DATE							
Ambulatory excluding ED	E&M	6.0%	$88.26	4.7%	$77.17	5.7%	$82.17
Ambulatory excluding ED	Imaging	2.4%	$180.65	1.0%	$128.38	1.2%	$161.66
Ambulatory excluding ED	Laboratory Tests	4.0%	$68.67	1.7%	$56.52	2.3%	$64.56
Ambulatory excluding ED	Surgical Pathology	0.3%	$106.61	0.2%	$185.32	0.4%	$207.93
Ambulatory excluding ED	Other Tests	1.7%	$39.25	0.5%	$52.93	0.7%	$72.28
Ambulatory excluding ED	Anesthesiology	0.2%	$121.55	0.1%	$114.63	0.2%	$123.54
Ambulatory excluding ED	Eligible Procedures	0.1%	$335.94	0.0%	$247.20	0.0%	$247.87
Ambulatory excluding ED	Ambulatory Proc. NOC	1.8%	$180.90	1.1%	$112.28	1.6%	$101.73
Ambulatory excluding ED	Ambulatory Svcs. NOC	2.5%	$117.47	0.7%	$146.82	0.8%	$118.74
Inpatient	All Facility Services	0.0%	$6,004.14	0.0%	$8,487.18	0.2%	$7,827.42
Inpatient	All Facility Services	1.4%	$143.49	0.0%	$102.02	0.8%	$186.05
ED	All Services	1.5%	$401.11	0.1%	$107.78	0.3%	$127.96
DAY OF INDEX PROCEDURE							
Ambulatory excluding ED	E&M	4.3%	$77.39	2.0%	$65.86	14.0%	$73.56
Ambulatory excluding ED	Imaging	3.8%	$140.44	1.1%	$123.28	1.5%	$180.09
Ambulatory excluding ED	Laboratory Tests	22.9%	$34.59	3.3%	$61.08	7.6%	$61.27
Ambulatory excluding ED	Surgical Pathology	62.4%	$132.96	66.2%	$222.56	61.8%	$284.11
Ambulatory excluding ED	Other Tests	4.3%	$31.85	0.2%	$46.22	0.8%	$45.62
Ambulatory excluding ED	Anesthesiology	49.8%	$121.61	65.8%	$114.82	64.6%	$127.76
Ambulatory excluding ED	Eligible Procedures	27.6%	$372.57	25.4%	$234.53	13.5%	$120.58
Ambulatory excluding ED	Ambulatory Proc. NOC	4.1%	$367.42	0.8%	$247.09	3.4%	$108.42

Place of Service	Service Type	HOPD (n=1,665,353): *Share of Episodes with Utilization*	HOPD (n=1,665,353): *Payments per Episode with Utilization*	HOPD (n=1,665,353): *Share of Episode with Utilization*	HOPD (n=1,665,353): *Payments per Episode with Utilization*	Office (n=148,651): *Share of Episodes with Utilization*	Office (n=148,651): *Payments per Episode with Utilization*
Ambulatory excluding ED	Ambulatory Svcs. NOC	95.0%	$11.28	0.7%	$115.50	15.5%	$8.21
Inpatient	All Facility Services	0.1%	$9,852.24	0.2%	$22,522.91	0.2%	$11,894.09
Inpatient	All Facility Services	4.0%	$126.77	0.3%	$288.28	1.1%	$269.25
ED	All Services	2.0%	$215.38	0.3%	$137.85	0.3%	$136.79
1 DAY AFTER INDEX PROCEDURE DATE							
Ambulatory excluding ED	E&M	4.8%	$75.63	3.8%	$72.45	4.4%	$76.22
Ambulatory excluding ED	Imaging	1.8%	$197.96	1.4%	$133.66	1.5%	$170.96
Ambulatory excluding ED	Laboratory Tests	2.8%	$55.75	1.3%	$59.39	1.5%	$67.88
Ambulatory excluding ED	Surgical Pathology	1.3%	$92.63	1.9%	$165.59	2.6%	$213.64
Ambulatory excluding ED	Other Tests	0.8%	$59.81	0.5%	$60.28	0.6%	$90.38
Ambulatory excluding ED	Anesthesiology	0.3%	$134.41	0.3%	$124.94	0.5%	$134.82
Ambulatory excluding ED	Eligible Procedures	0.3%	$664.97	0.3%	$442.93	0.6%	$335.56
Ambulatory excluding ED	Ambulatory Proc. NOC	1.9%	$257.87	1.4%	$147.43	2.0%	$127.95
Ambulatory excluding ED	Ambulatory Svcs. NOC	2.9%	$94.55	0.9%	$168.02	1.1%	$112.74
Inpatient	All Facility Services	0.1%	$10,171.23	0.2%	$21,192.93	0.2%	$11,046.76
Inpatient	All Facility Services	1.1%	$144.86	0.4%	$503.14	1.1%	$262.64
ED	All Services	0.6%	$181.05	0.3%	$131.42	0.2%	$124.98
2 DAYS AFTER INDEX PROCEDURE DATE							
Ambulatory excluding ED	E&M	3.7%	$76.33	3.3%	$72.74	4.0%	$76.99
Ambulatory excluding ED	Imaging	1.4%	$204.64	1.1%	$132.51	1.4%	$175.85
Ambulatory excluding ED	Laboratory Tests	2.0%	$56.94	1.1%	$61.52	1.4%	$70.18
Ambulatory excluding ED	Surgical Pathology	0.4%	$112.14	0.6%	$214.70	1.7%	$199.05
Ambulatory excluding ED	Other Tests	0.6%	$67.20	0.4%	$63.86	0.6%	$72.65
Ambulatory excluding ED	Anesthesiology	0.1%	$139.49	0.2%	$126.67	0.3%	$135.98
Ambulatory excluding ED	Eligible Procedures	0.1%	$709.03	0.2%	$437.29	0.5%	$409.62

Place of Service	Service Type	HOPD (n=1,665,353): *Share of Episodes with Utilization*	HOPD (n=1,665,353): *Payments per Episode with Utilization*	HOPD (n=1,665,353): *Share of Episode with Utilization*	HOPD (n=1,665,353): *Payments per Episode with Utilization*	Office (n=148,651): *Share of Episodes with Utilization*	Office (n=148,651): *Payments per Episode with Utilization*
Ambulatory excluding ED	Ambulatory Proc. NOC	1.5%	$267.03	1.2%	$166.24	1.7%	$148.36
Ambulatory excluding ED	Ambulatory Svcs. NOC	1.7%	$130.74	0.8%	$168.46	0.9%	$113.38
Inpatient	All Facility Services	0.1%	$10,628.75	0.1%	$17,722.68	0.2%	$12,865.24
Inpatient	All Professional Services	0.6%	$177.67	0.4%	$284.91	0.9%	$253.28
ED	All Services	0.4%	$234.77	0.3%	$128.71	0.2%	$128.36
3 DAYS AFTER INDEX PROCEDURE DATE							
Ambulatory excluding ED	E&M	3.5%	$76.47	3.0%	$72.65	3.7%	$76.39
Ambulatory excluding ED	Imaging	1.2%	$201.80	1.0%	$132.55	1.2%	$185.01
Ambulatory excluding ED	Laboratory Tests	1.9%	$55.09	1.0%	$60.37	1.2%	$72.43
Ambulatory excluding ED	Surgical Pathology	0.3%	$118.33	0.6%	$174.44	1.4%	$186.52
Ambulatory excluding ED	Other Tests	0.5%	$69.29	0.4%	$61.66	0.6%	$86.59
Ambulatory excluding ED	Anesthesiology	0.1%	$141.38	0.1%	$128.36	0.2%	$137.87
Ambulatory excluding ED	Eligible Procedures	0.1%	$711.72	0.1%	$423.60	0.3%	$353.03
Ambulatory excluding ED	Ambulatory Proc. NOC	1.3%	$277.66	1.1%	$165.75	1.5%	$130.39
Ambulatory excluding ED	Ambulatory Svcs. NOC	1.5%	$143.17	0.7%	$160.54	0.8%	$109.75
Inpatient	All Facility Services	0.1%	$10,540.58	0.1%	$19,903.26	0.1%	$11,504.33
Inpatient	All Professional Services	0.5%	$203.55	0.5%	$266.47	0.9%	$233.81
ED	All Services	0.4%	$249.58	0.2%	$126.64	0.2%	$128.13
4 DAYS AFTER INDEX PROCEDURE DATE							
Ambulatory excluding ED	E&M	3.6%	$76.64	3.0%	$72.75	3.8%	$77.64
Ambulatory excluding ED	Imaging	1.2%	$201.03	1.0%	$132.00	1.1%	$182.02
Ambulatory excluding ED	Laboratory Tests	1.9%	$54.46	1.1%	$58.13	1.3%	$68.20
Ambulatory excluding ED	Surgical Pathology	0.2%	$125.78	0.4%	$206.76	1.2%	$190.30
Ambulatory excluding ED	Other Tests	0.5%	$68.61	0.4%	$65.20	0.6%	$90.77
Ambulatory excluding ED	Anesthesiology	0.1%	$150.63	0.1%	$131.50	0.2%	$140.83

Place of Service	Service Type	HOPD (n=1,665,353): *Share of Episodes with Utilization*	HOPD (n=1,665,353): *Payments per Episode with Utilization*	HOPD (n=1,665,353): *Share of Episode with Utilization*	HOPD (n=1,665,353): *Payments per Episode with Utilization*	Office (n=148,651): *Share of Episodes with Utilization*	Office (n=148,651): *Payments per Episode with Utilization*
Ambulatory excluding ED	Eligible Procedures	0.1%	$726.30	0.1%	$438.24	0.3%	$351.80
Ambulatory excluding ED	Ambulatory Proc. NOC	1.3%	$288.49	1.1%	$170.99	1.6%	$135.51
Ambulatory excluding ED	Ambulatory Svcs. NOC	1.4%	$151.40	0.7%	$174.00	0.8%	$102.54
Inpatient	All Facility Services	0.2%	$10,406.94	0.1%	$19,942.65	0.1%	$12,181.13
Inpatient	All Professional Services	0.6%	$259.37	0.5%	$260.97	0.8%	$250.07
ED	All Services	0.4%	$233.71	0.2%	$126.95	0.2%	$126.28
5 DAYS AFTER INDEX PROCEDURE DATE							
Ambulatory excluding ED	E&M	4.2%	$76.33	3.6%	$73.37	4.1%	$77.26
Ambulatory excluding ED	Imaging	1.3%	$199.77	1.1%	$132.24	1.3%	$180.67
Ambulatory excluding ED	Laboratory Tests	2.0%	$55.26	1.2%	$59.99	1.4%	$66.38
Ambulatory excluding ED	Surgical Pathology	0.2%	$140.24	0.4%	$187.08	1.2%	$192.54
Ambulatory excluding ED	Other Tests	0.6%	$73.71	0.4%	$61.55	0.6%	$76.05
Ambulatory excluding ED	Anesthesiology	0.1%	$148.79	0.2%	$129.18	0.2%	$134.54
Ambulatory excluding ED	Eligible Procedures	0.1%	$716.35	0.1%	$438.24	0.3%	$342.07
Ambulatory excluding ED	Ambulatory Proc. NOC	1.5%	$308.78	1.2%	$168.20	1.6%	$135.19
Ambulatory excluding ED	Ambulatory Svcs. NOC	1.5%	$170.78	0.8%	$170.95	0.9%	$162.34
Inpatient	All Facility Services	0.2%	$10,712.21	0.1%	$20,329.68	0.1%	$14,075.66
Inpatient	All Professional Services	0.7%	$282.02	0.5%	$274.72	0.8%	$246.74
ED	All Services	0.4%	$241.56	0.2%	$126.36	0.2%	$124.69
6 DAYS AFTER INDEX PROCEDURE DATE							
Ambulatory excluding ED	E&M	5.8%	$75.99	5.1%	$72.73	5.6%	$76.86
Ambulatory excluding ED	Imaging	1.6%	$202.97	1.4%	$136.22	1.6%	$183.29
Ambulatory excluding ED	Laboratory Tests	2.6%	$55.37	1.6%	$59.72	1.7%	$68.74
Ambulatory excluding ED	Surgical Pathology	0.2%	$149.03	0.4%	$178.13	1.0%	$193.36
Ambulatory excluding ED	Other Tests	0.7%	$73.02	0.6%	$61.50	0.8%	$77.70

Place of Service	Service Type	HOPD (n=1,665,353): *Share of Episodes with Utilization*	HOPD (n=1,665,353): *Payments per Episode with Utilization*	HOPD (n=1,665,353): *Share of Episode with Utilization*	HOPD (n=1,665,353): *Payments per Episode with Utilization*	Office (n=148,651): *Share of Episodes with Utilization*	Office (n=148,651): *Payments per Episode with Utilization*
Ambulatory excluding ED	Anesthesiology	0.2%	$147.39	0.2%	$128.51	0.3%	$137.73
Ambulatory excluding ED	Eligible Procedures	0.1%	$724.39	0.2%	$422.43	0.3%	$343.01
Ambulatory excluding ED	Ambulatory Proc. NOC	1.9%	$303.32	1.6%	$175.21	2.2%	$155.50
Ambulatory excluding ED	Ambulatory Svcs. NOC	1.8%	$170.09	1.0%	$179.20	1.1%	$123.93
Inpatient	All Facility Services	0.2%	$11,135.01	0.1%	$20,388.89	0.1%	$11,895.88
Inpatient	All Professional Services	0.8%	$295.46	0.6%	$288.63	0.8%	$272.73
ED	All Services	0.4%	$238.80	0.2%	$126.98	0.2%	$130.91
7 DAYS AFTER INDEX PROCEDURE DATE							
Ambulatory excluding ED	E&M	7.4%	$75.16	6.6%	$72.01	7.6%	$75.94
Ambulatory excluding ED	Imaging	2.0%	$204.03	1.8%	$139.22	1.9%	$185.34
Ambulatory excluding ED	Laboratory Tests	3.2%	$54.40	2.1%	$58.38	2.2%	$66.29
Ambulatory excluding ED	Surgical Pathology	0.4%	$143.16	0.7%	$212.34	1.5%	$258.14
Ambulatory excluding ED	Other Tests	0.9%	$73.78	0.7%	$61.88	1.0%	$82.76
Ambulatory excluding ED	Anesthesiology	0.3%	$139.40	0.5%	$122.83	1.0%	$136.71
Ambulatory excluding ED	Eligible Procedures	0.4%	$732.34	0.6%	$476.46	1.1%	$372.17
Ambulatory excluding ED	Ambulatory Proc. NOC	2.3%	$334.87	1.9%	$179.40	2.5%	$139.07
Ambulatory excluding ED	Ambulatory Svcs. NOC	2.3%	$151.53	1.2%	$161.96	1.3%	$118.57
Inpatient	All Facility Services	0.2%	$11,005.16	0.1%	$20,522.95	0.1%	$14,492.76
Inpatient	All Professional Services	0.9%	$311.69	0.6%	$320.09	0.8%	$292.98
ED	All Services	0.4%	$232.94	0.2%	$126.95	0.2%	$123.35

SOURCE: Authors' analysis of Medicare Outpatient, Carrier, and MedPAR claims data for Medicare FFS beneficiaries, 2012.

NOTE: "Proc." is procedure and "Svcs." is services.

Table A.3. Services Provided in Gastroenterology Episodes, Screening Only

Place of Service	Service Type	HOPD: *Share of HOPD Episodes*	HOPD: *Payments per HOPD Episode*	ASC: *Share of ASC Episodes*	ASC: *Payments per ASC Episode*	Office: *Share of Office Episodes*	Office: *Payments per Office Episode*
1 DAY BEFORE INDEX PROCEDURE DATE							
Ambulatory excluding ED	E&M	2.5%	$1.91	2.4%	$1.64	2.6%	$1.92
Ambulatory excluding ED	Imaging	0.9%	$1.38	0.6%	$0.73	0.6%	$0.90
Ambulatory excluding ED	Laboratory Tests	1.7%	$0.85	1.0%	$0.55	1.5%	$0.74
Ambulatory excluding ED	Surgical Pathology	0.1%	$0.11	0.1%	$0.15	0.2%	$0.19
Ambulatory excluding ED	Other Tests	0.6%	$0.27	0.3%	$0.14	0.4%	$0.32
Ambulatory excluding ED	Anesthesiology	0.1%	$0.11	0.1%	$0.09	0.2%	$0.29
Ambulatory excluding ED	Eligible Procedures	0.1%	$0.19	0.0%	$0.06	0.0%	$0.04
Ambulatory excluding ED	Ambulatory Proc. NOC	0.9%	$1.23	0.8%	$0.84	0.9%	$0.95
Ambulatory excluding ED	Ambulatory Svcs. NOC	0.9%	$0.82	0.5%	$0.60	0.5%	$0.54
Inpatient	All Facility Services	0.0%	$0.00	0.0%	$0.00	0.0%	$0.00
Inpatient	All Professional Services	0.1%	$0.07	0.0%	$0.00	0.0%	$0.06
ED	All Services	0.1%	$0.28	0.0%	$0.04	0.0%	$0.02
DAY-OF INDEX PROCEDURE DATE							
Ambulatory excluding ED	E&M	1.5%	$0.98	1.0%	$0.55	7.3%	$5.67
Ambulatory excluding ED	Imaging	1.6%	$1.81	0.8%	$0.72	1.1%	$1.53
Ambulatory excluding ED	Laboratory Tests	11.2%	$1.80	0.8%	$0.34	4.1%	$2.12
Ambulatory excluding ED	Surgical Pathology	6.2%	$6.94	3.2%	$6.38	10.1%	$20.73
Ambulatory excluding ED	Other Tests	2.6%	$0.62	0.1%	$0.04	0.3%	$0.12
Ambulatory excluding ED	Anesthesiology	42.1%	$46.75	61.0%	$64.52	59.1%	$70.29
Ambulatory excluding ED	Eligible Procedures	5.2%	$16.17	2.1%	$4.60	8.9%	$12.19
Ambulatory excluding ED	Ambulatory Proc. NOC	2.3%	$6.28	0.9%	$1.44	1.8%	$1.03
Ambulatory excluding ED	Ambulatory Svcs. NOC	95.7%	$3.14	0.6%	$0.45	18.2%	$0.73
Inpatient	All Facility Services	0.0%	$0.00	0.0%	$0.00	0.0%	$0.00
Inpatient	All Professional Services	0.7%	$0.65	0.1%	$0.54	0.1%	$0.54
ED	All Services	0.3%	$0.54	0.2%	$0.26	0.2%	$0.23

Place of Service	Service Type	HOPD: *Share of HOPD Episodes*	HOPD: *Payments per HOPD Episode*	ASC: *Share of ASC Episodes*	ASC: *Payments per ASC Episode*	Office: *Share of Office Episodes*	Office: *Payments per Office Episode*
1 DAY AFTER INDEX PROCEDURE DATE							
Ambulatory excluding ED	E&M	3.0%	$2.15	3.0%	$2.04	3.0%	$2.13
Ambulatory excluding ED	Imaging	1.2%	$1.93	1.0%	$1.08	1.0%	$1.33
Ambulatory excluding ED	Laboratory Tests	1.2%	$0.67	0.9%	$0.48	1.0%	$0.65
Ambulatory excluding ED	Surgical Pathology	0.4%	$0.40	0.4%	$0.63	0.5%	$1.07
Ambulatory excluding ED	Other Tests	0.5%	$0.36	0.4%	$0.21	0.4%	$0.19
Ambulatory excluding ED	Anesthesiology	0.2%	$0.32	0.3%	$0.39	0.4%	$0.48
Ambulatory excluding ED	Eligible Procedures	0.3%	$1.74	0.4%	$1.73	0.3%	$0.97
Ambulatory excluding ED	Ambulatory Proc. NOC	1.3%	$3.37	1.2%	$1.68	1.3%	$1.72
Ambulatory excluding ED	Ambulatory Svcs. NOC	1.5%	$1.33	0.8%	$0.92	0.9%	$0.72
Inpatient	All Facility Services	0.0%	$0.00	0.0%	$0.00	0.0%	$0.00
Inpatient	All Professional Services	0.1%	$0.47	0.2%	$0.95	0.2%	$1.07
ED	All Services	0.2%	$0.44	0.1%	$0.18	0.1%	$0.15
2 DAYS AFTER INDEX PROCEDURE DATE							
Ambulatory excluding ED	E&M	2.5%	$1.84	2.6%	$1.77	2.7%	$1.92
Ambulatory excluding ED	Imaging	0.9%	$1.52	0.8%	$0.94	0.8%	$1.09
Ambulatory excluding ED	Laboratory Tests	1.1%	$0.63	0.8%	$0.50	1.0%	$0.72
Ambulatory excluding ED	Surgical Pathology	0.2%	$0.20	0.2%	$0.28	0.2%	$0.46
Ambulatory excluding ED	Other Tests	0.4%	$0.27	0.3%	$0.22	0.4%	$0.30
Ambulatory excluding ED	Anesthesiology	0.1%	$0.14	0.1%	$0.11	0.2%	$0.19
Ambulatory excluding ED	Eligible Procedures	0.0%	$0.23	0.1%	$0.25	0.1%	$0.37
Ambulatory excluding ED	Ambulatory Proc. NOC	1.0%	$2.88	1.0%	$1.42	1.0%	$1.37
Ambulatory excluding ED	Ambulatory Svcs. NOC	1.0%	$1.10	0.7%	$0.82	0.6%	$0.51
Inpatient	All Facility Services	0.0%	$0.00	0.0%	$0.00	0.0%	$0.00
Inpatient	All Professional Services	0.1%	$0.32	0.2%	$0.52	0.2%	$0.47
ED	All Services	0.2%	$0.40	0.1%	$0.16	0.2%	$0.17

Place of Service	Service Type	HOPD: *Share of HOPD Episodes*	HOPD: *Payments per HOPD Episode*	ASC: *Share of ASC Episodes*	ASC: *Payments per ASC Episode*	Office: *Share of Office Episodes*	Office: *Payments per Office Episode*
3 DAYS AFTER INDEX PROCEDURE DATE							
Ambulatory excluding ED	E&M	2.3%	$1.69	2.3%	$1.56	2.6%	$1.85
Ambulatory excluding ED	Imaging	0.8%	$1.42	0.7%	$0.76	0.7%	$1.04
Ambulatory excluding ED	Laboratory Tests	1.1%	$0.57	0.7%	$0.44	1.0%	$0.54
Ambulatory excluding ED	Surgical Pathology	0.1%	$0.14	0.1%	$0.23	0.3%	$0.66
Ambulatory excluding ED	Other Tests	0.3%	$0.25	0.3%	$0.17	0.3%	$0.16
Ambulatory excluding ED	Anesthesiology	0.1%	$0.09	0.1%	$0.09	0.1%	$0.11
Ambulatory excluding ED	Eligible Procedures	0.0%	$0.18	0.0%	$0.18	0.1%	$0.28
Ambulatory excluding ED	Ambulatory Proc. NOC	0.9%	$2.55	0.8%	$1.28	1.0%	$1.10
Ambulatory excluding ED	Ambulatory Svcs. NOC	0.9%	$1.09	0.6%	$0.72	0.6%	$0.67
Inpatient	All Facility Services	0.0%	$0.00	0.0%	$0.00	0.0%	$0.00
Inpatient	All Professional Services	0.1%	$0.29	0.2%	$0.55	0.2%	$0.42
ED	All Services	0.2%	$0.41	0.1%	$0.11	0.1%	$0.08
4 DAYS AFTER INDEX PROCEDURE DATE							
Ambulatory excluding ED	E&M	2.4%	$1.76	2.3%	$1.59	2.4%	$1.74
Ambulatory excluding ED	Imaging	0.8%	$1.42	0.7%	$0.76	0.8%	$0.92
Ambulatory excluding ED	Laboratory Tests	1.2%	$0.63	0.8%	$0.44	0.6%	$0.24
Ambulatory excluding ED	Surgical Pathology	0.1%	$0.15	0.1%	$0.21	0.3%	$0.56
Ambulatory excluding ED	Other Tests	0.4%	$0.25	0.3%	$0.17	0.3%	$0.37
Ambulatory excluding ED	Anesthesiology	0.1%	$0.12	0.1%	$0.10	0.1%	$0.15
Ambulatory excluding ED	Eligible Procedures	0.0%	$0.17	0.0%	$0.15	0.1%	$0.37
Ambulatory excluding ED	Ambulatory Proc. NOC	0.9%	$2.82	0.9%	$1.41	0.9%	$1.07
Ambulatory excluding ED	Ambulatory Svcs. NOC	0.9%	$1.01	0.6%	$0.78	0.6%	$0.34
Inpatient	All Facility Services	0.0%	$0.00	0.0%	$0.00	0.0%	$0.00
Inpatient	All Professional Services	0.2%	$0.58	0.2%	$0.49	0.2%	$0.28
ED	All Services	0.2%	$0.41	0.1%	$0.14	0.1%	$0.12

Place of Service	Service Type	HOPD: *Share of HOPD Episodes*	HOPD: *Payments per HOPD Episode*	ASC: *Share of ASC Episodes*	ASC: *Payments per ASC Episode*	Office: *Share of Office Episodes*	Office: *Payments per Office Episode*
5 DAYS AFTER INDEX PROCEDURE DATE							
Ambulatory excluding ED	E&M	2.8%	$2.01	2.7%	$1.86	2.8%	$1.96
Ambulatory excluding ED	Imaging	0.8%	$1.50	0.8%	$0.88	0.9%	$1.22
Ambulatory excluding ED	Laboratory Tests	1.2%	$0.60	0.9%	$0.54	1.0%	$0.63
Ambulatory excluding ED	Surgical Pathology	0.1%	$0.15	0.1%	$0.25	0.3%	$0.74
Ambulatory excluding ED	Other Tests	0.4%	$0.33	0.3%	$0.19	0.4%	$0.26
Ambulatory excluding ED	Anesthesiology	0.1%	$0.11	0.1%	$0.09	0.1%	$0.14
Ambulatory excluding ED	Eligible Procedures	0.0%	$0.15	0.0%	$0.15	0.1%	$0.29
Ambulatory excluding ED	Ambulatory Proc. NOC	1.0%	$2.83	1.0%	$1.72	1.2%	$1.44
Ambulatory excluding ED	Ambulatory Svcs. NOC	1.0%	$1.34	0.7%	$0.88	0.5%	$0.81
Inpatient	All Facility Services	0.0%	$0.00	0.0%	$0.00	0.0%	$0.00
Inpatient	All Professional Services	0.2%	$0.68	0.2%	$0.60	0.2%	$0.32
ED	All Services	0.2%	$0.40	0.1%	$0.13	0.1%	$0.09
6 DAYS AFTER INDEX PROCEDURE DATE							
Ambulatory excluding ED	E&M	3.8%	$2.71	3.7%	$2.54	3.8%	$2.85
Ambulatory excluding ED	Imaging	1.1%	$1.79	1.0%	$1.21	1.1%	$1.47
Ambulatory excluding ED	Laboratory Tests	1.6%	$0.79	1.2%	$0.62	1.3%	$0.67
Ambulatory excluding ED	Surgical Pathology	0.2%	$0.21	0.2%	$0.32	0.3%	$0.51
Ambulatory excluding ED	Other Tests	0.5%	$0.41	0.4%	$0.27	0.6%	$0.37
Ambulatory excluding ED	Anesthesiology	0.1%	$0.14	0.1%	$0.13	0.2%	$0.23
Ambulatory excluding ED	Eligible Procedures	0.0%	$0.12	0.1%	$0.24	0.2%	$0.53
Ambulatory excluding ED	Ambulatory Proc. NOC	1.3%	$3.62	1.3%	$2.27	1.4%	$2.02
Ambulatory excluding ED	Ambulatory Svcs. NOC	1.2%	$1.79	0.9%	$1.21	0.9%	$0.63
Inpatient	All Facility Services	0.0%	$0.00	0.0%	$0.00	0.0%	$0.00
Inpatient	All Professional Services	0.2%	$0.79	0.2%	$0.79	0.2%	$0.91
ED	All Services	0.1%	$0.33	0.1%	$0.13	0.1%	$0.13

Place of Service	Service Type	HOPD: *Share of HOPD Episodes*	HOPD: *Payments per HOPD Episode*	ASC: *Share of ASC Episodes*	ASC: *Payments per ASC Episode*	Office: *Share of Office Episodes*	Office: *Payments per Office Episode*
7 DAYS AFTER INDEX PROCEDURE DATE							
Ambulatory excluding ED	E&M	4.9%	$3.47	4.6%	$3.16	5.4%	$3.90
Ambulatory excluding ED	Imaging	1.3%	$2.25	1.3%	$1.54	1.6%	$2.41
Ambulatory excluding ED	Laboratory Tests	2.2%	$1.05	1.5%	$0.88	1.8%	$1.05
Ambulatory excluding ED	Surgical Pathology	0.3%	$0.39	0.3%	$0.74	0.4%	$1.01
Ambulatory excluding ED	Other Tests	0.6%	$0.48	0.6%	$0.32	0.7%	$0.68
Ambulatory excluding ED	Anesthesiology	0.2%	$0.22	0.2%	$0.28	0.3%	$0.42
Ambulatory excluding ED	Eligible Procedures	0.1%	$0.64	0.2%	$0.84	0.3%	$0.89
Ambulatory excluding ED	Ambulatory Proc. NOC	1.6%	$5.51	1.5%	$2.58	1.9%	$3.40
Ambulatory excluding ED	Ambulatory Svcs. NOC	1.5%	$1.84	1.0%	$1.41	1.1%	$1.02
Inpatient	All Facility Services	0.0%	$0.00	0.0%	$0.00	0.0%	$0.00
Inpatient	All Professional Services	0.3%	$0.91	0.2%	$0.86	0.2%	$0.54
ED	All Services	0.2%	$0.38	0.1%	$0.13	0.1%	$0.14

Table A.4. Services Provided in Gastroenterology Episodes, Initial Screening but Ultimately Not Screening

Place of Service	Service Type	HOPD: *Share of HOPD Episodes*	HOPD: *Payments per HOPD Episode*	ASC: *Share of ASC Episodes*	ASC: *Payments per ASC Episode*	Office: *Share of Office Episodes*	Office: *Payments per Office Episode*
1 DAY BEFORE INDEX PROCEDURE DATE							
Ambulatory excluding ED	E&M	2.6%	$2.09	2.6%	$1.79	2.3%	$1.46
Ambulatory excluding ED	Imaging	0.8%	$1.31	0.6%	$0.67	0.5%	$0.38
Ambulatory excluding ED	Laboratory Tests	1.8%	$0.90	1.2%	$0.60	3.8%	$1.72
Ambulatory excluding ED	Surgical Pathology	0.3%	$0.32	0.3%	$0.38	0.3%	$0.30
Ambulatory excluding ED	Other Tests	0.6%	$0.29	0.4%	$0.15	0.3%	$0.07
Ambulatory excluding ED	Anesthesiology	0.1%	$0.10	0.1%	$0.10	0.2%	$0.22
Ambulatory excluding ED	Eligible Procedures	0.1%	$0.19	0.0%	$0.11	0.0%	$0.00
Ambulatory excluding ED	Ambulatory Proc. NOC	0.9%	$1.07	0.8%	$0.87	0.8%	$0.60
Ambulatory excluding ED	Ambulatory Svcs. NOC	0.9%	$0.78	0.5%	$0.62	0.5%	$0.23
Inpatient	All Facility Services	0.0%	$0.00	0.0%	$0.00	0.0%	$0.00
Inpatient	All Professional Services	0.1%	$0.06	0.0%	$0.01	0.0%	$0.06
ED	All Services	0.1%	$0.23	0.0%	$0.04	0.1%	$0.07
DAY-OF INDEX PROCEDURE DATE							
Ambulatory excluding ED	E&M	1.3%	$0.92	0.7%	$0.44	1.6%	$1.26
Ambulatory excluding ED	Imaging	1.1%	$1.60	0.4%	$0.43	0.4%	$0.47
Ambulatory excluding ED	Laboratory Tests	13.1%	$2.30	1.5%	$0.73	3.6%	$1.41
Ambulatory excluding ED	Surgical Pathology	94.6%	$93.94	92.7%	$138.73	88.6%	$122.53
Ambulatory excluding ED	Other Tests	2.4%	$0.62	0.1%	$0.06	0.3%	$0.16
Ambulatory excluding ED	Anesthesiology	41.1%	$50.32	63.1%	$73.35	55.0%	$65.34
Ambulatory excluding ED	Eligible Procedures	27.1%	$109.81	29.0%	$66.57	23.8%	$24.96
Ambulatory excluding ED	Ambulatory Proc. NOC	1.6%	$4.20	0.3%	$0.69	0.6%	$0.60
Ambulatory excluding ED	Ambulatory Svcs. NOC	96.5%	$3.89	0.4%	$0.42	16.8%	$0.55
Inpatient	All Facility Services	0.0%	$0.00	0.0%	$0.00	0.0%	$0.00
Inpatient	All Professional Services	1.6%	$1.23	0.2%	$0.52	0.2%	$0.53

Place of Service	Service Type	HOPD: *Share of HOPD Episodes*	HOPD: *Payments per HOPD Episode*	ASC: *Share of ASC Episodes*	ASC: *Payments per ASC Episode*	Office: *Share of Office Episodes*	Office: *Payments per Office Episode*
ED	All Services	0.3%	$0.57	0.3%	$0.37	0.2%	$0.21
1 DAY AFTER INDEX PROCEDURE DATE							
Ambulatory excluding ED	E&M	3.1%	$2.38	3.1%	$2.18	2.5%	$1.61
Ambulatory excluding ED	Imaging	1.0%	$1.91	0.9%	$1.09	0.8%	$0.80
Ambulatory excluding ED	Laboratory Tests	1.4%	$0.68	1.0%	$0.57	0.7%	$0.36
Ambulatory excluding ED	Surgical Pathology	1.5%	$1.08	2.9%	$3.01	1.1%	$1.56
Ambulatory excluding ED	Other Tests	0.6%	$0.38	0.4%	$0.26	0.3%	$0.09
Ambulatory excluding ED	Anesthesiology	0.1%	$0.20	0.2%	$0.19	0.1%	$0.11
Ambulatory excluding ED	Eligible Procedures	0.1%	$0.58	0.1%	$0.47	0.1%	$0.21
Ambulatory excluding ED	Ambulatory Proc. NOC	1.3%	$3.52	1.1%	$1.60	1.0%	$1.27
Ambulatory excluding ED	Ambulatory Svcs. NOC	1.4%	$1.47	0.8%	$1.16	0.8%	$0.66
Inpatient	All Facility Services	0.0%	$0.00	0.0%	$0.00	0.0%	$0.00
Inpatient	All Professional Services	0.2%	$0.46	0.2%	$1.10	0.2%	$0.95
ED	All Services	0.2%	$0.59	0.2%	$0.28	0.2%	$0.19
2 DAYS AFTER INDEX PROCEDURE DATE							
Ambulatory excluding ED	E&M	2.7%	$2.08	2.7%	$1.89	2.5%	$1.81
Ambulatory excluding ED	Imaging	0.9%	$1.78	0.8%	$0.99	0.8%	$0.70
Ambulatory excluding ED	Laboratory Tests	1.3%	$0.69	0.9%	$0.47	1.0%	$0.50
Ambulatory excluding ED	Surgical Pathology	0.3%	$0.32	0.7%	$1.16	0.6%	$0.65
Ambulatory excluding ED	Other Tests	0.4%	$0.35	0.4%	$0.23	0.3%	$0.09
Ambulatory excluding ED	Anesthesiology	0.1%	$0.12	0.1%	$0.11	0.1%	$0.07
Ambulatory excluding ED	Eligible Procedures	0.0%	$0.25	0.0%	$0.15	0.1%	$0.16
Ambulatory excluding ED	Ambulatory Proc. NOC	1.0%	$2.99	1.0%	$1.59	1.1%	$1.28
Ambulatory excluding ED	Ambulatory Svcs. NOC	1.1%	$1.25	0.7%	$0.89	0.8%	$0.82
Inpatient	All Facility Services	0.0%	$0.00	0.0%	$0.00	0.0%	$0.00
Inpatient	All Professional Services	0.1%	$0.35	0.3%	$0.73	0.2%	$0.59
ED	All Services	0.2%	$0.47	0.2%	$0.26	0.2%	$0.17

Place of Service	Service Type	HOPD: *Share of HOPD Episodes*	HOPD: *Payments per HOPD Episode*	ASC: *Share of ASC Episodes*	ASC: *Payments per ASC Episode*	Office: *Share of Office Episodes*	Office: *Payments per Office Episode*
3 DAYS AFTER INDEX PROCEDURE DATE							
Ambulatory excluding ED	E&M	2.5%	$1.91	2.3%	$1.65	2.7%	$1.80
Ambulatory excluding ED	Imaging	0.8%	$1.58	0.7%	$0.87	0.7%	$0.85
Ambulatory excluding ED	Laboratory Tests	1.3%	$0.60	0.8%	$0.46	1.1%	$0.56
Ambulatory excluding ED	Surgical Pathology	0.3%	$0.32	0.8%	$0.98	0.3%	$0.32
Ambulatory excluding ED	Other Tests	0.4%	$0.28	0.3%	$0.19	0.4%	$0.27
Ambulatory excluding ED	Anesthesiology	0.1%	$0.09	0.1%	$0.11	0.1%	$0.06
Ambulatory excluding ED	Eligible Procedures	0.0%	$0.17	0.0%	$0.16	0.1%	$0.18
Ambulatory excluding ED	Ambulatory Proc. NOC	1.0%	$2.74	0.8%	$1.54	0.7%	$0.61
Ambulatory excluding ED	Ambulatory Svcs. NOC	1.0%	$0.87	0.6%	$0.59	0.6%	$0.41
Inpatient	All Facility Services	0.0%	$0.00	0.0%	$0.00	0.0%	$0.00
Inpatient	All Professional Services	0.2%	$0.37	0.3%	$0.83	0.3%	$0.69
ED	All Services	0.2%	$0.48	0.1%	$0.18	0.2%	$0.22
4 DAYS AFTER INDEX PROCEDURE DATE							
Ambulatory excluding ED	E&M	2.5%	$1.92	2.4%	$1.70	2.6%	$1.77
Ambulatory excluding ED	Imaging	0.8%	$1.44	0.7%	$0.82	0.6%	$0.73
Ambulatory excluding ED	Laboratory Tests	1.4%	$0.62	0.8%	$0.45	0.9%	$0.38
Ambulatory excluding ED	Surgical Pathology	0.2%	$0.22	0.5%	$0.68	0.3%	$0.41
Ambulatory excluding ED	Other Tests	0.4%	$0.27	0.3%	$0.19	0.3%	$0.29
Ambulatory excluding ED	Anesthesiology	0.1%	$0.09	0.1%	$0.11	0.0%	$0.05
Ambulatory excluding ED	Eligible Procedures	0.0%	$0.18	0.0%	$0.10	0.1%	$0.22
Ambulatory excluding ED	Ambulatory Proc. NOC	0.9%	$2.51	0.9%	$1.62	0.9%	$0.93
Ambulatory excluding ED	Ambulatory Svcs. NOC	0.9%	$1.09	0.6%	$0.75	0.6%	$0.47
Inpatient	All Facility Services	0.0%	$0.00	0.0%	$0.00	0.0%	$0.00
Inpatient	All Professional Services	0.2%	$0.62	0.3%	$0.73	0.3%	$1.00
ED	All Services	0.2%	$0.46	0.1%	$0.19	0.0%	$0.04

Place of Service	Service Type	HOPD: *Share of HOPD Episodes*	HOPD: *Payments per HOPD Episode*	ASC: *Share of ASC Episodes*	ASC: *Payments per ASC Episode*	Office: *Share of Office Episodes*	Office: *Payments per Office Episode*
5 DAYS AFTER INDEX PROCEDURE DATE							
Ambulatory excluding ED	E&M	2.9%	$2.20	2.8%	$1.99	3.0%	$2.23
Ambulatory excluding ED	Imaging	0.9%	$1.57	0.8%	$0.93	0.9%	$0.98
Ambulatory excluding ED	Laboratory Tests	1.5%	$0.71	0.9%	$0.47	1.2%	$0.55
Ambulatory excluding ED	Surgical Pathology	0.2%	$0.28	0.4%	$0.66	0.2%	$0.34
Ambulatory excluding ED	Other Tests	0.5%	$0.36	0.4%	$0.19	0.4%	$0.43
Ambulatory excluding ED	Anesthesiology	0.1%	$0.12	0.1%	$0.12	0.1%	$0.09
Ambulatory excluding ED	Eligible Procedures	0.0%	$0.16	0.0%	$0.15	0.0%	$0.04
Ambulatory excluding ED	Ambulatory Proc. NOC	1.0%	$3.40	1.0%	$1.84	1.0%	$1.65
Ambulatory excluding ED	Ambulatory Svcs. NOC	1.0%	$1.24	0.7%	$0.97	0.8%	$1.24
Inpatient	All Facility Services	0.0%	$0.00	0.0%	$0.00	0.0%	$0.00
Inpatient	All Professional Services	0.3%	$0.78	0.3%	$0.83	0.2%	$0.46
ED	All Services	0.2%	$0.51	0.1%	$0.18	0.0%	$0.03
6 DAYS AFTER INDEX PROCEDURE DATE							
Ambulatory excluding ED	E&M	4.1%	$3.07	3.9%	$2.81	3.6%	$2.62
Ambulatory excluding ED	Imaging	1.1%	$2.09	1.0%	$1.25	1.0%	$1.37
Ambulatory excluding ED	Laboratory Tests	1.9%	$0.88	1.3%	$0.72	1.3%	$1.12
Ambulatory excluding ED	Surgical Pathology	0.2%	$0.20	0.5%	$0.71	0.2%	$0.46
Ambulatory excluding ED	Other Tests	0.6%	$0.42	0.5%	$0.29	0.4%	$0.24
Ambulatory excluding ED	Anesthesiology	0.1%	$0.16	0.1%	$0.15	0.1%	$0.11
Ambulatory excluding ED	Eligible Procedures	0.0%	$0.18	0.1%	$0.21	0.0%	$0.11
Ambulatory excluding ED	Ambulatory Proc. NOC	1.4%	$4.48	1.3%	$2.32	1.2%	$2.06
Ambulatory excluding ED	Ambulatory Svcs. NOC	1.3%	$1.57	0.9%	$1.23	0.8%	$0.66
Inpatient	All Facility Services	0.0%	$0.00	0.0%	$0.00	0.0%	$0.00
Inpatient	All Professional Services	0.3%	$1.04	0.3%	$0.96	0.2%	$1.30
ED	All Services	0.2%	$0.43	0.1%	$0.18	0.1%	$0.10

Place of Service	Service Type	HOPD: *Share of HOPD Episodes*	HOPD: *Payments per HOPD Episode*	ASC: *Share of ASC Episodes*	ASC: *Payments per ASC Episode*	Office: *Share of Office Episodes*	Office: *Payments per Office Episode*
7 DAYS AFTER INDEX PROCEDURE DATE							
Ambulatory excluding ED	E&M	5.4%	$4.01	5.2%	$3.64	5.8%	$4.06
Ambulatory excluding ED	Imaging	1.4%	$2.63	1.3%	$1.69	1.2%	$1.43
Ambulatory excluding ED	Laboratory Tests	2.5%	$1.20	1.7%	$0.93	1.5%	$0.52
Ambulatory excluding ED	Surgical Pathology	0.3%	$0.38	0.4%	$0.76	0.4%	$0.50
Ambulatory excluding ED	Other Tests	0.7%	$0.53	0.7%	$0.38	0.7%	$0.47
Ambulatory excluding ED	Anesthesiology	0.2%	$0.23	0.2%	$0.26	0.2%	$0.23
Ambulatory excluding ED	Eligible Procedures	0.1%	$0.56	0.2%	$0.63	0.2%	$0.50
Ambulatory excluding ED	Ambulatory Proc. NOC	1.7%	$5.85	1.6%	$3.17	1.7%	$2.24
Ambulatory excluding ED	Ambulatory Svcs. NOC	1.6%	$1.91	1.1%	$1.38	1.1%	$0.86
Inpatient	All Facility Services	0.0%	$0.00	0.0%	$0.00	0.0%	$0.00
Inpatient	All Professional Services	0.4%	$1.24	0.3%	$1.19	0.3%	$0.84
ED	All Services	0.2%	$0.53	0.1%	$0.18	0.2%	$0.21

Table A.5. Services Provided in Gastroenterology Episodes, Never Screening

Place of Service	Service Type	HOPD: *Share of HOPD Episodes*	HOPD: *Payments per HOPD Episode*	ASC: *Share of ASC Episodes*	ASC: *Payments per ASC Episode*	Office: *Share of Office Episodes*	Office: *Payments per Office Episode*
1 DAY BEFORE INDEX PROCEDURE DATE							
Ambulatory excluding ED	E&M	6.8%	$6.08	5.8%	$4.53	6.5%	$5.36
Ambulatory excluding ED	Imaging	2.7%	$4.94	1.2%	$1.60	1.4%	$2.25
Ambulatory excluding ED	Laboratory Tests	4.5%	$3.16	2.0%	$1.16	2.4%	$1.59
Ambulatory excluding ED	Surgical Pathology	0.4%	$0.40	0.3%	$0.53	0.4%	$0.93
Ambulatory excluding ED	Other Tests	1.9%	$0.75	0.6%	$0.31	0.8%	$0.61
Ambulatory excluding ED	Anesthesiology	0.2%	$0.21	0.1%	$0.14	0.2%	$0.19
Ambulatory excluding ED	Eligible Procedures	0.1%	$0.24	0.1%	$0.13	0.0%	$0.03
Ambulatory excluding ED	Ambulatory Proc. NOC	2.1%	$3.82	1.3%	$1.48	1.8%	$1.87
Ambulatory excluding ED	Ambulatory Svcs. NOC	2.9%	$3.45	0.8%	$1.18	0.9%	$1.05
Inpatient	All Facility Services	0.0%	$1.50	0.0%	$0.35	0.2%	$19.37
Inpatient	All Professional Services	1.7%	$2.48	0.0%	$0.04	0.9%	$1.67
ED	All Services	1.9%	$7.59	0.1%	$0.15	0.3%	$0.41
DAY-OF INDEX PROCEDURE DATE							
Ambulatory excluding ED	E&M	4.9%	$3.87	2.4%	$1.63	16.0%	$11.73
Ambulatory excluding ED	Imaging	4.4%	$6.16	1.3%	$1.64	1.7%	$3.10
Ambulatory excluding ED	Laboratory Tests	25.5%	$9.31	4.2%	$2.65	8.5%	$5.27
Ambulatory excluding ED	Surgical Pathology	67.2%	$92.51	76.3%	$181.53	68.1%	$201.87
Ambulatory excluding ED	Other Tests	4.7%	$1.54	0.3%	$0.12	0.9%	$0.42
Ambulatory excluding ED	Anesthesiology	51.8%	$63.55	70.3%	$81.54	68.6%	$88.43
Ambulatory excluding ED	Eligible Procedures	30.8%	$114.43	30.3%	$71.33	14.0%	$16.96
Ambulatory excluding ED	Ambulatory Proc. NOC	4.6%	$17.48	1.0%	$2.54	3.9%	$4.34
Ambulatory excluding ED	Ambulatory Svcs. NOC	95.1%	$12.41	0.8%	$0.99	15.8%	$1.42
Inpatient	All Facility Services	0.1%	$8.45	0.2%	$49.64	0.3%	$34.73
Inpatient	All Professional Services	4.6%	$5.98	0.3%	$0.94	1.3%	$3.37
ED	All Services	2.4%	$5.17	0.4%	$0.53	0.4%	$0.52

Place of Service	Service Type	HOPD: *Share of HOPD Episodes*	HOPD: *Payments per HOPD Episode*	ASC: *Share of ASC Episodes*	ASC: *Payments per ASC Episode*	Office: *Share of Office Episodes*	Office: *Payments per Office Episode*
1 DAY AFTER INDEX PROCEDURE DATE							
Ambulatory excluding ED	E&M	5.2%	$3.92	4.2%	$3.10	4.9%	$3.76
Ambulatory excluding ED	Imaging	2.0%	$3.96	1.6%	$2.15	1.6%	$2.88
Ambulatory excluding ED	Laboratory Tests	3.1%	$1.74	1.5%	$0.89	1.6%	$1.11
Ambulatory excluding ED	Surgical Pathology	1.4%	$1.32	2.1%	$3.80	3.0%	$6.46
Ambulatory excluding ED	Other Tests	0.9%	$0.54	0.5%	$0.33	0.7%	$0.67
Ambulatory excluding ED	Anesthesiology	0.3%	$0.42	0.3%	$0.43	0.5%	$0.69
Ambulatory excluding ED	Eligible Procedures	0.3%	$2.00	0.3%	$1.47	0.7%	$2.41
Ambulatory excluding ED	Ambulatory Proc. NOC	2.1%	$5.30	1.6%	$2.33	2.2%	$2.85
Ambulatory excluding ED	Ambulatory Svcs. NOC	3.3%	$3.10	1.0%	$1.82	1.1%	$1.32
Inpatient	All Facility Services	0.2%	$18.58	0.2%	$51.79	0.2%	$25.82
Inpatient	All Professional Services	1.3%	$1.89	0.5%	$2.36	1.2%	$3.16
ED	All Services	0.8%	$1.33	0.4%	$0.46	0.3%	$0.34
2 DAYS AFTER INDEX PROCEDURE DATE							
Ambulatory excluding ED	E&M	4.0%	$3.05	3.6%	$2.67	4.3%	$3.37
Ambulatory excluding ED	Imaging	1.5%	$3.09	1.3%	$1.79	1.6%	$2.81
Ambulatory excluding ED	Laboratory Tests	2.1%	$1.23	1.2%	$0.76	1.5%	$1.09
Ambulatory excluding ED	Surgical Pathology	0.4%	$0.45	0.7%	$1.59	2.0%	$3.92
Ambulatory excluding ED	Other Tests	0.7%	$0.44	0.5%	$0.31	0.6%	$0.47
Ambulatory excluding ED	Anesthesiology	0.2%	$0.22	0.2%	$0.26	0.3%	$0.41
Ambulatory excluding ED	Eligible Procedures	0.1%	$1.01	0.2%	$0.86	0.6%	$2.29
Ambulatory excluding ED	Ambulatory Proc. NOC	1.6%	$4.29	1.4%	$2.32	1.9%	$2.84
Ambulatory excluding ED	Ambulatory Svcs. NOC	1.9%	$2.52	0.9%	$1.60	1.0%	$1.14
Inpatient	All Facility Services	0.1%	$14.95	0.2%	$27.29	0.2%	$25.28
Inpatient	All Professional Services	0.7%	$1.15	0.5%	$1.51	1.1%	$2.77
ED	All Services	0.5%	$1.17	0.3%	$0.38	0.2%	$0.32

Place of Service	Service Type	HOPD: *Share of HOPD Episodes*	HOPD: *Payments per HOPD Episode*	ASC: *Share of ASC Episodes*	ASC: *Payments per ASC Episode*	Office: *Share of Office Episodes*	Office: *Payments per Office Episode*
3 DAYS AFTER INDEX PROCEDURE DATE							
Ambulatory excluding ED	E&M	3.7%	$2.86	3.3%	$2.45	4.0%	$3.09
Ambulatory excluding ED	Imaging	1.4%	$2.76	1.2%	$1.60	1.3%	$2.45
Ambulatory excluding ED	Laboratory Tests	2.0%	$1.13	1.2%	$0.72	1.3%	$0.99
Ambulatory excluding ED	Surgical Pathology	0.4%	$0.44	0.7%	$1.21	1.7%	$3.15
Ambulatory excluding ED	Other Tests	0.6%	$0.39	0.4%	$0.27	0.6%	$0.57
Ambulatory excluding ED	Anesthesiology	0.1%	$0.19	0.2%	$0.23	0.3%	$0.39
Ambulatory excluding ED	Eligible Procedures	0.1%	$0.85	0.2%	$0.76	0.4%	$1.31
Ambulatory excluding ED	Ambulatory Proc. NOC	1.4%	$3.94	1.2%	$1.99	1.7%	$2.25
Ambulatory excluding ED	Ambulatory Svcs. NOC	1.6%	$2.34	0.8%	$1.39	0.9%	$0.98
Inpatient	All Facility Services	0.1%	$12.85	0.1%	$28.91	0.2%	$18.70
Inpatient	All Professional Services	0.6%	$1.13	0.6%	$1.49	1.0%	$2.37
ED	All Services	0.4%	$1.10	0.3%	$0.35	0.2%	$0.30
4 DAYS AFTER INDEX PROCEDURE DATE							
Ambulatory excluding ED	E&M	3.8%	$2.96	3.4%	$2.52	4.2%	$3.26
Ambulatory excluding ED	Imaging	1.3%	$2.74	1.2%	$1.58	1.3%	$2.36
Ambulatory excluding ED	Laboratory Tests	2.0%	$1.12	1.2%	$0.72	1.4%	$0.98
Ambulatory excluding ED	Surgical Pathology	0.2%	$0.30	0.5%	$1.07	1.4%	$2.65
Ambulatory excluding ED	Other Tests	0.6%	$0.38	0.4%	$0.29	0.6%	$0.57
Ambulatory excluding ED	Anesthesiology	0.1%	$0.17	0.2%	$0.21	0.3%	$0.39
Ambulatory excluding ED	Eligible Procedures	0.1%	$0.73	0.2%	$0.67	0.3%	$1.11
Ambulatory excluding ED	Ambulatory Proc. NOC	1.4%	$4.03	1.2%	$2.05	1.8%	$2.44
Ambulatory excluding ED	Ambulatory Svcs. NOC	1.5%	$2.35	0.8%	$1.49	0.9%	$0.94
Inpatient	All Facility Services	0.2%	$25.17	0.1%	$29.24	0.1%	$16.65
Inpatient	All Professional Services	0.7%	$1.68	0.6%	$1.58	0.9%	$2.33
ED	All Services	0.5%	$1.12	0.3%	$0.34	0.2%	$0.28

Place of Service	Service Type	HOPD: *Share of HOPD Episodes*	HOPD: *Payments per HOPD Episode*	ASC: *Share of ASC Episodes*	ASC: *Payments per ASC Episode*	Office: *Share of Office Episodes*	Office: *Payments per Office Episode*
5 DAYS AFTER INDEX PROCEDURE DATE							
Ambulatory excluding ED	E&M	4.5%	$3.46	4.1%	$3.05	4.5%	$3.52
Ambulatory excluding ED	Imaging	1.4%	$2.90	1.3%	$1.73	1.4%	$2.63
Ambulatory excluding ED	Laboratory Tests	2.2%	$1.25	1.4%	$0.83	1.5%	$0.99
Ambulatory excluding ED	Surgical Pathology	0.2%	$0.32	0.4%	$0.86	1.4%	$2.60
Ambulatory excluding ED	Other Tests	0.6%	$0.45	0.5%	$0.31	0.6%	$0.47
Ambulatory excluding ED	Anesthesiology	0.1%	$0.21	0.2%	$0.24	0.3%	$0.35
Ambulatory excluding ED	Eligible Procedures	0.1%	$0.79	0.2%	$0.81	0.3%	$1.05
Ambulatory excluding ED	Ambulatory Proc. NOC	1.6%	$4.87	1.4%	$2.26	1.8%	$2.40
Ambulatory excluding ED	Ambulatory Svcs. NOC	1.6%	$2.82	0.9%	$1.61	1.0%	$1.55
Inpatient	All Facility Services	0.2%	$25.94	0.2%	$32.00	0.1%	$20.95
Inpatient	All Professional Services	0.8%	$2.19	0.6%	$1.74	0.9%	$2.19
ED	All Services	0.5%	$1.09	0.3%	$0.35	0.2%	$0.26
6 DAYS AFTER INDEX PROCEDURE DATE							
Ambulatory excluding ED	E&M	6.3%	$4.80	5.8%	$4.24	6.2%	$4.77
Ambulatory excluding ED	Imaging	1.8%	$3.65	1.6%	$2.28	1.7%	$3.26
Ambulatory excluding ED	Laboratory Tests	2.8%	$1.59	1.8%	$1.13	1.9%	$1.31
Ambulatory excluding ED	Surgical Pathology	0.3%	$0.41	0.5%	$0.88	1.2%	$2.24
Ambulatory excluding ED	Other Tests	0.8%	$0.57	0.7%	$0.41	0.9%	$0.69
Ambulatory excluding ED	Anesthesiology	0.2%	$0.27	0.2%	$0.30	0.3%	$0.42
Ambulatory excluding ED	Eligible Procedures	0.1%	$0.99	0.2%	$0.88	0.3%	$1.05
Ambulatory excluding ED	Ambulatory Proc. NOC	2.0%	$6.22	1.8%	$3.17	2.4%	$3.72
Ambulatory excluding ED	Ambulatory Svcs. NOC	1.9%	$3.34	1.1%	$2.15	1.1%	$1.46
Inpatient	All Facility Services	0.3%	$29.59	0.2%	$34.30	0.2%	$18.28
Inpatient	All Professional Services	0.9%	$2.71	0.7%	$1.92	0.9%	$2.30
ED	All Services	0.5%	$1.09	0.3%	$0.33	0.2%	$0.28

Place of Service	Service Type	**HOPD:** *Share of HOPD Episodes*	**HOPD:** *Payments per HOPD Episode*	**ASC:** *Share of ASC Episodes*	**ASC:** *Payments per ASC Episode*	**Office:** *Share of Office Episodes*	**Office:** *Payments per Office Episode*
7 DAYS AFTER INDEX PROCEDURE DATE							
Ambulatory excluding ED	E&M	7.9%	$5.98	7.5%	$5.47	8.3%	$6.31
Ambulatory excluding ED	Imaging	2.2%	$4.52	2.0%	$2.89	2.1%	$4.00
Ambulatory excluding ED	Laboratory Tests	3.5%	$1.92	2.3%	$1.36	2.4%	$1.66
Ambulatory excluding ED	Surgical Pathology	0.5%	$0.66	0.8%	$1.80	1.7%	$4.43
Ambulatory excluding ED	Other Tests	0.9%	$0.69	0.8%	$0.51	1.1%	$0.88
Ambulatory excluding ED	Anesthesiology	0.4%	$0.54	0.7%	$0.80	1.2%	$1.62
Ambulatory excluding ED	Eligible Procedures	0.4%	$3.25	0.8%	$3.66	1.3%	$5.01
Ambulatory excluding ED	Ambulatory Proc. NOC	2.4%	$8.05	2.1%	$3.79	2.7%	$3.75
Ambulatory excluding ED	Ambulatory Svcs. NOC	2.4%	$3.80	1.3%	$2.21	1.4%	$1.75
Inpatient	All Facility Services	0.3%	$33.38	0.2%	$41.79	0.2%	$25.79
Inpatient	All Professional Services	1.1%	$3.36	0.7%	$2.32	0.9%	$2.65
ED	All Services	0.5%	$1.07	0.3%	$0.34	0.2%	$0.30

Table A.6. Services Provided in Gastroenterology Single and Multiple Index Procedure Episodes

Place of Service	Service Type	Single Index Procedure *Share of Episodes*	Single Index Procedure *Payments per Episode*	Multiple Index Procedures *Share of Episodes*	Multiple Index Procedures *Payments per Episode*
1 DAY BEFORE INDEX PROCEDURE DATE					
Ambulatory excluding ED	E&M	5.5%	$4.59	5.2%	$4.38
Ambulatory excluding ED	Imaging	1.8%	$2.92	1.5%	$2.55
Ambulatory excluding ED	Laboratory Tests	2.8%	$1.86	3.0%	$1.91
Ambulatory excluding ED	Surgical Pathology	0.3%	$0.34	0.4%	$0.62
Ambulatory excluding ED	Other Tests	1.1%	$0.48	1.1%	$0.44
Ambulatory excluding ED	Anesthesiology	0.1%	$0.13	0.2%	$0.23
Ambulatory excluding ED	Eligible Procedures	0.0%	$0.00	0.2%	$0.62
Ambulatory excluding ED	Ambulatory Proc. NOC	1.5%	$2.40	1.4%	$2.09
Ambulatory excluding ED	Ambulatory Svcs. NOC	1.6%	$2.04	1.6%	$1.79
Inpatient	All Facility Services	0.0%	$1.60	0.0%	$1.28
Inpatient	All Professional Services	0.9%	$1.25	0.5%	$0.65
ED	All Services	0.9%	$3.40	0.8%	$2.57
DAY-OF INDEX PROCEDURE DATE					
Ambulatory excluding ED	E&M	3.8%	$2.78	3.4%	$2.50
Ambulatory excluding ED	Imaging	2.3%	$3.19	2.8%	$3.91
Ambulatory excluding ED	Laboratory Tests	11.7%	$4.65	17.7%	$6.29
Ambulatory excluding ED	Surgical Pathology	55.8%	$86.55	86.2%	$196.68
Ambulatory excluding ED	Other Tests	2.1%	$0.73	2.6%	$0.77
Ambulatory excluding ED	Anesthesiology	56.5%	$64.92	61.1%	$77.68
Ambulatory excluding ED	Eligible Procedures	0.0%	$0.00	95.6%	$293.99
Ambulatory excluding ED	Ambulatory Proc. NOC	2.7%	$9.75	2.4%	$5.94
Ambulatory excluding ED	Ambulatory Svcs. NOC	47.5%	$5.50	51.2%	$6.53
Inpatient	All Facility Services	0.1%	$19.15	0.1%	$33.69
Inpatient	All Professional Services	2.1%	$2.88	2.4%	$3.34

Place of Service	Service Type	Single Index Procedure *Share of Episodes*	Single Index Procedure *Payments per Episode*	Multiple Index Procedures *Share of Episodes*	Multiple Index Procedures *Payments per Episode*
ED	All Services	1.1%	$2.33	1.2%	$2.52
1 DAY AFTER INDEX PROCEDURE DATE					
Ambulatory excluding ED	E&M	4.3%	$3.16	4.4%	$3.30
Ambulatory excluding ED	Imaging	1.5%	$2.55	1.7%	$3.17
Ambulatory excluding ED	Laboratory Tests	1.9%	$1.10	2.3%	$1.34
Ambulatory excluding ED	Surgical Pathology	1.3%	$1.60	2.4%	$4.13
Ambulatory excluding ED	Other Tests	0.7%	$0.41	0.7%	$0.43
Ambulatory excluding ED	Anesthesiology	0.2%	$0.22	0.7%	$0.87
Ambulatory excluding ED	Eligible Procedures	0.0%	$0.00	1.1%	$6.04
Ambulatory excluding ED	Ambulatory Proc. NOC	1.7%	$3.60	1.7%	$3.34
Ambulatory excluding ED	Ambulatory Svcs. NOC	1.8%	$2.11	2.3%	$2.26
Inpatient	All Facility Services	0.2%	$24.56	0.2%	$37.35
Inpatient	All Professional Services	0.8%	$1.73	0.8%	$2.05
ED	All Services	0.4%	$0.71	0.6%	$0.96
2 DAYS AFTER INDEX PROCEDURE DATE					
Ambulatory excluding ED	E&M	3.4%	$2.56	3.7%	$2.83
Ambulatory excluding ED	Imaging	1.2%	$2.05	1.4%	$2.64
Ambulatory excluding ED	Laboratory Tests	1.4%	$0.85	1.8%	$1.06
Ambulatory excluding ED	Surgical Pathology	0.4%	$0.64	0.9%	$1.77
Ambulatory excluding ED	Other Tests	0.5%	$0.35	0.6%	$0.36
Ambulatory excluding ED	Anesthesiology	0.1%	$0.12	0.4%	$0.47
Ambulatory excluding ED	Eligible Procedures	0.0%	$0.00	0.6%	$3.04
Ambulatory excluding ED	Ambulatory Proc. NOC	1.4%	$3.01	1.4%	$3.16
Ambulatory excluding ED	Ambulatory Svcs. NOC	1.2%	$1.78	1.5%	$1.84
Inpatient	All Facility Services	0.1%	$15.12	0.1%	$26.17
Inpatient	All Professional Services	0.5%	$1.08	0.6%	$1.40

Place of Service	Service Type	Single Index Procedure *Share of Episodes*	Single Index Procedure *Payments per Episode*	Multiple Index Procedures *Share of Episodes*	Multiple Index Procedures *Payments per Episode*
ED	All Services	0.3%	$0.63	0.4%	$0.80
3 DAYS AFTER INDEX PROCEDURE DATE					
Ambulatory excluding ED	E&M	3.2%	$2.37	3.4%	$2.61
Ambulatory excluding ED	Imaging	1.1%	$1.84	1.3%	$2.33
Ambulatory excluding ED	Laboratory Tests	1.4%	$0.78	1.7%	$0.98
Ambulatory excluding ED	Surgical Pathology	0.4%	$0.54	0.8%	$1.42
Ambulatory excluding ED	Other Tests	0.5%	$0.31	0.5%	$0.32
Ambulatory excluding ED	Anesthesiology	0.1%	$0.10	0.3%	$0.41
Ambulatory excluding ED	Eligible Procedures	0.0%	$0.00	0.5%	$2.51
Ambulatory excluding ED	Ambulatory Proc. NOC	1.2%	$2.70	1.3%	$2.86
Ambulatory excluding ED	Ambulatory Svcs. NOC	1.0%	$1.59	1.3%	$1.65
Inpatient	All Facility Services	0.1%	$14.67	0.1%	$23.70
Inpatient	All Professional Services	0.5%	$1.08	0.6%	$1.33
ED	All Services	0.3%	$0.59	0.4%	$0.73
4 DAYS AFTER INDEX PROCEDURE DATE					
Ambulatory excluding ED	E&M	3.2%	$2.42	3.6%	$2.77
Ambulatory excluding ED	Imaging	1.1%	$1.78	1.3%	$2.38
Ambulatory excluding ED	Laboratory Tests	1.4%	$0.79	1.7%	$0.96
Ambulatory excluding ED	Surgical Pathology	0.3%	$0.45	0.6%	$1.15
Ambulatory excluding ED	Other Tests	0.5%	$0.31	0.5%	$0.36
Ambulatory excluding ED	Anesthesiology	0.1%	$0.10	0.3%	$0.37
Ambulatory excluding ED	Eligible Procedures	0.0%	$0.00	0.4%	$2.18
Ambulatory excluding ED	Ambulatory Proc. NOC	1.2%	$2.79	1.3%	$2.89
Ambulatory excluding ED	Ambulatory Svcs. NOC	1.0%	$1.63	1.2%	$1.74
Inpatient	All Facility Services	0.1%	$19.08	0.2%	$38.35
Inpatient	All Professional Services	0.5%	$1.33	0.6%	$1.63

Place of Service	Service Type	Single Index Procedure *Share of Episodes*	Single Index Procedure *Payments per Episode*	Multiple Index Procedures *Share of Episodes*	Multiple Index Procedures *Payments per Episode*
ED	All Services	0.3%	$0.60	0.4%	$0.73
5 DAYS AFTER INDEX PROCEDURE DATE					
Ambulatory excluding ED	E&M	3.8%	$2.84	4.3%	$3.26
Ambulatory excluding ED	Imaging	1.2%	$1.95	1.4%	$2.48
Ambulatory excluding ED	Laboratory Tests	1.5%	$0.86	1.9%	$1.12
Ambulatory excluding ED	Surgical Pathology	0.3%	$0.39	0.6%	$1.07
Ambulatory excluding ED	Other Tests	0.5%	$0.35	0.6%	$0.37
Ambulatory excluding ED	Anesthesiology	0.1%	$0.12	0.3%	$0.41
Ambulatory excluding ED	Eligible Procedures	0.0%	$0.00	0.4%	$2.42
Ambulatory excluding ED	Ambulatory Proc. NOC	1.3%	$3.30	1.4%	$3.30
Ambulatory excluding ED	Ambulatory Svcs. NOC	1.1%	$1.85	1.3%	$2.24
Inpatient	All Facility Services	0.1%	$20.49	0.2%	$39.89
Inpatient	All Professional Services	0.6%	$1.59	0.7%	$1.95
ED	All Services	0.3%	$0.59	0.4%	$0.71
6 DAYS AFTER INDEX PROCEDURE DATE					
Ambulatory excluding ED	E&M	5.3%	$3.92	6.0%	$4.54
Ambulatory excluding ED	Imaging	1.5%	$2.46	1.7%	$3.22
Ambulatory excluding ED	Laboratory Tests	2.0%	$1.13	2.4%	$1.45
Ambulatory excluding ED	Surgical Pathology	0.3%	$0.42	0.6%	$1.12
Ambulatory excluding ED	Other Tests	0.7%	$0.45	0.7%	$0.48
Ambulatory excluding ED	Anesthesiology	0.1%	$0.15	0.4%	$0.52
Ambulatory excluding ED	Eligible Procedures	0.0%	$0.00	0.5%	$2.84
Ambulatory excluding ED	Ambulatory Proc. NOC	1.8%	$4.23	1.8%	$4.61
Ambulatory excluding ED	Ambulatory Svcs. NOC	1.3%	$2.34	1.6%	$2.59
Inpatient	All Facility Services	0.2%	$22.20	0.2%	$44.41
Inpatient	All Professional Services	0.6%	$1.89	0.8%	$2.30

Place of Service	Service Type	Single Index Procedure *Share of Episodes*	Single Index Procedure *Payments per Episode*	Multiple Index Procedures *Share of Episodes*	Multiple Index Procedures *Payments per Episode*
ED	All Services	0.3%	$0.58	0.3%	$0.69
7 DAYS AFTER INDEX PROCEDURE DATE					
Ambulatory excluding ED	E&M	6.8%	$4.97	7.8%	$5.81
Ambulatory excluding ED	Imaging	1.8%	$3.06	2.2%	$4.11
Ambulatory excluding ED	Laboratory Tests	2.5%	$1.36	3.1%	$1.84
Ambulatory excluding ED	Surgical Pathology	0.3%	$0.46	1.4%	$2.98
Ambulatory excluding ED	Other Tests	0.8%	$0.56	0.9%	$0.60
Ambulatory excluding ED	Anesthesiology	0.1%	$0.21	1.3%	$1.62
Ambulatory excluding ED	Eligible Procedures	0.0%	$0.00	1.9%	$10.52
Ambulatory excluding ED	Ambulatory Proc. NOC	2.1%	$5.48	2.2%	$5.59
Ambulatory excluding ED	Ambulatory Svcs. NOC	1.5%	$2.62	2.3%	$2.79
Inpatient	All Facility Services	0.2%	$26.13	0.2%	$53.78
Inpatient	All Professional Services	0.7%	$2.23	0.9%	$2.99
ED	All Services	0.3%	$0.59	0.4%	$0.70

Table A.7. Frequency and Medicare Payments for Services Provided During Cardiology Episodes, Payments Conditional on Utilization in Each Service Category

Place of Service	Service Type	HOPD: *Share of Episodes*	HOPD: *Payments per Episode*
1 DAY BEFORE INDEX PROCEDURE DATE			
Ambulatory excluding ED	E&M	13.2%	$100.71
Ambulatory excluding ED	Imaging	10.5%	$155.56
Ambulatory excluding ED	Laboratory Tests	14.4%	$74.10
Ambulatory excluding ED	Surgical Pathology	0.1%	$153.52
Ambulatory excluding ED	Other Tests	11.7%	$39.32
Ambulatory excluding ED	Anesthesiology	0.1%	$153.18
Ambulatory excluding ED	Eligible Procedures	0.1%	$1,133.58
Ambulatory excluding ED	Ambulatory Proc. NOC	2.7%	$163.10
Ambulatory excluding ED	Ambulatory Svcs. NOC	6.6%	$175.39
Inpatient	All Facility Services	0.3%	$3,167.77
Inpatient	All Professional Services	4.4%	$116.68
ED	All Services	5.6%	$459.69
DAY-OF INDEX PROCEDURE DATE			
Ambulatory excluding ED	E&M	16.6%	$103.38
Ambulatory excluding ED	Imaging	80.2%	$53.48
Ambulatory excluding ED	Laboratory Tests	66.7%	$48.75
Ambulatory excluding ED	Surgical Pathology	1.1%	$171.10
Ambulatory excluding ED	Other Tests	45.4%	$30.45
Ambulatory excluding ED	Anesthesiology	0.7%	$190.81
Ambulatory excluding ED	Eligible Procedures	16.6%	$1,129.91
Ambulatory excluding ED	Ambulatory Proc. NOC	25.6%	$594.85
Ambulatory excluding ED	Ambulatory Svcs. NOC	91.2%	$162.99
Inpatient	All Facility Services	0.9%	$20,239.55
Inpatient	All Professional Services	12.7%	$138.74

Place of Service	Service Type	HOPD: *Share of Episodes*	HOPD: *Payments per Episode*
ED	All Services	8.0%	$116.86
1 DAY AFTER INDEX PROCEDURE DATE			
Ambulatory excluding ED	E&M	16.0%	$62.96
Ambulatory excluding ED	Imaging	3.5%	$194.99
Ambulatory excluding ED	Laboratory Tests	20.1%	$43.61
Ambulatory excluding ED	Surgical Pathology	0.1%	$136.26
Ambulatory excluding ED	Other Tests	13.6%	$29.85
Ambulatory excluding ED	Anesthesiology	0.1%	$169.62
Ambulatory excluding ED	Eligible Procedures	0.3%	$4,679.58
Ambulatory excluding ED	Ambulatory Proc. NOC	3.2%	$829.41
Ambulatory excluding ED	Ambulatory Svcs. NOC	15.0%	$43.10
Inpatient	All Facility Services	0.3%	$14,412.50
Inpatient	All Professional Services	7.7%	$165.37
ED	All Services	2.3%	$81.34
2 DAYS AFTER INDEX PROCEDURE DATE			
Ambulatory excluding ED	E&M	4.4%	$76.82
Ambulatory excluding ED	Imaging	1.6%	$155.23
Ambulatory excluding ED	Laboratory Tests	3.5%	$55.05
Ambulatory excluding ED	Surgical Pathology	0.1%	$153.10
Ambulatory excluding ED	Other Tests	1.8%	$46.83
Ambulatory excluding ED	Anesthesiology	0.1%	$175.16
Ambulatory excluding ED	Eligible Procedures	0.1%	$4,880.53
Ambulatory excluding ED	Ambulatory Proc. NOC	1.2%	$728.33
Ambulatory excluding ED	Ambulatory Svcs. NOC	2.2%	$111.82
Inpatient	All Facility Services	0.2%	$13,824.87
Inpatient	All Professional Services	2.0%	$345.78
ED	All Services	0.8%	$219.98

Place of Service	Service Type	HOPD: *Share of Episodes*	HOPD: *Payments per Episode*
3 DAYS AFTER INDEX PROCEDURE DATE			
Ambulatory excluding ED	E&M	4.2%	$77.65
Ambulatory excluding ED	Imaging	1.5%	$150.75
Ambulatory excluding ED	Laboratory Tests	3.0%	$47.69
Ambulatory excluding ED	Surgical Pathology	0.1%	$163.33
Ambulatory excluding ED	Other Tests	1.4%	$51.89
Ambulatory excluding ED	Anesthesiology	0.1%	$176.98
Ambulatory excluding ED	Eligible Procedures	0.1%	$5,083.97
Ambulatory excluding ED	Ambulatory Proc. NOC	1.0%	$686.89
Ambulatory excluding ED	Ambulatory Svcs. NOC	1.6%	$146.41
Inpatient	All Facility Services	0.2%	$14,899.17
Inpatient	All Professional Services	1.4%	$410.60
ED	All Services	0.7%	$254.70
4 DAYS AFTER INDEX PROCEDURE DATE			
Ambulatory excluding ED	E&M	4.7%	$78.58
Ambulatory excluding ED	Imaging	1.5%	$151.80
Ambulatory excluding ED	Laboratory Tests	2.8%	$50.83
Ambulatory excluding ED	Surgical Pathology	0.1%	$162.15
Ambulatory excluding ED	Other Tests	1.4%	$57.08
Ambulatory excluding ED	Anesthesiology	0.1%	$212.53
Ambulatory excluding ED	Eligible Procedures	0.1%	$5,181.92
Ambulatory excluding ED	Ambulatory Proc. NOC	1.1%	$602.66
Ambulatory excluding ED	Ambulatory Svcs. NOC	1.4%	$192.18
Inpatient	All Facility Services	0.6%	$21,257.94
Inpatient	All Professional Services	1.8%	$745.69
ED	All Services	0.7%	$249.22

Place of Service	Service Type	HOPD: *Share of Episodes*	HOPD: *Payments per Episode*
5 DAYS AFTER INDEX PROCEDURE DATE			
Ambulatory excluding ED	E&M	5.6%	$79.47
Ambulatory excluding ED	Imaging	1.7%	$150.47
Ambulatory excluding ED	Laboratory Tests	2.8%	$55.24
Ambulatory excluding ED	Surgical Pathology	0.1%	$146.85
Ambulatory excluding ED	Other Tests	1.6%	$56.65
Ambulatory excluding ED	Anesthesiology	0.1%	$205.85
Ambulatory excluding ED	Eligible Procedures	0.1%	$4,866.44
Ambulatory excluding ED	Ambulatory Proc. NOC	1.3%	$609.68
Ambulatory excluding ED	Ambulatory Svcs. NOC	1.5%	$183.98
Inpatient	All Facility Services	0.6%	$21,747.45
Inpatient	All Professional Services	2.1%	$710.86
ED	All Services	0.7%	$243.79
6 DAYS AFTER INDEX PROCEDURE DATE			
Ambulatory excluding ED	E&M	7.8%	$79.18
Ambulatory excluding ED	Imaging	2.1%	$161.13
Ambulatory excluding ED	Laboratory Tests	3.3%	$54.40
Ambulatory excluding ED	Surgical Pathology	0.2%	$170.24
Ambulatory excluding ED	Other Tests	2.1%	$56.66
Ambulatory excluding ED	Anesthesiology	0.1%	$192.65
Ambulatory excluding ED	Eligible Procedures	0.1%	$5,101.15
Ambulatory excluding ED	Ambulatory Proc. NOC	1.6%	$584.74
Ambulatory excluding ED	Ambulatory Svcs. NOC	1.8%	$170.73
Inpatient	All Facility Services	0.8%	$21,933.42
Inpatient	All Professional Services	2.7%	$719.79
ED	All Services	0.6%	$243.25

Place of Service	Service Type	HOPD: *Share of Episodes*	HOPD: *Payments per Episode*
7 DAYS AFTER INDEX PROCEDURE DATE			
Ambulatory excluding ED	E&M	10.5%	$78.10
Ambulatory excluding ED	Imaging	2.6%	$163.32
Ambulatory excluding ED	Laboratory Tests	4.3%	$55.47
Ambulatory excluding ED	Surgical Pathology	0.2%	$164.36
Ambulatory excluding ED	Other Tests	2.7%	$52.46
Ambulatory excluding ED	Anesthesiology	0.2%	$203.42
Ambulatory excluding ED	Eligible Procedures	0.3%	$4,898.81
Ambulatory excluding ED	Ambulatory Proc. NOC	1.9%	$746.14
Ambulatory excluding ED	Ambulatory Svcs. NOC	2.2%	$178.96
Inpatient	All Facility Services	0.9%	$22,463.49
Inpatient	All Professional Services	3.2%	$710.90
ED	All Services	0.6%	$231.90

SOURCE: Authors' analysis of Medicare Outpatient, MedPAR, and Carrier claims data for Medicare FFS beneficiaries, 2012.
NOTE: "Proc." is procedure and "Svcs." is services.

Table A.8. Services Provided in Cardiology Episodes, PCI versus Catheterization Episodes

Place of Service	Service Type	PCI Index Procedures *Share of Episodes*	PCI Index Procedures *Payments per Episode*	Cath. Index Procedures *Share of Episodes*	Cath. Index Procedures *Payments per Episode*
1 DAY BEFORE INDEX PROCEDURE DATE					
Ambulatory excluding ED	E&M	12.8%	$12.41	13.3%	$13.54
Ambulatory excluding ED	Imaging	9.8%	$15.70	10.7%	$16.52
Ambulatory excluding ED	Laboratory Tests	13.9%	$9.69	14.5%	$10.91
Ambulatory excluding ED	Surgical Pathology	0.1%	$0.08	0.1%	$0.18
Ambulatory excluding ED	Other Tests	11.6%	$4.30	11.7%	$4.64
Ambulatory excluding ED	Anesthesiology	0.0%	$0.03	0.1%	$0.09
Ambulatory excluding ED	Eligible Procedures	0.2%	$2.33	0.0%	$0.32
Ambulatory excluding ED	Ambulatory Proc. NOC	2.5%	$3.85	2.8%	$4.58
Ambulatory excluding ED	Ambulatory Svcs. NOC	6.5%	$11.85	6.6%	$11.48
Inpatient	All Facility Services	0.4%	$14.42	0.3%	$9.24
Inpatient	All Professional Services	4.4%	$5.40	4.4%	$5.04
ED	All Services	5.3%	$23.53	5.7%	$26.24
DAY-OF INDEX PROCEDURE DATE					
Ambulatory excluding ED	E&M	18.4%	$19.36	16.2%	$16.69
Ambulatory excluding ED	Imaging	82.9%	$38.53	79.6%	$43.87
Ambulatory excluding ED	Laboratory Tests	80.1%	$40.88	63.8%	$30.70
Ambulatory excluding ED	Surgical Pathology	0.0%	$0.04	1.4%	$2.35
Ambulatory excluding ED	Other Tests	72.8%	$24.53	39.3%	$11.47
Ambulatory excluding ED	Anesthesiology	0.6%	$1.19	0.8%	$1.48
Ambulatory excluding ED	Eligible Procedures	85.8%	$840.68	1.4%	$43.95
Ambulatory excluding ED	Ambulatory Proc. NOC	32.8%	$356.29	24.1%	$107.88
Ambulatory excluding ED	Ambulatory Svcs. NOC	92.1%	$558.32	91.0%	$58.92
Inpatient	All Facility Services	0.6%	$45.55	0.9%	$206.84
Inpatient	All Professional Services	22.1%	$33.95	10.7%	$14.13

Place of Service	Service Type	PCI Index Procedures *Share of Episodes*	PCI Index Procedures *Payments per Episode*	Cath. Index Procedures *Share of Episodes*	Cath. Index Procedures *Payments per Episode*
ED	All Services	17.0%	$11.14	6.1%	$9.02
1 DAY AFTER INDEX PROCEDURE DATE					
Ambulatory excluding ED	E&M	50.0%	$28.65	8.6%	$6.01
Ambulatory excluding ED	Imaging	4.6%	$8.07	3.3%	$6.60
Ambulatory excluding ED	Laboratory Tests	72.4%	$28.77	8.7%	$4.39
Ambulatory excluding ED	Surgical Pathology	0.0%	$0.03	0.2%	$0.22
Ambulatory excluding ED	Other Tests	54.3%	$13.94	4.7%	$1.91
Ambulatory excluding ED	Anesthesiology	0.0%	$0.06	0.1%	$0.25
Ambulatory excluding ED	Eligible Procedures	0.5%	$16.43	0.3%	$15.92
Ambulatory excluding ED	Ambulatory Proc. NOC	6.9%	$16.65	2.3%	$28.40
Ambulatory excluding ED	Ambulatory Svcs. NOC	48.7%	$13.48	7.6%	$4.93
Inpatient	All Facility Services	0.3%	$21.83	0.3%	$49.04
Inpatient	All Professional Services	20.2%	$13.96	4.9%	$12.37
ED	All Services	5.2%	$2.14	1.6%	$1.77
2 DAYS AFTER INDEX PROCEDURE DATE					
Ambulatory excluding ED	E&M	4.1%	$2.85	4.5%	$3.50
Ambulatory excluding ED	Imaging	1.3%	$1.57	1.7%	$2.65
Ambulatory excluding ED	Laboratory Tests	3.9%	$1.88	3.4%	$1.95
Ambulatory excluding ED	Surgical Pathology	0.0%	$0.03	0.1%	$0.18
Ambulatory excluding ED	Other Tests	2.5%	$0.67	1.7%	$0.90
Ambulatory excluding ED	Anesthesiology	0.0%	$0.04	0.1%	$0.16
Ambulatory excluding ED	Eligible Procedures	0.1%	$3.99	0.1%	$5.29
Ambulatory excluding ED	Ambulatory Proc. NOC	1.1%	$4.02	1.2%	$9.66
Ambulatory excluding ED	Ambulatory Svcs. NOC	3.0%	$2.82	2.1%	$2.44
Inpatient	All Facility Services	0.1%	$9.93	0.2%	$26.22
Inpatient	All Professional Services	2.1%	$2.36	1.9%	$7.76

Place of Service	Service Type	PCI Index Procedures *Share of Episodes*	PCI Index Procedures *Payments per Episode*	Cath. Index Procedures *Share of Episodes*	Cath. Index Procedures *Payments per Episode*
ED	All Services	1.2%	$2.87	0.7%	$1.55
3 DAYS AFTER INDEX PROCEDURE DATE					
Ambulatory excluding ED	E&M	3.6%	$2.69	4.4%	$3.41
Ambulatory excluding ED	Imaging	1.1%	$1.37	1.5%	$2.39
Ambulatory excluding ED	Laboratory Tests	2.9%	$1.38	3.0%	$1.43
Ambulatory excluding ED	Surgical Pathology	0.0%	$0.09	0.1%	$0.17
Ambulatory excluding ED	Other Tests	1.7%	$0.64	1.4%	$0.75
Ambulatory excluding ED	Anesthesiology	0.0%	$0.03	0.1%	$0.15
Ambulatory excluding ED	Eligible Procedures	0.1%	$3.20	0.1%	$4.96
Ambulatory excluding ED	Ambulatory Proc. NOC	0.8%	$2.82	1.1%	$8.16
Ambulatory excluding ED	Ambulatory Svcs. NOC	1.6%	$2.27	1.6%	$2.30
Inpatient	All Facility Services	0.1%	$11.65	0.2%	$29.04
Inpatient	All Professional Services	1.0%	$1.50	1.5%	$6.78
ED	All Services	0.9%	$2.64	0.6%	$1.51
4 DAYS AFTER INDEX PROCEDURE DATE					
Ambulatory excluding ED	E&M	4.2%	$3.13	4.8%	$3.78
Ambulatory excluding ED	Imaging	1.1%	$1.36	1.6%	$2.48
Ambulatory excluding ED	Laboratory Tests	2.8%	$1.52	2.8%	$1.39
Ambulatory excluding ED	Surgical Pathology	0.0%	$0.06	0.1%	$0.22
Ambulatory excluding ED	Other Tests	1.6%	$0.65	1.4%	$0.85
Ambulatory excluding ED	Anesthesiology	0.0%	$0.04	0.1%	$0.21
Ambulatory excluding ED	Eligible Procedures	0.1%	$2.55	0.1%	$5.34
Ambulatory excluding ED	Ambulatory Proc. NOC	0.9%	$2.21	1.1%	$7.60
Ambulatory excluding ED	Ambulatory Svcs. NOC	1.4%	$2.74	1.4%	$2.77
Inpatient	All Facility Services	0.3%	$27.55	0.6%	$141.84
Inpatient	All Professional Services	1.0%	$2.35	1.9%	$15.41

Place of Service	Service Type	PCI Index Procedures *Share of Episodes*	PCI Index Procedures *Payments per Episode*	Cath. Index Procedures *Share of Episodes*	Cath. Index Procedures *Payments per Episode*
ED	All Services	1.0%	$2.67	0.6%	$1.55
5 DAYS AFTER INDEX PROCEDURE DATE					
Ambulatory excluding ED	E&M	5.4%	$4.05	5.7%	$4.55
Ambulatory excluding ED	Imaging	1.3%	$1.68	1.7%	$2.69
Ambulatory excluding ED	Laboratory Tests	2.9%	$1.73	2.8%	$1.50
Ambulatory excluding ED	Surgical Pathology	0.0%	$0.12	0.2%	$0.23
Ambulatory excluding ED	Other Tests	1.8%	$0.76	1.5%	$0.93
Ambulatory excluding ED	Anesthesiology	0.0%	$0.04	0.1%	$0.26
Ambulatory excluding ED	Eligible Procedures	0.1%	$4.24	0.1%	$4.52
Ambulatory excluding ED	Ambulatory Proc. NOC	1.1%	$3.15	1.3%	$8.63
Ambulatory excluding ED	Ambulatory Svcs. NOC	1.5%	$3.07	1.5%	$2.65
Inpatient	All Facility Services	0.4%	$38.16	0.7%	$160.17
Inpatient	All Professional Services	1.2%	$3.26	2.3%	$17.87
ED	All Services	1.0%	$2.56	0.6%	$1.45
6 DAYS AFTER INDEX PROCEDURE DATE					
Ambulatory excluding ED	E&M	7.5%	$5.75	7.9%	$6.29
Ambulatory excluding ED	Imaging	1.4%	$1.85	2.2%	$3.63
Ambulatory excluding ED	Laboratory Tests	3.3%	$1.80	3.4%	$1.82
Ambulatory excluding ED	Surgical Pathology	0.1%	$0.09	0.2%	$0.33
Ambulatory excluding ED	Other Tests	2.3%	$0.96	2.0%	$1.21
Ambulatory excluding ED	Anesthesiology	0.0%	$0.06	0.2%	$0.31
Ambulatory excluding ED	Eligible Procedures	0.1%	$4.93	0.1%	$6.94
Ambulatory excluding ED	Ambulatory Proc. NOC	1.3%	$3.47	1.7%	$10.59
Ambulatory excluding ED	Ambulatory Svcs. NOC	1.6%	$2.78	1.8%	$3.11
Inpatient	All Facility Services	0.4%	$35.40	0.8%	$193.89
Inpatient	All Professional Services	1.4%	$3.60	2.9%	$22.51

Place of Service	Service Type	PCI Index Procedures *Share of Episodes*	PCI Index Procedures *Payments per Episode*	Cath. Index Procedures *Share of Episodes*	Cath. Index Procedures *Payments per Episode*
ED	All Services	0.8%	$2.12	0.6%	$1.41
7 DAYS AFTER INDEX PROCEDURE DATE					
Ambulatory excluding ED	E&M	10.3%	$7.72	10.5%	$8.27
Ambulatory excluding ED	Imaging	1.9%	$2.58	2.8%	$4.65
Ambulatory excluding ED	Laboratory Tests	4.1%	$2.47	4.4%	$2.37
Ambulatory excluding ED	Surgical Pathology	0.1%	$0.13	0.3%	$0.45
Ambulatory excluding ED	Other Tests	3.1%	$1.15	2.6%	$1.45
Ambulatory excluding ED	Anesthesiology	0.0%	$0.05	0.2%	$0.43
Ambulatory excluding ED	Eligible Procedures	0.3%	$15.89	0.3%	$12.24
Ambulatory excluding ED	Ambulatory Proc. NOC	1.6%	$6.64	2.0%	$16.22
Ambulatory excluding ED	Ambulatory Svcs. NOC	2.0%	$3.48	2.2%	$3.96
Inpatient	All Facility Services	0.3%	$34.51	1.0%	$233.27
Inpatient	All Professional Services	1.5%	$4.07	3.6%	$26.93
ED	All Services	0.8%	$2.13	0.6%	$1.33

Table A.9. Services Provided in Cardiology Single and Multiple Index Procedure Episodes

Place of Service	Service Type	Single Index Procedure *Share of Episodes*	Single Index Procedure *Payments per Episode*	Multiple Index Procedures *Share of Episodes*	Multiple Index Procedures *Payments per Episode*
1 DAY BEFORE INDEX PROCEDURE DATE					
Ambulatory excluding ED	E&M	13.4%	$13.57	13.7%	$13.47
Ambulatory excluding ED	Imaging	10.7%	$16.43	10.8%	$17.60
Ambulatory excluding ED	Laboratory Tests	14.6%	$10.88	15.1%	$10.82
Ambulatory excluding ED	Surgical Pathology	0.1%	$0.18	0.1%	$0.10
Ambulatory excluding ED	Other Tests	11.7%	$4.63	12.6%	$4.77
Ambulatory excluding ED	Anesthesiology	0.1%	$0.09	0.0%	$0.04
Ambulatory excluding ED	Eligible Procedures	0.0%	$0.00	0.3%	$3.91
Ambulatory excluding ED	Ambulatory Proc. NOC	2.8%	$4.57	2.7%	$4.34
Ambulatory excluding ED	Ambulatory Svcs. NOC	6.6%	$11.47	7.1%	$13.02
Inpatient	All Facility Services	0.3%	$9.44	0.4%	$14.53
Inpatient	All Professional Services	4.5%	$5.32	4.1%	$4.59
ED	All Services	5.7%	$26.06	5.9%	$26.75
DAY-OF INDEX PROCEDURE DATE					
Ambulatory excluding ED	E&M	16.4%	$16.81	19.3%	$20.45
Ambulatory excluding ED	Imaging	81.0%	$43.54	83.9%	$43.97
Ambulatory excluding ED	Laboratory Tests	65.2%	$31.21	80.1%	$41.69
Ambulatory excluding ED	Surgical Pathology	1.3%	$2.29	0.2%	$0.47
Ambulatory excluding ED	Other Tests	40.7%	$11.89	71.0%	$24.03
Ambulatory excluding ED	Anesthesiology	0.8%	$1.52	0.6%	$1.09
Ambulatory excluding ED	Eligible Procedures	0.0%	$0.00	94.9%	$1,072.27
Ambulatory excluding ED	Ambulatory Proc. NOC	24.6%	$116.37	32.9%	$334.31
Ambulatory excluding ED	Ambulatory Svcs. NOC	92.5%	$64.37	93.4%	$553.35
Inpatient	All Facility Services	0.9%	$205.63	0.7%	$65.64
Inpatient	All Professional Services	11.2%	$14.61	21.0%	$33.60

Place of Service	Service Type	Single Index Procedure *Share of Episodes*	Single Index Procedure *Payments per Episode*	Multiple Index Procedures *Share of Episodes*	Multiple Index Procedures *Payments per Episode*
ED	All Services	6.2%	$8.83	17.2%	$12.93
1 DAY AFTER INDEX PROCEDURE DATE					
Ambulatory excluding ED	E&M	9.4%	$6.46	48.1%	$27.82
Ambulatory excluding ED	Imaging	3.1%	$6.46	5.8%	$9.39
Ambulatory excluding ED	Laboratory Tests	9.7%	$4.66	70.3%	$28.64
Ambulatory excluding ED	Surgical Pathology	0.2%	$0.22	0.0%	$0.04
Ambulatory excluding ED	Other Tests	5.5%	$2.06	52.7%	$13.79
Ambulatory excluding ED	Anesthesiology	0.1%	$0.25	0.1%	$0.09
Ambulatory excluding ED	Eligible Procedures	0.0%	$0.00	2.0%	$91.77
Ambulatory excluding ED	Ambulatory Proc. NOC	2.4%	$26.68	7.2%	$26.89
Ambulatory excluding ED	Ambulatory Svcs. NOC	8.2%	$3.37	47.9%	$21.43
Inpatient	All Facility Services	0.3%	$48.92	0.3%	$26.12
Inpatient	All Professional Services	5.3%	$12.34	19.1%	$15.30
ED	All Services	1.6%	$1.77	5.3%	$2.29
2 DAYS AFTER INDEX PROCEDURE DATE					
Ambulatory excluding ED	E&M	4.4%	$3.47	4.8%	$3.31
Ambulatory excluding ED	Imaging	1.6%	$2.63	1.8%	$1.89
Ambulatory excluding ED	Laboratory Tests	3.2%	$1.88	5.3%	$2.39
Ambulatory excluding ED	Surgical Pathology	0.1%	$0.18	0.0%	$0.04
Ambulatory excluding ED	Other Tests	1.5%	$0.84	3.6%	$1.03
Ambulatory excluding ED	Anesthesiology	0.1%	$0.16	0.0%	$0.04
Ambulatory excluding ED	Eligible Procedures	0.0%	$0.00	0.6%	$28.99
Ambulatory excluding ED	Ambulatory Proc. NOC	1.2%	$9.23	1.4%	$6.75
Ambulatory excluding ED	Ambulatory Svcs. NOC	1.9%	$2.00	4.1%	$5.09
Inpatient	All Facility Services	0.2%	$26.29	0.1%	$11.54
Inpatient	All Professional Services	1.9%	$7.66	2.6%	$3.37

Place of Service	Service Type	Single Index Procedure *Share of Episodes*	Single Index Procedure *Payments per Episode*	Multiple Index Procedures *Share of Episodes*	Multiple Index Procedures *Payments per Episode*
ED	All Services	0.7%	$1.61	1.3%	$2.77
3 DAYS AFTER INDEX PROCEDURE DATE					
Ambulatory excluding ED	E&M	4.4%	$3.42	3.9%	$2.91
Ambulatory excluding ED	Imaging	1.5%	$2.38	1.5%	$1.60
Ambulatory excluding ED	Laboratory Tests	2.9%	$1.39	3.7%	$1.69
Ambulatory excluding ED	Surgical Pathology	0.1%	$0.16	0.1%	$0.12
Ambulatory excluding ED	Other Tests	1.3%	$0.74	2.2%	$0.76
Ambulatory excluding ED	Anesthesiology	0.1%	$0.15	0.0%	$0.04
Ambulatory excluding ED	Eligible Procedures	0.0%	$0.00	0.5%	$26.60
Ambulatory excluding ED	Ambulatory Proc. NOC	1.1%	$7.59	1.1%	$6.08
Ambulatory excluding ED	Ambulatory Svcs. NOC	1.5%	$1.92	2.3%	$4.28
Inpatient	All Facility Services	0.2%	$29.22	0.2%	$12.98
Inpatient	All Professional Services	1.5%	$6.70	1.3%	$2.32
ED	All Services	0.6%	$1.54	1.0%	$2.67
4 DAYS AFTER INDEX PROCEDURE DATE					
Ambulatory excluding ED	E&M	4.8%	$3.80	4.5%	$3.35
Ambulatory excluding ED	Imaging	1.5%	$2.46	1.6%	$1.65
Ambulatory excluding ED	Laboratory Tests	2.7%	$1.36	3.6%	$1.82
Ambulatory excluding ED	Surgical Pathology	0.1%	$0.21	0.1%	$0.11
Ambulatory excluding ED	Other Tests	1.3%	$0.83	2.1%	$0.84
Ambulatory excluding ED	Anesthesiology	0.1%	$0.21	0.0%	$0.05
Ambulatory excluding ED	Eligible Procedures	0.0%	$0.00	0.5%	$27.73
Ambulatory excluding ED	Ambulatory Proc. NOC	1.1%	$6.90	1.1%	$5.99
Ambulatory excluding ED	Ambulatory Svcs. NOC	1.3%	$2.20	2.1%	$5.67
Inpatient	All Facility Services	0.6%	$142.16	0.4%	$35.88
Inpatient	All Professional Services	1.9%	$15.41	1.4%	$3.38

Place of Service	Service Type	Single Index Procedure *Share of Episodes*	Single Index Procedure *Payments per Episode*	Multiple Index Procedures *Share of Episodes*	Multiple Index Procedures *Payments per Episode*
ED	All Services	0.6%	$1.55	1.1%	$2.86
5 DAYS AFTER INDEX PROCEDURE DATE					
Ambulatory excluding ED	E&M	5.7%	$4.59	5.6%	$4.25
Ambulatory excluding ED	Imaging	1.7%	$2.68	1.7%	$1.94
Ambulatory excluding ED	Laboratory Tests	2.7%	$1.47	3.6%	$2.03
Ambulatory excluding ED	Surgical Pathology	0.2%	$0.23	0.1%	$0.08
Ambulatory excluding ED	Other Tests	1.5%	$0.92	2.3%	$0.90
Ambulatory excluding ED	Anesthesiology	0.1%	$0.26	0.0%	$0.05
Ambulatory excluding ED	Eligible Procedures	0.0%	$0.00	0.5%	$25.59
Ambulatory excluding ED	Ambulatory Proc. NOC	1.3%	$8.12	1.3%	$6.14
Ambulatory excluding ED	Ambulatory Svcs. NOC	1.4%	$2.21	2.0%	$5.38
Inpatient	All Facility Services	0.7%	$160.23	0.4%	$49.15
Inpatient	All Professional Services	2.3%	$17.84	1.6%	$4.65
ED	All Services	0.6%	$1.48	1.0%	$2.57
6 DAYS AFTER INDEX PROCEDURE DATE					
Ambulatory excluding ED	E&M	8.0%	$6.38	7.7%	$5.88
Ambulatory excluding ED	Imaging	2.1%	$3.62	2.0%	$2.19
Ambulatory excluding ED	Laboratory Tests	3.3%	$1.80	4.1%	$2.07
Ambulatory excluding ED	Surgical Pathology	0.2%	$0.33	0.1%	$0.13
Ambulatory excluding ED	Other Tests	1.9%	$1.20	2.8%	$1.12
Ambulatory excluding ED	Anesthesiology	0.2%	$0.31	0.0%	$0.09
Ambulatory excluding ED	Eligible Procedures	0.0%	$0.00	0.7%	$37.70
Ambulatory excluding ED	Ambulatory Proc. NOC	1.6%	$9.81	1.6%	$7.87
Ambulatory excluding ED	Ambulatory Svcs. NOC	1.7%	$2.61	2.4%	$5.38
Inpatient	All Facility Services	0.8%	$194.75	0.4%	$44.75
Inpatient	All Professional Services	2.9%	$22.57	1.7%	$4.84

Place of Service	Service Type	Single Index Procedure *Share of Episodes*	Single Index Procedure *Payments per Episode*	Multiple Index Procedures *Share of Episodes*	Multiple Index Procedures *Payments per Episode*
ED	All Services	0.6%	$1.44	0.9%	$2.14
7 DAYS AFTER INDEX PROCEDURE DATE					
Ambulatory excluding ED	E&M	10.7%	$8.38	10.6%	$7.95
Ambulatory excluding ED	Imaging	2.6%	$4.61	2.9%	$3.14
Ambulatory excluding ED	Laboratory Tests	4.2%	$2.27	5.3%	$3.17
Ambulatory excluding ED	Surgical Pathology	0.2%	$0.40	0.2%	$0.41
Ambulatory excluding ED	Other Tests	2.4%	$1.43	4.0%	$1.38
Ambulatory excluding ED	Anesthesiology	0.2%	$0.43	0.0%	$0.08
Ambulatory excluding ED	Eligible Procedures	0.0%	$0.00	1.5%	$73.89
Ambulatory excluding ED	Ambulatory Proc. NOC	2.0%	$15.02	2.1%	$13.43
Ambulatory excluding ED	Ambulatory Svcs. NOC	2.0%	$2.84	3.2%	$9.04
Inpatient	All Facility Services	1.0%	$233.63	0.4%	$48.65
Inpatient	All Professional Services	3.5%	$26.89	2.0%	$6.07
ED	All Services	0.6%	$1.36	0.9%	$2.12

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