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ASSESSING QUALITY DATA REPORTING BY AMBULATORY SURGERY CENTERS

Jean M. Mitchell, Ph.D.*

INTRODUCTION

Ambulatory surgery centers (ASCs) are freestanding facilities where outpatient surgical procedures, diagnostic procedures, or both are performed (i.e., no overnight stay).¹ These facilities have grown at an accelerated rate since the early 2000s as the number of Medicare-certified ASCs increased annually by 6.7% from 2002 through 2007, and the total number of ASCs grew from about 3,600 in 2002 to more than 5,300 in 2011.² The unprecedented growth of the ASC industry can be attributed to a myriad of factors.³ While this growth has slowed significantly in recent years, in 2015 the number of ASCs was close to 5,500 and exceeded the number of acute care general hospitals.⁴

* Professor of Public Policy, McCourt School of Public Policy, Georgetown University. This Article was prepared for 24th Annual Clifford Symposium on Tort Law and Social Policy, April 19–20, 2018, Chicago, Illinois. Please do not quote without permission from the author.

1. MEDICARE PAYMENT ADVISORY COMM'N, REPORT TO THE CONGRESS: MEDICARE PAYMENT POLICY, at xv (2012) [hereinafter MEDPAC 2012].

2. *Id.* at 115–16, 123; MEDICARE PAYMENT ADVISORY COMM'N, REPORT TO THE CONGRESS: MEDICARE PAYMENT POLICY 116 (2009) [hereinafter MEDPAC 2009].

3. Among these are technological advances in anesthesia administration and surgical techniques, patient convenience, ease of scheduling procedures, shorter waiting times, and Medicare's coverage of colonoscopy procedures beginning in 1998. See MEDPAC 2009, *supra* note 2, at 116 ("For patients, ASCs offer more convenient locations, shorter waiting times, and easier scheduling . . ."); Gabor Mezei & Francis Chung, *Return Hospital Visits and Hospital Readmissions After Ambulatory Surgery*, 230 ANNALS SURGERY 721, 725–26 (1999) (discussing the low rate of adverse events following the use of current anesthesia and surgical practices). Other factors that fostered the growth of ASCs included the elimination of certificate of need laws by many states, physicians' desires to exercise more control over management and scheduling decisions, and the exemption of ASCs from the federal and most state prohibitions on the practice of self-referral. See Lawrence P. Casalino, Kelly J. Devers, & Linda R. Brewster, *Focused Factories? Physician-Owned Specialty Facilities*, 22 HEALTH AFF., NOV./DEC. 2003, at 56, 57, 60; see also John K. Iglehart, *The Emergence of Physician-Owned Specialty Hospitals*, 352 NEW ENG. J. MED. 78, 78–79, 81 (2005); Scott Becker & Marcy Biala, *Ambulatory Surgery Centers—Current Business and Legal Issues*, 27 J. HEALTH CARE FIN., Winter 2000, at 1, 3–5. The rationale for this safe harbor exception for ASCs is that these facilities were regarded as an extension of the physician's practice. Becker & Biala, *supra*, at 3.

4. MEDICARE PAYMENT ADVISORY COMM'N, REPORT TO THE CONGRESS: MEDICARE PAYMENT POLICY, at xiii–xiv (2017) [hereinafter MEDPAC 2017].

Congress enacted two major legislative reforms designed to address payment and quality concerns associated with ASCs during the last decade. In January 2008, the Medicare program implemented the new ASC payment system, which was phased in over a four-year period.⁵ The objective of revamping the ASC payment system was to align ASC payment rates with the hospital outpatient prospective payment system (OPPS).⁶ Under the new reimbursement system, ASC payment rates for individual services are determined using the same procedure groups, known as ambulatory payment classification categories, and the same set of weights as the OPSS.⁷ Each ambulatory payment classification (APC) category has similar clinical and cost characteristics.⁸ The federal statute stipulated the new system be budget-neutral, which means that spending under the old and new payment systems must be equivalent.⁹ For this reason, ASC payments are set as a fraction of the OPSS payments; the latter vary by year and are contingent on changes in the relative service costs as well as input prices.¹⁰ The dollar amount for each APC category is the product of the specific APC weight multiplied by a conversion factor.¹¹ The payment rate is the same for all procedures in a given APC. The ASC conversion factor is typically about 60% of the OPSS conversion factor.¹²

Although the revamped ASC payment system and the hospital OPSS dramatically changed how ASCs and hospitals are reimbursed for outpatient surgical and diagnostic procedures, little research has examined the effects of either payment system reform. Using outpatient discharge data from Florida spanning the years 1997 through 2008, He and Mellor examined the effect of the OPSS on hospital outpatient volume.¹³ They found that the implementation of the hos-

5. MEDPAC 2009, *supra* note 2, at 112.

6. *Id.* at 116; MEDPAC 2012, *supra* note 1, at 119.

7. MEDPAC 2012, *supra* note 1, at 119.

8. *Id.* at 50.

9. MEDPAC 2009, *supra* note 2, at 77–78.

10. *Id.* at 114.

11. Daifeng He & Jennifer M. Mellor, *Hospital Volume Responses to Medicare's Outpatient Prospective Payment System: Evidence from Florida*, 31 J. HEALTH ECON. 730, 732 (2012) (“To determine payment rates for each APC, the Centers for Medicare and Medicaid Services (CMS) first establishes a relative weight for each APC; this weight reflects the resource costs associated with services in the APC and was initially based on the national median cost of services within each APC as determined by the Medicare claims data and cost reports prior to 2000. The relative weight is then multiplied by a conversion factor to arrive at a national unadjusted payment rate for each APC.”).

12. MEDICARE PAYMENT ADVISORY COMM'N, REPORT TO THE CONGRESS: MEDICARE PAYMENT POLICY 129 (2018).

13. See generally He & Mellor, *supra* note 11.

pital OPPS on Medicare and private fee-for-service (FFS) volume responses varied by each hospital's exposure to Medicare.¹⁴ Hospitals with large Medicare shares responded to the OPPS with smaller Medicare outpatient volume reductions compared to hospitals with smaller Medicare shares.¹⁵ Further, highly exposed hospitals responded to the OPPS with larger increases in private FFS outpatient procedures relative to less exposed hospitals.¹⁶

In 2016, Mitchell and Carey estimated ASC production costs using financial and claims records for procedures performed by surgery centers that specialize in gastroenterology (GI) procedures (i.e., colonoscopy and endoscopy).¹⁷ Comparisons of the costs of each procedure with 2013 national Medicare ASC payment rates suggest that Medicare payments exceed production costs for both colonoscopy and endoscopy.¹⁸ Their findings indicate that Medicare ASC payment rates are more than adequate and raise concerns that even under the new ASC reimbursement system, Medicare continues to overpay for commonly performed outpatient procedures.¹⁹

The second major reform addressed concerns about quality of care for procedures performed in ASCs. In 2012, Centers for Medicare and Medicaid Services (CMS) finalized a pay-for-reporting, quality-data initiative known as the Ambulatory Surgical Center Quality Reporting (ASCQR) program.²⁰ ASCs must report quality of care data for standardized measures to receive the full annual update to their ASC annual payment rate beginning with calendar year (CY) 2014 payments.²¹ ASCs that do not successfully submit their data will have their payment update reduced by 2.0 percentage points.²² Initially ASCs were required to report quality G-codes on five quality measures, or otherwise they would face Medicare payment reductions.²³ ASCs were considered successful reporters on these measures if 50%

14. *Id.* at 743.

15. *Id.* at 741–43.

16. *Id.* at 742.

17. See generally Jean M. Mitchell & Kathleen Carey, *A Comparison of Ambulatory Surgery Center Production Costs and Medicare Payments*, 54 *MED. CARE* 126 (2016).

18. *Id.* at 129–30.

19. See generally *id.*

20. MEDPAC 2012, *supra* note 1, at 116; see also *ASC Quality Reporting*, CMS.GOV, <https://www.cms.gov/Medicare/Quality-Initiatives-Patient-Assessment-Instruments/ASC-Quality-Reporting/index.html> (last updated Jan. 11, 2018, 9:26 AM).

21. MEDPAC 2012, *supra* note 1, at 116.

22. *Ambulatory Surgical Center Quality Reporting Program Overview*, QUALITYNET, <http://qualitynet.org/dcs/ContentServer?c=page&pagename=qnetPublic%2FPage%2FQnetTier2&cid=1228772497737> (last visited Nov. 23, 2018).

23. ASCs are required to report quality data codes on five quality measures or face payment reductions. The quality data codes begin with the letter G followed by a four-digit number.

of their Medicare visits during the year included quality data G-codes. Notably, performance on these quality indicators did not affect an ASC's payment rate; only data submission mattered.²⁴

Given that this quality reporting system was only adopted within the last five years, little research has examined whether ASCs are complying with this new reporting requirement. This proposed research examines this significant gap in knowledge. The study has three objectives. The first is to investigate whether ASCs are in compliance with these quality reporting requirements. The second is to examine if ASC specialization (i.e., focus on a single product line versus a multi-product array of procedures) influences whether an ASC is in compliance with the quality reporting requirements. The third objective is to ascertain if degree of specialization is associated with the likelihood that an ASC experiences an adverse outcome. Our analysis employs ambulatory and outpatient procedure data from Pennsylvania for the years 2014 through 2017 to address these questions.

I. BACKGROUND ON QUALITY OF CARE CONCERNS IN ASCs

The impetus for addressing quality of care for procedures performed in ASCs was the increased incidence of healthcare associated infections (HACs) and patient notifications resulting from deficient practices in infection control in ASCs.²⁵ The specific circumstance that put the spotlight on this concern involved an outbreak of Hepatitis C that was attributed to poor infection control practices in two Nevada ASCs.²⁶ These ASCs routinely employed deficient unsafe injection practices that included reuse of syringes for individual patients, reuse of single-use vials of propofol for multiple patients, and lax hand hygiene practices.²⁷ About 100 patients exposed to such lax infection control practices developed Hepatitis C.²⁸ The Nevada Board of Licensure and Certification inspected all 51 of the state's ASCs using a Centers for Disease Control and Prevention (CDC) infection control

Quality Data Codes, AMBULATORY SURGERY CTR. ASS'N, <https://www.ascassociation.org/federal-regulations/qualityreporting/qualitydatacodes> (last visited Nov. 23, 2018).

24. AMBULATORY SURGICAL CTR. QUALITY REPORTING PROGRAM, SUCCESSFUL REPORTING IN THE ASCQR PROGRAM 3 (2018).

25. Melissa K. Schaefer et al., *Infection Control Assessment of Ambulatory Surgery Centers*, 303 JAMA 2273, 2273 (2010).

26. Philip S. Barie, *Infection Control Practices in Ambulatory Surgery Centers*, 303 JAMA 2295, 2296 (2010).

27. *Id.*

28. *Id.*

audit protocol and found 28 facilities had deficient infection control practices.²⁹

The results of this investigation prompted CMS to collaborate with the CDC to conduct inspections of ASCs using a new infection control survey instrument to document clinical practices.³⁰ Sixty-eight ASCs in three states were evaluated: 32 in Maryland, 16 in North Carolina, and 20 in Oklahoma.³¹ Results show that breeches in infection control practices were commonplace. Two-thirds of the ASCs incurred at least one lapse in infection control.³² Almost 18% of the surgery centers experienced lapses in three or more of the five infection control categories.³³ The most common deficiencies included poor handling of blood glucose monitoring, use of single dose vials for multiple patients, and non-adherence to equipment reprocessing protocols.³⁴

II. ASC QUALITY REPORTING SYSTEM

Quality measures required to be reported in 2014 included: (1) patient burn (ASC-1); (2) patient fall (ASC-2); (3) wrong site, wrong side, wrong patient, wrong procedure, wrong implant (ASC-3); (4) hospital transfer/admission (ASC-4); and (5) prophylactic intravenous antibiotic timing (ASC-5).³⁵ In 2015, two additional measures were added to the list: safe-surgery checklist use (ASC-6) and ASC volume data on selected ASC surgical procedures (ASC-7).³⁶ Three more quality indicators were added to the list in 2016: (1) influenza vaccination coverage among health care professionals (ASC-8); (2) endoscopy/polyp surveillance following a colonoscopy on average risk patients (ASC-9); and (3) endoscopy/polyp surveillance following colonoscopy for patients with a history of adenomatous polyps (ASC-10).³⁷ We can only evaluate ASC categories 1–5 as these are reported on UB 1500 forms (i.e., the standard paper claim form to bill Medicare for services rendered by FFS providers). Facilities who treated less than 240 Medicare visits (i.e., claims) were not subject to the re-

29. Schaefer et al., *supra* note 25, at 2274.

30. *Id.*

31. *Id.* at 2273.

32. *Id.*

33. *Id.*

34. *Id.*

35. *2014 Final Rule Quality Reporting FAQs*, AMBULATORY SURGERY CTR. ASS'N, <https://www.ascassociation.org/federalregulations/qualityreporting/2014finalrulequalityreportingfaqs> (last visited Jan. 31, 2019).

36. *Quality Reporting*, AMBULATORY SURGERY CTR. ASS'N, <https://www.ascassociation.org/federalregulations/qualityreporting> (last visited Nov. 23, 2018). For CY 2019, ASC-5 through ASC-7 are not required. *ASC Quality Reporting*, *supra* note 20.

37. *ASC Quality Reporting*, *supra* note 20.

porting requirements. A list and description of the G-codes used to construct the quality indicators are reported in Table 1.³⁸

III. DATA

The analysis employs panel data from freestanding ASCs operating in Pennsylvania during 2014 through the second quarter of 2017. A focus on Pennsylvania is informative for a number of reasons. Pennsylvania is home to many ASCs; as of July 2003, the state had opened 113 ASCs, but that number more than doubled over the next decade to 288 ASCs by the end of 2014.³⁹ Pennsylvania is the only state that collects operating expenses for ASCs. The data collection procedures are standardized and well established, suggesting that reporting reliability and accuracy is high. Pennsylvania ASCs also vary widely in terms of size and degree of specialization, allowing sufficient sample size to test hypotheses regarding the role of specialization on quality reporting.⁴⁰

The Pennsylvania Health Care Cost Containment Council (PHC4) has collected inpatient discharge and outpatient procedure data from hospitals and outpatient procedure data from ASCs since 1996.⁴¹ During fiscal year 2013, almost 3.1 million outpatient procedures were performed at either Pennsylvania ASCs or hospital outpatient surgery departments.⁴² The share of outpatient procedures performed at freestanding ASCs exceeded 30%.⁴³ The Pennsylvania ASC data contains detailed information on patient diagnoses and procedures as well as the physician who performed the surgical procedure.⁴⁴ For ASCs, PHC4 collects aggregate financial data annually, including net patient

38. See *infra* Appendix, Table 1; *Quality Data Codes*, AMBULATORY SURGERY CENTER ASS'N, <https://www.ascassociation.org/federalregulations/qualityreporting/qualitydatacodes> (last visited Nov. 23, 2018).

39. 2 PA. HEALTH CARE COST CONTAINMENT COUNCIL, FINANCIAL ANALYSIS 2014: AN ANNUAL REPORT ON THE FINANCIAL HEALTH OF PENNSYLVANIA'S AMBULATORY SURGERY CENTERS 1 (2015) [hereinafter PHC4 2014 FINANCIAL ANALYSIS]; 2 PA. HEALTH CARE COST CONTAINMENT COUNCIL, FINANCIAL ANALYSIS 2003: AN ANNUAL REPORT ON THE FINANCIAL HEALTH OF PENNSYLVANIA'S NON-GENERAL ACUTE CARE FACILITIES 6 (2004) ("Between July 2003 and May 2004, 48 new ASCs opened, bringing the total to 161.").

40. See generally PHC4 2014 FINANCIAL ANALYSIS, *supra* note 39.

41. *About the Council*, PHC4, www.phc4.org/council/mission.htm (last visited Jan. 31, 2019).

42. 2 PA. HEALTH CARE COST CONTAINMENT COUNCIL, FINANCIAL ANALYSIS 2013: AN ANNUAL REPORT ON THE FINANCIAL HEALTH OF PENNSYLVANIA'S AMBULATORY SURGERY CENTERS 7 (2014).

43. *Id.*

44. See, e.g., *Public Reports—Hospital Performance Reports*, PHC4, www.phc4.org/reports/hpr/ (last visited Jan. 31, 2019).

revenue and total operating expenses.⁴⁵ In addition, the Pennsylvania Department of Health publishes annual data from a mandatory survey of ASCs which contains information on the number of operating rooms, medical staff with privileges, paid and contracted staff, types of services offered, and the total number of patient visits and procedures performed.⁴⁶

IV. CLASSIFICATION OF ASCS BY TYPE

Surgical or diagnostic procedures performed in ASCs included all claims with a Current Procedural Terminology (CPT) code ranging from 10021–69990 or Healthcare Common Procedure Coding System (HCPCS) temporary codes G0104–G0106 and G0120–G0121.⁴⁷ The PHC4 does not collect information that would enable one to identify single specialty versus multispecialty ASCs.⁴⁸ Therefore, we developed algorithms based on CPT and HCPCS codes to identify the types of procedures performed in each ASC. Specifically, we developed distinct algorithms to identify single specialty and multispecialty ASCs. We identified four types of single specialty ASCs and three classes of multispecialty facilities that focus on two, three, or four or more distinct product lines. To qualify as a single specialty GI ASC, at least 75% of the total procedures performed at the facility in a given year must be either colonoscopy procedures, endoscopy procedures, or both. Single specialty eye ASCs include those whose share of eye pro-

45. *Public Reports—Financial Analysis*, PHC4, www.phc4.org/reports/fin (last visited Jan. 31, 2019).

46. *Ambulatory Surgery Center Reports*, PA. DEP'T HEALTH, <https://www.health.pa.gov/topics/HealthStatistics/HealthFacilities/SurgeryCenterreports/Pages/ambulatory-surgery-center-reports.aspx> (last visited Jan. 31, 2019).

47. The Healthcare Common Procedure Coding System (HCPCS) is divided into two principal subsystems, referred to as level I and level II of the HCPCS.

Level I of the HCPCS is comprised of Current Procedural Terminology (CPT-4), a numeric coding system maintained by the American Medical Association (AMA). The CPT-4 is a uniform coding system consisting of descriptive terms and identifying codes that are used primarily to identify medical services and procedures furnished by physicians and other health care professionals. These health care professionals use the CPT-4 to identify services and procedures for which they bill public or private health insurance programs. Level I of the HCPCS, the CPT-4 codes, does not include codes needed to separately report medical items or services that are regularly billed by suppliers other than physicians.

Level II of the HCPCS is a standardized coding system that is used primarily to identify products, supplies, and services not included in the CPT-4 codes, such as ambulance services and durable medical equipment, prosthetics, orthotics, and supplies (DMEPOS) when used outside a physician's office. Because Medicare and other insurers cover a variety of services, supplies, and equipment that are not identified by CPT-4 codes, the level II HCPCS codes were established for submitting claims for these items.

48. This information is based on discussions with the staff at the PHC4. They collect data and report raw numbers but do not further classify ASCs by degree of specialization.

cedures performed at the facility was at least 70%. A similar criterion was employed to distinguish surgery centers that specialize in plastic surgery. Our classification approach adopted a lower threshold of 60% to identify orthopedic/spinal surgery centers. We classified multispecialty ASCs by the number of distinct product lines offered by each facility in a given year: two major categories, three types of outputs, or four or more types of procedure categories. This classification scheme was defined annually so an ASC might be classified as a single specialty ASC in one year and then be reclassified as a two-service multiproduct ASC if the facility added a second product line.

V. SAMPLE

The unit of observation for the sample employed in the analysis was the ASC in a given year. Our analytical sample was comprised of 820 ASC year observations.⁴⁹ For those facilities classified as single specialty ASCs, we identified 220 GI ASC years, 142 eye ASC years, 34 orthopedic surgery facility years, and 19 plastic surgery center years. For those facilities classified as multispecialty ASCs, we identified 200 ASC years that offered two product lines, 158 ASC years that focused on three distinct product services, and 47 ASC years that provided four or more product lines.

VI. OUTCOME MEASURES AND ANALYSIS

For each ASC we calculated the number of Medicare surgical visits in each year during which a diagnostic or surgical procedure was performed. We summed Medicare FFS, Medicare point of service plans (POS), Medicare Health Maintenance Organizations (HMOs), and Medicare Preferred Provider Organizations (PPOs) to calculate total Medicare surgical visits. The latter three plan types comprise Medicare Advantage. We analyzed two indicators of quality reporting. The first, Quality Reporting Any, was a dichotomous indicator equal to 1 if the ASC reported quality measures for at least 10% of their ambulatory surgical Medicare visits in a given year. The second, Quality Reporting Compliant, was a dichotomous indicator equal to 1 if the ASC reported quality measures for at least 50% of the ambulatory surgical Medicare visits in a given year. We first conducted descriptive analysis to assess if there were any differences in reporting of quality indicators by ASC type. Next, we used regression analysis (linear

49. The unit of observation is the ASC facility in a given year. So, for example, ASC-1 might be included in the data file for the years 2014, 2015, 2016, and 2017; therefore, there would be four ASC years associated with ASC-1.

probability and logit models) to ascertain if the likelihood that a facility was quality compliant varied systematically by ASC type. Finally, we employed both descriptive and regression analysis to assess whether the ASC had one or more adverse outcomes in a given year. We constructed a dichotomous indicator—Adverse Outcome—equal to 1 if the ASC reported one or more problem G-codes in a given year; these codes include G8908, G8910, G8912, and G8917.

VII. RESULTS

Table 2 shows the percentage of ASCs by type reporting quality indicators for at least 10% of ASC visits by Medicare beneficiaries in each year and across all four years.⁵⁰ Among single specialty facilities, those that focus on orthopedic and spinal procedures or plastic surgery were more likely to report quality indicators on at least 10% of ASC visits by Medicare patients. This reporting percentage ranged from 58%–86% and the mean across all four years was close to 68% for all single specialty orthopedic facilities. The percentage for plastic surgery centers was also 58%. In contrast, this percentage was much lower for single specialty facilities that focused on either GI or eye procedures. The proportion of these two facility types that reported quality codes on at least 10% of Medicare ASC visits ranged from 42%–50%.

The reporting of quality indicators on at least 10% of Medicare ASC visits also varied among multispecialty ASCs. Facilities that offer a wide array of procedures were much more likely to report quality codes on visits by Medicare patients. The average reporting percentage for multispecialty ASCs that offer four or more product lines was close to 70%. In comparison, the mean reporting percentages for multispecialty ASCs that focus on two and three distinct types of services were about 34% and 42%, respectively.

The tabulations presented in Table 3 show the percentage of ASCs deemed to be quality compliant (i.e., reporting quality codes on at least 50% of ASC visits by Medicare beneficiaries in a given year) after controlling for both degree of specialization and year.⁵¹ While the pattern of results mirrors the findings reported in Table 2, the proportion of ASCs that met the 50% threshold to be earmarked as quality compliant was much lower. Among single specialty facilities, orthopedic ASCs were much more likely to reach the 50% threshold than other single specialty ASCs. The mean across all years was 56%

50. See *infra* Appendix, Table 2.

51. See *infra* Appendix, Table 3.

for orthopedic facilities compared to about 33% for eye and GI ASCs and 21% for ASCs that focus on plastic surgery. Among multispecialty ASCs, those offering four or more product lines were most likely to meet the 50% threshold, as almost 64% of this ASC type was deemed to be quality compliant. In contrast, only 25% of two product ASCs and 34% of three product ASCs reported quality codes on at least 50% of their ASC visits by Medicare patients.

Table 4 reports regression results predicting the likelihood that an ASC was quality compliant in a given year. The linear probability estimates (reported in column A) indicate that single focused orthopedic surgery centers were 22.7 percentage points more likely to meet the quality reporting threshold of 50% in comparison to single speciality GI ASCs.⁵² Multispecialty surgery centers that offer four or more distinct products were nearly 30.6 percentage points more likely to be deemed quality compliant relative to ASCs that focus solely on GI procedures. Odd ratio results from a logistic regression model (column C) reveal that orthopedic single speciality ASCs were about 2.5 times as likely to be deemed quality compliant compared to single speciality facilities that focus on GI procedures. Multispecialty ASCs that provide a wide array of products were almost 3.5 times as likely to meet the quality threshold of 50% of Medicare visits compared to single speciality ASCs that concentrate on GI procedures. We estimated an alternative specification that included a variable identifying ASCs with high Medicare shares (i.e., 30% or more of total visits). Surprisingly, the Medicare share was not statistically significant and had negligible effects on the estimated parameters reported in Table 4.

Table 5 shows the percentage of ASCs who experienced at least one adverse event controlling for degree of specialization and year.⁵³ Among single specialty facilities, orthopedic surgery ASCs were the least likely to incur an adverse event; the mean was 13%. The incidence rate of an adverse event occurring at both GI ASCs and eye ASCs was almost twice as high as the rate at orthopedic surgery ASCs. Among multispecialty facilities, the probability that a facility incurred at least one adverse event ranged from 12% for three product surgery centers to 25% for those that offered two products. Regression analysis, however, revealed the probability of a facility incurring an adverse event was not associated with ASC specialization.

52. See *infra* Appendix, Table 4.

53. See *infra* Appendix, Table 5.

VIII. SENSITIVITY ANALYSIS

We constructed a more restricted measure of total Medicare visits, comprised of Medicare FFS claims only, to evaluate whether ASCs were less predisposed to report quality indicators on Medicare Advantage participants. The percentage of ASCs deemed to be quality compliant was higher in comparison to results based on the more comprehensive measure which includes both Medicare FFS and Medicare Advantage beneficiaries. For example, almost 67% of single specialty orthopedic surgery centers were deemed to be quality compliant under this more restrictive measure, compared to 56% under the more comprehensive measure. Moreover, regression results using this more restrictive measure were consistent with the findings reported in Table 4. For example, single specialty orthopedic surgery centers were about 20 percentage points more likely to meet the quality threshold of 50% in comparison to single specialty GI ASCs ($p < 0.001$). Multispecialty ASCs that offer two distinct products were almost 17 percentage points less likely than single specialty GI centers to be quality compliant ($p < 0.001$). Conversely, ASCs that offer a wide array of product lines were almost 19 percentage points more likely to be earmarked as meeting the quality threshold relative to single specialty ASCs that focused solely on GI procedures ($p < 0.001$).

CONCLUSION

An outbreak of Hepatitis C, which affected more than 100 patients treated at two Nevada ASCs in 2010, provided the impetus for the state's licensure board to investigate infection control practices at each of the state's fifty-one ASCs.⁵⁴ Almost 60% of the state's ASCs were found to have deficient infection control practices.⁵⁵ These findings prompted CMS to collaborate with the CDC to conduct a survey of ASCs to document the magnitude of the problem. Results from surveys conducted in three states documented that breaches in infection control practices were widespread. Subsequently, in 2012 CMS implemented a pay-for-reporting quality data initiative known as the Ambulatory Surgical Center Quality Reporting (ASCQR) program.⁵⁶

To my knowledge, this is the first initiative to investigate whether ASCs are in compliance with these quality reporting requirements. Following the CMS guidelines, we classified an ASC as being quality compliant in a given year if quality codes were reported on at least

54. Barie, *supra* note 26, at 2296; Schaefer et al., *supra* note 25, at 2274.

55. Barie, *supra* note 26, at 2296; Schaefer et al., *supra* note 25, at 2273.

56. MEDPAC 2012, *supra* note 1, at 116.

50% of surgical Medicare visits. Findings based on analyses of data reporting by four types of single specialty ASCs and three classes of multispecialty ASCs show that the reporting of quality codes on Medicare surgical visits varied significantly by ASC specialization. Among single specialty ASCs, the mean percentage deemed to be quality compliant ranged from a low of 21% for single specialty plastic surgery centers to a high of 56% for single specialty orthopedic ASCs.⁵⁷ Orthopedic single specialty ASCs were about 2.5 times as likely to be deemed quality compliant compared to single specialty facilities that focus on GI. Among multispecialty ASCs, 64% of facilities that offered at least four product lines were deemed to be quality compliant.⁵⁸ Multispecialty ASCs that provide a wide array of products were almost 3.5 times as likely to meet the quality threshold of 50% of Medicare visits compared to single specialty ASCs that concentrate on GI procedures.

A significant proportion of both single and multispecialty ASCs in Pennsylvania did not report quality codes on at least 50% of their Medicare surgical visits. This finding raises concerns as to why these facilities failed to comply with the metrics stipulated by the new CMS reporting system. One possible explanation is that non-compliant ASCs treat low shares of Medicare patients and thus did not feel the need to document such quality codes for procedures performed on Medicare patients. We included a Medicare share variable in the quality compliant regression model to evaluate this hypothesis. Results show that an ASC's Medicare share had no impact on whether the ASC met the 50% threshold to be classified as quality compliant. A second contributing factor may relate to the penalty established by CMS for ASCs that do not successfully report their data. Facilities that fail to submit their quality data are subject to a 2.0 percentage point reduction in their payment update. This penalty may be too small to prompt ASCs to document quality codes on Medicare surgical visits.

Results based on reporting of quality codes for Medicare visits in ASCs located in Pennsylvania indicate that the rate of compliance with the quality reporting system implemented by CMS is low. These findings suggest that the system established by CMS needs to examine if similar patterns of non-compliance are evident elsewhere throughout the United States. If such evidence on non-compliance exists in many other states, CMS should reevaluate and possibly replace the

57. See *infra* Appendix, Table 3.

58. See *infra* Appendix, Table 3.

ASC quality reporting system with one that is based on more stringent reporting requirements. This would result in a more comprehensive set of metrics that also imposes stronger incentives for compliance.

APPENDIX

TABLE 1. Quality data codes and description of ASC quality measures.

Quality Data Code	Description of Quality Measure & Year Used for Payment Determination
G8907	Patient documented to not have experienced any of the following events: burn prior to discharge; a fall within facility; wrong site/side/patient/procedure/implant event; or a hospital transfer or hospital admission upon discharge from the facility
G8908	Patient documented to have received a burn prior to discharge (2014)
G8909	Patient documented not to have received a burn prior to discharge (2014)
G8910	Patient documented to have experience a fall within ASC
G8911	Patient documented not to have a fall within ASC
G8912	Patient documented to have experienced a wrong site, wrong side, wrong patient, wrong procedure or wrong implant event
G8913	Patient documented not to have experienced a wrong site, wrong side, wrong patient, wrong procedure or wrong implant event
G8914	Patient documented to have experienced a hospital transfer or hospital admission upon discharge from an ASC
G8915	Patient documented not to have experienced a hospital transfer or hospital admission upon discharge from an ASC
G8916	Patient with preoperative order for IV antibiotic surgical site infection (SSI) prophylaxis, antibiotic initiated on time
G8917	Patient with preoperative order for IV antibiotic surgical site infection (SSI) prophylaxis, antibiotic not initiated on time
G8918	Patient without preoperative order for IV antibiotic surgical site infection (SSI) prophylaxis

TABLE 2. Percentage of ASCs by type reporting quality indicators for at least 10% of ASC visits by Medicare beneficiaries.⁵⁹

ASC Type	2014	2015	2016	2017	ALL YEARS
Single Specialty GI ASC	45.8% (59)	50.0% (56)	51.8% (54)	54.9% (51)	50.4% (220)
Single Specialty Eye ASC	44.4% (36)	42.9% (35)	41.7% (36)	40.0% (35)	42.2% (142)
Single Specialty Orthopedic ASC	85.7% (8)	66.7% (9)	58.3% (12)	60.0% (5)	67.7% (34)
Single Specialty Plastic Surgery ASC	40.0% (5)	50.0% (6)	75.0% (4)	75.0% (4)	57.9% (19)
Two Product Multispecialty ASC	42.0% (50)	34.1% (44)	36.5% (54)	30.8% (52)	34.5% (200)
Three Product Multispecialty ASC	43.2% (44)	36.4% (44)	41.7% (36)	50.0% (34)	42.4% (158)
Four + Product Multispecialty ASC	60.0% (10)	64.3% (14)	83.3% (12)	72.7% (11)	70.2% (47)

59. The number of facilities of each type in each year that reported quality indicators on at least 10% of ASC visits by Medicare beneficiaries appears in parentheses.

TABLE 3. Percentage of ASCs by type deemed to be quality compliant.⁶⁰

ASC Type	2014	2015	2016	2017	ALL YEARS
Single Specialty GI ASC	30.5% (59)	32.1% (56)	31.5% (54)	39.2% (51)	33.2% (220)
Single Specialty Eye ASC	36.1% (36)	31.4% (35)	36.1% (36)	31.4% (35)	33.8% (142)
Single Specialty Orthopedic ASC	75.0% (8)	55.6% (9)	41.7% (12)	60.0% (5)	55.9% (34)
Single Specialty Plastic Surgery ASC	40.0% (5)	16.7% (6)	0.0% (4)	25.0% (4)	21.0% (19)
Two Product Multispecialty ASC	32.0% (50)	25.0% (44)	22.2% (54)	23.0% (52)	25.5% (200)
Three Product Multispecialty ASC	38.6% (44)	31.8% (44)	30.6% (36)	35.3% (34)	34.2% (158)
Four + Product Multispecialty ASC	50.0% (10)	50.0% (14)	83.3% (12)	72.7% (11)	63.8% (47)

60. ASCs are deemed to be quality compliant if each facility in a given year reports quality indicators on at least 50% of ASC visits by Medicare beneficiaries. The number of facilities of each type in each year is reported in parentheses below the percentage deemed to be quality compliant.

TABLE 4. Regression analysis predicting the probability an ASC was quality compliant in a given year.⁶¹

Variable	Linear Probability	Logit Coefficient	Logit Odds Ratio
Single Specialty Eye ASC	.006 (.051)	.028 (.228)	1.028 (.658, 1.607)
Single Specialty Orthopedic ASC	.227*** (.091)	.936*** (.374)	2.550*** (1.225, 5.308)
Single Specialty Plastic Surgery ASC	-.121 (.099)	-.621 (.580)	.537 (.172, 1.676)
Two Product Multispecialty ASC	-.077 (.044)	-.372 (.216)	.689 (.451, 1.053)
Three Product Multispecialty ASC	.009 (.049)	.044 (.220)	1.046 (.679, 1.611)
Four + Product Multispecialty ASC	.306*** (.077)	1.268*** (.336)	3.554*** (1.841, 6.861)

Notes: N = 820 ASCs.⁶²

***All estimates for the Single Specialty Orthopedic ASC variable and the Four + Product Multispecialty ASC variable are statistically significant ($p < 0.001$).

61. Single specialty GI facilities are the reference category and are captured by the constant term. All comparisons are made with reference to single specialty GI facilities.

62. N is the number of ASCs in a given year summed over three-and-a-half years (2014 through the second quarter of 2017).

TABLE 5. Percentage of ASCs by type who experienced at least one adverse event.⁶³

ASC Type	2014	2015	2016	2017	ALL YEARS
Single Specialty GI ASC	18.5% (27)	25.0% (28)	37.5% (28)	17.9% (28)	24.3% (111)
Single Specialty Eye ASC	37.5% (16)	26.7% (15)	33.3% (15)	0.0% (14)	25.0% (60)
Single Specialty Orthopedic ASC	0.0% (6)	16.7% (6)	14.3% (7)	33.3% (3)	13.0% (23)
Single Specialty Plastic Surgery ASC	50.0% (2)	33.3% (3)	0.0% (3)	0.0% (3)	18.2% (11)
Two Product Multispecialty ASC	30.4% (21)	21.7% (15)	24.6% (17)	23.2% (16)	25.0% (69)
Three Product Multispecialty ASC	15.8% (19)	18.7% (16)	6.7% (15)	5.9% (17)	11.9% (67)
Four + Product Multispecialty ASC	66.7% (6)	22.2% (9)	0.0% (10)	0.0% (8)	18.2% (33)

63. ASCs had to report quality indicators on at least 10% of ASC visits by Medicare beneficiaries to be included in this analysis. The number of facilities of each type in each year is reported in parentheses below the percentage of each facility type that experienced at least one adverse outcome.