Accreditation

Quality of Care in Accredited and Nonaccredited Ambulatory Surgical Centers

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Accreditation of health care facilities is considered a useful way to foster accountability in the provision of patient care.[1–3] Positive accreditation status, often used as a marketing tool, communicates to stakeholders that a given organization has met established benchmarks associated with excellence in processes of care.[4,5] Quality of care has become an important topic,[6,7] particularly for ambulatory surgery centers (ASCs), which have experienced significant growth in the past decade.[8,9] The number of Medicare-certified ASCs increased more than 60%—from 3,028 in 2000 to 4,964 in 2007—and Medicare payments more than doubled, from $1.4 billion to $2.9 billion.

In Florida, ASCs must be accredited by a nationally recognized organization or be subjected to annual licensure surveys conducted by the state regulatory agency.[10] In the United States, ASCs can obtain accreditation by one of three main organizations—the Accreditation Association for Ambulatory Health Care (AAAHC), The Joint Commission, or the American Association for the Accreditation of Ambulatory Surgical Facilities (AAAASF).[11] Although regulations differ by state,[3] accreditation by one of these organizations generally exempts ASCs from annual licensing site visits by their state regulatory agency. In Florida, accredited ASCs may still be subjected to accreditation validity checks conducted annually by the state.[10]

The ultimate goal of any accrediting body, or state regulatory agency, is to ensure quality of care among the organizations for which it has oversight. However, each oversight body establishes and maintains unique criteria with emphasis on different standards of excellence.[2,11] Furthermore, regulators and accreditation bodies have historically focused on processes of care rather than outcomes.[12,13] Thus, despite the growing and increasingly important ambulatory surgical setting, no comparative studies have examined quality outcomes in ASCs that are governed by differing oversight bodies.[14]

This article compares quality outcomes of accredited ASCs operating in Florida with those of nonaccredited facilities. More specifically, we were interested in whether ASCs accredit-

Article-at-a-Glance

Background: Little is known about quality outcomes in accredited and nonaccredited ambulatory surgical centers (ASCs). Quality outcomes in ASCs accredited by either the Accreditation Association for Ambulatory Health Care (AAAHC) or The Joint Commission were compared with those of nonaccredited ASCs in Florida.

Methods: Patient-level ambulatory surgery and hospital discharge data from Florida for 2004 were merged and analyzed. Multivariate logistic regressions were estimated separately for the five most common ambulatory surgical procedures: colonoscopy, cataract removal, upper gastroendoscopy, arthroscopy, and prostate biopsy. Statistical models examined differences in risk-adjusted 7-day and 30-day unexpected hospitalizations between nationally accredited and nonaccredited ASCs. In addition to risk adjustment, each model controlled for facility volume of procedure and patient demographic characteristics including gender, race, age, and insurance type.

Results: In multivariate analyses that controlled for facility volume and patient characteristics, patients at Joint Commission–accredited facilities were still significantly less likely to be hospitalized after colonoscopy. Specifically, compared with patients treated in nonaccredited ASCs regulated by the state agency, patients treated at those facilities were 10.9% less likely to be hospitalized within 7 days (adjusted odds ratio [OR] = 0.891; 95% confidence interval [C.I.], 0.799–0.993) and 9.4% less likely to be hospitalized within 30 days (adjusted OR = 0.906; 95% C.I., 0.850–0.966). No other differences in unexpected hospitalization rates were detected in the other procedures examined.

Discussion: With the exception of one procedure, systematic differences in quality of care do not exist between ASCs that are accredited by AAAHC, those accredited by the Joint Commission, or those not accredited in Florida.

ed by AAAHC and the Joint Commission differed from their nonaccredited counterparts with respect to quality outcomes. The results of our study, which addresses the call for more research on patient safety and quality outcomes,[14,15] especially among accredited and nonaccredited facilities,[2,12,16] should shed light on important factors that may be related to improved quality.

Methods

Data Sources

To examine differences in quality outcomes among ASCs, our study draws on multiple data sources that were originally assembled as part of a larger study.[17] We examined differences in outcomes between ASCs and hospital-based outpatient departments[17] and identified the existence of racial disparities in ambulatory surgical outcomes.[18] All the data were obtained from the Florida Agency for Health Care Administration (AHCA), the governmental agency responsible for state licensure of health care facilities. We used the 2004 ambulatory surgery discharge database, the 2004 hospital discharge database, and a separate administrative database that contains ASC facility characteristics, including accreditation type.

Procedures

Using the ambulatory discharge database, we identified the five most common procedures performed in ASCs among adults 18 years of age or older in 2004. Those procedures included colonoscopy (n = 315,070), cataract removal (n = 245,154), upper gastrointestinal endoscopy (n = 122,682), arthroscopy (n = 31,335), and biopsy of the prostate (n = 6,231). Note that these and other ambulatory procedures can also be performed in hospital-based outpatient departments (HOPDs) or physician offices. However, oversight of hospitals and physician offices is performed by a different set of accreditation bodies, and these organizations are therefore outside the scope of the current analysis.

Measures

The primary outcomes measure is hospitalization after ambulatory procedures, which represents an important measure of quality for ambulatory procedures.[19] Hospital admissions following ambulatory surgery is an easily identifiable quality indicator and an important outcome measure in this setting because it reflects perioperative complications, adds to health care cost, and is disruptive for patients.[20] The main purpose of accountability through accreditation is frequently to improve quality by achieving better outcomes and to improve efficiency by reducing costs. Thus, hospitalizations are important outcomes measures to consider when examining the affect of accreditation on quality of care.

Using patient-level identifiers, we linked the ambulatory discharge database to the hospital discharge database. We then determined unexpected hospitalizations at 7 days and at 30 days after ambulatory surgical procedures. Using both 7- and 30-day measures allows for the capture of adverse events that take longer than one week to develop and accounts for patient lag times from symptom development to presentation at the hospital for care.

Not all hospital admissions after an ambulatory surgical procedure are related to the procedure itself. As such, the research team [the authors], consisting of a panel of physicians and researchers, evaluated hospital admissions for each individual procedure using diagnosis-related group (DRG) codes. The reasons for hospitalization from the DRG codes were discussed, and, with a high degree of agreement, admissions deemed unrelated to the ambulatory procedure were excluded. For example, hospital admissions due to substance abuse, HIV/AIDS, or psychiatric or reproductive systems' disorders were excluded because there were no direct relationships with any of the ambulatory surgical procedures being examined. By excluding nonrelated hospitalizations we ensured the greater reliability of the quality indicators.

Our main independent variable, accreditation status, was obtained by AHCA along with other ASC characteristics from the most recent licensure forms on file with the agency. Accreditation status was defined as accreditation by the either the Joint Commission, AAAHC, or AAAASF, or not accredited (that is, oversight provided by the state regulatory agency). For the top five 2004 procedures that were the focus of our analyses, no ASC was accredited by AAAASF, which typically focuses on reconstructive and cosmetic surgical facilities. Therefore, we present results comparing ASCs regulated by the state and those accredited by either AAAHC or the Joint Commission.

Statistical Analyses

Standard descriptive statistics, including frequencies and measures of central tendency, were first used to examine the data. Next, to examine the effect of accreditation type on quality of care in ASCs, adjusted odds ratios (ORs) were calculated using logistic regression modeling techniques. To separate the potential effect of cumulative procedures conducted on the same patient, each outcome was separately examined for each of the five procedures. When patients received the same proce-

Table 1. Patient Demographic Information by Facility Type*

	Ambulatory Surgical Center Oversight By:		
	Joint Commission (*n* = 95 facilities)	AAAHC (*n* = 106 facilities)	State Regulatory Agency (*n* = 163 facilities)
Race/Ethnicity			
White	219,100 (85.61%)	201,890 (80.26%)	157,998 (74.17%)
African American/Black	13,339 (5.21%)	14,093 (5.60%)	9,067 (4.26%)
Hispanic	13,013 (5.08%)	23,089 (9.18%)	28,577 (13.42%)
Other or unknown	10,479 (4.09%)	12,458 (4.95%)	17,369 (8.15%)
Patient Age			
18-49 years	42,742 (16.70%)	30,013 (11.93%)	28,543 (13.40%)
50-64 years	80,768 (31.56%)	64,728 (25.73%)	57,363 (26.93%)
65-74 years	67,807 (26.49%)	76,833 (30.55%)	64,962 (30.50%)
75-84 years	54,782 (21.40%)	67,480 (26.83%)	52,601 (24.69%)
84 years or greater	9,825 (3.84%)	12,471 (4.96%)	9,533 (4.48%)
Gender			
Male	111,731 (43.66%)	108,343 (43.07%)	93,012 (43.67%)
Payer Type			
Medicaid	5,062 (1.98%)	3,107 (1.24%)	5,175 (2.43%)
Medicare	124,982 (48.83%)	140,769 (55.97%)	111,124 (52.17%)
Indemnity insurance	86,918 (33.96%)	73,535 (29.24%)	63,213 (29.68%)
Managed care	28,833 (11.27%)	26,814 (10.66%)	28,889 (13.56%)
Other	10,136 (3.96%)	7,305 (2.91%)	4,610 (2.17%)
Severity of Illness			
Average patient severity†	0.75	0.84	0.80

* All *p* values < 0.01. Numbers may not add up to 100% because of rounding. AAAHC, Accreditation Association for Ambulatory Health Care.
† Average patient severity score is relative to 1.0 for all surgical outpatients in Florida (1997–2004), as calculated with Diagnosis Cost Groups-Hierarchical Condition Categories software.

dure twice (for example, removal of two cataracts) and were subsequently hospitalized, only one of their procedures counted as an unexpected hospitalization.

Increasing evidence in the literature suggests that facility volume plays an important role in improved outcomes.[21–23] Thus, we controlled for total facility volume of a given procedure in each of the models. In addition, we controlled for patient characteristics—race, age, insurance type, gender (with the obvious exception of prostate biopsy), and severity of illness. Severity of illness was calculated using the Diagnosis Cost Groups-Hierarchical Condition Categories (DCG-HCC) methodology (RiskSmart™ StandAlone software, release 2.1; DxCG, Boston), which was previously validated[24,25] and is currently used by the U.S. Centers for Medicare & Medicaid Services for calculating adjusted payment amounts.[26] The DCG-HCC method produces a continuous measure of comorbidities that is based on primary diagnosis and up to five secondary diagnoses for each patient.

Data management was conducted in SAS version 9.0 (SAS Institute, Inc., Cary, North Carolina), and data analysis was conducted in SPSS version 14.0 (SPSS, Inc., Chicago). Our use of this data was approved by our university Institutional Review Board.

Results

Sample

In 2004, a total of 364 ASCs were in operation in Florida, of which 106 (29%) indicated they were accredited by AAAHC, 95 (26%) indicated accreditation by the Joint Commission, and the remaining 163 ASCs (45%) had no national accreditation and received oversight by AHCA, the state regulatory agency. A total of 720,472 patients received care in 2004 for one of the five most common ambulatory surgical procedures. Given this large sample size, statistical differences in patient demographics were detected among facilities receiving oversight from each of the accreditation/regulatory bodies (Table 1, above). For example, facilities receiving oversight from the state agency were more likely than facilities with national accreditation to treat Hispanic patients ($p < .001$) and were less likely to treat white patients ($p < .001$). Moreover, Joint Commission–accredited ASCs treated slightly fewer Medicare patients and slightly more indemnity-insured patients than their counterparts.

Table 2. Unadjusted Rates of Unexpected Hospitalizations in Ambulatory Surgical Centers by Procedure in Florida, 2004*

	Ambulatory Surgical Center Oversight By:			
	Joint Commission (*n* = 95 facilities)	AAAHC (*n* = 106 facilities)	State Regulatory Agency (*n* = 163 facilities)	*p* Value
Arthroscopy (Total *N* = 31,335)				
Number of patients treated	14,893	11,096	5,346	
Raw 7-day unexpected hospitalization rate	0.36%	0.43%	0.45%	.51
Raw 30-day unexpected hospitalization rate	1.01%	0.90%	1.09%	.48
Colonoscopy (Total *N* = 315,070)				
Number of patients treated	124,375	94,877	95,818	
Raw 7-day unexpected hospitalization rate	0.61%	0.63%	0.69%	.09
Raw 30-day unexpected hospitalization rate	1.83%	1.96%	2.00%	.01
Upper Gastroendoscopy (Total *N* = 122,682)				
Number of patients treated	54,801	30,487	37,394	
Raw 7-day unexpected hospitalization rate	0.81%	0.78%	0.77%	.78
Raw 30-day unexpected hospitalization rate	2.58%	2.45%	2.55%	.50
Cataract Removal (Total *N* = 245,154)				
Number of patients treated	59,338	114,643	71,173	
Raw 7-day unexpected hospitalization rate	0.33%	0.29%	0.31%	.39
Raw 30-day unexpected hospitalization rate	1.25%	1.13%	1.20%	.08
Prostate Biopsy (Total *N* = 6,231)				
Number of patients treated	2,524	427	3,280	
Raw 7-day unexpected hospitalization rate	0.75%	0.47%	0.85%	.68
Raw 30-day unexpected hospitalization rate	2.85%	1.87%	2.35%	.32

* Unadjusted (raw) hospitalization rates have unrelated hospitalizations (for example, HIV/AIDS, substance abuse, psychiatric disorders) excluded. AAAHC, Accreditation Association for Ambulatory Health Care.

Unanticipated Hospitalizations

Unadjusted (raw) rates of unanticipated hospitalizations at 7 and 30 days are presented in Table 2 (above). Overall, no differences in unadjusted hospitalization rates existed between ASCs receiving oversight from the Joint Commission, AAAHC, or the state agency. However, among colonoscopy patients, Joint Commission–accredited facilities had lower raw rates of 30-day (1.83% versus 1.96% for AAAHC versus 2.00% for state agency; $p = .01$) unexpected hospitalizations and marginally lower raw rates of 7-day (0.61% versus 0.63% for AAAHC versus 0.69% for state agency; ($p = .09$) unexpected hospitalizations. In addition, AAAHC facilities had marginally lower unadjusted 30-day hospitalization rates among cataract patients (1.13% versus 1.25% for the Joint Commission versus 1.20% for state agency; $p = .08$).

In multivariate analyses that controlled for facility volume and patient characteristics, patients at Joint Commission–accredited facilities were still significantly less likely to be hospitalized after colonoscopy (Table 3, page 550). Specifically, compared with patients treated in ASCs regulated by the state agency, patients treated at those facilities were 10.9% less likely to be hospitalized within 7 days (adjusted OR = 0.891; 95% confidence interval [C.I.], 0.799–0.993) and 9.4% less likely to be hospitalized within 30 days (adjusted OR = 0.906; 95% C.I., 0.850–0.966). No other differences in unexpected hospitalization rates were detected in the other procedures examined.

Discussion

The purpose of the current study was to explore quality outcomes among the most common procedures performed in Florida-based ASCs that are either accredited by a national organization or unaccredited and regulated by the state. The main findings of our analyses suggest that systematic differences in quality of care do not exist between ASCs that are accredited by the AAAHC or the Joint Commission or that are regulated by the state agency responsible for licensure in Florida. With the exception of colonoscopy, where Joint Commission–accredited facilities exhibited slightly lower unexpected hospitalizations relative to nonaccredited ASCs, no differences were noted. This finding suggests that perhaps the work flow for colonoscopies lends itself to improvement as a direct result of accreditation standards.

Table 3. Adjusted Odds Ratios for Unexpected Hospitalizations in Ambulatory Surgical Centers (ASC) by Procedure in Florida, 2004*

	Ambulatory Surgical Procedure				
	Arthroscopy (*n* = 31,335)	Colonoscopy (*n* = 315,070)	Upper Gastroendoscopy (*n* = 122,682)	Cataract Removal (*n* = 245,154)	Prostate Biopsy (*n* = 6,231)
7-Day Unexpected Hospitalization					
ASC accredited by:					
State regulatory agency (*n* = 163)	1.00	1.00	1.00	1.00	1.00
AAAHC (*n* = 106)	.981	.925	.986	.981	.318
Joint Commission (*n* = 95)	.771	.891†	1.02	1.03	.913
30-Day Unexpected Hospitalization					
ASC accredited by:					
State regulatory agency (*n* = 163)	1.00	1.00	1.00	1.00	1.00
AAAHC (*n* = 106)	.785	.985	.940	.987	.594
Joint Commission (*n* = 95)	.989	.906‡	1.01	1.04	1.17

* Each model controls for facility procedure volume and patient characteristics, including severity of illness, age, race, and payer type. AAAHC, Accreditation Association for Ambulatory Health Care.
† $p < .05$
‡ $p < .01$

These findings suggest that despite differences in review criteria by oversight organizations, facilities performing the five most common ambulatory surgical procedures offer their patients comparable quality as measured by unexpected hospitalizations, an important patient outcome. These findings are somewhat different from the inpatient and health plan literature, where accredited organizations generally perform better on quality measures. For example, several researchers have reported that accredited hospitals perform better on various quality measures,[27–29] and others have reported that accredited health plans have higher scores on some quality measures.[30]

The lack of difference noted in the ambulatory setting, compared with other settings of care, may reflect the nature of surgical procedures performed in ASCs. Most patients treated in ASCs are relatively healthy, and adverse outcomes are somewhat rare events. In addition, the elective nature of many ambulatory surgical procedures makes the outpatient setting very different from procedures performed in a hospital. Although oversight, including accreditation, may be important, outcomes in this setting may be more reliant on physician skill. The extent to which board certification and other physician characteristics is related to improved outcomes is well known in both the inpatient[31,32] and outpatient[33] settings.

Despite the overall trend of no quality differences in ASCs, we found that colonoscopy patients treated at Joint Commission–accredited facilities had improved outcomes after controlling for confounders. Even though oversight organizations have traditionally focused on processes of care, about 50% of the Joint Commission standards relate directly to patient safety,[11] and Joint Commission leadership has been outspoken about its organization's role in reducing medical errors.[34] Furthermore, the Joint Commission has increasingly been interested in monitoring and evaluating actual results of care, especially in the hospital setting.[1,13] Whether this emerging focus on outcomes is affecting the results for colonoscopy patients is unknown. However, patients should consider accreditation status and overseeing organization when selecting ASCs for colonoscopies in Florida.

Despite the new information that this study presents, several research limitations are worth mentioning. First, our findings are based on the use of administrative data sets that were originally collected for reasons other than research. The well-documented limitations[35,36] of secondary data, including the potential for coding inaccuracy and the bias associated with nonclinical data, may apply to the current study. An additional potential source of bias is related to the imperfect nature of any risk-adjustment methodology,[37] although we used the best available method for ambulatory risk adjustment in our analyses. Another limitation of our work includes the fact that our study was conducted in a single state, where demographic characteristics of patients and their physicians may be different than other geographic locations. Thus, generalizability of our findings to other geographical areas must be done with caution. By design, our cross-sectional study focused exclusively on ASCs and not on other locations where ambulatory surgeries are performed. Therefore, our results should be validated with longitudinal studies, and they do not generalize to HOPDs or physician offices that perform similar ambulatory procedures to

the ASCs we examined. Finally, future research should examine the specific reasons and lengths of stay for hospitalizations of patients after receiving care in an ASC.

Conclusion

On the basis of the single outcome measure we examined, preliminary evidence suggests that the State of Florida does an equally successful job at regulating nonaccredited ASCs as the two major national accreditation bodies. In Florida, AHCA conducts a single annual site visit for licensure purposes that is scheduled a few days in advance. Additional site visits are not made unless they are in response to a specific complaint. More research examining other outcomes will be needed to ultimately determine the relationship between accreditation and quality of care. As the ambulatory surgical setting continues to expand, comparative quality studies that consider structure, process, and outcomes will be of interest to consumers, providers, policymakers, and health care payers alike. J

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