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# Disease severity and treatment does not affect satisfaction in diverticulitis

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ABSTRACT

*Background:* Patient satisfaction is widely reported and impacts satisfaction despite a limited understanding of the clinical and structural determinants. Patients with diverticulitis are admitted to various services, with variable disease severities. They, therefore, represent a unique group to delineate relationships between these factors and satisfaction. We examined the factors that impact hospital satisfaction in patients with diverticulitis.

*Materials and methods:* Patients admitted between 2009 and 2012 were identified using ICD-9 codes. The primary outcome of patient satisfaction was the Press Ganey Survey overall hospitalization satisfaction question because of a high response rate. This is a precursor survey to the widely available Hospital Consumer Assessment of Healthcare Systems and Providers Survey. There was high concordance between these items. Clinical and structural variables were collected retrospectively. Patients were divided into two groups based on whether they gave the topbox response for the overall hospital rating.

*Results:* Sixty-six patients were identified (56% female, 63 ± 14 years, length of stay: 5 ± 5 d). Seventy-four percent patients rated the hospitalization as topbox. Forty-four percent were admitted to a surgical service, and 21% of all patients underwent an operation. When comparing the topbox to the nontopbox group, demographics and disease severity were similar. Treatment modality, admitting service, and outpatient IV antibiotics did not influence patient satisfaction.

*Conclusions:* Clinical and structural variables did not impact overall hospital satisfaction for patients admitted with diverticulitis. This indicates that less-tangible aspects of in-hospital care may be the primary determinants of hospital satisfaction in this group. Efforts aimed at defining these variables are needed to improve patient satisfaction.



## Introduction

Acute colonic diverticulitis is a common disease that results in a greater than 200,000 hospital admissions yearly, at a cost of $2.2 billion.[1] Historically, 15%-30%[2] of patients required operative intervention during the index hospitalization; however, changes in practice patterns have resulted in recently published data placing the rate of urgent or emergent operation during the index readmission figure between 12.5% and 17.4%.[3,4] As a result, these patients are currently managed by a wide variety of inpatient providers, including surgeons, hospitalists, and general medical physicians. Given the potential

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for wide variation in the types and structure of clinical care, this group offers a unique clinical subgroup to investigate patient-centered outcomes.

One patient-centered outcome of particular interest is patient satisfaction. In the current reimbursement climate, precipitated by the institution of the Affordable Care Act, patient satisfaction is increasingly emphasized, as reimbursement is now linked, in part, to publically reported patient satisfaction scores.[5] Despite the importance of these satisfaction measures, a paucity of data exists examining the clinical and structural determinants of clinical care that impact patient satisfaction. Specifically, it is currently unknown how service, treatment, and disease severity impact satisfaction for patients admitted with acute colonic diverticulitis. Therefore, the primary aim of the study was to determine if clinical or structural factors impact overall hospital satisfaction in patients admitted with diverticulitis.

## Materials and methods

### Patients

Adult patients who were admitted between 2009 and 2012 and completed either the Hospital Consumer Assessment of Healthcare Systems and Providers Survey (HCAHPS) or Press Ganey Survey (PG) were identified using ICD-9 codes for diverticulitis: diverticulitis of colon without mention of hemorrhage (562.11), diverticulitis of colon with hemorrhage (562.13), as well as inclusion of diverticulitis of small intestine without mention of hemorrhage (562.01) and diverticulum of esophagus, acquired (530.6) to ensure all possible cases of colonic diverticulitis were included. Detailed retrospective chart review was then undertaken to confirm that the primary admission diagnosis was acute colonic diverticulitis and to collect specific clinical and structural variables. These variables included treatment type (percutaneous drainage, antibiotic therapy alone, and surgical therapy), duration and route of antibiotics, admitting service, demographics, and disease severity. Patients completing either the PG or the HCAHPS survey were considered for inclusion. This study was granted an institutional review board waiver.

### Surveys

All patients who met the inclusion criteria completed the PG survey; however, only 41% (27 of 66) of patients also completed the HCAHPS survey. Therefore, the primary outcome was the PG question which asks the patient about the "likelihood of recommending the hospital to others" (possible responses: 100; very good, 75: good, 50: fair, 25: poor, and 0: very poor). There was a significant correlation between the primary PG outcome question and the HCAHPS question asking "Using any number from 0 to 10, where 0 is the worst hospital possible and 10 is the best hospital possible, what number would you use to rate this hospital during your stay?" ($P < 0.0001$, $r = 0.639$). In addition, there is an additional overall hospital rating in the PG survey, "Overall rating of the hospital care given," which was also had a very strong correlation with the primary outcome ($P < 0.0001$, $r = 0.885$). Therefore, the question chosen as the primary outcome appeared to be a valid surrogate for several overall hospital-rating items, including the overall HCAHPS hospital rating.

For analysis, patients were then divided into two groups based on the PG overall hospital item, with patients divided into those who gave the highest response (topbox group—a response of 100) and those who gave a lower hospital rating (nontopbox group—any other response). In addition, we also examined the five physician-rating questions in the PG survey (time that the physician spent with you, physician's concern for your questions and worries, how well the physician kept you informed, friendliness of physician, and skill of the physician). These were also analyzed in a topbox manner.

### Disease severity

Severity of disease was classified according to both the Hinchey Classification,[6] as well as the American Association for the Surgery of Trauma (AAST) disease grade[7] (Table 1). Chart review of the computed tomography scan reports, operative and pathologic reports, and documented admission clinical examination were used to assign the appropriate disease severity.

### Service definition

Admission service in the medical group included patients admitted to the medicine hospitalist service, to the family medicine service, to the general internal medicine service, and to medical subspecialty services. Admission service to the surgery group included admission to general surgery service and subspecialty services. Chart review was undertaken to determine whether there was a general surgery consult and if there was a service change during the hospitalization.

### Statistics

Data analysis was generated using SPSS statistical software (IBM Corp. Released 2012. IBM SPSS Statistics for Windows,

**Table 1 – Classification of disease severity.**

| Stage | Description |
|---|---|
| Hinchey classification[6] | |
| I | Pericolic abscess |
| II | Distant abscess (pelvic or retroperitoneal) |
| III | Generalized purulent peritonitis |
| IV | Generalized fecal peritonitis |
| American Association for the Surgery of Trauma grade for diverticulitis[7] | |
| I | Colonic inflammation |
| II | Colon microperforation or pericolic phlegmon without abscess |
| III | Localized paracolic abscess |
| IV | Distant abscess |
| V | Free colonic perforation with generalized peritonitis |