CONCISE COMMUNICATION

Impact of Isolation on Hospital Consumer Assessment of Healthcare Providers and Systems Scores: Is Isolation Isolating?

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The Hospital Consumer Assessment of Healthcare Providers and Systems (HCAHPS) survey was used to measure the effect of isolation on patient satisfaction. Isolated patients reported lower scores for questions regarding physician communication and staff responsiveness. Overall scores for these domains were lower in isolated than in nonisolated patients.

Acute care hospital infection prevention programs commonly employ isolation practices to prevent cross-transmission of pathogens. Isolation has been recognized as having deleterious effects on patient throughput, safety, care, emotional well-being, and hospital costs; methods to measure these effects are lacking.[1-7] The Center for Medicare and Medicaid Services (CMS) measures patient satisfaction using the Hospital Consumer Assessment of Healthcare Providers and Systems (HCAHPS) survey.[8,9] Hospitals subject to the CMS Inpatient Prospective Payment System must collect and submit HCAHPS data. These data will comprise 30% of a hospital's value-based purchasing score in CMS fiscal year 2013. We report the use of HCAHPS scores as an attempt to measure the effect of isolation on patient experience.

METHODS

The HCAHPS survey requires a random sample of adult patients to be surveyed between 48 hours and 6 weeks after hospital discharge. The survey asks 22 patient satisfaction and 5 demographic questions (Table 1).[8-10] The results of related satisfaction questions are combined into 6 domains (Table 2). Domains summarize nursing and physician communication with patients, responsiveness by the hospital staff to patients' needs, how well the staff assists with pain control, staff communication about the purpose and adverse effects of prescribed medications, and if key discharge information is provided to the patient. Two questions address the patient's perception of cleanliness and if the room was quiet at night. Two questions report the patient's overall rating of the hospital and whether the patient would recommend the hospital. Patients' responses are categorized as always, usually, sometimes, or never. Only top box responses (always, definitely yes, score of 9 or 10 on a scale of 1–10) are counted.

Categories of isolation include contact (gown and gloves) for patients with multidrug-resistant organisms (MDROs)

and Clostridium difficile; enhanced respiratory (gown, glove, respirator, eye protection) for influenza A (surrogate for pandemic influenza); droplet (mask); airborne; and hazardous airborne and contact (inhaled ribavirin use). Patients are not routinely isolated for methicillin-resistant Staphylococcus aureus or vancomycin-resistant Enterococcus. Since October 2009, infection preventionists write notes and ensure the presence of an order on all isolated patients in the electronic health record (EHR).

The EHR of our 1,200-bed tertiary care hospital was queried for patients with an order for isolation between January 1, 2010, and September 30, 2010. This list was compared with an internal database of HCAHPS respondents to generate a cohort of patients with both an order for isolation and a completed HCAHPS. Patient age, gender, length of stay, and All Patient Refined Diagnosis Related Group (3M) weighted scores (APR-DRG weight) for the cohort were also obtained from the HCAHPS database. Survey respondents during this same time without an order for isolation were the comparator group.

The HCAHPS top box score for a domain was calculated as the percentage of top box responses. The overall top box score for a domain was calculated as the mean of the top box percentages of all surveys. Comparisons were made using χ^2 test for categorical variables and Wilcoxon rank sum test (2 groups) or Kruskal-Wallis test (≥ 2 groups) for ordinary or continuous scores between groups. If Kruskal-Wallis test was significant, paired comparisons were performed using a Steel-Dwass multiple comparison procedure. The Bonferroni adjustment was used as appropriate. Analyses were performed using SAS, version 9.1, with 2-tailed significance levels of .05.

RESULTS

From January 1, 2010, to September 30, 2010, there were 40,340 patient admissions to Cleveland Clinic. A total of 22,228 HCAHPS surveys were mailed to patients discharged during this time. A total of 8,436 HCAHPS surveys (38%) were returned, and these comprised the cohort: 8,233 without and 203 with an order for isolation. Among isolated patients, 73% (149 patients) were in contact isolation for either MDROs (113 patients) or C. difficile (36 patients); 15% (30 patients) were placed in enhanced respiratory isolation; 9% (18 patients) were placed in airborne; 3% (4 patients) were in droplet or droplet contact; and 1% (2 patients) were placed in hazardous airborne and contact precautions. Characteristics of age, gender, length of stay, and APR-DRG severity index 3 or 4 are displayed in Table 3. Comparison among the categories showed significant differences among isolation types with respect to age, length of stay, and APR-DRG severity score.

Results of the comparison between isolated and nonisolated patients for specific domains, individual questions and

TABLE 1. Comparisons of Questions between the Isolation Group and the Nonisolation Group

| | Top box result | | |
| | Nonisolation ($n = 8{,}234$) | Isolation ($n = 203$) | P |
Indicator, question			
Nurse communication domain			
How often did nurses treat you with courtesy and respect?	82 (6,724/8,180)	76 (154/202)	.029
How often did nurses listen carefully to you?	71 (5,772/8,178)	67 (135/202)	.25
How often did nurses explain things in a way you could understand?	71 (5,787/8,144)	65 (129/199)	.056
Physician communication domain			
How often did doctors treat you with courtesy and respect?	85 (6,912/8,154)	76 (151/200)	.0003
How often did doctors listen carefully to you?	75 (6,075/8,132)	64 (129/201)	.0007
How often did doctors explain things in a way you could understand?	71 (5,756/8,145)	60 (120/199)	.0015
Staff responsiveness domain			
After you pressed the call button how often did you get help as soon as you wanted it?	55 (4,086/7,377)	46 (86/188)	.0087
How often did you get help getting to the bathroom or using the bedpan as soon as you wanted?	59 (2,426/4,103)	41 (50/121)	<.0001
Pain management domain			
How often was your pain well controlled?	59 (3,664/6,201)	53 (83/156)	.14
How often did staff do everything they could to help you with your pain?	76 (4,693/6,207)	68 (107/157)	.032
Medication domain			
Before giving you a new medicine, how often did staff describe possible adverse effects in a way you could understand?	41 (2,266/5,494)	39 (54/137)	.67
How often did staff tell you what a new medicine was for?	74 (4,131/5,573)	70 (100/143)	.26
Discharge domain			
Did staff talk with you about whether you would have the help you need at discharge?	84 (5,778/6,885)	87 (119/137)	.35
Did you get information in writing about symptoms or health problems to look for after discharge?	87 (5,957/6,826)	89 (120/135)	.58
Global rating			
How would you rate this hospital?	74 (5,796/7,806)	68 (133/195)	.057
Would you recommend this hospital to friends and family?	82 (6,687/8,160)	76 (153/201)	034
Hospital environment			
How often were your room and bathroom kept clean?	68 (5,546/8,135)	60 (119/197)	.021
How often was the area around your room quiet at night?	48 (3,870/8,132)	47 (94/198)	.97

NOTE. Top box results are displayed as percentages of top box scores. Denominators vary by availability. Using Bonferroni adjustment, $P < .0028$ is significant.

global ratings are shown in Table 1. Patients in isolation reported a significantly lower response to all physician communication domain questions as compared to patients not in isolation: physician courtesy and respect; physician listen; physician explain. Isolated patients also reported a significantly lower response to one of the staff responsiveness questions: bathroom and bedpan assistance. There was a trend toward significantly lower responses for questions regarding nursing communication, staff responsiveness, recommending the hospital to family and friends, and cleanliness.

Isolation was associated with lower overall domain scores for physician communication ($P = .0001$) and staff respon-

TABLE 2. Comparison of Continuous Domain Score between the Isolation and Nonisolation Groups

Domain	Nonisolation ($n = 8{,}234$)		Isolation ($n = 203$)		
	Available n	Mean ± SD, %	Available n	Mean ± SD, %	P
Nurse communication	8,210	75 ± 36	202	69 ± 40	.071
Physician communication	8,189	77 ± 35	201	66 ± 40	.0001
Staff responsiveness	7,607	58 ± 46	196	48 ± 48	.003
Pain management	6,238	67 ± 41	157	61 ± 44	.073
Communication about medication	5,630	58 ± 40	143	55 ± 40	.43
Discharge needs assessment and written instruction	6,971	86 ± 28	137	88 ± 25	.51

NOTE. P values are from Wilcoxon rank sum tests. Using Bonferroni adjustment, $P < .0083$ is significant. SD, standard deviation.

siveness ($P = .003$) (Table 2). The domain scores for nursing communication, pain management, medication communication, quietness at night, and discharge communication were not significantly impacted by isolation.

When comparing HCAHPS scores among airborne, contact, and enhanced respiratory isolation groups, there was a higher proportion of contact patients in need of bathroom assistance ($P = .006$). Also, the contact group had a higher proportion of patients discharged to another facility than the other 2 groups ($P = .013$). Comparison of the discharge assistance received among the 3 groups trended toward significance ($P = .05$).

DISCUSSION

This comparison of HCAHPS responses found an association between isolation and lower scores for physician communication and staff responsiveness. A trend toward lower scores was also seen for nursing communication and pain management. Isolation was also associated with a trend toward a deleterious effect on the patients' perception of cleanliness and their willingness to recommend the hospital.

Previously, HCAHPS responses were utilized by Gasink et al[11] to measure the impact of isolation on patient satisfaction. An association was found between isolation and HCAHPS responses on univariate analysis but no significant association was found between isolation and scores with a multivariable

model. In contrast to Gasink's study, ours was comprised of a larger cohort of patients in various forms of isolation who chose to respond to their survey after discharge. The results of our study are consistent with past reports that show a deleterious effect of isolation on patient care and well-being.[1-7] There were differences in age, length of stay, and APR-DRG severity index among our cohort that could confound our results and require further exploration; however, there is an a priori plausibility that isolation policies and personal protective equipment are an obstacle to optimal physician communication and staff responsiveness.

Additional limitations to this study include that the cohort is compromised of only those who returned surveys and our setting, a tertiary referral center, potentially limiting applicability to other centers. Also 15% of the cohort was isolated during the H1N1 pandemic and our hospital employed recommendations by the Centers for Disease Control and Prevention for use of a respirator for care. This posed a unique situation for healthcare workers and may have impacted performance. Despite these limitations HCAHPS scores provide a unique, standardized assessment of care for isolated patients that can be tracked over time. HCAHPS scores also provide readily accessible data for future efforts to understand the relationship between isolation and patient experience and provide a reasonable metric to assess the impact of interventions to improve care.

TABLE 3. Comparisons of Gender, Age, Length of Stay, and APR-DRG Severity among 8,436 Discharged Patients Who Completed an HCAHPS Survey Stratified by Isolation Status

Characteristic	Airborne ($n = 18$)	Contact ($n = 149$)	Droplet ($n = 4$)	Enhanced respiratory ($n = 30$)	Hazardous airborne and contact ($n = 2$)	No isolation	P^a
Male, %	61	56	75	60	0	53	.7
Age[b]	55 (50.5–59.8)	65 (56–75.5)	55 (34–56.5)	56.5 (50–67)	56.6 (50–67)	63 (52–72)	.0013
Length of stay[b]	7 (4–9)	8 (4–16)	16 (3.5–28.5)	7 (3–14.5)	7 (3–14.5)	4 (2–7)	<.001
APR-DRG severity 3 or 4	11 (61%)	117 (79%)	2 (50%)	22 (73%)	2 (100%)	3,149 (38%)	<.001

[a] P for test of differences among airborne, contact, enhanced respiratory, and no isolation groups.
[b] Median (interquartile range, 25%–75%).

At our facility, ongoing interventions to improve HCAHPS scores for all patients include the implementation of an office of patient experience, an online manual of communication for clinicians, mandatory customer service training for all employees (including physicians), and hourly nursing rounds. Interventions specific to isolation practices include the provision of written and verbal education on isolation for both the patient and their family. Environmental Services has scripted patient interactions for its housekeepers and is investigating novel technology to measure room cleanliness. At this point, metrics on these processes have not been developed.

Isolation precautions are tools that benefit a hospitalized population and healthcare workers rather than the individual isolated. The inclusion of HCAHPS results in a hospital's value-based purchasing score raises the visibility of all procedures influencing a patient's hospital experience, including environmental cleanliness and infection prevention protocols. This heightened awareness is an opportunity for infection prevention programs to reinforce reasons, adherence, and execution of isolation practices. It also compels infection prevention to examine their approach to isolation, assessing its impact on the totality of patient care and assuring that this tool is used judiciously.

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