

Comparative Analysis

Patient Perception of Pain Care in the United States: A 5-Year Comparative Analysis of Hospital Consumer Assessment of Health Care Providers and Systems

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Background: The necessity of aggressive pain management in the hospital setting is becoming increasingly evident. It has been shown to improve patient outcomes, and is now an avenue for Medicare to assess reimbursement. In this cohort analysis, we compared the March 2008 to the December 2012 Hospital Consumer Assessment of Health Plans Survey (HCAHPS) reports in order to determine if pain management has improved in the United States after this national standardized survey was created.

Objective: To evaluate whether pain perception would improve in the 2012 report relative to the 2008 report.

Study Design: Statistical analyses were conducted with the HCAHPS report to compare pain control in regards to hospital type, hospital ownership, and individual hospitals. Using the question, "How often is your pain controlled?," T-tests were used to compare each hospital type. Hospital ownerships were assessed via analysis of variance (ANOVA) testing. T-tests were conducted to track the difference of hospital performance between the 2008 and the 2012 report. Paired management data were obtained from hospitals that participated in both reports and were assessed using paired T-tests.

Setting: This survey was administered to a random sample of adult inpatients between 48 hours and 6 weeks after discharge from any hospital reporting to Centers for Medicare and Medicaid (CMS) across the US.

Limitations: Limitations of this study include response bias, recall bias, and there may be bias related to types of people likely to respond to a survey, but this is inherent to data that is collected on a voluntary response. Additionally, a 3% increase in the number of patients rating their pain as always well-controlled, while statistically significant, admittedly may not be clinically significant. In addition, the raw data collected is adjusted for the effects of patient-mix. The statistical analyses performed to derive the final quarterly HCAHPS reports are unavailable to us and therefore we cannot comment on how individual factors such as age, sex, race, and education or the interaction of the aforementioned affect responses about the patient's perception on how well their pain was controlled between 2008 and 2012.

Results: Two thousand three hundred and ninety five hospitals reported pain management data in both 2008 and 2012. In 2012, hospitals improved their ability to "always control a patients pain" by 3.07% ($P < 0.0001$) in comparison to the baseline March 2008 report, which was statistically significant. According to the 2012 data, the discrepancy in pain management between acute care hospitals and critical access hospitals was 3.33% which was statistically significant ($P < 0.05$). Government hospitals were shown to manage pain better at baseline, but all 3 types of ownership improved their pain scores between the 2 reports which was shown to be statistically significant ($P < 0.01$).

Discussion: The HCAHPS survey is a national public standardized report used as a way to compare care in the United States. Patient pain perception has improved between the 2008 and 2012 reports. Further studies are needed to evaluate critical care hospitals.

Key words: HCAHPS, pain scores, patient perception, national comparison of hospitals, Agency for Healthcare Research and Quality (AHRQ), acute care hospitals, critical access hospitals, pain management:

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Pain is a ubiquitous symptom that is frequently overlooked in the hospitalized setting. Pain can be the result of surgical interventions or comorbidity related to a medical condition. Regardless of etiology, it has been consistently shown that effective pain management can improve long-term outcomes (1-6). Despite these findings, pain continues to be undermanaged (6), and thus exposes patients to physical and psychological impairments, extended recovery times, delayed healing, and reduced quality of life (6-8).

In the hospital, there are many therapeutic options, such as neural blockade and opioid and non-opioid analgesics available to the treating physician (9-10). These approaches, when successful, have been shown to reduce the risk of chronic pain (2), improve physical function (2,4,5), decrease recovery time (3,5), and improve quality of life (3,5). For example, the incidence of post-thoracotomy chronic pain has been well documented (2,11-13), with some estimates as high as 75% at 6 months after the surgery (2). With proper perioperative pain management, the incidence of chronic post-thoracotomy pain can be reduced (14). Additional clinical trials have shown that reducing pain in patients undergoing aortic and abdominal surgery may reduce postoperative cardiovascular and pulmonary complications (15-17). Aggressive pain management has also been shown to reduce the incidence of chronic pain after breast surgery (18).

In contrast to postsurgical pain, the prevalence and best practices to manage pain among medical inpatients is relatively less well studied (19-21). Despite the lack of clinical data, the inadequacy of pain management in this population is well recognized (19). The failures in pain management are partially due to the vast spectrum of medical disorders that can induce pain. With the exception of perioperative pain (22), cancer (23), and sickle cell related pain (24), there are currently no guidelines that exist regarding the management of pain in hospitalized patients.

In recent years the importance of effective pain management has become a topic of increasing academic investigation. Unfortunately, the results of several studies suggest that pain continues to be undermanaged, thus prompting hospital organizations to rethink current standards of care. The American Pain Society (APS) has published guidelines on how to treat acute and cancer pain (25), and the Joint Commission on Accreditation of Healthcare Organizations (JCAHO) have presented pain management standards

that are now required for accreditation (26). In particular, JCAHO has emphasized a strategy that utilizes an interdisciplinary approach, including individualized patient pain control plans, assessments and frequent reassessments of pain, the use of pharmacologic and nonpharmacologic strategies, and establishment of a formalized approach (26).

Current US government policies have focused on a patient-centered model of health care. In this model, the patient's perception of care is used as the impetus to improve health care (27). To that end, the Centers for Medicare and Medicaid (CMS) partnered with the Agency for Healthcare Research and Quality (AHRQ) to create the Hospital Consumer Assessment of Health Plans Survey (HCAHPS) which measures the quality of hospital care. Implemented in October 2006, this survey consists of a battery of questions that are designed to assess patients' perception of their medical care in areas such as pain management and overall quality of care (28-29). The first public reporting of HCAHPS data revealed that only 67% of patients felt their pain was "always well controlled" (30-32). In this paper, we evaluate the progress of pain management over the last 4 years since the first data collection.

METHODS

HCAHPS Survey

The HCAHPS survey consists of a battery of questions that measures 10 core concepts: communication with nurses and doctors, responsiveness of hospital staff, cleanliness and quietness of the hospital environment, pain management, communication about medicines, discharge information, overall rating of hospital, and recommendation of the hospital. CMS publishes the HCAHPS data within their Hospital Compare database and updated reports are available quarterly (33). In terms of pain management, patients were asked if their pain was "always, usually, or sometimes/never" controlled.

This survey is administered to a random sample of adult inpatients between 48 hours and 6 weeks after discharge. Specific inclusion and exclusion criteria are available from CMS on www.hcahponline.org. Survey data were collected either by the hospital directly (with approval by CMS) or an approved survey vendor. This data was then adjusted for patient-specific factors such as age, education level, self-rating of health, primary language, type of admission (e.g., medical, surgical, maternity, and direct admission versus ER admission), and lag time between hospitalization and completion

of survey to ensure comparability of HCAHPS scores between hospitals and also over time (33-35). Details regarding the specifics of how the adjustment coefficients and regression models were derived to produce the final HCAHPS scores for each hospital are available online at www.hcahponline.org/ (36,37).

Response rates were comparable between the March 2008 survey and December 2012 survey. In the March 2008 report, 1,898 hospitals (76%) reported having 300 or more completed responses, 540 hospitals (21%) had between 100 to 299 responses, and 79 hospitals (3%) had fewer than 100 completed responses. In the December 2012 report, 2,928 hospitals (75%) had 300 or greater completed surveys, 691 hospitals (18%) had between 100 to 299 responses, and 273 hospitals (7%) had fewer than 100 completed responses.

The first set of HCAHPS data was released in March 2008, and since then, CMS has published multiple, updated reports based on quarterly collection periods. In this study, we analyze the results of the March 2008 and December 2012 HCAHPS reports. The March 2008 HCAHPS report reflects data collected from October 1, 2006, to September 30, 2007 (34). While the December 2012 HCAHPS report reflects data collected from April 1, 2011, to March 31, 2012, it is the most recent set of data available at the time of this manuscript (33-35). The data is accessible to the public, and can be downloaded at www.medicare.gov.

Hospital Characteristics

The HCAHPS survey classifies hospitals according to type and ownership. The different types of hospitals include acute care hospitals (ACH), children's hospitals (CH), and critical access hospitals (CAH). However, HCAHPS data was not collected in the CH, because only patients over the age of 18 were surveyed. Medicare defines ACH as a hospital that provides inpatient medical care and other related services for surgery and acute medical conditions or injuries (usually for a short-term illness or conditions). In contrast, Medicare defines CAH as a small facility that provides outpatient services, as well as inpatient services on a limited basis, to people in rural areas (35).

Hospital ownership can be classified as government, non-profit, or proprietary. The quality of pain control within each of these classifications is analyzed individually.

Statistical Analysis

Changes in each of the 10 HCAHPS domain results

were compared using the March 2008 and December 2012 Hospital Compare database.

Using hospital reported percentages, patient responses to the specific pain management question, "How often was your pain controlled?" were averaged. Paired T-tests were used to assess statistical differences between the March 2008 and December 2012 report.

Differences in pain management scores between ACH and CAH were assessed via T-tests to compare each hospital type against their respective counterpart within the report.

Statistical differences between the quality of pain management among the 3 different hospital ownership types were assessed via analysis of variance (ANOVA) testing. T-tests were conducted to track the difference of hospital performance between the 2008 and the 2012 reports.

Paired management data were obtained by comparing only hospitals that provided pain management data in both 2008 and 2012. Pain management outcomes were considered to improve if a hospital was able to increase the percentage of patients who felt that their pain was always well controlled. Changes in hospital performance were assessed using paired T-tests. This subpopulation of hospitals was further characterized according to hospital ownership and hospital type (32-37).

RESULTS

Comparing the HCAHPS Domains between 2008 and 2012

The 2008 HCAHPS report contained pain management data from 2,517 hospitals. The 2012 report contained pain management data from 3,890 hospitals (Table 1). Of these hospitals, we identified 2,395 hospitals that reported pain management data in both the 2008 and 2012 HCAHPS reports (Table 2). Each of 10 HCAHPS domains saw improvements between the 2008 and 2012 reports (Fig. 1) with an average improvement of 4.49%. "Quietness" had the greatest percent increase, while "communication with doctors" saw the least improvement.

The December 2012 HCAHPS data indicated that the average hospital was able to "always" control a patient's pain 70.38% of the time. This represents a statistically significant 3.07% increase ($t(4891) = -19.75, P < 0.0001$) in pain control in comparison to the baseline March 2008 report where it was 67.31% (Fig. 2).

Table 1. Characterization of hospitals that reported pain management specific HCAHPS data.

	March 2008 Report (n = 2517)	December 2012 Report (n = 3890)
Hospital Ownership		
Government	403	767
Non-Profit	1694	2385
Proprietary	420	717
Physician Owned	0	21
Hospital Type		
Acute Care Hospital	2226	3324
Critical Access Hospital	291	566

Paired Hospital Comparison

We identified 2,395 of hospitals that reported pain management data in both the 2008 and 2012 HCAHPS reports. These hospitals reported the highest level of pain relief at a rate of 67.34% and 69.93% for 2008 and 2012, respectively. Within this subset of hospitals, we found 1,604 hospitals that were able to improve upon their average “pain was always controlled” dimension. An additional 155 hospitals did not improve their 2008 baseline pain performance, while the remaining 636 hospitals reported a 2012 percentage lower than their 2008 baseline (Table 2).

Table 2. Hospitals that contained pain management HCAHPS data in both the March 2008 and December 2012 report.

	Pain Always Controlled (March 2008 Report)	Pain Always Controlled (December 2012)	Overall Group Change	No. of Hospitals Improved (Average Improvement)	No. of Hospitals Declined (Average Decline)	No. of Hospitals Did Not Change
Hospital Ownership						
Government (n = 390)	69.39% ± 7.01	70.57% ± 4.93	+1.18%	230 (+5.45%)	21 (-5.71%)	139
Non-Profit (n = 1625)	67.57% ± 5.63	70.04% ± 4.36	+2.46%	1072 (+5.30%)	116 (-3.84%)	437
Proprietary (n = 380)	64.27% ± 7.00	68.85% ± 4.62	+4.58%	302 (6.61%)	18 (-4.28%)	60
Hospital Type						
Acute Care Hospitals (n = 2125)	66.88% ± 6.16	69.49% ± 4.13	+2.61%	1440 (+5.47%)	544 (-4.28%)	141
Critical Access Hospital (n = 270)	70.99% ± 6.03	73.40% ± 5.85	+2.41%	164 (+6.41%)	92 (-4.36%)	14
Total Number of Hospitals (n = 2,395)	67.34% ± 6.28%	69.93% ± 4.53%	2.59%	1604 (+5.57%)	636 (-4.29%)	155

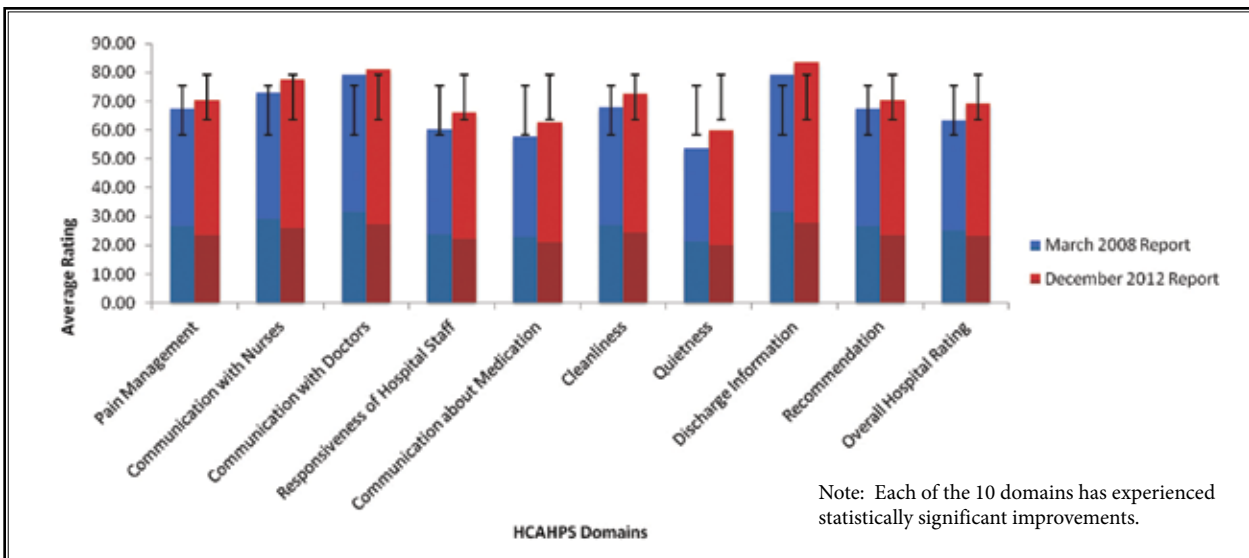


Fig. 1. Baseline HCAHPS report from March 2008 Compared to the December 2012 HCAHPS report.

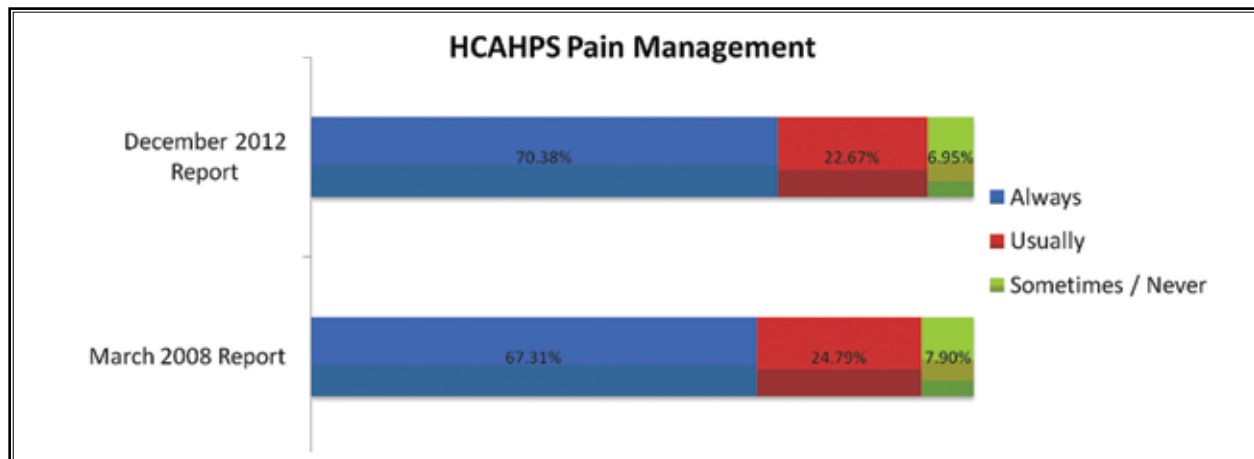


Fig. 2. "How often was your pain well controlled?" (National Average).

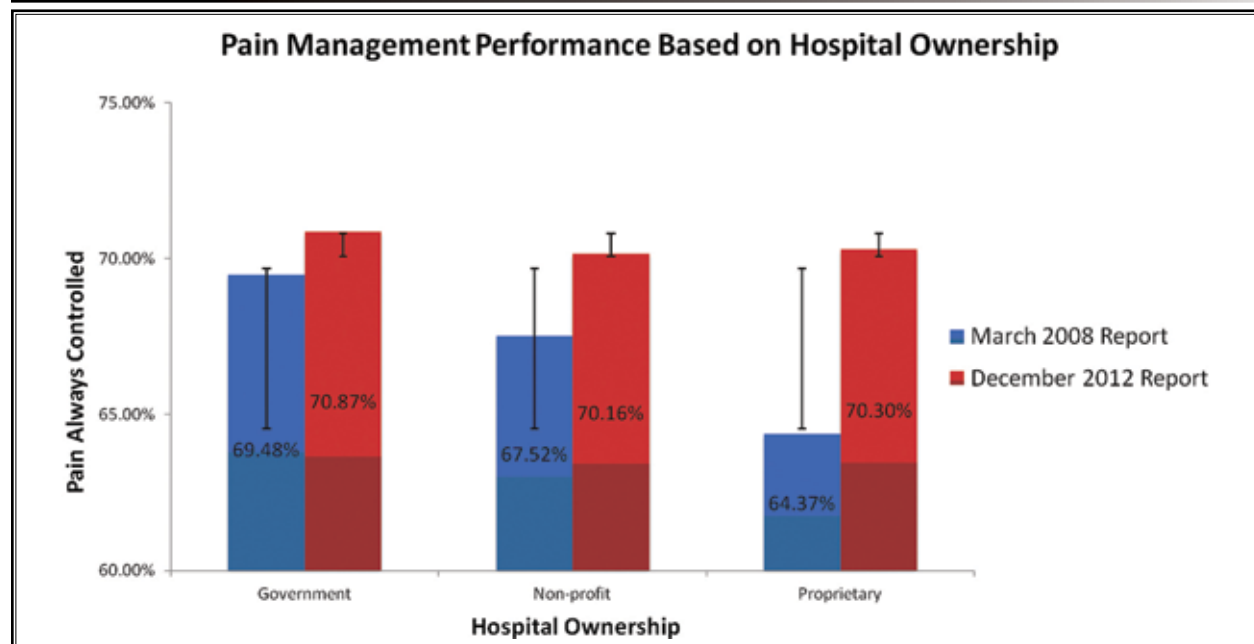


Fig. 3. Comparing pain management performance based on hospital ownership.

This sample of hospitals was further characterized according to hospital ownership and hospital type (Table 2). ACH improved from 66.88% in 2008 to 69.49% in 2012 ($t[3711] = -16.24, P < 0.0001$). CAH improved from 70.99% in 2008 to 73.40% in 2012 ($t[538] = -4.71, P < 0.05$).

Hospital Ownership Comparison

Participating HCAHPS hospitals were classified according to hospital ownership (Table 2). In 2008, government-owned hospitals had comparably more success

in managing patients' pain, while proprietary hospitals had the least success. The disparities between each class of hospitals were statistically significant ($F[2,2514] = 73.17, P < 0.0001$). The December 2012 HCAHPS report indicated that each class of hospital ownership was able to improve upon their baseline HCAHPS averages. Proprietary-owned hospitals experienced the greatest improvement; while government-owned hospitals improved the least. According to the 2012 report, the pain management disparity between each class of ownership was reduced (Fig. 3). However, the difference in pain

management means remained statistically significant ($F[2,3866] = 4.83, P < 0.01$).

Hospital Type Comparison

Participating HCAHPS hospitals were classified as ACH or CAH (Table 1) and their ability to effectively manage pain was compared using this classification. According to the December 2012 HCAHPS, ACH were able to “always” control a patient’s pain 69.89% of the time, representing a statistically significant 3.04% increase in pain control ($t[4251] = 3.89, P < 0.0001$) since 2008 (Fig. 4).

CAH received the highest pain management score 73.22% of the time, representing a statistically significant 2.46% increase in patients reporting that their pain as being always well controlled ($t[855] = -5.35, P < 0.0001$) since 2008.

According to the 2012 data, the difference in pain management between ACH and CAH was 3.33% and statistically significant ($t[703] = -11.67, P < 0.05$).

Discussion

Improving the quality of health care within the United States has been a goal of many government and medical organizations (25-26). To achieve this goal, various government agencies have advocated for increased transparency regarding the outcomes of medical care.

In theory, by quantifying the quality of care, health care providers will be able to identify their areas of strength and weakness, and alter their practices to improve the overall quality of patient care (30). Furthermore, standardized measures of patient satisfaction would allow for patients and consumers to compare the quality of care in hospitals throughout the country. It was hypothesized that by creating a standardized measure of comparison, the quality of care in the US would improve, and the disparity of care would decline, and to that end, the HCAHPS survey was created (33). In this study, we examined the pain management performance of the initial HCAHPS report in March 2008, and compared it to the results that were published in December 2012.

The first public reporting of HCAHPS data revealed that only 67% of patients felt that their pain was “always well controlled” (Fig. 1). These results were surprising as pain management has been a target outcome identified by government agencies as an area of medicine in need of improvement. Since then, the data indicates that 1,604 out of 2,395 (67%) hospitals that contained pain management data in both the 2008 and 2012 HCAHPS reports have improved upon their baseline performance (Table 2).

One goal of the HCAHPS survey was to reduce the disparity of care between hospitals (33). Prior to the advent of this survey, it was difficult to ascertain

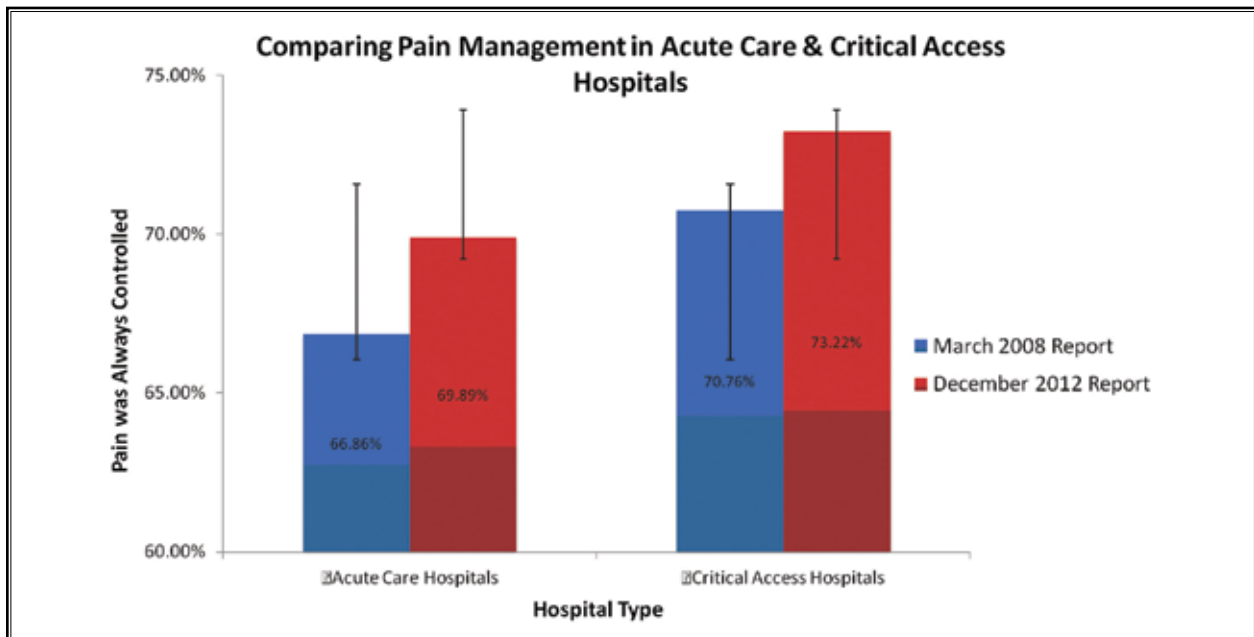


Fig. 4. Comparing pain management performance between acute care hospitals and critical access hospitals.

comparisons between hospitals throughout the country. Furthermore, it was also unknown if the quality of care varied according to hospital specific characteristics. To help answer this question, hospitals were classified according to ownership (government vs. proprietary vs non-profit) and according to type (ACH vs. CAH).

We have previously shown that patients treated in government-owned hospitals were more satisfied with the quality of their pain management, while patients treated in proprietary hospitals were least satisfied (30). According to our analysis, the December 2012 report indicates that government-owned hospitals are still able to provide pain management that was higher rated in comparison to proprietary and non-profit hospitals. However, the disparity is closing as both non-profit and proprietary-owned hospitals have experienced a greater percent growth in pain management (Table 2).

Established in 1997 by the Medicare Rural Hospital Flexibility (Flex) program, CAH represent Medicare designated hospitals that were designed to increase financial reimbursements, and thus increase medical services to patients in rural communities throughout the US. To qualify as a CAH, hospitals must have a maximum of 25 inpatient beds and must be located 35 miles away from another hospital. Because of these requirements, many of the CAH designated hospitals are small hospitals, geographically isolated from high volume, larger, metropolitan hospitals. Ultimately, it was hoped that this program would increase medical access to rural America and provide quality medical care that was consistent with hospitals throughout the country. Yet despite this commitment to rural medicine, little is known regarding the quality of care provided by CAH, as these hospitals are exempt from reporting nationally collected outcomes that would otherwise be mandatory to non-CAHs. Unlike other hospitals that receive Medicare/Medicaid reimbursements, CAH are not required to report HCAHPS data, although they may voluntarily do so. Based on our analysis, CAH are statistically more effective than ACH in managing patients' pain as described by patient satisfaction data. However, caution must be taken to avoid participation bias, as the number of participating CAH, represent only a small portion of the total CAH sample. Also, rural patients tend to have closer ties to the CAH and its employees, thereby inherently inflating all quality assessments of CAH. Until all CAH are required to report outcomes, it will be difficult to assess the quality of their patient care.

Since the first set of data was released in March 2008, each HCAHPS dimension has steadily improved,

with an average 4.49% increase. However, despite these improvements, in terms of "always" controlling patient pain, the growth of pain management (+3.07%) has lagged behind the other HCAHPS dimensions. This modest increase in pain control may reflect an unwillingness or apprehension of medical staff to aggressively manage pain and calls for additional strategies to optimize patient satisfaction with pain care. Previous studies have shown that physicians and medical staff consistently underestimate the severity of their patient's pain (36), and it is speculated that barriers in physician attitude and aptitude perpetuate the inadequacies of pain relief (26). Many providers view the management of pain as simply writing prescriptions for opioids and therefore are rightfully reluctant to do so. They are possibly less well-versed in the utilization of opioid-sparing adjuvants analgesics and other interventional techniques to reduce opioid requirement. Admittedly, at the current time there is no magic pill for complete analgesia without attendant side effects; however, there needs to be a coordinated, multidisciplinary effort to achieve adequate pain relief.

It may also represent the increased complexity inherent to the subjective complaints of pain when compared to the other HCAHPS measures of hospital work. The answer to the question of, "Is your pain well-controlled?" is influenced by the patient's cultural background, their expectations of what is an acceptable quality of life, their values, priorities, and other psychological factors. There needs to be a balance between control of the patient's pain and safety. Part of the job of the physician is to educate patients on the dangers of opioid use, including the potential for dependence, tolerance, risk of death, and also helping to set their goals and expectations of what level of pain should be acceptable (i.e., they are pain-free enough to function).

Adequate pain management is a double-edged sword. While we advocate for patient comfort as a measure the improvement of patient care, this needs to be balanced against the patient's other comorbidities. The pharmacological elimination of all pain could be undesirable or dangerous in the elderly or patients with Obstructive Sleep Apnea (OSA). Realistically, we should instead evaluate the patient's perception of whether everything that could be done to treat the pain was being done. Proper treatment of pain should involve patient communication, the use of multimodal analgesia, and also take patient safety into consideration.

We recognize that there are limitations to our analysis of this data, as this is a retrospective study.

However, given the relatively large sample of hospitals (and patients), we are confident that the sample is a good representation of the population. Additionally, the same biases that were present in the first HCAHPS data released would likely be present in the most recent data set as well. We admit that there may be bias related to types of people likely to respond to a survey, but this is inherent to data that is collected on a voluntary basis. Additionally, a 3% increase in the number of patients rating their pain as always well-controlled, while statistically significant, admittedly may not be clinically significant. Only through continued analysis of data being collected will we be able to tell if we have made improvements or if we have reached a plateau.

Since the United States Congress proclaimed 2001 – 2011 as the “Decade of Pain,” medicine has recognized the importance of pain as the fifth vital sign. Based on the results of our study, it is evident that patients perceive improvements in pain management are being made in hospitals throughout the country. Continued analysis of data regarding the management of pain is necessary to evaluate our progress over the next several years. It appears there are still opportunities to improve. If we are to optimize the quality of pain medicine, interdisciplinary efforts must be made that utilize the results of pain-specific outcomes to create a strategy of global pain relief.

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