

Value of patient experience:

Hospitals with higher patient experience scores have higher clinical quality



Executive summary

With the market shift towards value-based and patient-centered models of care, improving patient experience is an increasingly common focus for hospitals. Good patient experience is an intrinsically valuable goal, and payers are increasingly emphasizing patient experience as part of care quality.¹ Patient experience scores—reflecting factors as diverse as a hospital floor’s noise level throughout the night and how well nurses and doctors communicate with patients—have become key hospital performance measures.

In Deloitte's 2016 report *The value of patient experience: Hospitals with better patient-reported experience perform better financially*, we found that higher patient experience scores are associated with higher hospital profitability, and that this association is strongest for aspects of patient experience most likely to be associated with better clinical care (in particular, nurse staffing engagement).

Since improving patient experience can likely address attributes of care that promote and increase quality,^{2,3} these results suggest that improvements in patient experience scores might be associated with increased clinical quality. However, patient expectations do not always map to clinical quality indicators. Patients sometimes value amenities more than clinical ability.⁴ As a result, improvements in patient experience might not always be associated with improvements in clinical quality.⁵

Although many consumers value both clinical quality and care experience when choosing a hospital, the link between patient experience and hospital quality has not been well studied.⁶ The literature on the topic is rather limited, and has largely focused on selected clinical outcomes such as readmissions and

mortality rates.⁷ To gain greater insight into this topic, the Deloitte Center for Health Solutions conducted regression analyses to examine the association between patient experience scores and a broad range of hospital clinical quality measures (both process of care [POC] measures as well as clinical outcomes). We controlled for numerous hospital and market characteristics that can also affect hospital performance, including hospital ownership, location, teaching status, payer and patient case mix. Our analyses point to two main findings:



Hospitals with higher patient-reported experience ratings have better process of care quality scores. Hospitals receiving “excellent” (9 or 10 out of 10) patient experience ratings have better clinical quality

scores for all 18 process of care measures that we analyzed compared to hospitals receiving “low” (0 to 6 out of 10) ratings. For instance, a 10-percentage-point-higher score in the number of respondents giving a hospital an “excellent” experience rating is associated with a 20-minute lower emergency department (ED) wait time relative to hospitals receiving a “low” rating.



Hospitals with higher experience ratings have better scores for some, but not all, clinical outcomes.

Hospitals receiving “excellent” patient experience ratings have lower readmission and mortality rates compared to hospitals receiving “low” experience ratings. High-scoring hospitals, however, don’t always have lower hospital-acquired infection (HAI) rates. Such results suggest that patients might find it difficult to infer quality for care outcomes that are less obvious, or that are

infrequently encountered, such as HAIs at surgical site. It also could indicate that the variation in outcomes between hospitals is small because most hospitals have already made considerable progress in reducing HAIs. We also performed additional analyses to study potential factors that might underlie the association between experience scores and hospital clinical quality. The results indicate that:



Clinical quality measures that are more visible to patients are more strongly associated with patient experience. Clinical quality measures that are more visible and tangible for patients, such as ED wait times and readmissions, are more closely associated with patient experience ratings.



Communication with nurses and relevant discharge information enhance patient experience, and are strongly associated with clinical quality. Experience scores pertaining to nurse

communication and discharge information have the strongest association with the largest number of clinical quality measures.



Hospitals' participation in value-based care models, such as accountable care organization (ACO) affiliation and bundled-payment arrangements, may strengthen

the association between patient experience and hospital clinical quality. Our regression analyses determined that ACO affiliation and payment incentives tied to quality—such as bundled payments—might strengthen and reinforce the association between patient experience and clinical care quality domains such as ED and surgical care.

Hospital executives face multiple priorities and resource demands, and may question the business value of analyzing and acting upon patient experience data. Along with our prior work on the association between patient experience and hospital profitability, these new findings help strengthen the business case for patient experience. Moreover, our findings point to particular aspects of care that hospital leaders might want to prioritize for investments in tools and mechanisms that engage consumers and help improve patient experience.

Hospitals with higher patient-reported experience ratings have better process of care quality scores. Further, hospitals with higher experience ratings also have better scores for some, but not all, clinical outcomes.

Introduction

With the appearance of a market shift towards value-based and patient-centered models of care, improving patient experience—along with efforts to improve clinical quality, and reduce the cost of care— is an increasingly common tactic for hospitals. Although improving patient experience can be valuable unto itself and regarded as distinct from improving clinical quality, the two concepts are often interrelated. Payers, for instance, increasingly emphasize patient experience as a core element of care quality.⁸ In tying hospital Medicare payments to experience scores under the Value Based Purchasing Program, for example, the Centers for Medicare and Medicaid Services (CMS) noted: “Delivery of high-quality, patient-centered care requires us to carefully consider the patient’s experience in the hospital inpatient setting.”⁹

Although consumers often value both inpatient clinical quality and the care experience when choosing a hospital, the link between these two factors has not been studied closely.¹⁰ Literature on the topic is rather limited, and has largely focused on clinical outcomes such as readmissions and mortality rates.¹¹

In this study, we analyzed the association between patient experience scores and a broad range of widely used clinical quality measures (both outcome and POC measures) reported to CMS. We found that hospitals with higher experience ratings generally have better clinical quality scores, particularly for process of care measures. Combined with the results of our previous study, which documented the association between patient experience and hospital profitability, these new findings provide evidence to help make the business case for increased focus on patient experience. That could help guide hospitals in prioritizing investments in tools and mechanisms that engage consumers and help improve patient experience.



Hospitals with higher patient-reported experience ratings have higher POC quality scores

To examine the relationship between patient experience and hospital clinical quality, we combined hospital-level patient experience ratings from the most widely used hospital experience survey—the Hospital Consumer Assessment of Healthcare Providers and Systems (HCAHPS)—with clinical outcome and POC quality measures from CMS.¹²

- In the HCAHPS survey, only ranges of scores are publicly reported, so the main HCAHPS metrics that we used in our analyses are the percentage of respondents giving a hospital a rating of 9 or 10 out of 10 (“excellent” rating), 7 or 8 out of 10 (“moderate” rating), or 0-6 out of 10 (“low” rating). See sidebar on the following page or the appendix for details.
- For quality measures, we selected a broad range of POC and outcome measures based on conversations with subject matter experts, data availability, and inclusion in key Medicare reimbursement programs, such as the Value-based Purchasing (VBP) and hospital star rating programs. See sidebar on the following page or the appendix for details.

“Delivery of high-quality, patient-centered care requires us to carefully consider the patient’s experience in the hospital inpatient setting.”

—Centers for Medicare and Medicaid Services (CMS)

Patient experience and clinical quality measures included in the study



Patient experience measures

Measures from the HCAHPS survey that show patient-reported scores measuring patients' perception of hospital care. In our study, we use the global measure capturing patients' overall rating of the hospital on a scale of 0 to 10.



POC measures

Measures that show if the patients received timely, effective, and preventive hospital clinical services to get best results for certain common conditions, medical emergencies, or surgical procedures. We classify these measures into the following five categories:

ED timeliness of care

- Median time spent in ED before inpatient admission
- Median ED visit duration
- Median time spent in ED before receiving pain medication for broken bones
- Median time spent in ED before being seen by a health care professional
- Percentage of patients who left the ED before being seen

Surgical process of care

- Percentage of surgery patients appropriately kept on beta-blockers
- Percentage of surgery patients given the right kind of antibiotic to help prevent infection
- Percentage of surgery patients whose urinary catheters were removed on the first or second day after surgery
- Percentage of patients treated at the right time for blood clots after surgery

Information/education

- Percentage of patients who received stroke education
- Percentage of patients who received warfarin therapy discharge instructions

Preventive care

- Percentage of patients assessed and given influenza vaccination

Effectiveness of care

- Percentage of patients treated to prevent blood clots
- Percentage of stroke patients treated to prevent blood clots
- Percentage of ICU patients treated to prevent blood clots
- Percentage of patients whose preventive antibiotics were stopped at right time
- Percentage of newborn deliveries scheduled earlier than medically necessary
- Percentage of pneumonia patients given most appropriate antibiotic



Outcome of care measures

Measures that show what happened after patients with certain conditions received hospital care. We classify these measures into the following three categories:

Mortality

- Acute Myocardial Infarction (AMI) 30-day mortality rate
- Heart failure 30-day mortality rate
- Pneumonia 30-day mortality rate

Readmissions

- AMI 30-day readmission rate
- Heart failure 30-day readmission rate
- Pneumonia 30-day readmission rate

Hospital Acquired Infections (HAI)

- Central line-associated bloodstream infections (CLABSI) in ICUs and select wards
- Catheter-associated urinary tract infections (CAUTI) in ICUs and select wards
- Surgical site infections (SSI) from colon surgery
- SSI from abdominal hysterectomy

Source: Deloitte analysis of measures from CMS "Hospital Compare" dataset, 2008-2014

Since we would expect hospital characteristics and local market conditions to influence the association between patient experience and hospital clinical quality, we used a regression analysis framework (see appendix) to control for them. Hospital characteristics include hospital size, urban/rural location, ownership type, teaching status, being part of a system, case and payer mix. We also took into account local market (hospital referral region [HRR]) characteristics. This approach allowed us to compare changes in quality scores and experience ratings between 2008 and 2014 at hospitals with similar characteristics.

Regression results reveal that hospital patient experience ratings and quality scores for clinical POC measures are positively correlated. Hospitals receiving “excellent” (9 or 10 out of 10) and “moderate” (7 or 8 out of 10) experience ratings have better quality scores for virtually all POC measures that we analyzed, compared with hospitals receiving “low” (0-to-6 out of 10) experience ratings (Figure 1).

Moreover, the magnitude of the association between experience scores and quality metrics, as depicted by the darker shade in Figure 1, is largest for hospitals receiving “excellent” experience ratings. For instance, a 10 percentage point increase in the number of respondents giving a hospital an “excellent” rating is associated with a 1.5 percentage point higher number of stroke patients treated properly to prevent blood clots, and with a 20-minute shorter ED wait time from arrival to admission—relative to hospitals receiving a “low” rating. For hospitals receiving “moderate” ratings, an increase of 10 percentage points in the number of respective respondents is associated with a higher number of stroke patients appropriately treated to prevent blood clots (by 0.6 percentage points) and with a 15-minute lower ED wait time between arrival and admission, respectively, relative to “low” rated hospitals.

Regression results reveal that hospital patient experience ratings and quality scores for clinical POC measures are positively correlated.



Figure 1. Hospitals with higher experience ratings have better process of care quality scores

Process of care measure		Hospitals with "excellent" ratings	Hospitals with "moderate" ratings
Information/ education	Percentage of patients who received stroke education	Dark Blue	Light Blue
	Percentage of patients who received warfarin therapy discharge instructions	Dark Blue	Light Blue
Preventive care	Percentage of patients assessed and given influenza vaccination	Dark Blue	Light Blue
Surgical process of care	Percentage of surgery patients given beta-blockers	Dark Blue	Light Blue
	Percentage of surgery patients given the right kind of antibiotic (infection)	Dark Blue	Light Blue
	Percentage of surgery patients whose urinary catheters were removed appropriately	Light Blue	Light Blue
	Percentage of patients treated at the right time for blood clots after surgery	Light Blue	Light Blue
ED timeliness of care	(Shorter) median time from arrival in ED to inpatient admission	Dark Blue	Light Blue
	(Shorter) median ED visit duration	Dark Blue	Light Blue
	(Shorter) median time to pain medication for patients with broken bones	Dark Blue	Light Blue
	(Shorter) door to diagnostic evaluation time	Dark Blue	Light Blue
	Percentage of patients who left the ED before being seen	Dark Blue	Light Blue
Effectiveness of care	Percentage of patients who received treatment to prevent blood clots	Dark Blue	Light Blue
	Percentage of stroke patients who received treatment to prevent blood clots	Dark Blue	Light Blue
	Percentage of ICU patients who received treatment to prevent blood clots	Dark Blue	Light Blue
	Percentage of patients whose preventive antibiotics were stopped at the right time	Dark Blue	Light Blue
	Percentage of (fewer) newborn deliveries scheduled earlier than medically necessary	Dark Blue	Light Blue
	Percentage of pneumonia patients given most appropriate antibiotic	Light Blue	Light Blue

 Positive association between higher ratings in patient experience and higher quality performance in the indicated quality metric

Note: Darker shade of blue indicates a higher strength of association

Source: Deloitte analysis of HCAHPS and quality measures from CMS, and hospital characteristics from Truven and the AHA annual survey database. See appendix for a description of these variables.



Hospitals with higher experience ratings have better scores for some, but not all, clinical care outcomes

Our analyses show that higher experience ratings are strongly associated with higher POC quality scores. Do hospitals with higher patient-reported experience ratings also have better clinical outcomes?

Many payers regard hospital quality outcomes, such as mortality rates, readmissions, and different health states as superior to POC measures in assessing hospital performance. For instance, under programs such as the Hospital Readmissions Reduction Program (HRRP) and the Hospital Acquired Conditions Reduction Program (HACRP),¹³ Medicare payments to hospitals are tied to hospital performance on these outcomes (see sidebar). In 2016, over half of all hospitals were penalized for having “excess” readmissions, with penalties under HRRP reaching more than \$500 million, according to CMS.¹⁴ Under HACRP, the number of penalized hospitals was lower, with 23 percent of hospitals receiving Medicare payment adjustments for poor performance regarding HAC reduction.¹⁵

Medicare programs on reducing readmissions and hospital acquired conditions

Hospital Readmission Reduction Program (HRRP)

The HRRP program, established under the Affordable Care Act (ACA), requires CMS to reduce Medicare payments to hospitals with excess readmission rates for patients with certain conditions.¹⁶ When the program started in 2012, it initially tied Medicare reimbursements to hospital readmission rates for patients with acute myocardial infarction (AMI), heart failure, and pneumonia. Since FY 2015, readmission rates for two additional conditions—chronic obstructive pulmonary disease (COPD), hip and/or total knee replacement—have been added to the program.¹⁷

The readmission rates for most of the conditions tracked under this program started to fall in 2012 and have continued to drop since then, suggesting hospitals may have adopted interventions soon after the program was established, according to a Kaiser study.¹⁸ For instance, the average readmission rate for pneumonia patients fell from 18.5 percent to 16.9 percent during the 2012-2014 period compared to the 2008-2011 period.

Hospital Acquired Conditions Reduction Program (HACRP)

Like HRRP, the Hospital Acquired Conditions Reduction Program (HACRP), was established under the ACA and requires CMS to tie Medicare reimbursements to reductions in hospital acquired condition such as bloodstream infections, urinary tract infections, and surgical site infections.¹⁹

According to CMS, HACRP saves Medicare approximately \$350 million every year.²⁰ Under HACRP, HAIs declined by 21 percent between 2010 and 2015, according to the Agency for Healthcare Research and Quality. Adverse reactions to medicines, catheter infections, and post-surgical blood clots saw the biggest reduction.²¹

Nevertheless, some studies suggest that the early reductions in HAIs might have been the lower-hanging fruit, and that rates of HAIs might have plateaued recently.²²

One might expect that if hospitals with better patient experience have better processes of care, they might also have better clinical outcomes. However, clinical outcomes, such as mortality, readmissions, and HAIs, are the result of numerous factors, many of which—for example, sociodemographic factors—are outside a provider’s control.²³ For instance, a high readmission rate might indicate poor care, or it could point to another issue, such as a lack of caregivers in the home, or a misjudgment about the patient’s destination at the time of discharge. Similarly, sociodemographic factors such as age, education, marital status, and income

levels can all affect outcomes, such as mortality after heart failure.²⁴ As a result, ascertaining the degree to which specific health outcomes are attributable to the care received by a patient, as opposed to other factors outside a provider’s control, is often difficult.

Our findings reflect these complexities, and show that the degree of association between patient experience ratings and clinical outcomes of care is more multi-faceted than that between experience scores and POC measures (Figure 2).

Figure 2. Hospitals with “excellent” consumer ratings have a strong association with many, but not all, clinical outcomes measures

Outcome of care measure		Hospitals with “excellent” ratings	Hospitals with “moderate” ratings
Mortality	AMI 30-day mortality rate	Dark Blue	Grey
	Heart failure 30-day mortality rate	Grey	Orange
	Pneumonia 30-day mortality rate	Dark Blue	Grey
Readmissions	AMI 30-day readmission rate	Dark Blue	Light Blue
	Heart failure 30-day readmission rate	Dark Blue	Light Blue
	Pneumonia 30-day readmission rate	Light Blue	Light Blue
HAIs	Central line-associated bloodstream infections (CLABSI) in ICUs and select wards	Dark Blue	Light Blue
	Catheter-associated urinary tract infections (CAUTI) in ICUs and select wards	Grey	Grey
	Surgical site infections (SSI) from colon surgery	Grey	Grey
	SSI from abdominal hysterectomy	Grey	Grey

- Positive association between higher ratings in patient experience and higher quality performance in the indicated quality metric
- Negative association between higher ratings in patient experience and higher quality performance in the indicated quality metric
- No association between patient experience ratings and the indicated quality metric

Note: Darker shade of blue indicates a higher strength of association

Source: Deloitte analysis of HCAHPS and quality measures from CMS, and hospital characteristics from Truven and the AHA annual survey database. See appendix for a description of these variables.

Similar to POC measures, higher patient experience scores are associated with lower rates of readmissions. The correlation is stronger for hospitals with the best experience scores. For instance, a 10 percentage point increase in the number of respondents giving a hospital an “excellent” experience rating is associated with 0.3, 0.8, and 0.4 percentage points lower readmission rates for AMI, heart failure, and pneumonia, respectively, relative to hospitals with “low” experience ratings.

For hospitals receiving “moderate” ratings, an increase of 10 percentage points in the number of respective respondents is associated with lower readmissions from these causes (by 0.2, 0.6, and 0.3 percentage points respectively). To put these numbers in context, declines in readmission rates of 0.3, 0.8, and 0.4 percentage points would shift a hospital with typical readmission scores for AMI, heart failure, and pneumonia from the 50th percentile to the 58th, 64th, and 57th percentile of the respective national distribution of readmission rates.

Better patient experience is associated with lower mortality rates for hospitals with “excellent” experience ratings, but not necessarily for hospitals with “moderate” ratings.

Although higher patient experience scores are shown to be associated with decreased Central Line Associated Blood Stream Infections (CLABSIs), they are not significantly associated with decreases in the number of HAIs at other surgical sites.

Together, the results in Figure 2 are consistent with other findings in reviewed literature, which indicate that numerous patient, hospital, and policy factors can affect the relationship between patient experience ratings and clinical outcomes.²⁵ In particular, the literature notes that difficult-to-quantify factors can affect clinical outcomes. These factors include care coordination agility, management, and board practices, and generally how well a hospital is run. For instance, a 2015 *Health Affairs* study found that higher-quality hospitals, as measured by mortality rates, were more likely to have better management processes related to operations, monitoring, target setting, and human resources than hospitals with lower quality scores.²⁶

Such management and operational factors can complement and strengthen the association between patient experience and clinical quality (see sidebar). As suggested by the mortality and readmission results in Figure 2, however, such factors might not be as easily replicated by lower-performing hospitals in the absence of additional targeted incentives such as those provided under the HRRP initiative.²⁷

Financial incentives tied to quality outcomes, such as those provided by Medicare for readmissions and HAIs, can reinforce the association between experience and quality outcomes if they result in significant quality changes. For instance, under HRRP, national Medicare readmission rates have been falling during every period since the program was implemented in 2012.²⁸ Furthermore, a recent study shows that under HRRP, lower-performing hospitals saw faster decreases in readmission rates (92.4 per 10,000 discharges) compared to higher-performing hospitals (69 per 10,000 discharges).²⁹

Implementation of “re-engineered discharge” pilot improves both patient experience and readmission scores³⁰

Euclid hospital, a Cleveland Clinic facility located in Euclid, Ohio, is one of the highest-ranked hospitals in the region for heart failure patients based on measures of mortality rates and appropriate medication.

In 2014, readmission rates for heart failure patients began to increase. To address this issue, the hospital piloted a program based on the Agency for Healthcare Research and Quality’s Re-Engineered Discharge (RED) toolkit to improve and streamline the patient discharge process. Registered nurses, for example, were designated as “care advocates” for heart failure patients, helping with medication review to ensure both affordability as well as medication adherence. Nurses also helped with logistics such as transportation to follow-up appointments.

With the implementation of these care coordination and discharge efforts, experience scores and clinical outcomes both improved. Six months after the pilot, Euclid hospital HCAHPS scores increased above the national average and the 30-day readmission rate for heart failure patients declined by 16 percentage points, from 21 to five percent. The hospital has since expanded elements of the RED program to all inpatient units.

By contrast, while the HACRP program has been credited with some initial success in terms of reducing hospital-acquired conditions, progress might have plateaued in recent years.³¹ We found no consistent association between patient experience ratings and HAIs, which might be due to this reduced variation in HAI reduction performance between hospitals over time, or to patients who find it difficult to infer quality for care outcomes that are less visible to them, or less frequently encountered, such as HAIs at surgical sites.³²

Patient flow strategy enhancements improve patient experience and ED wait times at Florida Hospital Tampa³⁴

In 2014, Florida Hospital Tampa, part of the Adventist Health System, had one of the highest ED patient volumes in the region. Potentially due to overcrowding in the ED, patient engagement was relatively low; in the bottom 10th percentile.

To improve experience scores, Florida Hospital Tampa introduced a flexible patient flow strategy (“Doc1stER”) combining immediate bedding and team triage to reduce patient wait times. A year after the program’s implementation, patient ratings of ED doctors increased to the top 15th percentile, and the median door-to-provider ED wait time was reduced by 10 minutes (even as ED volume grew by 30 percent).

Why might hospitals with the best patient experience also have the best clinical quality?

Our regression analyses suggest a strong association between experience ratings and hospital quality measures, particularly POC ones. The relationship between patient experience scores and clinical quality is complex and multi-faceted, with many other factors—among them, hospital size, management processes, and financial resources—potentially driving both³³ (see sidebar).

A regression approach can be helpful in delineating the degree of association between patient experience scores and hospital clinical quality by parsing out the potential influence of many observable hospital and market characteristics that could potentially confound this relationship. However, we cannot say, based on the results, whether this association is causal. In fact, the literature suggests, and our own statistical analyses confirm,³⁵ that causality is likely bidirectional.



Clinical quality measures that are more visible to patients are more strongly associated with patient experience ratings

With growing evidence that patient engagement improves clinical quality while also potentially reducing costs,³⁶ many hospitals are increasingly investing in processes and technologies that enhance transparency and enable consumers to play a bigger role in the clinical decision-making process (see sidebar).

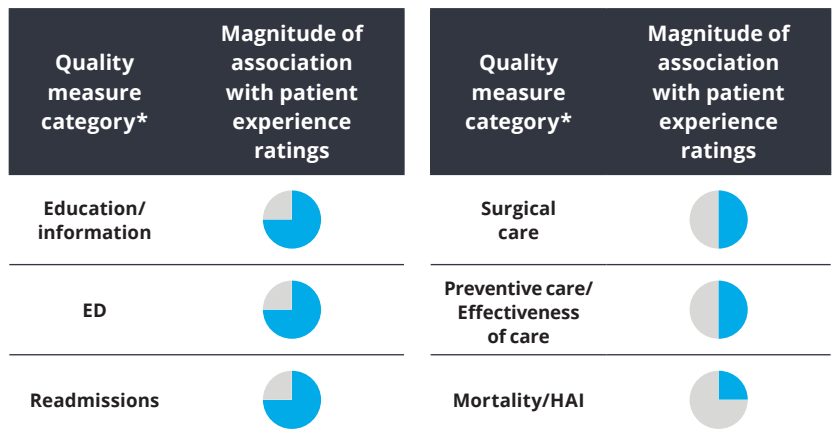
Technology strengthens inpatient engagement at Mercy Health

Ohio-based Mercy Health was named the “most wired health system” in 2015 by both the American Hospital Association’s Health Forum and the College of Healthcare Information Management Executives (CHIME). Mercy Health has relied heavily upon technology investments to enhance patients’ engagement during hospital stays. In the fall of 2013, the health system rolled out bedside tablets with an in-house “MyChart” app at one of their hospitals—St. Rita’s Medical Center. The app allowed patients to access their own data, including medication interaction information and test results. According to nurses, this helped reduce staff overload by decreasing the number of questions patients had for medical staff. In addition, it helped patients regain a sense of control over their care, which ultimately improves their experience of care.³⁷ The popularity of the tablets and the app has led the health system to introduce them at many other hospital sites.³⁸

Although patient engagement, and generally eliciting a patient’s perspective, can improve care quality, certain facets of care—such as a doctor’s skill and judgement, staff teamwork, and compliance with surgical protocols—cannot be directly observed by patients and, thus, cannot be accurately reflected by experience metrics.³⁹ For example, an anaesthetized patient’s experience would not capture the skill or safety of procedures within the operating room.

Our analysis finds that clinical quality measures that are more visible and tangible for patients, such as ED wait times and readmissions, are more strongly associated with patient experience ratings (Figure 3).

Figure 3. Quality measures highly visible to patients are more strongly associated with patient experience ratings



High magnitude
 Low magnitude

*Note: Quality measure category as defined in sidebar found on page 4

Source: Deloitte analysis of HCAHPS and quality measures from CMS, and hospital characteristics from Truven and the AHA annual survey database. See appendix for a description of these variables.



Nurse communication, discharge information, and staff engagement are strongly associated with clinical quality

Strong hospital staff engagement—particularly among nurses—has been shown to contribute to better patient experience,⁴⁰ as well as quality outcomes such as fewer patient deaths, reduced failure-to-rescue rates, shorter hospital stays, and lower readmission rates⁴¹ (see sidebar).

ThedaCare’s collaborative-care model improves clinical quality and patient experience⁴²

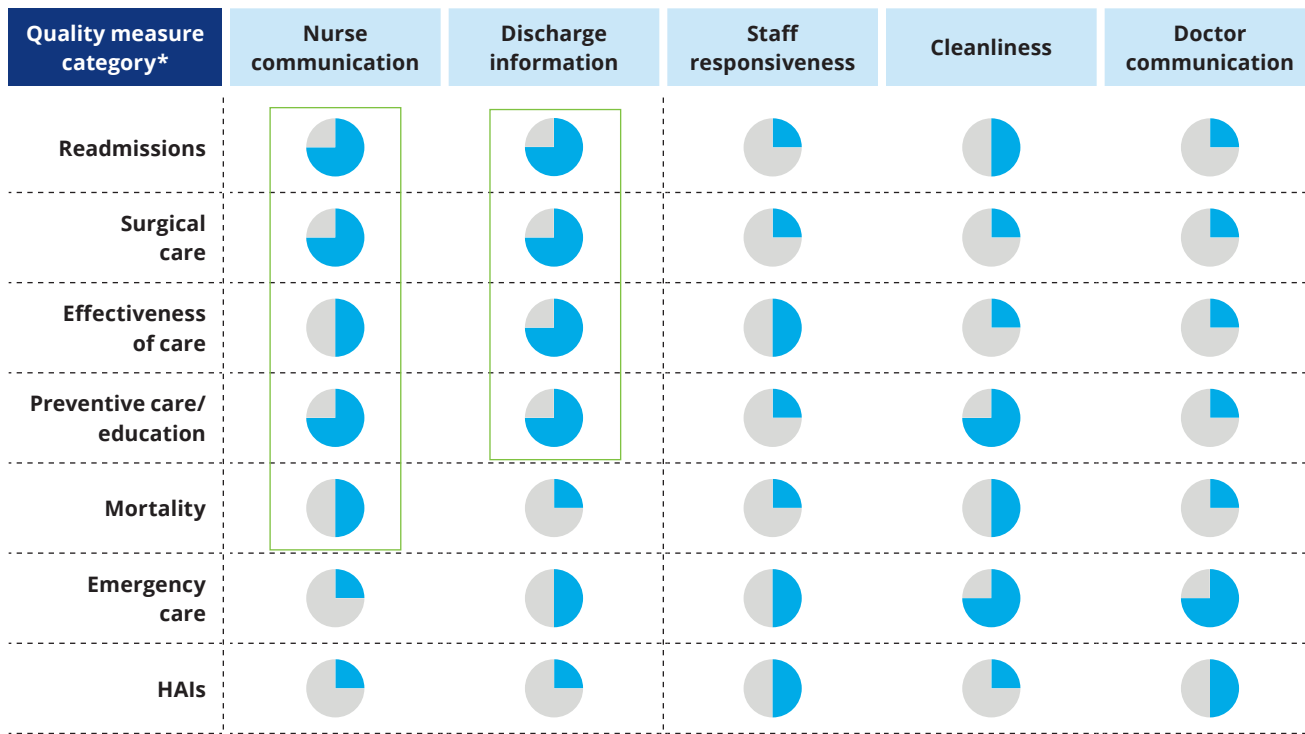
Wisconsin-based ThedaCare was one of the first health systems to implement a collaborative-care model to improve quality and patient experience, and reduce costs. Under this model, a bedside-care team is created for each patient, comprising the case physician, nurses, pharmacist, and a dedicated discharge planner. When a patient is admitted, the team analyzes the patient’s medical history, reviews the current diagnosis and potential complications, and anticipates a discharge date. The team then builds a coordinated plan of care. The physician leads the assessment and planning, the nurses manage the daily progress, the pharmacist focuses on optimizing the medication program, and the discharge planner works with the patient to drive adherence to the targeted discharge date and plans the post-acute care transition plan. The team elicits input from patients and their family to develop a single-care plan, which is updated daily during team huddles.

Preliminary results suggest the model is succeeding. Clinical quality measures such as readmissions and mortality (from pneumonia) improved by more than 40 percent, and patient experience improved by 50 percent. The health system management has now employed the patient-centered collaborative care model across all surgical units at all its hospitals.

The HCAHPS data contains information not only on the overall experience rating given to a hospital by patient respondents, but also on particular aspects of this experience, such as communication with doctors and nurses, availability of discharge information, staff engagement, hospital floor noise level at night, and hospital cleanliness. Analyses of the association between these domains of patient experience

and clinical quality metrics are consistent with the literature, which concludes that staff engagement, especially by nurses, is an important mediator of the association between patient experience and hospital clinical quality.⁴³ Of the HCAHPS experience of care domains, nurse communication and discharge information had the strongest correlation with hospital clinical quality in our data (Figure 4).

Figure 4. A highly-engaged staff, particularly nurses, and timely information can help foster clinical quality



- Strong association:** Significant association between the indicated patient experience measure and most metrics in the respective clinical quality category
- Moderate association:** Significant association between the indicated patient experience measure and some of the measures in the respective clinical quality category
- Weak association:** Weak or no association between the patient experience measure and the measures in the respective clinical quality category

*Note: Quality measure categories are defined in the sidebar on page 4

Source: Deloitte analysis of HCAHPS and quality measures from CMS, and hospital characteristics from Truven and the AHA annual survey database. See appendix for a description of these variables.

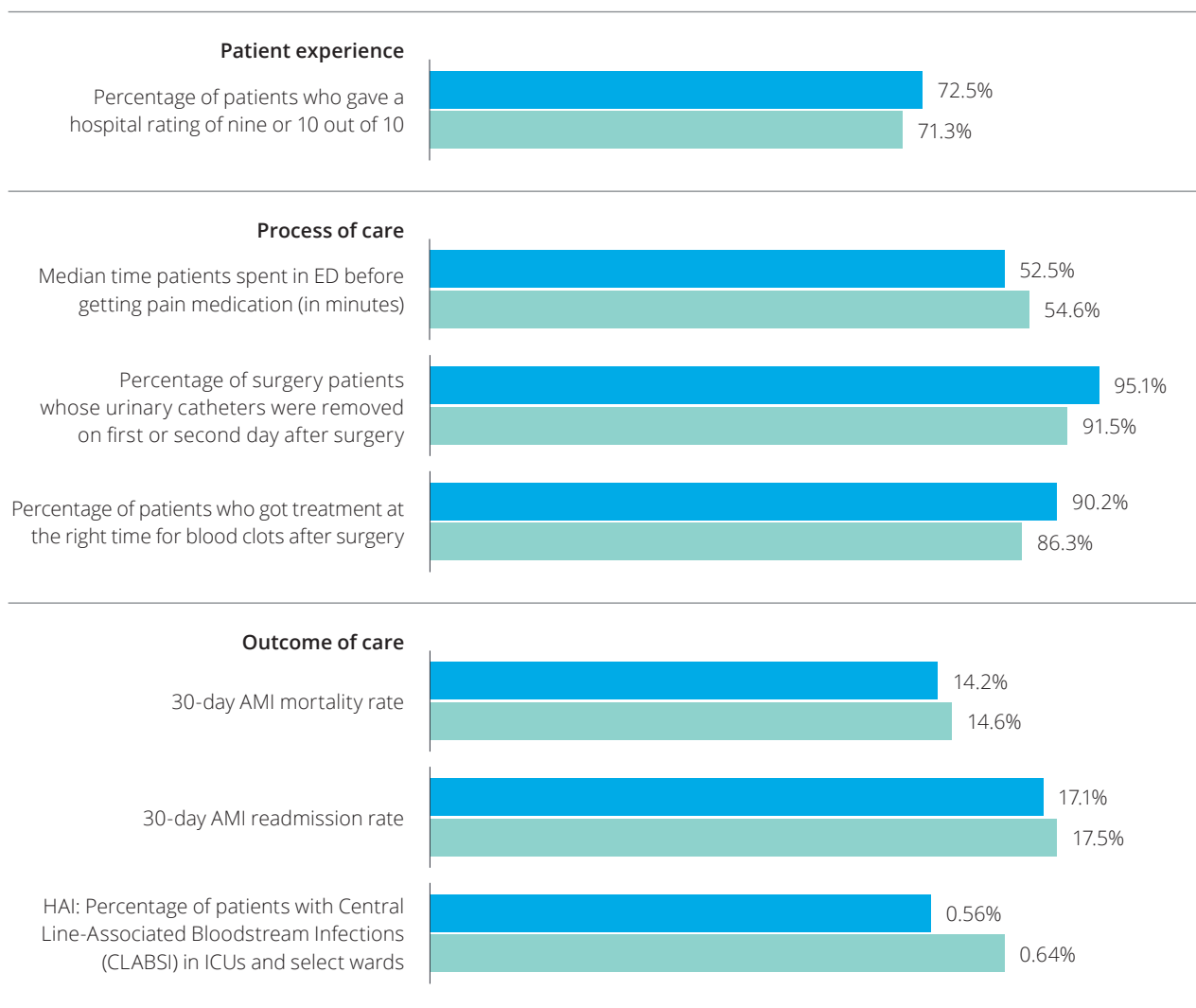


ACO affiliation may strengthen the association between patient experience and quality, particularly for POC measures

With the increased market shift towards value-based and patient-centered models of care, we might expect to see better experience ratings and clinical quality for hospitals affiliated with ACOs, which are designed with strong incentives to deliver improved patient experience, higher quality, and lower costs (Figure 5).

Figure 5. ACO-affiliated hospitals tend to have better patient experience as well as clinical quality scores

Average scores on select measures by ACO affiliation – 2015



- ACO-affiliated hospitals
- Other hospitals

Source: Deloitte analysis of HCAHPS and quality measures from CMS, hospital characteristics from Truven and the AHA annual survey database, and ACO affiliation data from the AHA health care systems survey. See appendix for a description of these variables.

In our regression analyses we added controls for the presence of hospital programs or arrangements that are tied explicitly to improvements in clinical quality, such as quality training programs for clinicians and pay-for-performance arrangements such as ACO affiliation and bundled payments. When we include controls for ACO affiliation, as well as for the presence of bundled payment arrangements, we find that the association of patient experience with certain clinical quality measures such as ED waiting times and surgical quality measures is reduced. These results are consistent with ACO affiliation and bundled payment incentives being potential levers for the association between patient experience and certain quality scores (Figure 6). This is particularly true for ACO affiliation, suggesting either that other types of programs might be less effective in consistently mediating the association between quality and experience or that these programs are less

widespread than ACOs⁴⁴ (and hence their effects more difficult to capture effectively in our analyses).

Our findings on ACO affiliation and bundled-payment programs are consistent with the evidence that such arrangements appear to be successful in improving some, but not all, aspects of clinical care. For instance, hospitals participating in CMS bundled payment programs were able to reduce costs while maintaining and sometimes improving aspects of quality.⁴⁵ Similarly, a *Health Affairs* study found that hospitals that were part of an ACO experienced faster declines in readmission rates between 2007 and 2013 relative to non-affiliated hospitals.⁴⁶ A 2016 Commonwealth Fund study determined that hospitals affiliated with an ACO had better preventive care outcomes due to their integrated delivery care structure and better coordination of care.⁴⁷

Figure 6. The association between experience ratings and clinical quality is stronger for hospitals that are part of an ACO or that participate in bundled programs

	Mortality	Re-admissions	HAIs	Preventive/effectiveness of care	Education/information	Surgical care	ED care
ACOs ACO-affiliated hospitals	Moderate association	Strong association	Weak/no association	Strong association	Moderate association	Strong association	Moderate association
Quality training programs Hospitals conducting clinical training programs	Weak/no association	Weak/no association	Weak/no association	Weak/no association	Weak/no association	Moderate association	Strong association
Bundled payments Hospitals with bundled payment programs (Medicare, Medicaid, private)	Weak/no association	Weak/no association	Weak/no association	Weak/no association	Weak/no association	Moderate association	Strong association

- Strong association between experience ratings and the indicated quality metrics
- Moderate association between experience ratings and the indicated quality metrics
- Weak/no association between experience ratings and the indicated quality metrics

Source: Deloitte analysis of HCAHPS and quality measures from CMS, and hospital characteristics from Truven and the AHA annual survey database. See appendix for a description of these variables.

Investing in patient experience

Our results show that patient experience has a strong association with hospital quality, even after controlling for hospital and local area characteristics. Although the results also could suggest that better-performing or better-run hospitals are making larger patient experience and quality investments, hospitals with higher patient experience ratings have higher quality scores for many POC and outcome metrics.

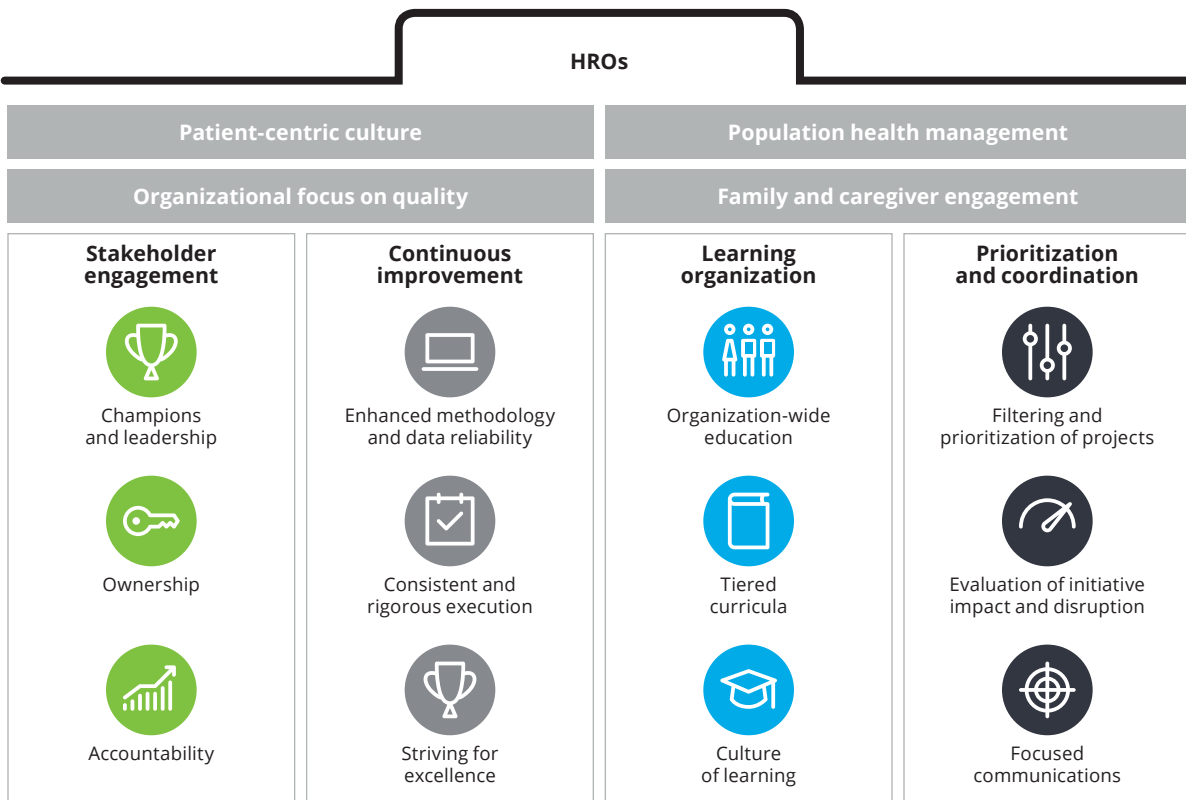
Together with our previous work on the association between patient experience and hospital profitability, these new findings help make the business case for patient experience. Many hospital executives face multiple priorities and resource demands, and may question the business value of analyzing and acting upon patient experience data. With the renewed patient and payer emphasis on patient experience as a core element of care quality, our results suggest that hospitals should consider investing in the mechanisms,

tools, and technology necessary to better engage patients and enhance patient experience—from making appointment scheduling easier to increasing shared decision-making, to offering convenient payment processes and effective care follow-up. In Deloitte's 2016 Survey of US Health Care Consumers, two-out-of-three survey respondents noted that using health technology for purposes such as measuring fitness, and receiving reminders and alerts has changed their health care behavior to a “moderate” or a “great” extent.⁴⁸

Although patient experience scores might not always or fully reflect hospital care quality, our findings suggest that investments in patient experience and quality can be mutually reinforcing strategies. Together, such investments can assist hospitals in becoming high reliability organizations (HROs) that consistently and reliably deliver on the promise of value-based and patient-centered care (see Figure 7).

Figure 7. Hospitals as HROs

HROs are organizations with systems in place that are exceptionally consistent in accomplishing their goals, avoiding potentially catastrophic errors, and delivering consistently safe and high-quality service.⁴⁹



Appendix

Regression analysis

Deloitte performed regression analyses to analyze the association between HCAHPS scores and hospital clinical quality metrics. We used controls for factors that could influence this association, including hospital organizational characteristics (such as hospital size, urban/rural location, ownership type, service mix, teaching status, and being part of a system), case and payer mix, as well as local market conditions.

Regression model

Our main regression specification was of the following linear form:

Quality metric = f(patient experience scores, hospital organizational characteristics, case and payer mix, local market characteristics, year indicators) where the regression variables are as follows:

- Clinical quality metrics: The clinical process of care and outcomes we analyzed are listed in the sidebar on page 4. All clinical quality metrics are standardized to facilitate comparison across hospitals. For quality metrics with non-normal distributions (e.g., percentage of surgery patients whose urinary catheters were removed properly), we followed similar work and categorized the top and bottom percentiles of measures as missing data, so as to diminish the potential for outlier values to affect the analyses.

- Patient experience variables:
 - The percentage of respondents who gave the hospital a rating of 9 or 10 out of 10 (“excellent” responses), and the percentage of respondents who gave a particular hospital a rating of 7 or 8 out of 10 (“moderate” responses).
 - In alternate specifications, “top-box” patient experience scores for the eight non-global HCAHPS domains for which we had data: nurse and doctor communication with patients, responsiveness of hospital staff to patients’ needs, staff communication about new medicines, provision of key information upon discharge, and understanding of care needs after leaving the hospital.
- Payer and case mix variables: Medicare and Medicaid shares in payer mix, an indicator for disproportionate share status, case mix index, intensive care indicators, and non-acute share in total patient days.
- Hospital organizational characteristics: Indicator for the hospital being part of a system, ownership (indicators for government and not-for-profit hospital ownership) and size (indicators for small and medium hospitals).
- Local market conditions: area wage mix index, critical access indicator, urban location indicator, 457 hospital referral region indicators.
- Indicators for each year between 2011-2015.

In these regression models, the unit of observation is the *hospital-year* cell. Since we include *hospital referral regions* and *year* indicators, the association between patient experience and hospital quality performance is estimated from changes in HCAHPS experience ratings in a given hospital over time, as compared to other hospitals with similar characteristics in the same hospital referral region (HRR). We correct the standard errors for clustering on state and year.

Value of patient experience: Hospitals with higher patient experience scores have higher clinical quality

Authors

David Betts, MBA

Principal
Deloitte Consulting LLP
dabetts@deloitte.com

Andreea Balan-Cohen, PhD

Senior Manager
Deloitte Center for Health Solutions
Deloitte Services LP
abalancohen@deloitte.com

Project team

Navneet Kumar analyzed data and helped coordinate interviews with subject matter experts. Maulesh Shukla helped manage the project, helped synthesize research findings, and contributed to the writing. Mohinder Sutrave made significant contributions to the secondary research.

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Sarah Thomas, MS

Managing Director
Deloitte Center for Health Solutions
Deloitte Services LP
sarthomas@deloitte.com

Email: healthsolutions@deloitte.com
Web: www.deloitte.com/centerforhealthsolutions
Twitter: @DeloitteHealth

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