



OUTCOME-BASED DESIGN

How an outcome-based built environment impacts patient satisfaction and safety

BSA

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Introduction

Healthcare executives across the country are asking questions about how their organization can improve patient satisfaction and, as a result, scores on the Hospital Consumer Assessment of Health Care Providers and Systems (HCAHPS) survey. The importance of patient satisfaction results has evolved since the introduction of the Patient Protection and Affordable Care Act—better known as healthcare reform—which affects hospitals’ reimbursement based on scores they receive on the HCAHPS and clinical outcomes. With the implementation of Value Based Purchasing (VBP) in 2013, Medicare ties payment to quality, not quantity. Moreover, improving the patient experience, safety and comfort is simply the right thing to.

How can you link the design of a patient room and related areas to improved patient satisfaction and patient outcomes? Healthcare facility planners and designers have the responsibility to create a physical environment that enables improved outcomes. The ability to identify the design elements that contribute to a healthy and positive patient experience allows hospitals to institute operational plans and design solutions that improve the healing environment. The answer to improving patient satisfaction is a holistic one, encompassing engaged caregivers and a built environment that is an enabler to patient, family and staff satisfaction. Design solutions that respond to all three of the above elements allow the built environment to act as an enabler for positive staff interaction with patients.

Approach

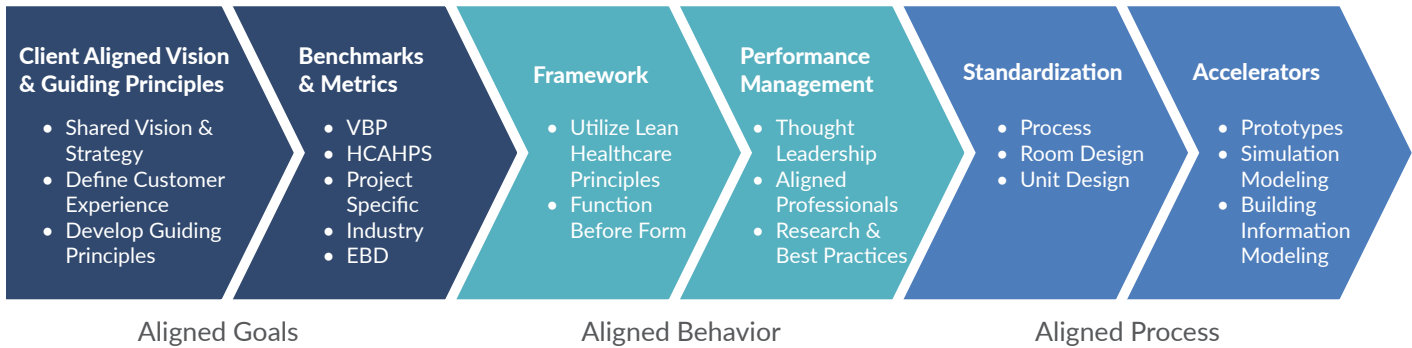
BSA LifeStructures has identified eight questions on the HCAHPS survey that can be impacted by the design of the built environment. Six of the 22 questions relate to the patient’s interaction with the staff, while two are directly associated with the built environment. The questions related to the built environment were analyzed and filtered through an improvement strategy process that identifies the impact of design, the recommendation for improvement and the expected outcome of that design solution. These design recommendations were then charted on the HCAHPS Improvement Grid to evaluate value relative to the capital cost of improvements and the potential for improvement.

There are a number of planning and design components that improve the patient experience, from using noise reducing materials to creating rooms that limit opportunities for dirt and dust collection. Using this improvement process, each design is weighed against evidence-based design principles to evaluate improvement and related costs. Ultimately all the recommended solutions address the challenge of improving the patient’s experience.

Evidence-Based Built Environment: Designing for Improved Outcomes

The process of implementing design solutions that measure outcomes starts with aligning goals, behaviors and processes. A coordinated approach to collaborative leadership and care will translate to results-driven design that addresses shared goals and objectives.

Operational and Facility Planning Driven Design

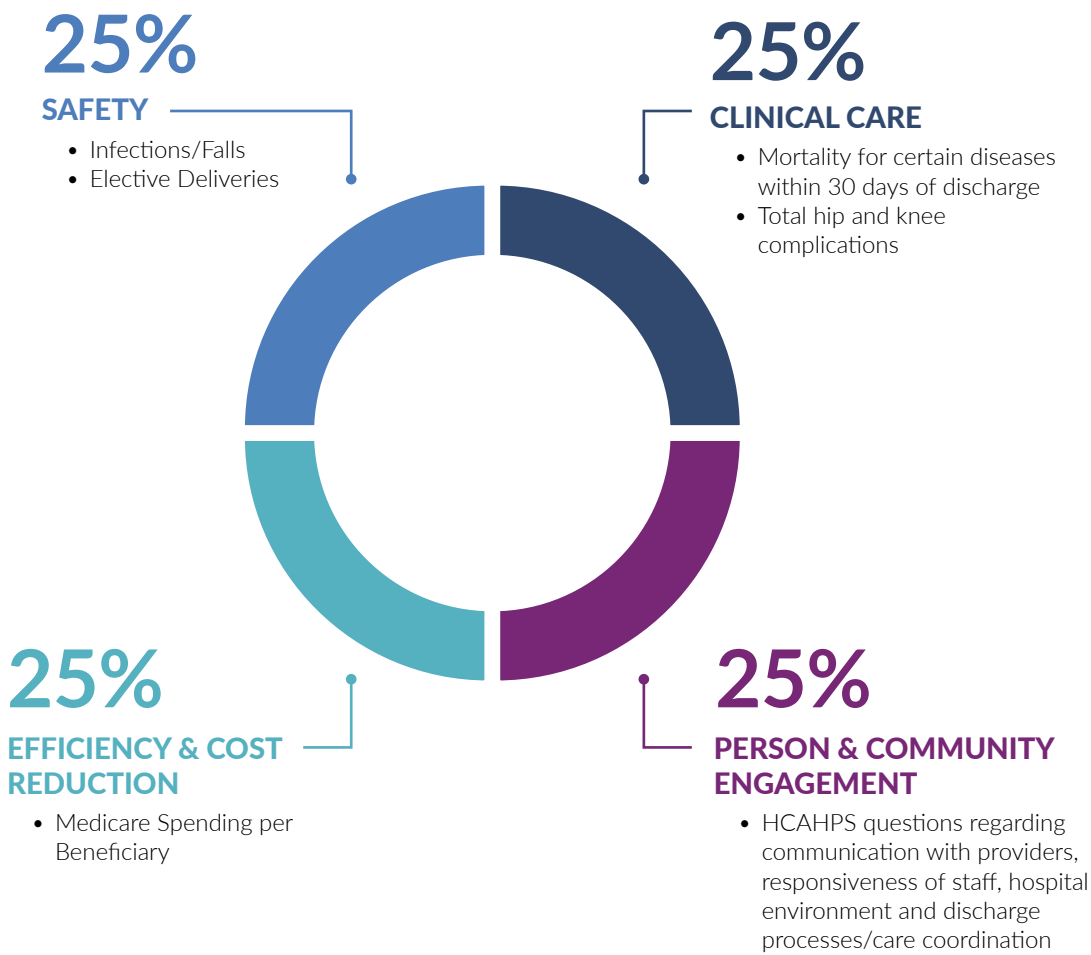


**This diagram is modified from and aligns with Studer Group's "Evidence Based Leadership Model".*

Value Based Purchasing – Aligned Goals

Under Value Based Purchasing Guidelines, total hospital reimbursement will include performance attainment and improvement against specific measures of the perception of care, process of care measures and quality outcomes. This approach to value-based purchasing puts the focus on outcomes and success measures. In 2018, approximately 57% of hospitals will receive Medicare bonuses

while 43% saw their payments reduced¹. The built environment's responsibility is to enable high performance in all the measures that drive success, particularly: patient experience, processes of care, outcomes of care and the prevention of hospital acquired conditions (HACS) such as injury from falls or infections.



¹Modern Healthcare, More Hospitals earning Medicare Bonuses under value-based purchasing, Maria Castellucci, Nov3, 2017.

HCAHPS Survey Questions – 2018

Your care from Nurses/Physicians
1. During this hospital stay, how often did nurses treat you with courtesy and respect?
2. During this hospital stay, how often did nurses <u>listen carefully to you</u> ?
3. During this hospital stay, how often did nurses <u>explain things</u> in a way you could understand?
4. During this hospital stay, after you pressed the call button, how often did you get help as soon as you wanted it?
5. During this hospital stay, how often did doctors treat you with <u>courtesy and respect</u> ?
6. During this hospital stay, how often did doctors <u>listen carefully to you</u> ?
7. During this hospital stay, how often did doctors <u>explain things</u> in a way you could understand?

The hospital environment
8. During this hospital stay, how often were your room and bathroom kept clean?
9. During this hospital stay, how often was the area around your room quiet at night?

Your experiences in this hospital
10.During this hospital stay, did you need help from nurses or other hospital staff in getting to the bathroom or in using a bedpan?
11.How often did you get help in getting to the bathroom or in using a bedpan as soon as you wanted?
12.During this hospital stay, did you need medicine for pain?

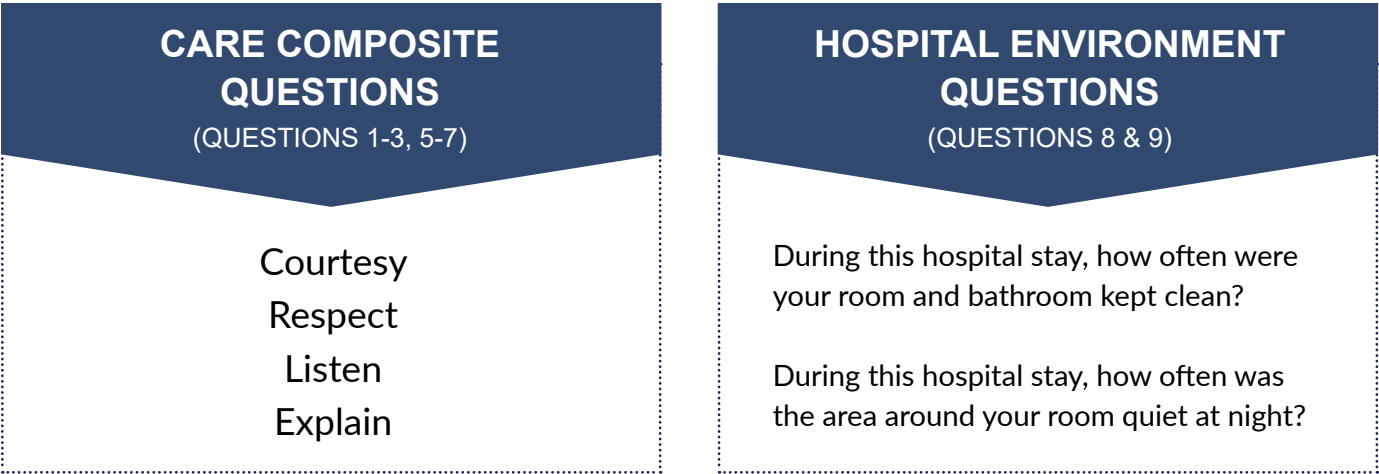
Your experiences in this hospital (con't)
13.During this hospital stay, how often did hospital staff talk with you about how much pain you had?
14.During this hospital stay, how often did the hospital staff talk with you about how to treat your pain?
15.During this hospital stay, were you given any new medicine that you had not taken before?
16.Before giving you any new medicine, how often did hospital staff tell you what the medicine was for?
17.Before giving you any new medicine, how often did hospital staff describe possible side effects in a way you could understand?

When you left the hospital
18.After you left the hospital, did you go directly to your own home, to someone else's home, or to another health facility?
19.During this hospital stay, did doctors, nurses or other hospital staff talk with you about whether you would have the help you needed when you left the hospital?
20.During this hospital stay, did you get information in writing about what symptoms or health problems to look out for after you left the hospital?

Overall rating of hospital
21.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?
22.Would you recommend this hospital to your friends and family?

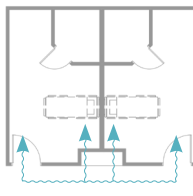
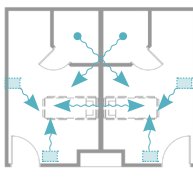
Relationship between HCAHPS & the built environment

Of the 22 questions used on the HCAHPS Survey, BSA LifeStructures identified eight questions that could be influenced by the built environment. Furthermore, these eight questions fall into two very distinct categories of influence. First, the hospital environment questions that directly ask about cleanliness and noise in and around the patient room. Second, the care composite questions that address caregiver interaction and communication with the patient.



Source:
Standard HCAHPS Survey. March 2018. Hospital Care Quality Information from the Consumer Perspective. March 2018. <<http://www.hcahpsonline.org/surveyinstrument.aspx>>

THE ENGAGED CAREGIVER				
	During this hospital stay, how often did nurses treat you with courtesy and respect?	During this hospital stay, how often did nurses listen carefully to you?	During this hospital stay, how often did doctors treat you with courtesy and respect?	During this hospital stay, how often did doctors explain things in a way you could understand?
BUILT ENVIRONMENT IMPACT		DESIGN CONSIDERATIONS		RECOMMENDATIONS
1 Adequate caregiver space at the bedside¹ 2 Off-stage collaboration areas to facilitate manager rounding and team communication 3 Caregiver support spaces²		Adequate caregiver space at the bedside • Computer orientation, staff seating • Supplies at the bedside • Clear path of travel to the bathroom • Collaborative areas at bedside	Plan caregiver spaces with the same considerations as patient spaces • Natural light • Healing environment • Quiet • Ergonomically	Provide flexible & adaptable options for caregiver documentation & workspaces • “Immersive” - place for quiet thought • Collaborative • Provide for standing and sitting at bedside and in caregiver documentation areas Provide storage space at bedside for supplies used most often
		Off-stage team collaboration areas • Team collaboration areas to support multi-disciplinary rounding		
		Caregiver support spaces • Staff lounges • Entrance • Respite areas • Natural light • Ergonomics		
1. American Journal of Nursing, Healing Environments for Everyone, Kennedy, Maureen Shawn MA, RN, April 2013 2. Steelcase 360. Healthcare: Time for change.				

THE HOSPITAL ENVIRONMENT			
During this hospital stay, how often was the area around your room quiet at night?			
BUILT ENVIRONMENT IMPACT	DESIGN CONSIDERATIONS		RECOMMENDATIONS
1 Noise contributes to lower patient satisfaction⁴ 2 Noise contributes to slower recovery of the patient⁵ 3 Noise contributes to longer lengths of stay⁵		External Noise • Location of staff/providers near patient room door • Location of caregivers/visitors in corridor • Location of equipment in corridor alcoves & storage • Decentralized vs. centralized work stations	Implement sound attenuation techniques • Sound masking at door and in room (white noise) • Sound insulation along corridor wall • Acoustical Ceiling Tiles Implement caregivers/visitors “reduce voice volume” program • Quiet zones • Provide sound recording devices in key locations • Provide signage program Implement mitigation of external noise • Sound insulation added at external sources • Study door locations to avoid door alignment • Consider optimal location for work stations Implement wall construction techniques • Increase wall thickness • Improve construction techniques • Sound insulation Implement same-handed patient room floor plan • Adjacent patient room noises reduced • No common headwall separate noise
		Decentralized Nurse Work Stations • Collaboration areas may add noise to the corridor • Work station adds noise at patient room entry • Corridors remain same width despite function change	
		Internal Noise • Toilet in adjacent patient room • Television in adjacent patient room • Adjacent mechanical rooms • Caregivers/visitors in adjacent patient room • Equipment in patient room • Caregivers/visitors in patient room	
4. Kiecolt-Glaser, J. K., G. G. Page, P. T. Marucha, R. C. MacCallum, and R. Glaser. 1998. Psychological influences on surgical recovery: Perspectives from psychoneuroimmunology. <i>American Psychologist</i> 53(11):1209–1218. 5. Ulrich, R. S., C. Zimring, A. Joseph, X. Quan, and R. Choudhary. 2004. The role of the physical environment in the hospital of the 21st century: A once-in-a-lifetime opportunity. Center for Health Design: Concord, CA.			

THE HOSPITAL ENVIRONMENT			
During this hospital stay, how often were your room and bathroom kept clean?			
BUILT ENVIRONMENT IMPACT		DESIGN CONSIDERATIONS	RECOMMENDATIONS
1 A clean room contributes to higher patient satisfaction 2 Unclean room or perception of an unclean room may contribute to negative scores 3 Contaminated environment contributes to hospital acquired infections³		Furniture, Casework, & Built-Ins (Location & Design) - Floor plan layouts, furniture/casework locations, consider minimizing difficult areas to clean - Fixed vs. movable - Snug fit vs. awkward voids	Floor plan configuration - Avoid acute angles and corners Furniture location & placement - Avoid tight and compact areas which will be difficult to clean - Anticipate where furniture can be moved Areas that collect dust & dirt - Provide soffits above upper cabinets - Provide soffits for task down lighting - Provide sloped tops as an alternative to soffits Flooring - Choose products that are easy to clean - Choose products that look clean - Choose products with simple cleaning instructions Walls - Choose easy to clean paint products - Choose walls coverings that look clean - Choose products with simple cleaning instructions
		Finishes & Products - Functionality - Product Selection - Utilize Experience - First cost vs. long term cost - Maintenance - Cleaning products	
	3. Deshpande, A., Cadnum, J. L., Fertelli, D., Sitzlar, B., Thota, P., Mana, T. S., ... Donskey, C. J. (2017). Are hospital floors an underappreciated reservoir for transmission of health care-associated pathogens? American Journal of Infection Control, 45(3), 336–338. https://doi.org/10.1016/j.ajic.2016.11.005		

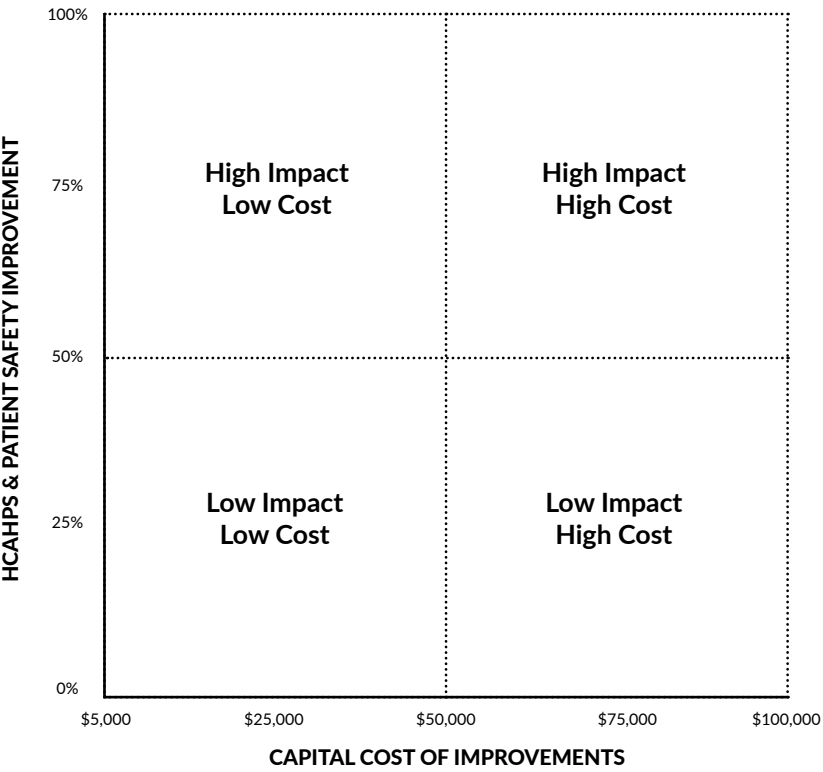
HOSPITAL ACQUIRED CONDITION MEASURES			
Patient falls in room and bathroom.			
BUILT ENVIRONMENT IMPACT		DESIGN CONSIDERATIONS	RECOMMENDATIONS
1 Patient falls in room & bathroom contribute to increased patient morbidity, mortality, LOS, & cost of care 2 Impaired posture during travel to and from to the patient bathroom contributes to the majority of falls⁶ 3 Unobstructed pathways		Distance from Bed to Toilet Consider that while rooms may be same-handed, patient will not be, and access to bathroom from both sides of the bed should be considered. Short as possible travel distance from bed to toilet Hand rails are helpful in preventing patient falls, but not the complete solution 	Preventing Patient Falls Unobstructed path from bed to bathroom in few steps Double leafed or sliding bathroom door Handrails to bathroom and vertically outside bathroom door Non-slip flooring Lighted pathway from bed to bathroom Visibility from corridor to bed or foot of bed Toilet in center of bathroom to provide assistance from caregivers on both sides of the patient Use of patient lifts
6. Pati, D., Valipoor, S., Cloutier, A., Yang, J., Freier, P., Harvey, T. E., & Lee, J. (2017). Physical Design Factors Contributing to Patient Falls. <i>Journal of Patient Safety</i>, (in press). https://doi.org/10.1097/PTS.0000000000000339.			

HOSPITAL ACQUIRED CONDITION MEASURES Infection Prevention		
BUILT ENVIRONMENT IMPACT	DESIGN CONSIDERATIONS	RECOMMENDATIONS
- Location of sinks and hand sanitizers - Personal protective equipment (PPE) location - Cleanable surfaces	Infection prevention - Sink located at entry to patient room » Features: height, depth, faucets, splash, visibility to patients - Cubicle curtains: cleanability, hand guards - Enclosed toilet in ICU reduces splash back and contains the spread of contaminants. - Decontamination and disinfection processes before design - Personal Protective Equipment location - Automated soap dispensers 	- Sink and hand sanitizers should be immediately available for access upon entry and exit to room - Sink should be visible to patient to observe staff handwashing - Provide separate caregiver work surfaces away from sink to avoid splash contamination - Personal Protective Equipment should be immediately available upon entry to the room - Limit cubicle curtains to only what is necessary for patient privacy between the door and bed. » Provide cleanable hand pulls for curtains and keep them secured (tied back) so that they are only used when needed. » Anti-microbial cubical curtains

HOSPITAL ACQUIRED CONDITION MEASURES Hospital acquired infections during construction projects & scheduled maintenance		
BUILT ENVIRONMENT IMPACT	DESIGN CONSIDERATIONS	RECOMMENDATIONS
- Infections lead to hospital readmissions - Infections contribute to lower patient satisfaction - Infections contribute to longer lengths of stay	Negative Pressure - Maintaining negative pressurization in construction zones to ensure healthy air infiltration in hospital - Continuous oversight of ICRA and ISLM standards and requirements - Maintenance of required doors and exits during construction - Capping of relevant sheet metal during construction AHU maintenance - Air handler maintenance (filters) is performed independent of operational functions and schedules - Maintenance protocols should coordinate with operational functions and schedules - Air handler maintenance (cooling coils) is performed independent of operational functions and schedules - Air handler running time protocol in place to ensure dirty particulates are not transferred in hospital rooms and areas	Construction - Stricter enforcement of contractor requirements - Utilize cameras and remote technology during construction - Financial penalties for contractors who do not meet requirements Maintenance - Develop maintenance protocols involving air handler maintenance - Utilize cameras and remote technology during air handler maintenance

HCAHPS Improvement Grid

Based on the goal of improving HCAHPS Scores through facility modifications and changes, the Risk / Frequency Grid has been modified for this specific process improvement. Included on this page is the HCAHPS Improvement Grid which assists with strategic facility analysis and documentation. The grid includes the relative capital dollars required for an improvement compared to the effectiveness percentage of the improvement. This approach provides four quadrants for all of the proposed physical plant improvements to be categorized. This provides a relative value for the comparison in order to make outcome-based decisions.



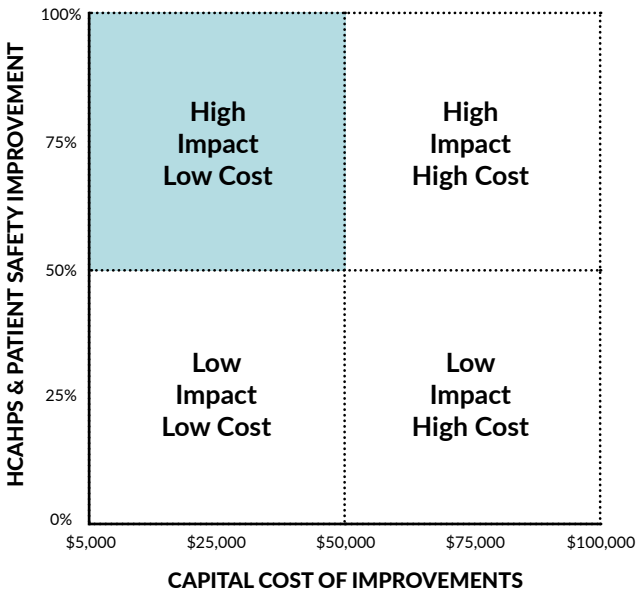
HCAHPS Improvement Grid

high impact/low cost:

The High Impact – Low Cost quadrant focuses on those facility improvements which offer a high value and impact at a relative low cost. In addition, these elements can be implemented in short time frames due to their low cost nature.

how to's:

- Lean process improvement
- Utilize sound masking devices
- Improve cleaning products
- Insulate noise generating equipment
- Replace ceiling tiles
- Add sloped top caps to exposed top caps
- Modify areas difficult to clean
- Limit or eliminate cubicle curtains. Cubicle curtains require cleaning between patients
- Provide a quiet area for caregiver respite

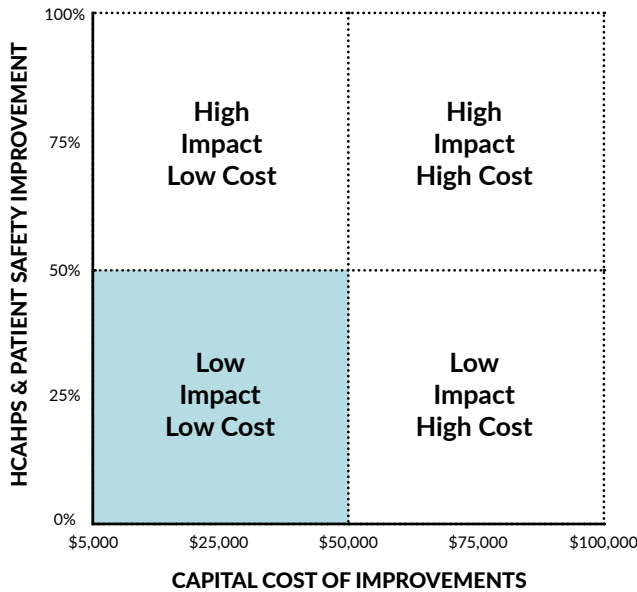


low impact/low cost:

The Low Impact – Low Cost quadrant focuses on those facility elements which offer less value and impact than others yet also require a relative low cost. In addition, these elements can be implemented in short time frames due to their low cost nature.

how to's:

- Eliminate inaccessible corners
- Eliminate acute angles
- Add sound insulation within toilet/shower walls
- Replace flooring to improve cleaning and appearance

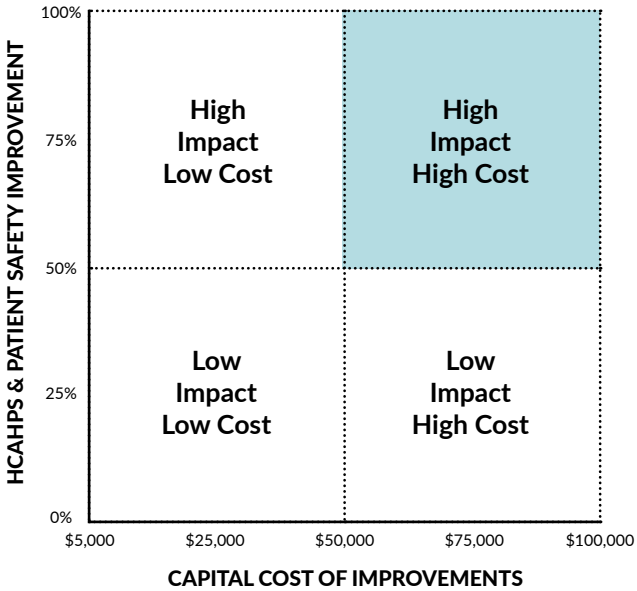


high impact/high cost:

The High Impact – High Cost quadrant focuses on those facility improvements which offer a high value and impact at a relative high cost. In addition, these elements require longer time frames to be implemented due to their relative high cost nature.

how to's:

- Convert to all private rooms
- Change countertops and horizontal surfaces
- Replace tired or broken furniture
- Consider built-in furniture
- Add acoustical features at:
 - » Areas outside of patient room door
 - » Nurse work area out of patient room door
- Remove or relocate noise generating equipment

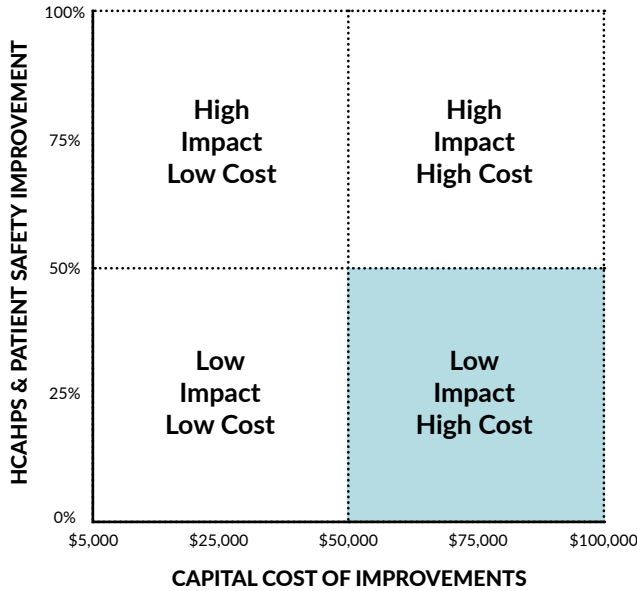


low impact/high cost:

The Low Impact – High Cost quadrant focuses on those facility improvements which offer less value and impact than others at a relative high cost. In addition, these elements require longer time frames to be implemented due to their relative high cost.

how to's:

- Create same-handed patient rooms
- Add sound insulation within patient room walls
- Improve lighting to simulate natural lighting
- Healing gardens
- Department greeting areas



A woman in a hospital setting, possibly a nurse or patient, looking at a clipboard. The background shows a hospital hallway with a reception desk and a framed picture on the wall.

appendix

13

HCAHPS: Patients' Perspectives of Care Survey

HCAHPS: Patients' Perspectives of Care Survey

HCAHPS Overview

The HCAHPS (Hospital Consumer Assessment of Healthcare Providers and Systems) Survey, also known as the CAHPS® Hospital Survey or Hospital CAHPS®, is a standardized survey instrument and data collection methodology that has been in use since 2006 to measure patients' perspectives of hospital care. While many hospitals collect information on patient satisfaction, HCAHPS (pronounced "H-caps") created a national standard for collecting and public reporting information that enables valid comparisons to be made across all hospitals to support consumer choice. The HCAHPS sampling protocol is designed to capture uniform information on hospital care from the patient's perspective.

Three broad goals shape the HCAHPS Survey. First, the survey is designed to produce comparable data on patients' perspectives of care that allows objective and meaningful comparisons among hospitals on topics that are important to consumers. Second, public reporting of the survey results is designed to create incentives for hospitals to improve quality of care. Third, public reporting serves to enhance public accountability in health care by increasing transparency. With these goals in mind, the HCAHPS project has taken substantial steps to assure that the survey is credible, useful, and practical. This methodology and the information it generates are available to the public.

HCAHPS Content and Administration

The HCAHPS Survey is composed of 27 items: 18 substantive items that encompass critical aspects of the hospital experience (communication with doctors, communication with nurses, responsiveness of hospital staff, cleanliness of the hospital environment, quietness of the hospital environment, pain management, communication about medicines, discharge information, overall rating of hospital, and recommendation of hospital); four items to skip patients to appropriate questions; three items to adjust for the mix of patients across hospitals; and two items to support congressionally-mandated reports. The

HCAHPS Survey is available in English, Spanish, Chinese, Russian and Vietnamese in the mail format, and in English and Spanish in the telephone and Interactive Voice Response formats. On average, it takes respondents about seven minutes to complete the HCAHPS survey items. The core set of HCAHPS questions can be combined with customized, hospital-specific items to complement the data hospitals collect to support internal customer service and quality-related activities.

The actual wording of the HCAHPS questions and response categories, as well as the scripts for conducting the survey in the Telephone and Active Interactive Voice Response (IVR) modes, can be found under "Survey Instruments" on the HCAHPS On-line website, <http://www.hcahponline.org/home.aspx>. Complete information about how to implement the HCAHPS survey can be found in the HCAHPS Quality Assurance Guidelines, also available on this Web site.

HCAHPS Development, Testing and Endorsement

The Centers for Medicare & Medicaid Services (CMS) partnered with the Agency for Healthcare Research and Quality (AHRQ), another agency in the federal Department of Health and Human Services, to develop HCAHPS. AHRQ carried out a rigorous, scientific process to develop and test the HCAHPS instrument. This process entailed multiple steps, including a public call for measures; literature review; cognitive interviews; consumer testing and focus groups; stakeholder input; a large-scale pilot test and a number of small-scale field tests. In addition, CMS responded to hundreds of public comments generated by several Federal Register notices.

In May 2005, the National Quality Forum (NQF)—which represents the consensus of many healthcare providers, consumer groups, professional associations, purchasers, Federal agencies, and research and quality organizations—endorsed the HCAHPS. In December

2005, the federal Office of Management and Budget gave its final approval for the national implementation of HCAHPS. HCAHPS was also endorsed by the Hospital Quality Alliance. CMS commissioned an independent research firm, Abt Associates Inc., to conduct an analysis of the benefits and costs of HCAHPS. The Abt report, which includes detailed cost estimates for hospitals, can be found at: <http://www.cms.gov/HospitalQualityInits/downloads/HCAHPSCostsBenefits200512.pdf>.

Voluntary collection of HCAHPS data for public reporting began in 2006, and public reporting of HCAHPS scores began in 2008. Since July 2007, hospitals subject to IPPS payment provisions (“subsection (d) hospitals”) must collect, submit and publicly report HCAHPS data in order to receive their full IPPS annual payment update (APU). IPPS hospitals that fail to report the required quality measures, which include the HCAHPS survey, may receive an APU that is reduced by 2.0 percentage points. Non-IPPS hospitals, such as Critical Access Hospitals, can voluntarily participate in HCAHPS. HCAHPS Survey results also form the basis for the Patient Experience of Care domain in the Hospital Value-Based Purchasing program.

HCAHPS and Public Reporting

Hospital-level HCAHPS results are publicly reported on the Hospital Compare website at <http://www.hospital-compare.hhs.gov>. Results are reported for four quarters

on a rolling basis, which means that the oldest quarter of survey data is rolled off as the newest quarter is rolled on. The survey response rate and the number of completed surveys (in broad categories) are also publicly reported on Hospital Compare. CMS publicly reports HCAHPS results for hospitals that obtain fewer than 100 completed surveys. However, a footnote is added when public reporting these results to denote the lower level of precision. Additional information about hospital performance on HCAHPS is available under “Summary Analyses” on the HCAHPS On-Line Web site, <http://www.hcahpsonline.org/home.aspx>.

To ensure that differences in HCAHPS results reflect differences in hospital quality only, HCAHPS survey results are adjusted for patient-mix and mode of data collection. Only the adjusted results are publicly reported and considered the official results. Several questions on the survey, as well as items drawn from hospital administrative data, are used for the patient-mix adjustment. Neither patient race nor ethnicity is used to adjust HCAHPS results; these items are included on the survey to support congressionally-mandated reports. The adjustment model also addresses the effects of non-response bias. More information about the mode experiment, as well as patient-mix adjustment coefficients for publicly reported HCAHPS results, can be found under “Mode and Patient-Mix Adjustment” at <http://www.hcahpsonline.org/home.aspx>.

Source: “HCAHPS: Patients’ Perspectives of Care Survey,” 2018. Centers for Medicare & Medicaid Services. 12/21/17 <https://www.cms.gov/Medicare/Quality-Initiatives-Patient-Assessment-Instruments/HospitalQualityInits/Downloads/HospitalHCAHPSFactSheet201007.pdf>

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