

A Multidisciplinary Approach to Improving the Pediatric Discharge Process

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ABSTRACT

Background: A collaborative and multidisciplinary shared responsibility with providing discharge information to pediatric patients/families can support successful reassimilation to life posthospitalization.

Problem: An analysis of the current discharge process at an urban pediatric hospital identified variations in discharge practices and instructions.

Approach: A multidisciplinary taskforce used the Plan-Do-Study-Act methodology to standardize the discharge process including creating a discharge template, adopting a new education platform, enhancing the electronic health record, and implementing strategies to improve discharge.

Outcomes: There was a reduction in 7-day readmission rate from preintervention 4.58 to postintervention for 4 consecutive quarters of 3.92, 4.20, 3.44, and 3.41, respectively. Percentile ranking and top box scores of the patient satisfaction measure of discharge preparation increased from 12th-62nd to 65th-95th percentile postimplementation and 81% to 88%, respectively.

Conclusions: A local improvement initiative related to standardization of the discharge process resulted in a reduction in 7-day readmission rate and improved patient satisfaction scores.

Keywords: discharge, multidisciplinary, pediatric, readmission rate

Clear, consistent, comprehensive, and organized discharge instructions and education are essential in preparing patients and their families for a successful reassimilation to home life

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after hospitalization and contribute to a positive patient experience.¹ When the information is unclear, inconsistent, and disorganized, the result is poor communication, which can lead to a lack of family understanding. Researchers found that up to 45% of pediatric families lack understanding of discharge instructions and 40% of pediatric families reported being unaware of essential postdischarge follow-up care.¹

Researchers reported families identified that feeling unprepared for discharge contributed to a return to the emergency department (ED).^{1,2} When a discharged patient returns to the ED, these visits can be complicated by a readmission to the hospital. Patients and their families can experience effects of hospital resource reutilization due to inpatient readmission, including financial and/or psychosocial suffering from lost work revenue, high health care costs, and disruption in family relationships.³ Readmissions are problematic for the hospital as a fiscal burden due to the partial or total loss of payer reimbursement. In adult populations, the Centers for Medicare & Medicaid Services (CMS) reduces reimbursement for select patient population readmissions. Although CMS readmission reductions do not apply to pediatric populations, select state

Medicaid programs disincentivize readmissions using similar reimbursement reductions strategies.⁴

PROBLEM

A multidisciplinary project team analyzed current processes at an urban pediatric hospital affiliated with an academic medical center, in the mid-Atlantic region of the United States, which revealed inconsistent discharge processes and no standardization of a discharge instruction document. Traditionally, physicians and advanced practice providers (APPs) completed a portion of the discharge instructions within a system application embedded in the electronic health record (EHR). Nursing staff supplemented patient and family education through an independent system application outside of the EHR. In addition, physicians and APPs did not have access to the independent system and frequently used external, web-based resources for discharge instructions. Therefore, patients and families received inconsistent and varying instructions due to the lack of coordination between the various providers and system applications. Documents created and printed from both patient and family and EHR systems were not standardized in appearance, including multiple font styles, font sizes, and accent markings, resulting in a less than friendly, easy-to-read document.

Two of the metrics used by the hospital to evaluate effectiveness of the patient discharge experience are the Agency for Healthcare Research and Quality (AHRQ) Consumer Assessment of Healthcare Providers and Systems (CAHPS) Child Hospital Survey administered by Press Ganey Associates and the 7-day readmission rate. The 7-day readmission rate for the hospital was above the internal target, with a rate of 4.58, and the CAHPS Child Hospital Survey patient experience ranged between the 12th and 62nd percentile related to discharge. These metrics prompted the development of a multidisciplinary team to evaluate current discharge processes and identify opportunities to improve patient care. The purpose of this project was to improve the discharge process, increase patient experience scores related to discharge, and decrease the hospital 7-day readmission rate.

LITERATURE REVIEW

Developing an understandable, fluid patient discharge document that meets the needs of the

patient and family is critical when planning for discharge.^{2,5,6} Research has shown there is a link between poorly written instructions and increased readmission risk after discharge.^{5,7} The standardization of certain elements of discharge can improve communication between the hospital staff, patients, and families.^{2,7} Literature supports that standardizing the hospital's discharge process increases effective communication and engagement, decreases the risk of missing information, and ensures patients and families receive consistent information.^{2,5,6} In addition to standardization, recent evidence suggests that "multifaceted interventions are more promising in reducing unplanned readmissions than individual interventions, which supports the development and implementation of bundled interventions."²

Improvement with patient satisfaction and experience throughout the discharge process is an integral strategy for reducing hospital readmissions.^{4,8} Hospital systems that have higher patient satisfaction and experience with the discharge process have positive health outcomes and fewer readmissions.^{4,8} Improving patient and family satisfaction and experience during discharge includes best practice strategies such as eliminating distractions, committing to sit with the patient and family during instruction review, including patients in age-appropriate discussion, and ensuring understanding of instructions and readiness for discharge.^{1,2,6,9-11} The initiation of the commitment to sit demonstrates a value in patient- and family-centered care, increases interpersonal communication, and allows for an improved patient experience.^{9,11} The teach-back technique evaluates patients' and families' understanding of information and identifies inaccuracies that may be a result of health literacy, difficulty understanding treatment plans, or miscommunication between the health care team and family.^{2,7,10} Teach-back is a method of assessing understanding by asking the patient and family to state in their own words what they need to know or do about their health.¹²

APPROACH

The project was conducted at 313-bed, inpatient, urban pediatric hospital associated with an academic medical center.¹³ This hospital sees nearly 110 000 ED and express care visits, completes around 19 900 surgical procedures, has

more than 11 000 inpatient and observation admissions, and schedules more than 1 million outpatient visits annually.¹³

The project leaders used the Plan-Do-Study-Act (PDSA) cycle as a methodological framework to conduct a local operational improvement project, supported by nursing and physician leadership. The PDSA cycle is a commonly used methodology aimed at improving processes in the health care setting by assessing change to optimize a process.¹⁴

There were 5 intervention strategies implemented using a staged approach: (1) development of a Discharge Taskforce, (2) standardization of discharge instructions and patient and family education, (3) development of the EHR workflow (4) discharge best practice strategies, and (5) hospital-wide education (see Supplemental Digital Content, Figure, available at: <http://links.lww.com/JNCQ/A922>). The initial 1-month phase included formation of the Discharge Taskforce and identification of key stakeholders. In the second planning phase, the team identified barriers to the current discharge process and developed a standard discharge process (standardization of discharge instructions and education, EHR workflow, and discharge best practice strategies) over 11 months. The final phase included a month long continuing education series to instruct physicians, APPs, and nursing staff and house-wide implementation.

Interventions

Multidisciplinary taskforce

The development of a multidisciplinary Discharge Taskforce was chartered to design, implement, and evaluate interventions to address the opportunities identified in the discharge process. The Discharge Taskforce had hospital-wide representation from nurses, physicians, APPs, nursing care coordinators, members from the Patient and Family Education Committee, Clinical Informatics Department, Information System Analysts, Pharmacy Department, Quality Services, Training and Education Services, and nursing and physician leadership. The taskforce met for an hour once a month for 13 months prior to the implementation of the new discharge process. In addition, the Discharge Taskforce used a shared leadership model for development of the discharge process, with members ensuring that all proposed interventions were aligned with

the hospital's ethical guidelines and standards of care.

Standardization of discharge instructions

The multidisciplinary Discharge Taskforce standardized discharge instructions using Pennsylvania Patient Safety Authority (PSA) guidelines.¹⁵ Instructions were designed to include 5 key topics during discharge to prepare patients and families to manage care at home. As part of the PSA's National Patient Safety Forum ASK ME 3[®] campaign focus areas included activity, diet, follow-up appointments, medications that are new or have been changed, and what to do if symptoms return or worsen.¹⁵ The taskforce developed a standard instruction template, with the required elements recommended by PSA and uploaded into the EHR as an electronic, modifiable instruction document for all health care providers to individualize based on patient needs. The format of the standard instruction template was designed to improve communication, ensure required aspects of discharge care (activity, diet, wound care, return to school) were included, and create a streamlined appearance of the discharge document.

To supplement the creation of a standard instruction template, the hospital adopted a new education learning platform to provide standard and updated resource materials to patients and families throughout the hospitalization. The education resource materials are embedded into the EHR and organized into topics related to diagnoses, medications, equipment, and other general care. The education learning platform offers general, easy-to-understand patient and family education including up to 12 languages.

Development of EHR

The EHR workflow for discharge is an evolving document that allows all members of the health care team to develop patient discharge instructions throughout the hospitalization. The workflow consists of 4 sections that prompt providers to complete the entire discharge document. These include the following: (1) new order entry to provide physicians and APPs with access to discharge orders, including outpatient laboratory work, home care medical equipment, and therapies; (2) medications to manage home medications and order new prescriptions; (3) follow up to create and save follow-up appointments; and (4) patient education that all health care

providers can contribute to by adding patient education from the EHR-embedded learning platform and patient-specific discharge instructions using the standardized template. Physicians and APPs were responsible for completing sections 1 through 4 with nurses responsible for contributing supplemental education and discharge documentation (see Supplemental Digital Content, Table, available at: <http://links.lww.com/JNCQ/A923>).

Once all 4 sections are finalized and reviewed by the health care team, the information merges into a document that has identifiable headers for organization of information, ease of understanding patient education, and consistency in appearance for the patients and families and limits variations in communication of information. Upon completion, the discharge document is automatically sent to the patient's electronic health portal for patient and family access at any time, as well as others providing care for the patient in the ambulatory setting. Nurses used an additional tab on the EHR workflow, titled Nursing Discharge Documentation, to document the discharge assessment of learning.

Discharge best practice strategies

The implementation of discharge best practice strategies included 3 categories focusing on the patient experience: (1) eliminating distractions, (2) improving the patient/family experience, and (3) ensuring readiness for discharge. In addition to the introduction of these strategies, reeducation regarding the use of the teach-back technique for evaluation of understanding for nursing staff was reviewed.

Eliminating distractions, such as handing off the nurse's portable phone, during discharge education was initiated to assist in a successful discharge by providing patients, families, and the health care provider more focused one-on-one time to discuss instructions, education, and allow questions to be asked and answered prior to discharge. Nursing staff were instructed to apply the teach-back technique when asking 3 open-ended questions upon the completion of discharge education to ensure understanding of: (1) follow-up planning, including appointments and laboratory testing, (2) who to call if the need for medical attention arises, and (3) changes in treatment or plan of care at home. The discharge education would then be concluded with a wrap-

up question, offering to answer any questions that may have arisen during teaching.

Hospital-wide education

The taskforce used a multimodal approach to implementation of the discharge process to ensure education on the new process was distributed and easily accessible to all hospital staff. Educational videos were the primary source of education. The videos were created and designed to highlight the major changes to the EHR system, process and role responsibility change, and best practice strategies for discharging a patient and family. Videos were approximately 5 to 7 minutes in duration and readily available within the hospital learning system for initial viewing and for future reference. The video for physicians and APPs was slightly longer in length because there were more significant changes associated with new responsibilities developed. To complement the videos, a resource binder was developed to be available on the units for health care providers.

Physician, APPs, and nurse staff members had the opportunity to practice using the discharge workflow bundle on a test patient. These practice sessions focused on the process for completing a discharge, how to place orders for discharge and home care needs, where to find patient education and patient instructions, and how to print the discharge instructions from the EHR system. In addition, members of the multidisciplinary taskforce conducted real-time rounding for 2 weeks postimplementation to provide support and resources to staff using the new process.

Data analysis and measures

The Discharge Taskforce used the PDSA cycle to study the hospital quarterly readmission rate and overall patient experience trends. The team analyzed data using descriptive statistics and measures of central tendency for the quarter prior to and postintervention. The hospital readmission data are collected and reported internally through the academic medical center and calculated by dividing the number of inpatient readmissions per month by the number of inpatient discharges per month, per 100 patient discharges.

Patient experience related to discharge was reflected in the AHRQ CAHPS Child Hospital Survey metric "prepare child (to) leave hospital." The results are pulled from a third-party

administrator, and survey responses were inclusive of all inpatient hospital units during the project timeframe. The CAHPS Child Hospital Survey is a standardized tool that uses a Likert scale to assess the patient and family experiences with health care in 2 metrics of top box scores and percentile rank relative to peer group.¹⁶ Top box scores represent the percentage of respondents who gave the highest possible response on the survey scale in relation to each question.¹⁷ The percentile rank describes how well an organization performs compared with similar hospitals within a peer group and assists in the development of a benchmark for scoring.¹⁷

OUTCOMES

The standardization of discharge was successfully implemented in spring 2019 in 14 inpatient units, 6 procedure areas, and 1 pediatric satellite surgical center. The inpatient areas discharged a total of 2149 patients and procedural areas discharged 1696 patients during the first month of implementation. In addition, 27 physician specialty and nursing service lines developed 350 separate instruction documents using the standard discharge template.

The initiation of the new, standardized discharge process was effective in reducing the 7-day readmission rate at the project facility. The project facility's 7-day readmission rate decreased from a preintervention rate of 4.58 to postintervention rates for 4 consecutive quarters of 3.92, 4.20, 3.44, and 3.41, respectively (Figure 1). Corresponding CAHPS Child Hospital Survey percentile rankings relative to peer group demonstrated an increase postimplementation.

These percentile rankings ranged from the 12th to 62nd percentile preintervention and increased to range between the 65th and 95th percentile after the development of the Discharge Taskforce and initiation of the discharge process (Figure 2). Top box scores increased from 81% to 88% (Figure 3).

DISCUSSION

Physician and nursing executive leadership support was essential to implementing a process change of this magnitude. Through multidisciplinary collaboration, the Discharge Taskforce successfully implemented a standard discharge process. The project facility recognized key stakeholders within the discharge process and used a shared leadership model to identify gaps and strategize interventions for improvement. Although the project was driven by nursing staff, the inclusion of care providers across the inpatient admission continuum was imperative to the project's success as this enabled the team to clearly outline responsibilities for physicians, APPs, and nursing staff. This also ensured that all components of the new discharge bundle were fully integrated into practice (see Supplemental Digital Content, Table, available at: <http://links.lww.com/JNCQ/A923>).

The improvement in patient satisfaction scores demonstrated the impact of ensuring patients and families felt prepared for discharge. Integrating this discharge process at the project facility supports literature that suggests successful re-assimilation to home life after hospitalization is related to a systematic, bundled approach to care.^{2,6,9,11,18} In addition, the project results

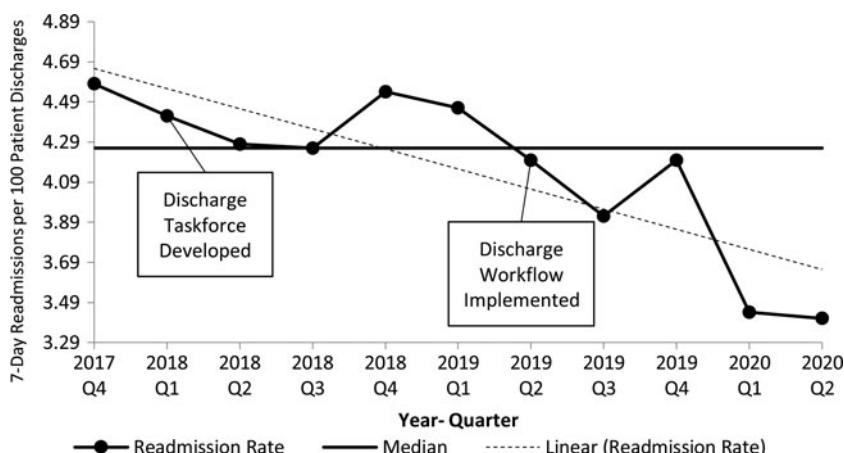


Figure 1. Project facility 7-day readmission rate.

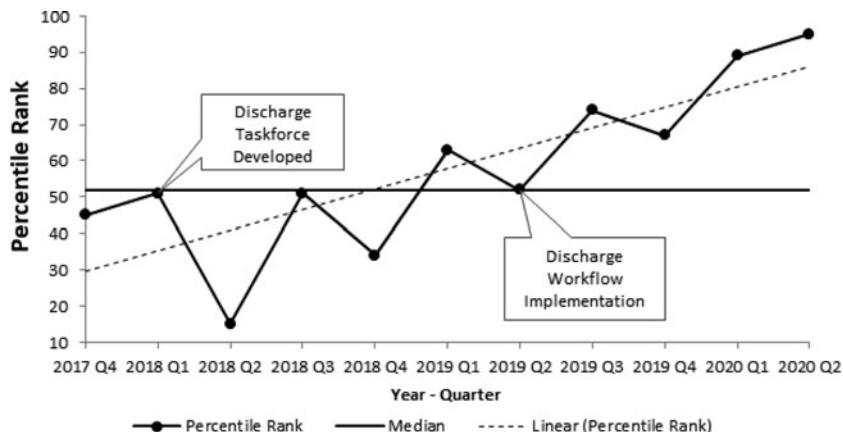


Figure 2. Patient experience: Discharge readiness. Data retrieved using CAHPS Child Hospital Survey (AHRQ, CMS) patient experience scores related to preparation for discharge at the project facility. Prepare Child (to) Leave Hospital Domain Performance administered by Press Ganey Associates collected between July 1, 2017, and June 30, 2020, via paper or electronic survey. During the July 2017–June 2020 time frame, 1387 surveys were received. CAHPS indicates Consumer Assessment of Healthcare Providers and Systems; AHRQ, Agency for Healthcare Research and Quality; CMS, Centers for Medicare & Medicaid Services.

demonstrated a reduction in readmission rates, which aligned with previous literature linking preparation of an effective discharge with a clear, consistent, and organized information exchange.^{1,2,6,9,11,18}

Limitations to Implementation

The project was limited to a single site and the results are not meant for generalizability. Although the short-term impact of the development of project was beneficial in reducing the readmission rate and increasing patient experience scores, it is difficult to ascertain the sustainability of the results due to the COVID-19

pandemic influence on the second quarter of 2020 data.

In addition, there were limitations to implementing the EHR workflow. It was not possible to pilot the EHR workflow on specific units and was created in a test domain only. The inability to pilot the EHR workflow did not allow the Discharge Taskforce to preemptively identify potential problems with the functionality, ensure that all documentation was uploaded correctly, or troubleshoot errors. The new EHR workflow was only able to go-live in every inpatient unit, the satellite surgery center, and procedure centers simultaneously.

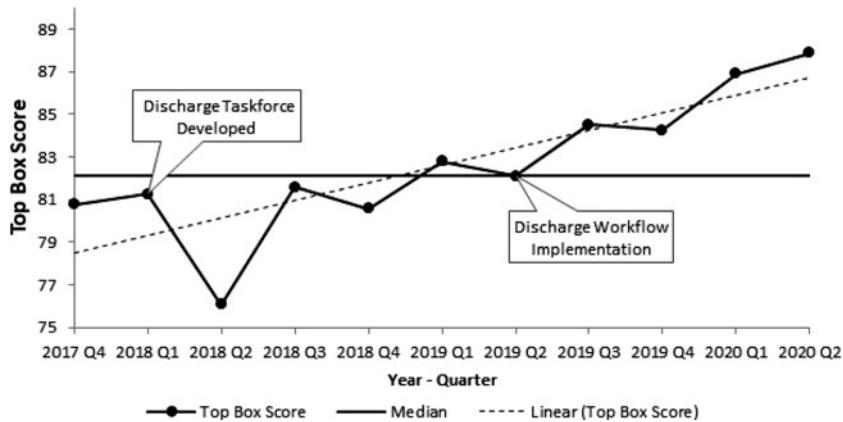


Figure 3. Patient experience: Top box scores discharge readiness. Data retrieved using CAHPS Child Hospital Survey (AHRQ, CMS) patient experience scores related to preparation for discharge at the project facility.^a Prepare Child (to) Leave Hospital Domain Performance administered by Press Ganey Associates collected between July 1, 2017, and June 30, 2020, via paper or electronic survey. During the July 2017–June 2020 time frame, 1387 surveys were received. CAHPS indicates Consumer Assessment of Healthcare Providers and Systems; AHRQ, Agency for Healthcare Research and Quality; CMS, Centers for Medicare & Medicaid Services.

CONCLUSIONS

Multidisciplinary standardization of the discharge process contributed to a positive patient/family experience and reduced readmission rates at the project facility. Using a multimodal approach to implementing best practice strategies and providing standard templates allowed for the development of a fluid patient discharge document that meets the needs of the patient and family. The ongoing assessment of the discharge process and identification of opportunities for expansion allows for the project PDSA framework to be continually evaluated and further improve the readmission and patient experience scores.

Future implications include the development of a dedicated home care coordination section within the EHR discharge workflow, electronically sending the discharge document to an identified primary care provider for continuity of care, integrating discharge and best practice education in nursing and physician orientation, and expansion to the ED and ambulatory setting. In addition, a merger of the Discharge Taskforce and the Patient and Family Education Committee is needed to develop a process for expanding, reviewing, and updating education and instructions for sustainability of the project.

REFERENCES

1. Canary HE, Wilkins V. Beyond hospital discharge mechanics: managing the discharge paradox and bridging the care chasm. *Qual Health Res.* 2017;27(8):1225-1235. doi:10.1177/1049732316679811
2. Shermont H, Pignataro S, Humphrey K, Bukoye B. Reducing pediatric readmissions: using a discharge bundle combined with teach-back methodology. *J Nurs Care Qual.* 2016; 31(3):224-232. doi:10.1097/NCQ.0000000000000176
3. Shah AN, Auger KA, Sucharew JH, et al. Effect of parental adverse childhood experiences and resilience on a child's healthcare reutilization. *J Hosp Med.* 2020;15(11):645-651. doi:10.12788/jhm.3396
4. Anderson S. Examining the relationship between patient experience and readmission rates: a profile deviation analysis. *Health Serv Manage Res.* Published online January 7, 2021. doi:10.1177/0951484820987499
5. Stossel LM, Segar N, Gliatto P, Fallar R, Karani R. Readability of patient education materials available at the point of care. *J Gen Intern Med.* 2012;27(9):1165-1170. doi:10.1007/s11606-012-2046-0
6. Hahn-Goldberg S, Okrainec K, Huynh T, Zahr N, Abrams H. Co-creating patient-oriented discharge instructions with patients, caregivers, and health care providers. *J Hosp Med.* 2015;10(12):804-807. doi:10.1002/jhm.2444
7. Unaka NI, Statile A, Haney J, Beck AF, Brady PW, Jerardi KE. Assessment of readability, understandability, and completeness of pediatric hospital medicine discharge instructions. *J Hosp Med.* 2017;12(2):98-101. doi:10.12788/jhm.2688
8. Anderson PM, Krallman R, Montgomery D, Kline-Rogers E, Bumpus SM. The relationship between patient satisfaction with hospitalization and outcomes up to 6 months post-discharge in cardiac patients. *J Patient Exp.* 2020;7(6): 1685-1692. doi:10.1177/2374373520948389
9. George S, Rahmatinick S, Ramos J. Commit to sit to improve nurse communication. *Crit Care Nurse.* 2018;38(2): 83-85. doi:10.4037/ccn2018846
10. Curran JA, Gallant AJ, Zemek R, et al. Discharge communication practices in pediatric emergency care: a systematic review and narrative synthesis. *Syst Rev.* 2019;8(1):83. doi:10.1186/s13643-019-0995-7
11. Kang E, Gillespie BM, Tobiano G, Chaboyer W. General surgical patients' experience of hospital discharge education: a qualitative study. *J Clin Nurs.* 2020;29(1/2):e1-e10. doi:10.1111/jocn.15057
12. Agency for Healthcare Research and Quality. Health Literacy Universal Precautions Toolkit, 2nd edition. Updated September 2020. Accessed September 3, 2021. <https://www.ahrq.gov/health-literacy/improve/precautions/tool5.html>
13. UPMC Children's Hospital of Pittsburgh. About UPMC Children's Hospital of Pittsburgh. Updated 2021. Accessed March 25, 2021. <https://www.chp.edu/about>
14. Coury J, Schneider JL, Rivelli JS, et al. Applying the Plan-Do-Study-Act (PDSA) approach to a large pragmatic study involving safety net clinics. *BMC Health Serv Res.* 2017; 17(1):411. doi:10.1186/s12913-017-2364-3
15. Pennsylvania Patient Safety Authority. Discharge instructions. Updated April 2018. Accessed August 31, 2018. http://patientsafety.pa.gov/PATIENTSCONSUMERS/Pages/Leaving_The_Hospital_Consumer_Tips.aspx
16. Agency for Healthcare Research and Quality. CAHPS Child Hospital Survey. Updated July 2020. Accessed September 15, 2021. https://www.ahrq.gov/cahps/surveys-guidance/hospital/about/child_hp_survey.html
17. Hospital Consumer Assessment of Health care Providers and Systems. HCAHPS Tables on HCAHPS On-Line. Updated February 23, 2021. Accessed July 2, 2021. <https://www.hcapsonline.org/en/summary-analyses>
18. Unaka N, Statile A, Jerardi K, et al. Improving the readability of pediatric hospital medicine discharge instructions. *J Hosp Med.* 2017;12(7):551-557. doi:10.12788/jhm.2770