

EMPOWERING PATIENTS: SIMPLIFYING DISCHARGE INSTRUCTIONS

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**EMPOWERING PATIENTS:
SIMPLIFYING DISCHARGE INSTRUCTIONS**

by

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DISSERTATION

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ABSTRACT
EMPOWERING PATIENTS: SIMPLIFYING DISCHARGE INSTRUCTIONS

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Background:

Studies have shown that many patients leave the ED with partial comprehension of their visit and discharge instructions. Patients who are not adequately informed as to their discharge plans have decreased compliance with medications and treatment plans, decreased patient safety, increased Emergency Department (ED) recidivism, and poor patient satisfaction. The fast-paced and unpredictable environment of the ED makes thorough communication a challenge, so it is especially important to ensure that patients are given accessible and easy-to-understand information given the acuity and urgency of these patients' conditions.

Local Problem:

This project's objective is to develop and implement a method to assess and improve patient understanding of treatment and discharge plan at the Clements University Hospital Emergency Department, an academic urban hospital ED that sees approximately 43,500 patients per year. Written instructions provided to patients at the beginning of the study were found to be long and tedious, and important information was often difficult to find.

Methods:

The PDSA (Plan, Do, Study, Act) cycle was employed throughout the project. Planning occupied a large portion of the project, with determination of stakeholders, mapping of the current state, and developing an algorithm for assessment of patient understanding. ED discharge process was mapped with a flow diagram to understand the process of educating patients upon discharge from Clements University Hospital. The authors developed a questionnaire to assess patient knowledge using CMS OP-19 Transfer Record and Joint Commission recommendations, areas of communication deficits reported in other papers, and ED staff and provider input. A baseline study was conducted with fifty patients to measure patient understanding of their discharge instructions (Do). Responses from patient interviews were then scored against the

medical record (Study). Three scorers graded all patient responses, and inter-rater reliability was calculated using the kappa statistic.

Interventions:

Based on patient scores in the baseline study, stakeholder interviews, and fishbone diagrams examining reasons for lower scores, a decision matrix was created to decide on the most effective intervention (Act, Plan). The intervention chosen was creating a new, short discharge document. We developed the one-page Simplified Information Page (SIP) targeted to teach patients their most relevant discharge instructions. Next, we tested the SIP on one hundred eighteen patients to see its effect on patient understanding (Do).

Results:

None (0%) of the fifty patients in the initial survey had complete comprehension of their ED visit and discharge instructions, although most patients stated they understood their discharge instructions and thought that their discharge instructions were useful. The lowest scoring questions were medication instructions (dosing and frequency) and indications to return to the ED. Median score improved after implementation of the SIP, with statistically significant changes in score distribution across all questions assessed with the Wilcoxon signed-rank test. Repeated measures ANOVA did not show any significant relationship between improvement in scores and any demographic criteria. Inter-rater reliability between scorers was high (kappa = 0.84).

Conclusion:

Healthcare providers often spend valuable time educating their patients, and it is important to assess the effectiveness of this teaching to identify areas in which we may improve health literacy and patient understanding. We found that the majority of patients do not fully comprehend their ED discharge instructions. Our project has shown that a simple, easy-to-read page with patient input significantly improved ED discharge knowledge.

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CHAPTER 1: Introduction

Problem Description

Hospital discharge instructions provide a permanent reference for patients with details about their medical condition, ongoing management of their illness, and recommended follow-up. Even though most institutions use templates for discharge, the content of these instructions varies between individual providers based on what they believe patients need to know. It is often assumed that patients understand the documents they are given, but at least 78% of patients discharged from the ED exhibited comprehension deficits for at least one area of their ED care and discharge instructions.[1, 2]

Patients are often unaware of their difficulties with comprehension, which raises concern for their adherence to treatment plans and possible future adverse events. There is little research to identify strategies and interventions to improve communication and patient comprehension at discharge from the ED. However, in the few instances when comprehension is studied, poor results have not necessarily resulted in changes to the printed materials given at discharge from the ED.[3] In the inpatient setting, evidence increasingly shows that efforts to enhance information delivery at discharge have a positive impact on morbidity and resource utilization.[2]

Available Knowledge

With its fast-paced and chaotic environment, communication can be difficult in the ED. Previous studies of recorded ED discharge encounters found that verbal exchanges between patients and providers were very brief (76 seconds on average for providers and 14 seconds on average for patients) and often incomplete.[4] The discharge process is recognized as a time with increased risk for communication failures.[2, 5] One investigation found that almost half (42%) of patients received incomplete discharge instructions.[6] ED physicians and nurses may not always go

through discharge instructions thoroughly with patients before releasing them due to time constraints or perceived availability and accessibility of information in the printed discharge instructions. This is not an optimal mindset as studies have shown that many patients do not understand their discharge medications and are often unable to recall even their primary diagnoses.[7] The most frequent area of deficiency was in post-ED care – medication dosage and duration (80%) and return instructions (79%).[4] Communication failures at hospital discharge have been found to lead to poor adherence with follow-up visits, incomplete laboratory testing, and adverse events, resulting in repeat visits and increased hospital utilization.[2] Reported noncompliance with follow-up appointments ranges from 20-67%, and one in five hospitalizations is complicated by a post-discharge adverse event, some of which may lead to preventable ED visits or readmissions to the hospital.[8] With approximately 136.9 million visits to the ED in the United States in 2015, this is an important issue to address.[9]

One factor to consider in studying patient understanding of and compliance with medical instructions is health literacy. Health literacy refers to a patient's understanding of information related to their medical condition and their ability to utilize this knowledge to make decisions regarding their healthcare.[10, 11] Mean ED patient reading levels range from grades 3 to 10 depending on the hospital setting, but even highly-educated people have been found to have poor medical comprehension.[12] Studies have shown that approximately one-third of Americans have low health literacy.[13]

Factors associated with lower health literacy are elderly age, minority ethnicity, low socioeconomic status, and education level less than high school.[14] Patients with poor comprehension are at increased risk for adverse health events and higher healthcare utilization.[15] Lower health literacy has been found to be consistently associated with increased rates of hospitalization and ED visits, as well as decreased use of preventative services and testing, poor overall health status, and higher mortality.[14, 16] In addition to adverse health events, health literacy has a significant

economic impact as a result of increased ED utilization and hospital admission, increased need for prescription drugs, and decreased use of preventative care measures. Low health literacy is estimated to cost between \$106 and \$238 billion annually in the United States alone.[17] This is a large range, and it is difficult to estimate the exact economic impact due to the many factors involved and lack of easy availability of medical costs and up-to-date information about health literacy. One study estimated that the increased medication use alone was \$172 billion.[18]

One last, but incredibly relevant, consideration is patient satisfaction. Patient satisfaction is important as a measure of quality of care, but also economically as it is a factor in for hospitals in Medicare reimbursement. Patients who reported a low level of satisfaction included those who felt that providers, especially nurses, did not show interest in their care, patients who did not receive useful information on self-care, and those who did not know which physician was responsible for their care. Studies have shown that overall patient satisfaction levels increase when patients are well-informed about the cause of their symptoms, tests that were conducted, and reason for admission.[19]

Rationale

Patient noncompliance with medical instructions often leads to inadequate care. Accessible written discharge instructions that empower patients to improve their understanding should improve health literacy and patient self-efficacy, a person's confidence in their abilities to access, understand, and assess the resources around them to promote their well-being. Self-efficacy is linked to patient empowerment and improved health outcomes.[20] A study funded by the Agency for Healthcare Research and Quality (AHRQ) found that patients who have clear understanding of their after-hospital care instructions are 30% less likely to be readmitted to the inpatient setting or visit the ED than patients who lack this information.[21]

Specific Aim

The process analyzed in this project occurs at the time of patient discharge from the ED at Clements University Hospital, an urban academic hospital in Dallas, Texas. As of 2017, the Clements University Hospital ED saw approximately 43,500 patients per year. UT Southwestern and Clements University Hospital have an organizational goal to focus on “quality, safety, and efficiency” to provide high-quality patient-centered care, which led to their receiving a national Rising Star Award for improved quality and safety efforts, ranking it within the country’s top 25 academic medical center hospitals.

The aim of this project is to **improve patient knowledge of their medical visit, as measured by our composite score, at the Clements University Emergency Department by 20% from March 2017 to January 2019.**

CHAPTER 2: Methods

The PDSA cycle (Plan, Do, Study, Act) provides a framework for organizing quality improvement projects through testing small changes in cycles. The “Plan” phase occupied a large portion of the project as we sought to understand current practices in the ED and input of stakeholders. The scope of the patient care steps studied in this project was limited to the immediate discharge process. This begins with provider documentation of discharge in electronic medical record and ends with the patient leaving the ED. The patient population interviewed and studied was limited to those who were discharged from the ED, received medical treatment in the ED, and had medication or treatment changes upon discharge. Patients were excluded if they did not choose to participate, were unable to participate (whether due to decreased consciousness or pain), were being admitted to the inpatient floor, or did not have any treatments prescribed upon discharge. Before beginning the patient surveys, the discharge process was analyzed and diagrammed in a process map (Figure 1).

We then examined the literature on patient discharge instructions to develop relevant questions that patients should know the answer to. Our six questions were derived from several sources, including CMS OP-19 Transfer Record, Joint Commission recommendations for elements of high-quality discharge instructions and medical information, and interviews with ED physicians, nurses, and staff.[22] We then organized these questions into a short questionnaire to assess patient understanding (Figure 2). As this was a quality improvement project, IRB approval was not required. The project was approved by the ED Quality Improvement Committee, and all ED physicians and staff were informed about the ongoing project.

Interviews were conducted in person by medical students at the time of discharge. We chose the time after patients received verbal instructions from nurses and were given their after-visit summary (AVS), a packet of discharge instructions including prescriptions and instructions. This was an optimal time for our assessment as all discharge information had been disseminated and patients had their discharge documents in hand to use for reference.

Initial baseline data collection was conducted as part of the “Do” phase over several shifts on multiple different dates. While the majority of patients spoke English, a few spoke Spanish and were interviewed with the assistance of an in-person translator. If patients were below age 18, their parents/guardians were interviewed, and their education level was recorded. A minority of patients had read their discharge instructions prior to the interview. If patients attested to reading some of the AVS, or if they used it as a guide to answer questions, they were marked as having partially read their AVS.

Baseline data was collected on the current state of patient knowledge at discharge from the ED at Clements University Hospital from 50 patients who met selection criteria. The questionnaire assessed knowledge of the diagnosis, ED tests and treatments, post-discharge treatments (including prescription names and other care instructions), medication frequency, follow up clinics, and reasons to return to the ED

(Figure 2).

This initial data was collected and analyzed (“Study”) with QI tools (fishbone diagrams, driver diagram, and decision matrix (Figures 5-8)) to identify the root causes of lower understanding and plan the best method for improvement. Based on our analysis, we determined that the best interventional strategy was to revamp the AVS. Using prior patient studies and educational standard practices (“Act” and “Plan”), we developed a one-page patient discharge summary, the Simplified Information Page (SIP) (Figure 10). We tested the SIP on a sample of 118 patients at the ED (“Do”) and analyzed the results (“Study”). Additional patient characteristics were collected at the time of the questionnaire, including patient age, education level, acuity of condition, severity of illness (ESI score), number of visits to the ED in the last twelve months, insurance status, main healthcare provider in the ED, and patient satisfaction with the current discharge process (Table 1). Five patients approached declined to be interviewed, citing reasons including being in pain, having other appointments to meet, wanting to leave the ED to eat, and transportation arrival.

Intervention

Multiple tools can be used to assess patients’ health literacy, including the Newest Vital Sign, Rapid Estimate of Adult Literacy in Medicine, Short Test of Functional Health Literacy in Adults, Single Item Literacy Screener, and Test of Functional Health Literacy in Adults.[23] However, multiple studies and national organizations do not recommend measuring health literacy levels for all patients. While low health literacy is associated with adverse events, routine assessments of health literacy are not strongly correlated with better patient outcomes, which is why we decided to not measure the health literacy levels of our patients. Instead, the advocated policy is to provide universal health literacy care, such as simplifying language and presenting focused information.[13, 24, 25]

At the time of the baseline survey, the discharge instructions ranged from 6 to 22 pages long. The information was not always intuitively organized, and important information was not immediately visible on the first page (Figure 9, 2017 AVS). For example, the new prescribed medications were first mentioned on page 5 in this AVS. The longer documents often had many pages of information semi-related to the patient's condition – pre-written 6th grade level papers describing the diagnosis, reasons to return to the ED, preventative measures, and possible treatments. These documents help the AVS in providing comprehensive information to patients and are used widely in the hospital. However, they do not always exactly match the patient's condition and may make the papers more difficult to read thoroughly, especially for people with lower health literacy.

Studies in learning theory have shown that it is difficult to retain large amounts of information accumulated in a short period of time, and patients retain as little as one-fifth of the information they are given.[26] This is especially true when people are stressed or in pain, as is the case with most people in the ED. However, healthcare providers often focus on giving comprehensive information and complete instructions. Since patients will likely not be able to remember detailed medical information, it is important to effectively focus on the key points that patients absolutely need to know, rather than everything that would be potentially beneficial to know.[13] Studies have shown that patient comprehension is greatest when only the most relevant and high-quality information was presented.[27, 28] The SIP aimed to balance the dual goals of providing complete yet condensed information by distilling the large amounts of information that patients are provided into one short, easy-to-read page with simple language, pictographs, and practical emphasis of key points. We aimed to improve the readability of discharge instructions by including all necessary information for patients on the first page of the AVS since many of the items that increased the size (and decreased readability) of the documents cannot be removed due to institutional policy.

About half (58/118) of patients did not read or reference their discharge papers

(Figure 1). We decided that the best way to address this is by providing a very simple, accessible, and interactive document. Multiple content and design points were taken into consideration when creating the SIP (Figure 10). Surveys of patients' recommendations for printed materials identifies several requests that patients had: define complex words and ideas, provide motivational information (why do this), provide practical information and examples, use visual aids, provide a logical flow of information, and emphasize key points.[2, 29] Multiple studies have shown that the reading level of ED discharge instructions often exceeds patients' reading and health literacy levels. It is generally recommended that ED discharge documents be written at a sixth-grade reading level; these documents are typically written at a 9th- to 10th-grade reading level.[2] The SIP was written at Flesch-Kincaid Grade Level of grade 5.

In addition to writing at an appropriate grade level, adding multiple methods of learning and making the document visually appealing are important. Adding pictographs is an easy method to improve patient comprehension and draw attention to specific areas.[2, 3, 30] The SIP contains small icons for subheadings (for example, a pill for new medications, a calendar for follow up visits needed, and a red and white emergency cross for reasons to return to the ED). The icons chosen allow some consistency with the current AVS (which has similar pictographs in red – Figure 9, 2018 AVS) while also making the sections easy to find. In addition, the SIP requires someone to fill out the information – this acts as an additional kinesthetic learning tool and a method of teach-back, which has been proven effective for patient discharge comprehension.[24, 31] Additional design points included leaving white space and avoiding lengthy text and small fonts. Finally, we wanted to make the data accessible and user-friendly, so the SIP was limited to one page in length.

Study of the intervention(s)

Baseline data was collected on the current state of patient knowledge at discharge from the ED at Clements University Hospital. Responses from patient interviews were

scored against the medical record, including the AVS, in Epic.

Analysis

This study had a fully crossed design, meaning that all scorers graded all of the patient interviews. The three scorers were trained with sample patient information and scores to understand the distinction between a full match between patient response and hospital chart (score of 1), no match (score of 0), or partially incomplete or matching response (score of 0.5). Inter-rater reliability was analyzed to assess the consistency between raters in assigning ordinal scores to patient responses in the study. The method chosen was weighted kappa calculations for rater pairs analyzing comprehension scores across all questions, both pre- and post-intervention, to measure the magnitude of agreement achieved between raters.

Chi squared analysis was used to compare baseline to pre-intervention scores since there were changes to the AVS in between studies (Figure 9). Wilcoxon signed rank test was used to compare individual patient scores pre-and post-intervention for the 118 patients who were given the SIP at discharge. This test was chosen since the data was ordinal and paired (same patient interviewed before and after receiving the SIP). The impact of demographic factors was analyzed in baseline and pre-intervention groups using chi squared analysis. Additional factors were studied in the pre-intervention group after the team discussed baseline group results. We also analyzed the effect of demographic factors in score improvement pre- and post-intervention using the repeated measures ANOVA test.

A team consisting of medical students, physicians, nurse practitioners, physician assistants, and nurses brainstormed possible reasons for difficulty in the two lowest-scoring areas, instructions to return to ED and medication instructions. Input from patients during interviews was also taken into account. These ideas were organized in the fishbone diagrams (Figures 5 and 6). Reasons for decreased comprehension

were grouped into the categories of AVS, nurse discharge procedure, patient factors, staff, and time. We then used a driver diagram (Figure 7) to help explore the factors that needed to be addressed and plan our strategy to achieve our aim.

The change factors listed in the driver diagram were used to brainstorm ideas that could be incorporated into the intervention. Multiple interventions were discussed, and the top choices were revamping the AVS, creating a nurse script for discharge, having dedicated staff for education, and telephone follow-up. The decision matrix (Figure 8) was created to plan the intervention to target the lowest knowledge categories. We looked at criteria for feasibility and effectiveness for each of these interventions: funds needed (ideally zero), time needed, staff investment required, technology assistance needed, and potential effect. Based on all these factors, we decided to revamp the AVS.

It was especially important to improve the AVS as there was a small significant difference in patient knowledge between those who read and those who did not read the AVS. This is very relevant since most patients do not read the AVS, so it is important to make discharge documents easy and accessible to motivate patients to use them. AVS default template changed from 2017 to 2018 to include pictographs and more summarized data, which may explain the increase in pre-intervention median score from 4 to 4.5 out of 6 (Figure 9). Since only one of the six questions, post discharge treatment, showed a statistically significant change from baseline to pre-intervention, the redesigned AVS had only a small impact in improving patient understanding. We were limited in our ability to further change the AVS, but our SIP has the potential for greater effect as it was designed to specifically target the lowest-scoring areas.

Ethical considerations

The UT Southwestern Institutional Review Board (IRB) reviews all research projects and studies conducted at UTSW. The UTSW IRB and the Office of Quality,

Safety, and Outcomes Education have created guidelines to determine which projects required full IRB review versus those that qualify as Quality Improvement work. This project was evaluated, determined to be QI work that conformed to the ethical conduct of QI research, and was approved by the ED Quality Improvement Committee prior to implementation.

In regards to implications of implementation of the project, adding an additional discharge page (the SIP) adds time to the patient discharge process, which keeps ED rooms occupied for a longer amount of time. This may delay the process of bringing new patients to rooms in the ED for treatment. To mitigate this effect, patients were interviewed quickly after nurse discharge and the questionnaires were kept to less than 10 minutes.

CHAPTER 3: Results

Results (Figure 3) from the baseline data collection show that patients' understanding is lowest in the domain of post-ED care. The two lowest areas of comprehension are "reasons to return to the ED" and "medication frequency and duration." There was a high variance in total scores, and none of the 50 patients analyzed initially had complete comprehension of their ED visit and discharge instructions (Figure 4). Despite this, 86/118 (73%) of patients gave the ED staff a 10/10 rating on the discharge instructions they were given, saying that they understood their discharge instructions (Table 1). (One patient lowered their assessment of standard discharge instructions after the interview and new discharge.) Median composite score was 4 out of 6.

The patient population was split almost equally between people with and without college education. Most patients were presenting for acute conditions, but most of those interviewed were not severely ill as measured by their ESI score. Average age of the group was 45.6 with standard deviation of 16.6. Most patients had health

insurance (Table 1).

Inter-rater reliability was used to measure the overall index of agreement. Raters were compared against each other and the mean of these scores was calculated: $\kappa = 0.84$ [range 0.635 to 0.9449], which indicated substantial agreement in scores. This high score allowed us to conclude that the scores are adequate for assessing the data in this study.

Chi square comparison of baseline and pre-intervention scores was statistically significant for only one of the six questions – post-discharge treatment ($p < 0.01$). In terms of odds ratio, there was a 3.85 (1/0.2597) times lower odds of incorrect/partial-correct answer for the post-discharge treatment question (Figure 2, question 3) in the pre-intervention compared to baseline.

Comparison of pre- and post-intervention scores with Wilcoxon signed-rank test showed a significant change across all question categories (Table 2). The change in composite scores can be seen in graphical form in Figure 12. The most noticeable changes occurred in the lowest-scoring initial knowledge categories: indications to return to the ED and medication details (Figure 11). No patients scored less than 3 points total post-intervention. Median composite score improved from 4.5 pre-intervention to 5.5 post-intervention (out of 6 points).

The effect of demographic characteristics on patient scores was examined in the baseline and pre-intervention groups. We then investigated the effect of different characteristics on score improvement pre- and post-intervention. In the baseline group, age, education level, main ED provider, AVS read status, and education level were analyzed using chi squared and Fisher's exact test. A statistically significant difference was found only in the category of medication frequency and duration in comparing AVS read status ($p < 0.01$). In addition to the factors studied in the baseline group, insurance status, disease chronicity, ESI score, and number of ED visits in the last 12

months were studied. Chi squared analysis of these factors found no significant effect on pre-intervention scores based on these characteristics. Repeated measures ANOVA test did not show any significant effect on patient score changes pre- and post-intervention based on any demographic characteristics.

After interviewing patients, we invited them to give us feedback about the SIP. We were pleased to receive a lot of positive feedback: “single sheet is much better,” “more helpful than looking through all the paperwork; they end up in the trash,” “this is great since I don’t have time to read through the regular discharge papers,” “I will put it up on my fridge as a reminder,” and “keeps it simple and sweet.” Some comments were a little more neutral: “very helpful, but I would read the whole document anyway,” “no negatives – (speaking in general) it either won’t matter or patients will be glad for more information.” Others offered constructive criticism and recommendations: “discharge papers should be emailed in case the papers get lost” (MyChart, an online healthcare record portal, is available to patients and they were informed), “make the print larger – older people need larger print!” “I’m not a fan of duplicate or discordant instructions – think of risk implications.” Although we encouraged patients to fill in the answers on the SIP themselves, not all patients were able to do so. Reasons for this included pain, hand injury, eye injury, and learning disability.

CHAPTER 4: Discussion

Our study showed that a clear majority of patients have incomplete understanding of their ED discharge instructions and that the SIP can significantly improve patient knowledge. Previous studies conducted on the topic of discharge understanding found that 78% of patients had incomplete understanding of their instructions as measured by deficiency in one or more knowledge area.[4] Our baseline analysis suggests that that number is likely higher as only one of the 168 patients interviewed had a perfect composite score without intervention. One factor that affects patient understanding is

low health literacy in the general population, which has a significant impact on patient outcomes and healthcare costs. The success of our SIP attests to the idea that patient comprehension is closely related to the working memory of patients, which is improved with short, focused instructions rather than long, comprehensive and complex messages.[32] It also corresponds to the idea that the best way to improve health literacy is to provide digestible information rather than simply measure each patient's health literacy level.

Many different strategies to improve patient discharge knowledge have been attempted including video interviews, patient discharge sheets targeted towards specific diseases, and structured discharge sheets. Each strategy has benefits and drawbacks. Videos provide visually engaging learning with good results.[6, 33] Creating high-quality educational videos can be a resource-intensive task, and a stock video cannot be tailored to each patient. Discharge sheets for specific conditions have the same issue – a one-size fits all approach and require a significant investment of time. Structured presentation of information such as our SIP that includes useful instructions for follow up and symptoms that are warning signs helped patients feel empowered and secure as well as acting as a reminder of education received in the hospital.[34] Our patients provided feedback that mirrored these sentiments as well as suggested future courses of action. We created another version of the SIP with larger font size to accommodate our vision-impaired patients. One of the concerns raised was that the SIP may lead to writing different instructions than provided, but having a time for teach-back and discussion during the discharge process using information from the AVS should minimize the risk of inaccurate information.

No patient demographics (age, education, etc.) were found to significantly affect patient scores or patient score improvement, suggesting that insufficient patient knowledge is a global problem that requires a global solution rather than one affecting a particular patient population. Going through the SIP with patients requires additional time from ED staff, which may affect sustainability. This has broad implications on

patient outcomes as well as healthcare costs since it requires more provider time. However, overall costs may be reduced. Project RED (An AHRQ study focused on standardizing patient discharge and providing high quality information) participants had overall lower costs of \$412 on average per person.[21]

Limitations

This project focused on patient understanding, but other areas of potential improvement were found as well. There are multiple steps in which the discharge process may be delayed (Figure 1), which, although not the focus of this project, is relevant to patient care. These steps include provider placing the discharge documents in the files for pickup and nurse checking the files to pick up the discharge documents. Discharge of stable patients was often delayed when nurses had to urgently attend to their unstable patients.

There were multiple setbacks to implementing our intervention. We were not able to make all the changes we wanted to the AVS to since Epic updates currently in place prevent additional changes to AVS until about six months in the future. In the current version, new prescription names are listed on the first page of the AVS, but administration route and dose are not. In addition, “return to ED instructions” are not usually typed by physicians but instead are part of end-of-summary pre-constructed reference documents on different health conditions written at a 6th grade reading level. Although these pre-written documents are usually comprehensive, their structure prevents the “return to ED instructions” from being placed at the beginning of the document, and there is no specific place where ED providers are required to enter return instructions.

Some factors may affect the generalizability of these findings. A convenience sample was used, and a consecutive and or randomized method may have changed the results, and the number of patients we could recruit was limited by time. In addition,

this study was done using a single-site academic center urban population with a relatively well-educated population, which may not match the demographics of all hospital centers.

Conclusions

Our study has shown that a simple one-page intervention can significantly increase discharge understanding through ease of use and accessibility. Patients across all demographic categories benefitted from the SIP, and that tells us that both the problem and solution are universal rather than specific to a particular group of patients, which makes our intervention worthwhile for the whole ED population and really all patients being discharged from a healthcare facility. Many patients do not read their discharge papers, and it is important to motivate them to read these important documents by making them as accessible as possible. Proposed next steps are working on improvements based on patient feedback including improving changes that we already made during this project: increasing the font size to make the SIP easier to read. We would also like to broaden the effect of our intervention by translating the SIP to Spanish and implementing this intervention on a larger scale now that we have proven its effectiveness. While every facility may not have the resources to spend time with patients to complete an additional form, our strategy of empowering patients to take charge of their healthcare by creating a quick and simple learner-driven discharge document is a powerful approach applicable to any healthcare setting.

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Table 1: Patient Characteristics

Table 2: Pre- and Post-Intervention Comparison Per Knowledge Category

Table 1: Patient Characteristics

Patient Characteristics	
Age	
mean	42.5
standard deviation	±16.6
Education Level	number of patients
Some school or High school	62
College	56
Insurance?	
yes	91
no	27
chronic or acute?	
acute	99
chronic	19
disease severity (ESI)	
I	2
II	10
III	56
IV	50
Number of ED visits in the last 12 months	
0	58
0-10	56
>10	4
Have you read your discharge instructions?	
yes	12
partially	48
no	58
Who told you your diagnosis?	
MD	31
APP	32
Nurse	17
Both MD and Nurse	34
other	4
Rate from 1-10 if your discharge information was useful.	
less than 10	32
10	86

Table 2: Pre- and Post-Intervention Comparison Per Question

Patient Knowledge Category/Question	p value for Wilcoxon signed-rank test
Diagnosis	$p < 0.01$
Follow up clinics	$p < 0.01$
Medication frequency	$p < 0.01$
Post-discharge treatment	$p < 0.01$
Indications for return to the ED	$p < 0.01$
ED tests and treatment	$p < 0.05$

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Figure 1: Discharge Procedure Process Map

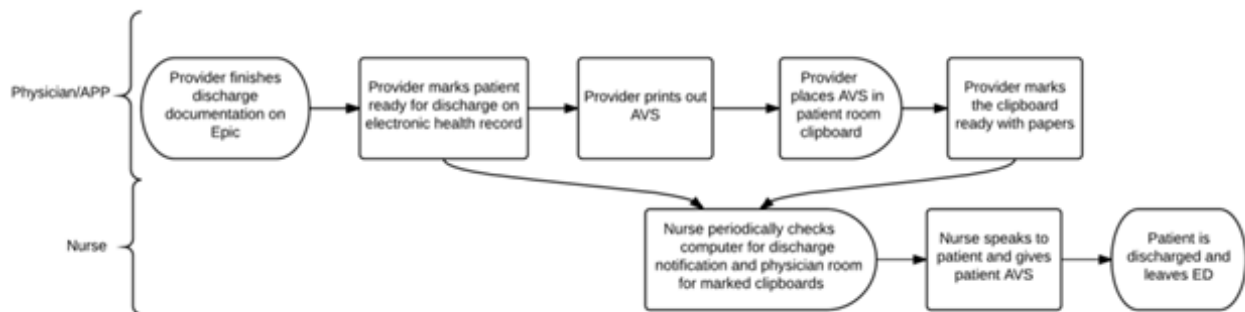


Figure 2: Six Item Patient Questionnaire

1. What was your diagnosis?
2. What treatments did you receive in the ED?
 - a. Circle if you received: IV fluids, Medications (name them), breathing treatments, procedures (name them)
 - b. Other:
3. What treatment (medications, diet, therapy, wound care, etc.) was recommended to you now that you have been discharged?
4. What is the frequency and duration of your prescribed medications?
5. What doctors or clinics do you need to follow up with after your ED visit?
6. For what symptoms or changes should you return to the ED?

Figure 3: Baseline Questionnaire Scores of 50 Patients

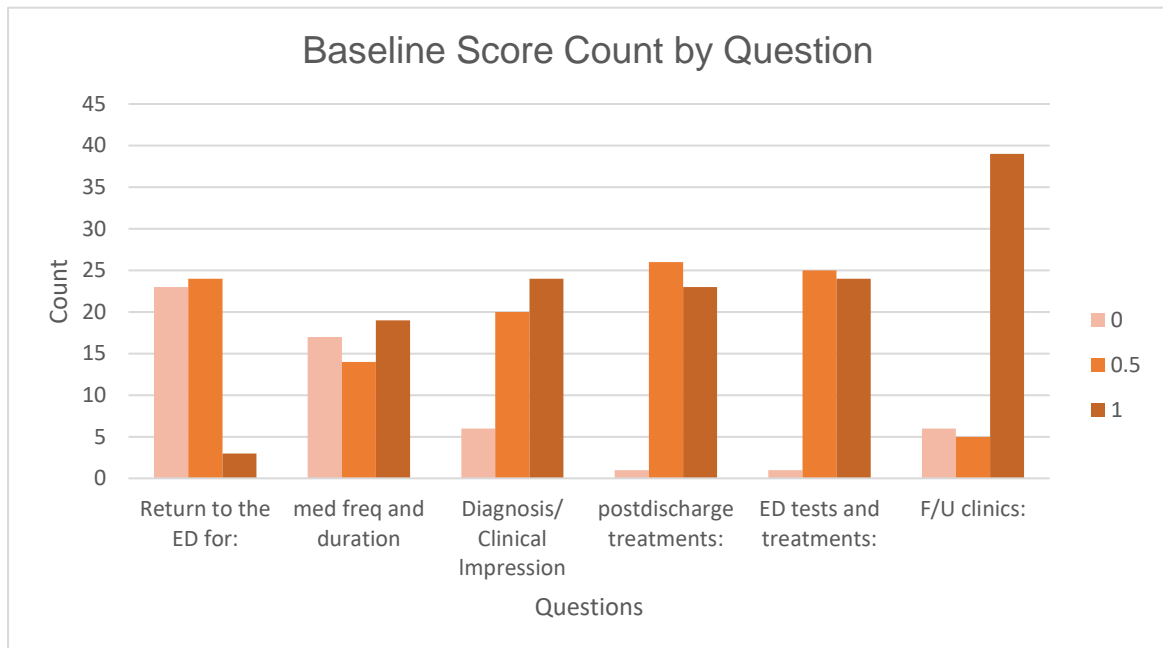


Figure 4: Baseline Total Score Distribution

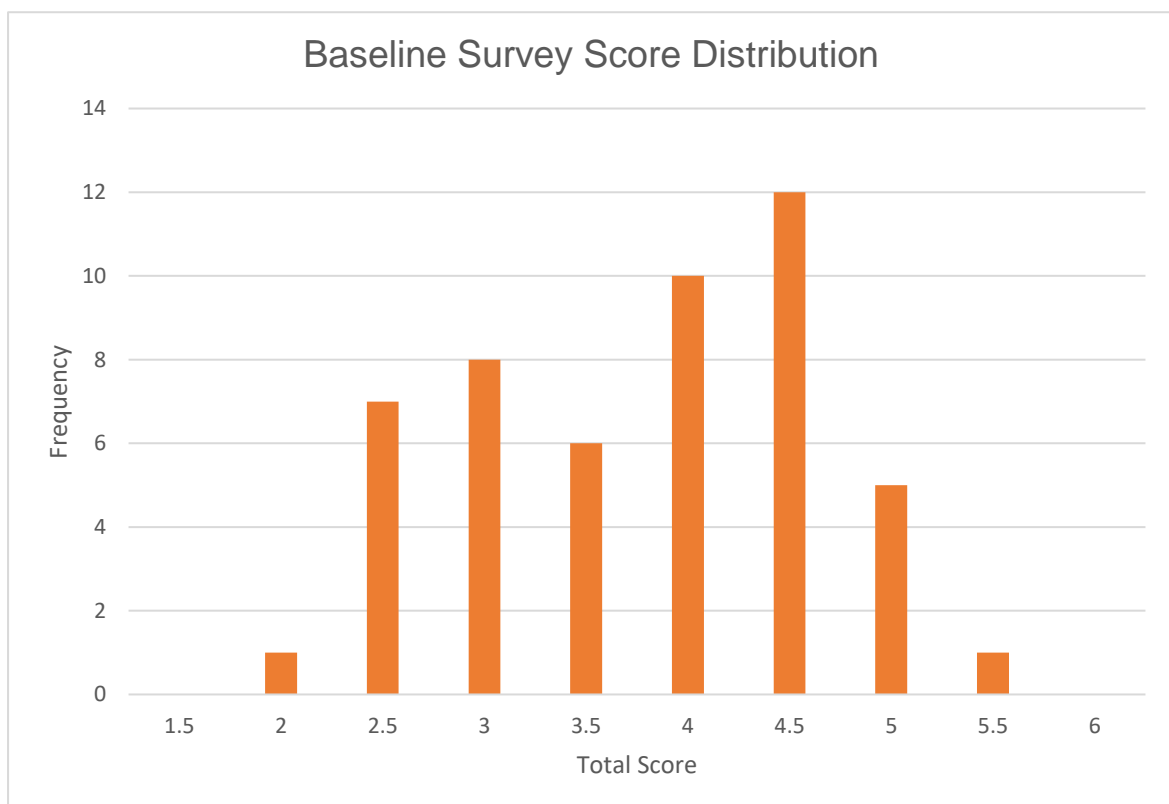


Figure 5: Fishbone Diagram – Indications to Return to the ED

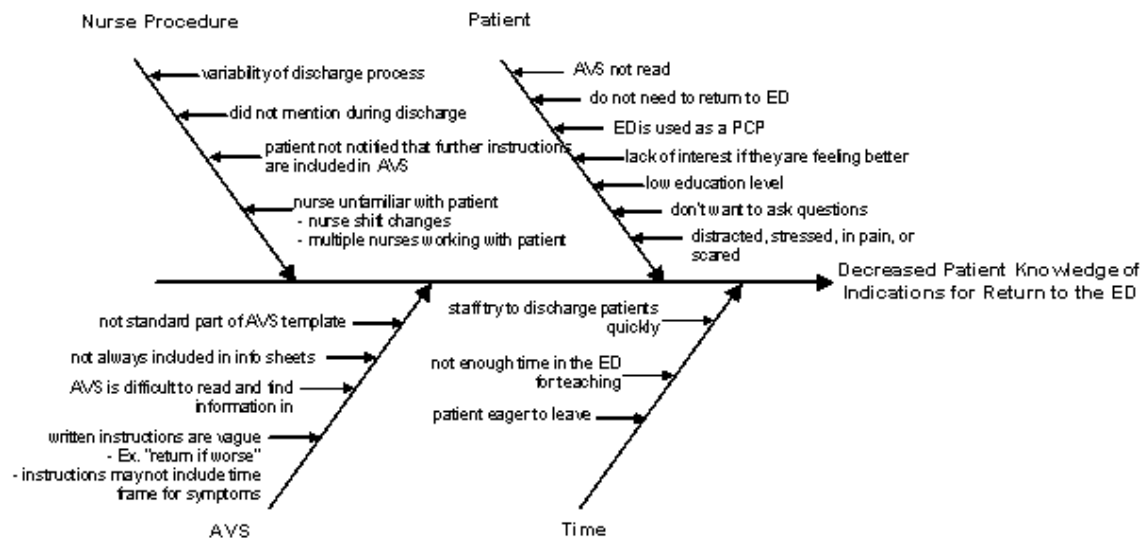


Figure 6: Fishbone Diagram – Medication Frequency and Duration

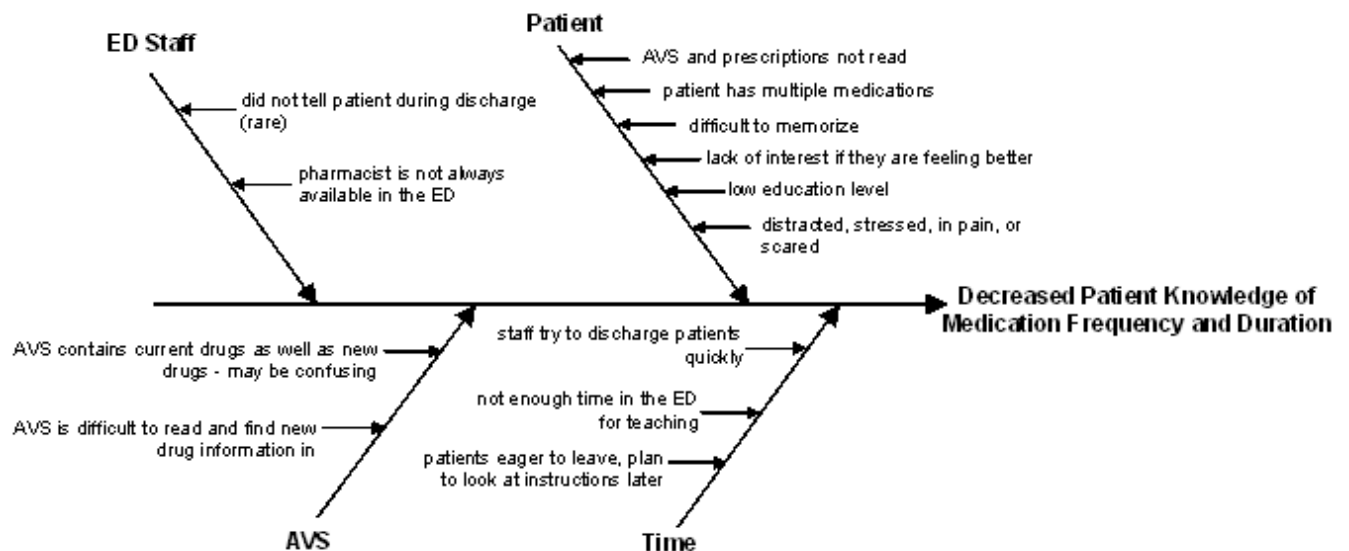


Figure 7: Driver Diagram

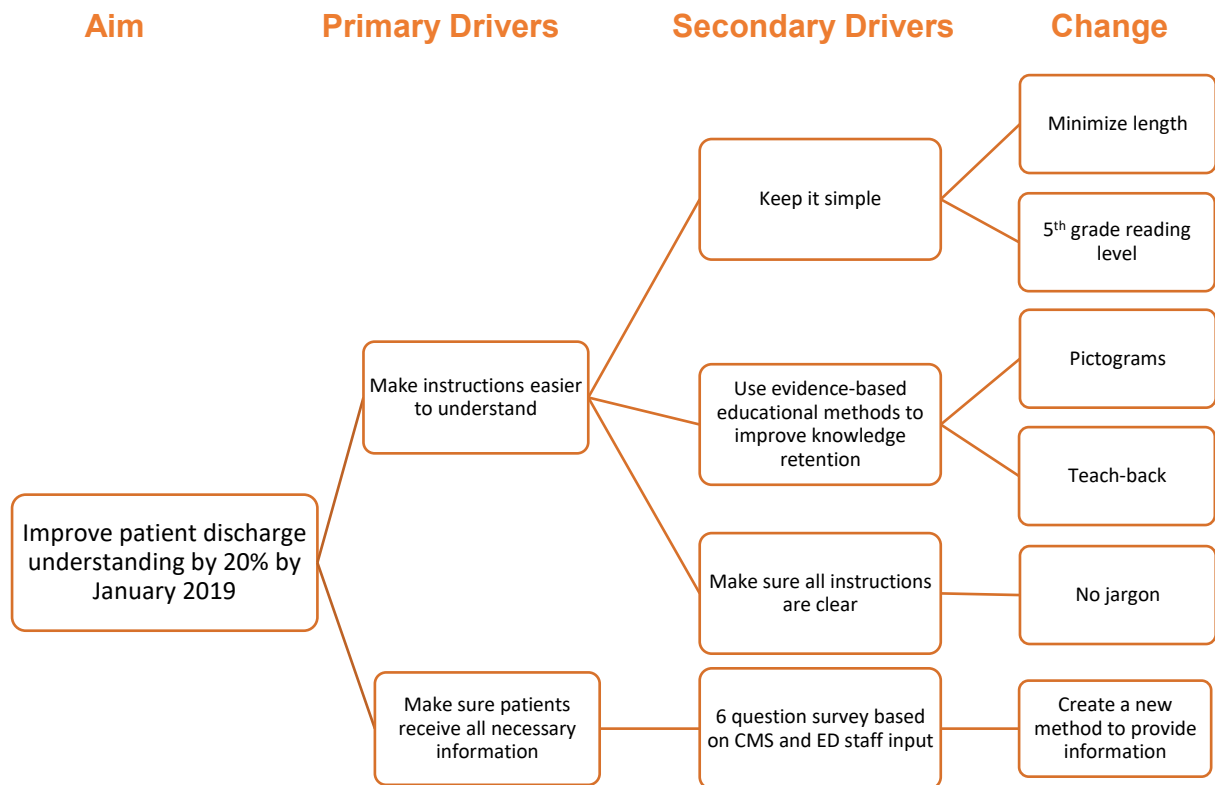


Figure 8: Decision Matrix for Intervention

Criteria	Funds Needed		Time Needed		Personnel Investment		Tech Needed		Potential Effect / Ease of Use		
Importance (weight)	10		8		10		8		-10		Rank Score
Revamp AVS	0	0	8	64	1	10	10	80	7	-70	84
Nurse Script for Discharge	0	0	4	32	10	100	2	16	4	-40	108
Education Staff*	10	100	10	80	10	100	0	0	10	-100	180
Follow-up on Telephone	9	90	10	80	8	80	4	32	10	-100	182

*Hiring a medical assistant or nurse dedicated solely to patient education

Figure 9: AVS First Page Changes Over Time

2017:

AVS

Printed 5/1/2017 4:56 PM

UT Southwestern Medical Center

5/1/2017

Patient Information

Patient Name	MRN#	Sex	DOB
		Female	

About your hospitalization

You were admitted on: N/A

You were discharged on:

You last received care in the: University Hospital Emergency Department
Unit phone number: 214-633-0100

Your Doctor(s) Were

Provider	Specialty
	EMERGENCY MEDICINE

Chief Complaint

Nausea and Vomiting x 2 days

Diagnoses

Trichomonal vaginitis - Primary
Nausea and vomiting, intractability of vomiting not specified, unspecified vomiting type
Gastroenteritis

Follow-up Information

Follow up With	Details	Comments	Contact Info
Patient and Physician Referral Services	Schedule an appointment as soon as possible for a visit	As needed	5323 Harry Hines Blvd Dallas Texas 75235 214-645-8300

Primary care providers (PCPs) are the point person to your health; they get to know you and will monitor your health over time. This relationship can help you stay on track with your health goals, prevent future sickness and provide referrals to specialists they know and trust. Our UTSW Patient Navigators would be happy to assist you in locating a PCP, please contact us at 214-645-8300 or visit our website at <https://www.utswmedicine.org/patients-visitors/appointments>.

Appointments for Next 90 Days

None

All Medication Administration

Date/Time	Order	Dose	Route	Action
-----------	-------	------	-------	--------

2nd page: lab results, new meds on page 5

2018:

AFTER VISIT SUMMARY



Name

MRN:

12/2/2018 University Hospital Emergency Department

Instructions

Your personalized instructions can be found at the end of this document.

includes ED return instructions



Your medications have changed

→ **START** taking:

nitrofurantoin (macrocrystal-monohydrate)
(MACROBID)

phenazopyridine (PYRIDIUM)

new meds, dose and duration on page 3

Review your updated medication list below.



Pick up these medications at Walgreens Drug Store

nitrofurantoin (macrocrystal-monohydrate) • phenazopyridine

Address:

Phone:



Follow up with , PCP name

Specialty: INTERNAL MEDICINE

Contact:

no time frame given

What's Next

You currently have no upcoming appointments scheduled.

Lab Results

URINALYSIS + REFLEX MICROSCOPIC

Component	Value	Standard Range & Units
COLLECTION METHOD	Unspec	
COLOR, UA	Orange	
CLARITY, UA	CLOUDY	
SPEC GRAV, UA		1.005 - 1.030
Unable to report due to color interference		
PH UA		5.0 - 6.0
Unable to report due to color interference		
Glucose Ur	Negative	Negative mg/dL
KETONES, URINE		Negative mg/dL
(Abnormal)		
Unable to report due to color interference		
PROTEIN, UA (Abnormal)		Negative mg/dL

Today's Visit

You were seen by
and , PA , MD

PA included

Reason for Visit

Burning With Urination

Diagnoses

- Dysuria
- Acute UTI (urinary tract infection)

Lab Tests Completed

CULTURE URINE

URINALYSIS + REFLEX MICROSCOPIC

URINALYSIS MICROSCOPIC ONLY

Done Today

IP NUR UR PREG POCT

ED tests

Medications Given

phenazopyridine (PYRIDIUM) last
given at 11:09 AM

ED treatment

Your End of Visit Vitals



Blood
Pressure
148/79



Temperature
(Temporal
Artery)
97.5 °F



Pulse
70



Oxygen
Saturation
98%

Figure 10: Simplified Information Page

Quality Improvement 2018 - EMPOWERING PATIENTS: SIMPLIFYING DISCHARGE PAPERS

Patient Name: _____ Date: _____

Today, you were treated at the Clements Emergency Department for _____
(Diagnosis)



After you leave the Emergency Department, get these medicines from your pharmacy:

- Medicine Name:
 - Dose:
 - How long to take:
 - Purpose:
- Medicine Name:
 - Dose:
 - How long to take:
 - Purpose:
- Medicine Name:
 - Dose:
 - How long to take:
 - Purpose:



You also need to visit your other doctors so they can check on you.

- Doctor Name _____, Specialty _____
 - Date, Time



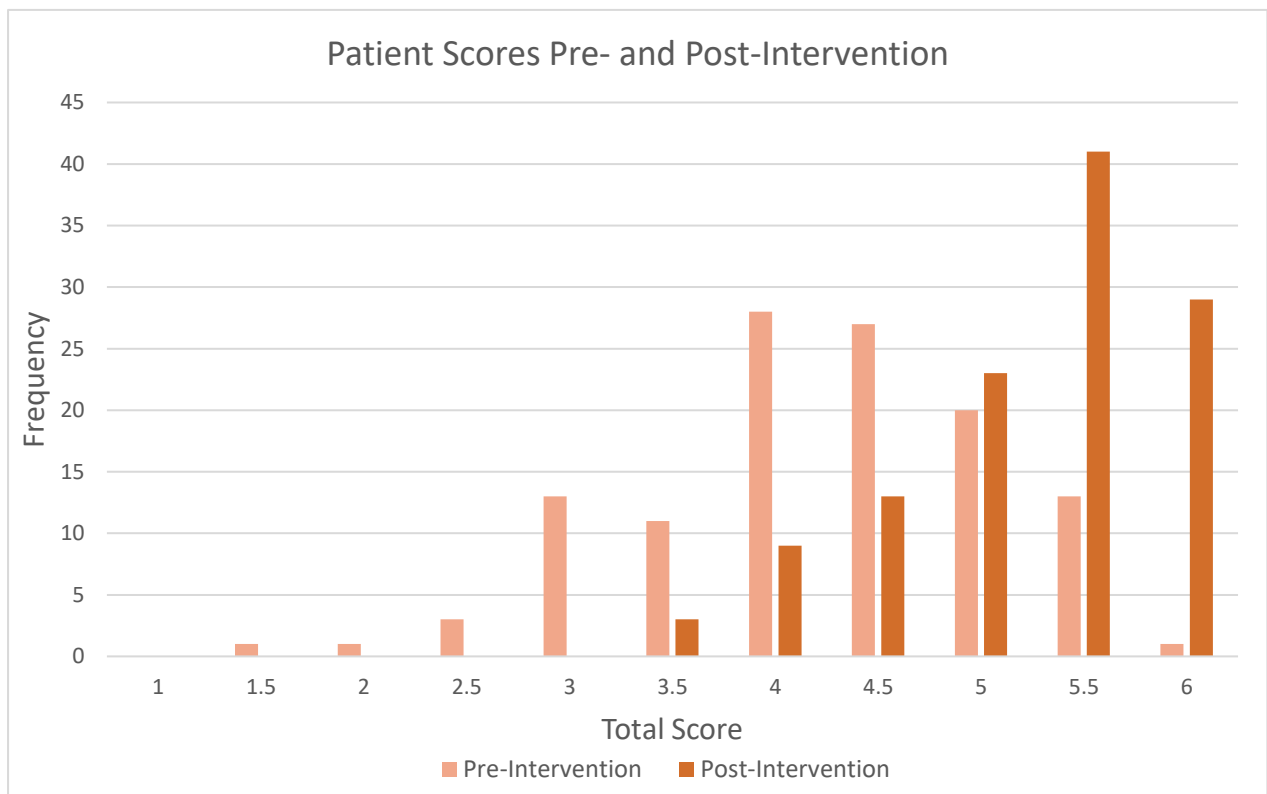
If you have these symptoms, visit the Emergency Department:

-
-

Figure 11: Pre- and Post-Intervention Score Counts by Question



Figure 12: Pre- and Post-Intervention Total Scores



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VITAE

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