

ABO NON-CLINICAL IMPROVEMENT IN MEDICAL PRACTICE ACTIVITY

Topic

Title of Project:	Mobile App (Sharp Health Companion) Designed to Help Patients Prepare & Recover from Cataract Surgery
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Project Description

<p>Describe the quality gap or issued addressed by this activity. (Included in your response to this question should be a description of the resources that informed your decision to pursue this topic, a description of what the literature says about the issue you identified, and the rationale for choosing to address this clinical project</p>	<p>In an effort to transform the entire cataract surgery experience, our team introduced the Sharp Health Companion app to aid in pre-surgical preparation and post-surgical recovery. Pre-surgical instructions can oftentimes be a lot to consider and remember. However, if patients don't follow the instructions, surgeries often end up being cancelled. Our app addresses these issues with reminders for required tasks that are needed before a patient is wheeled in to surgery.</p> <p>To make an anxiety-ridden surgery day go smoothly, the app provides reminders that help patients remember things like what to wear, and even gives directions to the surgery via GPS map apps. Educational videos also give people an idea of what to expect from their surgical experience.</p> <p>Once surgery is complete, the app adjusts to accommodate post-surgical care. For cataracts patients, medication compliance can be as low as 30%, so the app aims to increase adherence through reminders, tutorial videos, and a timer to help patients use their eye drops. There is even an eye test to help patients test their vision. Patients can also contact us (the care team) through the app if problems arise.</p>
<p>Background Information: The month you pulled the baseline IRIS performance report and any additional information that me be pertinent:</p>	<p>The genesis of our app came from years of feedback from patients and care team members from the frontline who simply did not want to continue with the status quo of our current process. We often had to cancel surgery cases because patients do not follow dietary restrictions, blood thinner restrictions, and show up at the wrong surgery location. We also observed patients who were non-compliant with eye drop medications because they are busy or often forget to take them. As a result, patients would get complications such as cystoid macular edema and uveitis after cataract surgery. Our team approached this app project from the perspective of the patient. What would we want if our own beloved family member was about to undergo cataract surgery? Thus, my team and I created the Sharp Health Companion App.</p>
<p>Project Setting: (Please select from options below):</p> <ul style="list-style-type: none"> • Group Practice • Healthcare Network • Hospital • Multi-Specialty Group • Solo Practice • Surgical Center • Other 	<p>Group Practice</p>

<p>Study population: (describe the type of patient for whom the care process will be improved, e.g., all patients in your practice, patients with diabetes, patients presenting for emergency care:</p>	<p>Study Population:</p> <ul style="list-style-type: none">• Patients who have been diagnosed with visually significant cataracts whose symptoms are not relieved with spectacles or contact lenses and have requested to undergo cataract surgery.• Patients who have mobile phone devices (Apple iOS or Android) and are comfortable in using them.• Patients who consent to use our HIPAA secure & mobile health app (Sharp Health Companion) to monitor their cataract surgery preparation, progress, and recovery. <p>The Care Process will help all future patients who undergo cataract surgery.</p>

Quality Indicators / Performance

Measures:

It is important to carefully define outcome or performance measures that will be quantified at baseline (before the care process is changed) and at re-measurement (after you have implemented the proposed improvement) to quantify the impact of your care process change. There are two basic types of performance measures - process of care measures and outcomes of care measures.

- Process of care measures (e.g. timely treatment of diabetic retinopathy) can influence outcome measure (e.g. decreased risk of severe vision loss);
- Outcome measures can be linked to processes of care that can be improved. Generally, performance measures are expressed as rates, often as percentage rates. For example, if the intent of a project is to improve the quality of glaucoma care in your practice, you may choose to improve your rate of establishing a goal IOP in patients with newly diagnosed glaucoma, measured over a 3-month period.

- The numerator of this process measure would be the number of newly diagnosed patients during this time who have a goal IOP recorded in the medical record.

- The denominator would be the total number of patients diagnosed during that same time period.

Continuous variables (e.g. the refracted spherical equivalent after cataract surgery) can often be simplified and transformed then into percentage rates by setting a quality threshold (within 0.5 diopters in the intended spherical equivalent) which, if attained, would qualify the patient to be in the numerator (e.g. number of patients within 0.5 diopters / total number of patients). It can be advantageous but not mandatory to have more than one quality measure in order to gauge the impact of your process change. In the example above, an additional outcome measure might be the percentage of patients in whom the goal IOP is attained within the first 6 months after diagnosis. If possible, measure quality indicators for at least 30 individual patients or data points during the baseline and again during the follow up period.

Measure Type: Outcome

Measure Name: Determine if App is reducing number of cataract surgery cancellations.

Numerator Statement: Number of patients who had their cataract surgery cancelled because of diet, blood thinner, wrong date/time.

Denominator Statement: 30 consecutive patients undergoing cataract surgery using our Sharp Health Companion App vs 30 consecutive patients undergoing cataract surgery NOT using the app.

Measure Type: Process

Measure Name: Determine if 30 consecutive patients are taking their eye drop medications after cataract surgery using the Sharp Health Companion App

Numerator Statement: Actual number of eye drop dosages instilled by patients during cataract surgery recovery as recorded by the Sharp Health Companion App.

Denominator Statement: Total number of eye drop dosages required for 100% medication adherence.

We realize that this may not be feasible or appropriate for all projects. Please indicate at least one measure below; either a process or outcome measure:

Example Measure:

- . Measure Type: Process Measure
- . Measure Name: Patient pain level during intravitreal injection
- . Numerator Statement: Number of patients in who pain levels decreased by 2 points on a 1-10 scale
- . Denominator Statement: 30 consecutive patients undergoing intravitreal injection.

<p>Project Interventions:</p> <p>Quality improvement requires that you analyze your care delivery processes and identify changes, which if implemented, will improve care and outcomes. Generally, educational interventions are thought to be weak and demonstrate little impact. The introduction of tools, strategies or systematic approaches to care delivery is more powerful. A tool is a thing, for example a preoperative checklist, or written standardized process or protocol. Strategies include changes in procedures or policies like the introduction of a surgical time out before surgery is initiated. Systematic approaches to care delivery involve a comprehensive analysis of care process and the introduction of a combination of tools and strategies designed as a complete process. Please describe the changes to your care processes you intend to introduce:</p>	<p>This project is designed to determine if mobile apps can not only help cataract eye surgery process and outcome but also other eye surgeries at our center including retina, glaucoma, and Oculoplastics surgeries.</p> <p>Our Sharp Health Companion app based on the Apple Carekit platform has built in tools for checklists for patients to do before, during, and after eye surgery.</p> <p>As a provider and a member of my care team, we can monitor these outcomes by patient generated PDF reports that are patient initiated and sent to the care team. The patient maintains control of their data and progress to respect privacy and their safety.</p> <p>We anticipate that the use of Mobile health apps for cataract surgery will complete replace all our paper instructions, telephone call reminders, and provide a safe and efficient way to scale for many patients while providing the best possible care experience.</p> <p>We anticipate we will require 60-90 days to measure and identify any improvements in our Sharp Health Companion App to help with the cataract surgery preparation and recovery process for patients.</p>
<p>Project Team: (include roles for yourself and all members of your team):</p> <p>List the individuals who will be involved in your quality improvement project (i.e., solo project, partners in practice, office staff, OR personnel, anesthesiologists) and the roles they will contribute.</p>	<ul style="list-style-type: none"> • Project Designer, fire starter, and physician champion • 4 Ophthalmic Technicians - help educate cataract surgery patients on how to use Sharp Health Companion App. • 2 Surgery Schedulers - help set up Sharp Health Companion app for prospective cataract surgery patients. • IT Support Team - help patients who encounter technical issues with our Sharp Health Companion App.
<p>Will any other ophthalmologists be requesting MOC credit for participation in this SD-PIM?</p>	<p>No</p>

Project Outcomes/Results

Project Summary	In the following sections, please prepare a brief summary of the project highlighting the data collected, effectiveness of your measurement approach, interventions, and the overall impact of the project.
Baseline Data: Quantify each of the quality indicators / performance measures described above for the baseline period (before interventions for improvement were introduced). Report the numerator, denominator and the calculated percentage rate for each measure.	BASELINE DATA 1: Baseline Cataract Surgery Cancellation Rate - PATIENTS NOT USING APP (No-show, failure to stop blood thinners, dietary requirements not followed, forgot surgery date, etc.). Numerator = 2 cancelled cataract surgery cases. Denominator = 30 total cataract surgery cases (not using our App) Percentage: 6.7% cancelled cataract surgery cases (not using our App). BASELINE DATA 2: Literature reported eye drop compliance adherence rate: 30%.

<p>Follow-up Data: Quantify each of the quality indicators / performance measures described above for the re-measurement period (the period following implementation of the interventions for improvement).</p>	<p>FOLLOW-UP DATA 1:</p> <p>Cataract Surgery Cancellation Rate - PATIENTS USING APP (Sharp Health Companion CareKit app)</p> <p>Numerator = zero cancelled cataract surgery cases (patients followed pre-surgery requirements and showed up on correct surgery date/location) Denominator = 30 total cataract surgery cases (using our App) Percentage = 0% cancelled cataract surgery cases (using our App)</p> <p>FOLLOW-UP DATA 2:</p> <p>Number of eye drop medication applications required after surgery to prevent infection and inflammation. Antibiotic eye drop (4X per day for 10 days); Steroid eye drop (4X per day for 30 days) N = 30 patients using our APP</p> <p>Number = total APP reported doses applied to eye by patient Denominator = 160 total eye drop doses required for complete post cataract surgery course Percentage = 78.6% applied eye drop doses (adherence)</p>
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Project Impact

<p>Compare the baseline data to the re-measurement / follow-up data and quantify the impact of the process of care changes (your project interventions). The project hopefully resulted in improvement; however, some projects may result in a diminution in quality. If a lack of improvement or reduction in quality occurred, suggest other strategies that might be more effective.</p>	<p>Using our Sharp Health Companion App, patients were reminded of pre-surgery requirements as well as post-surgery eye drop requirements.</p> <p>2 Improvements in Quality of Care were observed</p> <ol style="list-style-type: none"> 1. Reduction in cancelled cataract surgery cases because the App reminded patients. 2. Improvement in eye drop adherence after surgery because the App reminded patients to use their eye drops.
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Project Reflection

<p>Did you feel the project was worthwhile, effective?</p>	<p>YES</p>
<p>How might you have performed the project differently?</p>	<ol style="list-style-type: none"> 1. Use larger sample size. 2. Selection bias of patients (those that use apps and are comfortable with technology may be more adherent to pre-surgery and post-surgery requirements). 3. Measure baseline eye drop adherence rate in patients not using app by comparing weight of eye drop bottle before and after surgery. (instead of using reported literature eye drop adherence).

Please offer suggestions for other ophthalmologists undertaking a similar project.

1. Be open to technology. Remember it's just a tool. It's the ophthalmologist who will make it succeed or fail.
2. Patients, especially seniors, may be uncomfortable or unfamiliar with mobile computing and apps.
3. Remember that patients trust their ophthalmologists for their vision. They will also trust them as a curator of mobile health apps. It's important to be patient, sincere, and not push technology for those that are not ready. However, the ophthalmologist can be a positive proponent of mobile technology.
4. Get out of your comfort zone and don't take no for an answer when developing or designing apps. Everyone will say it won't work. But when it does, everyone will say why didn't I think of that!

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