ABO IMPROVEMENT IN MEDICAL PRACTICE ACTIVITY
(CLINICAL)

Topic

Title of Project:	Use of Atropine Once a Week to Improve Amblyopia Compliance in Children During Era of COVID-19 and Monitoring with Telemedicine Once a Month

Project Description

Describe the quality gap or issue 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	Eye diseases rarely carry a fatal outcome; however, they do represent high morbidity. During the COVID-19 outbreak, the American Academy of Ophthalmology (AAO) provided a list of urgent and emergent procedures required to solve potential sight-threatening conditions. Such procedures are mostly related to retinal, glaucomatous, orbital, oncology, and traumatic eye disease. But specific recommendations to evaluate and treat patients at risk of developing amblyopia during the pandemic are currently not available. The follow-up and compliance are worse in the low socioeconomically group. Amblyopia, with a prevalence of 3% of the global population, represents the most common cause of unilateral vision loss in children.It is defined as an interocular difference of â‰¥â€‰2 lines with visual acuity (VA) of 20/40 or worse in the amblyopic eye. It is related to an abnormal visual experience, mainly caused by strabismus, anisometropia, and visual deprivation, during the period of visual development (approx. up to 6 years). Because of a good vision of the sound eye, children rarely note diminished VA in the amblyopic eye, thus, they require prompt intervention in order to avoid permanent vision loss. Furthermore, close follow-up (between6 and 8 weeks) is required to ensure adequate treatment effect. We propose recommendations on how to adequately evaluate and make sure that children during the amblyopic period don't lose compliance by using atropine in the good eye once a week staying home and still being monitored by us while reducing COVID-19 transmission.

Background Information: The month you pulled the baseline IRIS performance report and any additional information that may be pertinent:	• Because of its high prevalence and lifetime morbidity, adequate and timely management of amblyopia represents an important public health issue. Almost 10 months have passed since COVID-19 first appeared, and little do we know when it will end. We saw inour offices' a huge decline in the follow-up of pediatric patients with amblyopia in this time period mostly due to parents' concern aboutCOVID exposure. • There was a significant risk of worsening amblyopia as these kids were not being monitored and even compliance with patching was affected while staying home. We decided to come up with use of atropine in the good eye once a week every Friday night in all patientswith amblyopia and they were monitored on telemedicine and the office staff gave a call every month to make sure drops are being used. The parents were also told to call if they noticed any signs of vision problem, misalignment of eyes.
Project Setting: (Please select from options below): • Group Practice • Healthcare Network • Hospital • Multi-Specialty Group • Solo Practice • Surgical Center • Other	Group Practice
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:	The patients with a diagnosis of amblyopia in which there was an interocular difference of â‰¥â€‰2 lines with visual acuity (VA) of20/40 or worse in the amblyopic eye. They had amblyopia caused by strabismus, anisometropia, or visual deprivation, and ages between 3-up to 9 years. These kids were being monitored in the office prior to COVID-19 every 6-8 weeks.

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 measures (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.	**Measure Type:** Process **Measure Name:** Patient pain level during intravitreal injection **Numerator Statement:** Number of patients in whose pain levels decreased by 2 points on a 1-10 scale **Denominator Statement:** 30 consecutive patients undergoing intravitreal injection **Measure Type:** Outcome **Measure Name:** The parents put 1 drop of 1% atropine in the good eye every Friday night. The telemedicine was performed after 1 month and parents checked the kid's vision by covering one eye at a time and doing fixation and follow test by showing an object or penlight on telemedicine in front of assigned office staff. If the kid failed to follow objects or light, the office staff member told parents to call the office to see Pediatric Ophthalmologist in person. But if kids showed good fixation and follow they continued to do atropine and rechecked in 1 month via telemedicine. **Numerator Statement:** On in-person follow-up after 20 weeks, 25 patients continued to show improvement in vision in the amblyopic eye when they were using atropine drops in the good eye every Friday. Their parents also felt being more involved in their kid's care while putting drops and giving follow-up on vision via telemedicine once a month. **Denominator Statement: a** total of 27 patients were chosen. 2 patients did not show improvement and those were the ones with H/O congenital optic nerve disorders.

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. 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 whose pain levels decreased by 2 points on a 1-10 scale . **Denominator Statement**: 30 consecutive patients undergoing intravitreal injection.	

Project Interventions: 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 a 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:	• There were two groups of patients with amblyopia seen between March till December. The established patients were using glasses and using patching. They were seen in the office within the last 3 months when we started this project. The second group was newly diagnosed seen between the months of March till December and were given glasses. I discussed in detail to parents about amblyopia and explained to parents that the most important treatment is to get the patient into eyeglasses. The kids need close monitoring between 6-8 weeks. If they don't get better significantly with glasses alone then we have to use atropine eye drops or patching to make the child use the less preferred eye. In the Era of COVID-19, the close follow-up in the office is not easy, also properly patching is sometimes a challenge. In this situation, the better stimulus for the brain would be use of 1 % atropine in the good eye every Friday to use the poorer-seeing eye for near vision. The parents were reassured that close monitoring will be performed by once a month telemedicine and they will be checking their kids' vision themselves in front of the assigned office staff while doing telemedicine. If trained office staff feels vision fixation and follow is not good, he or she will make their in-person appointment to be seen with Pediatric Ophthalmology. The parents were also encouraged to contact the doctor ASAP if they had any concerns about their child's vision. The assigned office staff members were also trained by me how to check fixation and follow tests while doing telemedicine. They were all those working with me as scribes or runners for the past 5-10 years. • The monthly calls were made starting from April till December. 27 patients were chosen with amblyopia and using glasses. They all used Atropine every Friday in the good eye. Parents felt very confident and more involved in their kid’s care. The patients were brought back to the office after 20 weeks from starting atropine and 25 patients showed huge improvement(2 or more lines better in visual acuity in the amblyopic eye in the office from the baseline. 2 patients did not show improvement and neither worsening and those were the one with H/O congenital optic nerves disorders. • So this helped us to understand that amblyopia treatment can be effectively done during this Pandemic without exposing parents and patients, if parents have access to telemedicine and using atropine drops once a week under close supervision. This also helped to build a better understanding and provided better education between parents and the office staff.

Project Team: (include roles for yourself and all members of your team): 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.	I educated amblyopia to the parents as well as my office 2 office staff members who are my scribes and runners and working with mefor more than 5 years. I explained to the parents that the most important treatment step is to start using glasses full-time. The pharmacology of atropine drops and why we are using them once a week were explained. The parents were reassured that close monitoringwill be performed by once-month telemedicine. The parents, as well as Office staff, were taught how to check kids' vision with light or object fixation and follow so they can do while doing telemedicine. The trained office staff was educated on how to pick up signs of no improvement on fixation and follow test so the kid can be reexamined by an Ophthalmologist in person ASAP. The parents were also encouraged to contact the doctor ASAP if they had any concerns about their child's vision. The staff also made sure on telemedicine that atropine is available through the pharmacy to all the patients.
Will any other ophthalmologists be requesting MOC credit for participation in this SD-PIM?	N/A

Project Outcomes/Results

Project Summary	In the following sections, please prepare a brief summary of the project highlighting the data collected, the 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.	The patients who were chosen for this project had a diagnosis of refractive amblyopia, and their vision in the worse eye with correction was 20/40 or worse. The ages of these patients were between 3 to 9 years. These kids were being monitored in the office prior to COVID-19 every 6-8 weeks. Due to the COVID-19 pandemic, follow-up in the office and compliance became difficult for parents and patients. The parents were educated about the importance of follow-up and limitations due to pandemics. They were introduced to putting 1 drop of 1% atropine in the good eye every Friday night. The parents were made sure kids were using glasses full-time. The parents received calls from the designated office staff for telemedicine once a month. At the time of telemedicine, a vision check was performed by parents on the kids by covering one eye at a time with glasses on and doing fixation and following test by showing an object or penlight in front of assigned office staff. If the kid failed to follow objects or light, or if parents had any concern regarding vision development, the office staff member told parents to call the office to see Pediatric Ophthalmologist in person. But if kids showed good fixation and follow, they were told to continue atropine and rechecked again in 1 month via telemedicine. In this way, parents did not have to bring kids to the office in person every 6-8 weeks. They had around 4 -5 telemedicine follow up and in-person follow up in the office was every 20 weeks.
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).	The follow-up using this plan was performed from March till December 2020. Total 27 patients were chosen and out of 27, the 25 patients continued to show improvement in vision in the amblyopic eye when they were using atropine drops in the good eye every Friday. There were two or more lines of a visual acuity (VA) improvement on office follow-up after 20 weeks. So, there was a 92% success rate in visual acuity improvement without compromising compliance and follow-up. Also, the parents felt being more involved in their kid'scare while putting drops and giving follow-up on vision via telemedicine once a month. The two patients who did not show improvement were the ones with H/O congenital optic nerve disorders.

Project Impact

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.	Since the start of the COVID-19 pandemic, we saw in our office a huge decline in the follow-up of pediatric patients with amblyopia, mostly dueto parents' concern about COVID exposure. There was a significant risk of worsening amblyopia as these kids were not being monitored and even compliance with patching was affected while staying home. We decided to come up with use of atropine in the goodeye once a week every Friday night in all patients with amblyopia and they were monitored on telemedicine and the office staff gave acall every month to make sure drops are being used. The parents were also told to call if they noticed any signs of vision problems. In this process, not only did we achieve desirable results of vision improvement, but we were also able to educate parents about the importance of compliance and follow-up.

Project Reflection

Did you feel the project was worthwhile, effective?	I think this project gave us good guidelines that how often we should evaluate and treat the patients between ages 3-9 years, who are at the risk of developing amblyopia, as during the COVID-19 outbreak, we do not have specific recommendations. There was a 92 % improvement in amblyopia. This project also created better bonding between parents, kids, and office staff. Everyone had an opportunity to understand that amblyopia treatment can be effectively done during this pandemic without exposing anyone to the risk of contracting COVID-19.
How might you have performed the project differently?	I wanted to have a better vision screening method by downloading a vision screening app on parents' iPhones. But not all parents had iPhones. So, it was a limiting factor.
Please offer suggestions for other ophthalmologists undertaking a similar project.	The parents and the office support staff should be working together as a team to get the best outcome of any project which involvesimproving amblyopia.