COVID-19 INFECTION CONTROL AND PREVENTION IN OPHTHALMOLOGY OFFICES

PRE-APPROVED TEMPLATE

Title: Intensive Care Unit Eye Care During the COVID-19 Pandemic

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Project Description	New York City and more specifically Elmhurst Hospital suffered the most brutal brunt of the coronavirus pandemic between March and July of 2020. Several colleagues and I joined the frontlines at Elmhurst Hospital in various capacities. The volume of hospitalized patients was overwhelming and the number dying daily was astounding. In the mayhem of scrabbling to save lives, we noticed the eyes were de-prioritized by the medical teams and many intubated patients were developing complications related to lagophthalmos such as dry eyes, epithelial breakdown, conjunctival chemosis, and corneal scarring. One of our responsibilities involved providing video visits for families. We decided to take over that service (Video Visits) for the families of all intubated patients in order to be able to simultaneously conduct anterior segment checks on all intubated patients. I designed an ICU Eye Care laminated poster as a tool that we distributed and posted on all ICU units in the hospital. This tool provided details of a systematic approach to eyelid assessment, exposure management, and anterior segment disease prevention in all COVID-19 intubated patients. We drew the attention of the medical team to patients with lagophthalmos-related eye problems and reviewed the ICU eye care poster with them to make the assessment for and management of these avoidable eye problems systematic and less burdensome for the medical team.
Background Information	We recommended daily assessment of eyelid closure and made recommendations for eye drops, taped lids, and ointment. We researched the cost of the recommended interventions in order to best contain the cost. We also posted the ICU EYE Care laminated poster in serval easy to access bulletin boards on all ICU units.
Project Setting	Hospital
Study Population	All intubated patients in the ICU.

Quality Measures	**Measure Type:** Process **Measure Name:** Lagophthalmos-related eye disease in intubated COVID-19 patients at Elmhurst Hospital during 2020 Pandemic. **Numerator Statement:** Number of patients in whom lagophthalmos-related eye disease was appropriately managed or averted. **Denominator Statement:** All ICU-based, intubated COVID-19 patients at Elmhurst Hospital.
Project Interventions and Improvement Period	This intervention was established and actively utilized during the 3-4 month period during the pandemic's peak in New York City (March 2020 - July 2020).
Project Team	I was one of several ophthalmologists on the frontlines at Elmhurst Hospital. The idea for and initiation of the poster tool was mine. Three other ophthalmology colleagues were partners in editing the poster, and in its printing, lamination, and distribution. Most importantly they were my partners in caring for these patients and supporting the medical teams.

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Section 2. Project Evaluation

PROJECT SUMMARY	**Review the effect and adjustment of implementing the policy changes after a minimum of 30 days and in the following sections, please prepare a brief summary of the project highlighting the data collected, the effectiveness of the measurement approach, interventions, and the overall impact of the project.**
BASELINE DATA	These numbers are estimates taken from the lists of sedated and ventilated patients followed by the eye care team for the purposes of providing video visits to families and to conduct bedside anterior segment checks on these vulnerable patients. • Numerator = 180 patients (with any lagophthalmos) • Denominator = 300 patients, sedated/ventilated due to COVID from April 2020 - July 2020 • Percentage Rate = 60 % or 60 per 100 patients had some degree of lagophthalmos with or without corneal exposure. <u>Lagophthalmos related eye diseases observed pre-intervention</u>: • Conjunctival hyperemia 60% • Epithelial defect/corneal staining 30% • Chemosis 20% • Anterior stromal scarring 10%
FOLLOW-UP DATA	• Numerator = 20 patients (with unaddressed lagophthalmos) • Denominator = 300 patients, sedated/ventilated due to COVID from April 2020 - July 2020 • Percentage Rate = 6.6 % or 6.7 per 100 patients had some degree of lagophthalmos with or without corneal exposure post-intervention.
PROJECT IMPACT	Before the intervention, none of the eyes of the sedated or ventilated patients' had received lubricating drops or ointment and none of their eyelids were taped. After the intervention lubricating eye ointment was found at the bedside and ointment had been placed in the eyes. Of those with lagophthalmos and corneal exposure, almost all had eyelids covered or taped at the time of the ophthalmologist's visit. Of those with conjunctival hyperemia, corneal

	abrasion, and/or chemosis there was near-total to complete resolution of these conditions after the intervention. The few with anterior stromal scarring had a decrease in scar opacification several weeks post-intervention.
PROJECT REFLECTION	• The project was definitely worthwhile. The Coronavirus hit Queens, and more specifically Elmhurst, harder than anyplace else in the United States. It has been referred to as the epicenter of this pandemic. Nearly the entire hospital was converted to an ICU. The intubated patients were the sickest and most complicated to manage. Severe exposure keratopathy, associated with eyelid position and duration of ventilation in critically ill patients, is uncommon in a protocolled ICU setting. In the setting of the pandemic, however, with an overwhelming number of patients facing serious threats to loss of life, prevention and management of eye issues are understandably deprioritized. Though many of the intubated patients at Elmhurst passed away, those who survived were often spared visual compromise from exposure-related corneal scarring because of this project. • Posting of the ICU eye care laminated poster combined with directly discussing the necessary interventions with the medical team was very effective. Simply posting the posters would not have been enough. Having an ICU eye care order set, as part of the electronic medical record for any critically ill, ventilated patient would have been a useful addition to this project. In addition, posting a sign at the bedside reminding care providers to assess eyelid closure and apply eyelid patching, ointment, or drops to the eyes would serve as a helpful reminder and nudge. • It is important to remember that the ICU medical team, especially in the setting of a pandemic, is overwhelmed and overworked. Anything we can do to assist or automate the care of patients should be done mindfully. It may also require examining the eyes, ordering the drops or ointment, and taping the eyelids when necessary ourselves.