

## Abstract

The COVID-19 pandemic drastically changed surgical decision making for ophthalmologists. Before returning to the Operating Room (OR), the Lankenau Medical Center Ophthalmology Department headed by PCOM Ophthalmology developed risk stratification guidelines for surgical ophthalmology cases and utilized these guidelines to determine which patients would take OR priority.

The Lankenau Medical Center used guidance from the American Academy of Ophthalmology (AAO), recommendations set out by the “Joint Statement: Roadmap for Resuming Elective Surgery after COVID-19 Pandemic”, and the MeNTs scoring system. Ophthalmic procedures were then categorized as urgent, emergent based on sight threatening status and risk of further vision loss, elective with documented vision loss, or cosmetic. Each procedure was given a number 1-4 based on these factors.

Procedures categorized as number 1 represent procedures with the highest OR priority. Procedures denoted with 2 represent procedures for conditions with vision worse than 20/100 or those with uncontrolled symptoms despite adequate medical management. Procedures categorized as number 3 represent procedures for conditions with less significant visual compromise and vision worse than 20/40. Lastly, number 4 procedures are those with the least OR priority.

Surgical decision making during the COVID-19 pandemic has become more regimented based on patient need and level of visual compromise. Because ophthalmology is a field where many procedures are elective, categorization of patient need is vital for independent surgical centers and hospital operating rooms.

## Introduction

Effective management of operating room (OR) resources in “normal” circumstances has always required a case prioritization process in a way that minimally disrupts previously scheduled cases and matches the need of available OR resources. However, the decision to proceed with operative treatment in the setting of the COVID-19 pandemic requires incorporation of factors not explicitly considered by surgeons prior.

COVID-19 has created a new and urgent challenge to deal safely with ophthalmic surgical procedures. This has driven the need for prompt and pragmatic change to the way ophthalmologists assess risk and benefits of what was previously regarded as a low-risk surgical intervention. This is further complicated by the fact that the majority of patients waiting for cataract surgery are elderly with comorbidities and are at a higher risk of mortality related to COVID-19 infection.

New responsibilities became vital as ophthalmologists returned to surgery, and with these new responsibilities, came new tasks and risks of exposure during preoperative clearance, COVID testing, and the use of personal protective equipment (PPE) by the surgeon and all other staff members.

Resumption of ophthalmology cases postponed due to the COVID-19 pandemic requires a systematic approach to case prioritization. Before returning to the OR, the Lankenau Medical Center Ophthalmology Department headed by PCOM Ophthalmology developed risk stratification guidelines for surgical ophthalmology cases. The providers in this department employed these guidelines to determine which patients would take OR priority.

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## Methods and Materials

Guidance was taken from the American Academy of Ophthalmology (AAO), recommendations set out by the “Joint Statement: Roadmap for Resuming Elective Surgery after COVID-19 Pandemic”, and the MeNTs scoring system to assess which patients would take OR priority upon returning to surgery. General considerations were taken from the AAO, which outlined the importance of the use of surgical masks to reduce transmission, appropriate surgical preparation guidelines, and lastly, the use of eye protection, close-fitting safety glasses, or sterile face shields.<sup>1</sup> In addition, more considerations from the AAO regarding the role and interpretation of testing patients before ophthalmic surgical procedures were taken into consideration.

The MeNTs scoring system can be separated into 3 parts. These parts are as follows: a procedure section, that takes into account procedure risks, a section dedicated to disease severity and effectiveness of non-surgical interventions, and lastly, a section dedicated to patient-specific demographics. Each section is added together at the end to create a cumulative MeNTs score. A higher cumulative MeNTs score, which can range from 21-105, is associated with poorer perioperative patient outcomes, increased risk of COVID-19 transmission to the healthcare team, and/or increased hospital resource use during the pandemic. Values were assigned on the 1-to-5 scale and summation of the points assigned to these individual factors generated a cumulative MeNTs score.<sup>2</sup>

Based on the recommendations set by the institutions listed above, combined with each patient’s MeNTs score, ophthalmic procedures were then categorized as urgent, emergent based on sight threatening status and risk of further vision loss, elective with documented vision loss, or cosmetic. Each procedure was given a number 1-4 based on these factors.

## Results

The Lankenau Medical Center categorized procedures as number 1-4, with 1 being procedures with the highest OR priority and 4 being procedures with the lowest OR priority.

- **Number 1** → procedures treating conditions such as **life threatening infections, malignancy, and diseases with significant sight-threatening potential**
- **Number 2** → procedures for conditions with visual acuity **worse than 20/100** or for patients who have **uncontrolled symptoms**, despite receiving adequate and maximal medical management
- **Number 3** → procedures for conditions with **less significant visual compromise** and a visual acuity **worse than 20/40**
- **Number 4** → procedures with the **least OR priority**, such as **keratorefractive procedures** in patients with **vision worse than 20/30** or procedures for **cosmetic reasons**

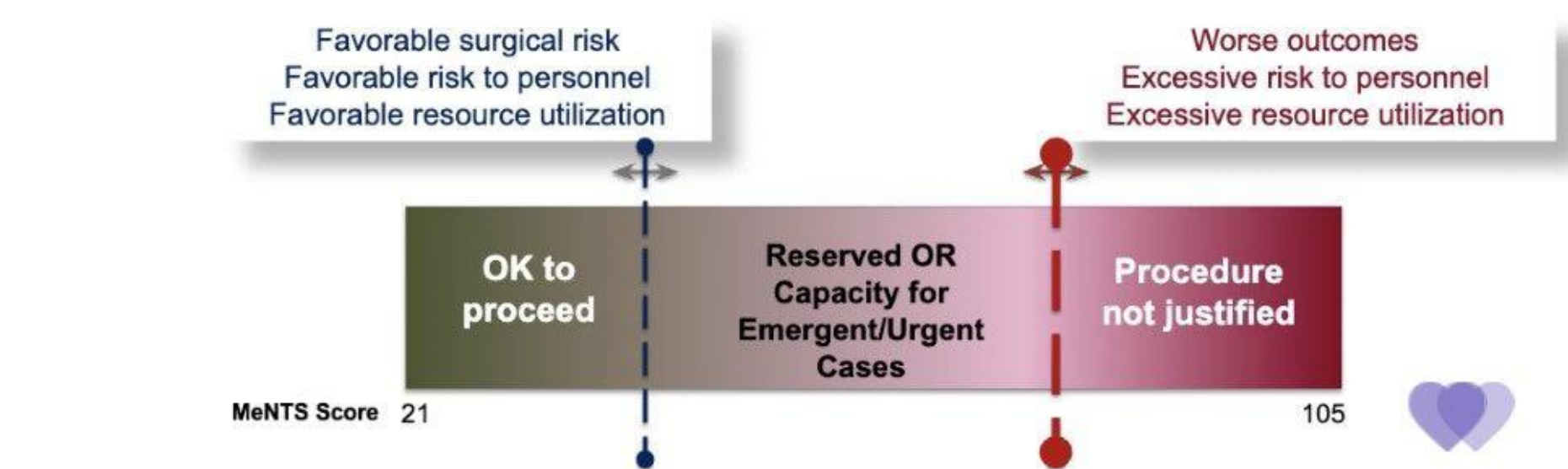
<b>Cumulative MeNTs Score (Procedure + Disease + Patient)</b>	<b>0</b>
	<b>Range (21-105)</b>

## Utility of MeNTs Scoring Process

• Procedure + Disease + Patient = Total MeNTs Procedure Score (21-105)

• Score thresholds can be adjusted in real time based on local resources and conditions in the context of the COVID-19 pandemic

- If score exceeds Upper Score threshold, procedure not currently justifiable
- Lower Score threshold guides preservation of resources for emergent/urgent cases



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## Discussion

The Lankenau Medical Center Department of Ophthalmology, headed by PCOM Ophthalmology, risk stratification model highlighted the need to balance quality of life, especially as it pertains to visual acuity, surgical risk, and the risk to patients of COVID-19 infection. This risk stratification method systematically integrates factors that are novel to the COVID-19 pandemic, such as resource limitations and COVID-19 transmission risk, and facilitates a systematic approach to triage procedures. This method was designed with two key goals; (1) quantify the risk factors that were known at the time to be predictors of poor outcomes in patients with COVID-19 infection in the patients waiting for ophthalmic surgery and (2) categorize patients by need for surgery based on visual acuity and clinical presentation.

Limitations to this stratification system mainly lies within the MeNTs scoring system, as each of the 21 factors in this system has been given an equal weight in the cumulative MeNTs score. Despite these limitations, the use of this risk stratification protocol has utility as a conceptual framework for triage decisions that must be made in order to continue to provide much-needed treatment when nonoperative options are less effective or not available.

## Conclusions

In conclusion, The Lankenau Medical Center developed a simple and effective means of prioritizing patients indicated for ophthalmic procedures, all while taking into account their risk of poor outcome from COVID-19 infection and need for improvement in vision from surgery. This approach balances the risk of morbidity and mortality from COVID-19 infection, need for improved vision, and the potential of visual improvement from surgery.

Given the growing knowledge of COVID-19, it is likely that the patient risk factors selected may need to be modified in the future. However, this risk stratification model provides a simple and pragmatic starting point for developing stratification and prioritization protocols, which can be easily modified as the pandemic continues to evolve.

## References

1. Chodosh J, Holland GN, Yeh S. Special considerations for ophthalmic surgery during the COVID-19 pandemic. American Academy of Ophthalmology. <https://www.aao.org/headline/special-considerations-ophthalmic-surgery-during-c>. Published March 22, 2021. Accessed April 11, 2021.
2. Prachand VN, Milner R, Angelos P, et al. Medically Necessary, Time-Sensitive Procedures: Scoring System to Ethically and Efficiently Manage Resource Scarcity and Provider Risk During the COVID-19 Pandemic. *J Am Coll Surg*. 2020;231(2):281-288. doi:10.1016/j.jamcollsurg.2020.04.011