COVID-19 Guidance on the Resumption of Eye Surgery

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Disclaimer: None of the authors above has any financial interest in any of the products mentioned in this manuscript. This guidance was developed based on international and local recommendations to date with the COVID-19 pandemic and expert clinical and system-level advice. However, as the pandemic situation is evolving day to day and information may change rapidly, these recommendations should not be considered as rigid guidelines and are not intended to supplant clinical judgement or institutional policies.

An initial version of this manuscript was posted in the Philippine Academy of Ophthalmology website last June 2020.

ABSTRACT

This document offers guidance to help the ophthalmologist plan for the safe resumption of elective surgical care. There are 4 sections: (I) COVID-19 Awareness, (II) Preparedness, (III) Patient Issues, and (IV) Delivery of Safe and High-Quality Care. Each section contains key issues to be addressed before elective surgery may be safely reinstituted.

Understanding the capabilities of health facilities (e.g., testing, operating rooms) as well as the potential limitations in manpower and supplies will remain important, while keeping an eye out on subsequent waves of COVID-19.

Keywords: COVID-19, elective surgery, pre-operative testing, ophthalmic surgery

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I. COVID AWARENESS

The Coronavirus-2019 disease (COVID-19) is an infectious disease caused by a new strain of coronavirus. This new virus and disease were unknown before the outbreak began in Wuhan, China in December 2019. On December 31, 2019, the World Health Organization (WHO) was alerted to a cluster of pneumonia patients in Wuhan City, Hubei Province of China. One week later, on January 7, 2020, Chinese authorities confirmed a novel coronavirus (Severe Acute Respiratory Syndrome Coronavirus-2 (SARS-CoV-2) as the cause of the pneumonia.

On January 30, 2020, the Philippine Department of Health (DOH) reported the first case of COVID-19 in the country with a 38-year-old female Chinese national. On March 7, 2020, the first local transmission of COVID-19 was confirmed.

In preparation for local and community transmission, DOH activated the Incident Management Team as well as its Emergency Operating Centre. Key decisions were taken by the Inter-Agency Task Force (IATF) and the Inter-Agency Technical Working Group (IATWG) for the Management of Emerging Infectious Diseases, consisting of key government agencies like the Department of Foreign Affairs (DFA), Department of Tourism (DOT), and the Department of the Interior and Local Government (DILG).

From February 27 to 28, 2020, the DOH led a national contingency planning exercise for COVID-19 jointly with the National Disaster Risk Reduction and Management Council (NDRRMC), where 60 key staff from relevant government agencies: United Nations (UN), Red Cross, and non-governmental organizations discussed their roles and responsibilities, available resources, and gaps for a potential COVID-19 outbreak in the country. The plan was based on the 2012 Philippine Preparedness and Response Plan for Pandemic and Avian Influenza which aligned with the draft, National Action Plan for Health Security.[1]

The DOH established surveillance systems in place to actively look for cases of COVID-19. Epidemiological Surveillance Units (ESU) at municipal, city, provincial, and regional levels continuously conducted event-based investigations, searching for clusters of diseases of unknown origin and/or pneumonia-like illnesses. Weekly surveillance of influenza-like illness (ILI) as well as severe acute respiratory illness (SARI) conducted throughout the country, allowed the DOH to look for unexpected trends in diseases with similar symptoms as COVID-19 (fever, cough, breathing difficulty). All SARI cases were furthermore tested for COVID-19 at DOH-certified laboratories.

To expand testing capacity for COVID-19 in the country, the Research Institute for Tropical Medicine (RITM) has trained laboratory technicians from the five identified sub-national laboratories namely, Baguio General Hospital and Medical Centre in Benguet, San Lazaro Hospital in Manila, Lung Centre of the Philippines in Quezon City, Southern Philippines Medical Centre in Davao, and Vicente Sotto Memorial Medical Centre in Cebu; and the National Institute of Health Central Laboratory of the University of the Philippines (UP-NIH) from March 4 to 6, 2020. By May 20, 2020, daily testing capacity exceeded 10,000 between all 37 DOH-certified laboratories to conduct COVID-19 testing throughout the country.[2] WHO supported DOH and the RITM with assessments of additional 110 public and private laboratories which applied for accreditation.

The DOH clarified last April 14, 2020 that assessment by a licensed health professional remained a prerequisite for COVID-19 testing. DOH reiterated that sub-groups most at risk were prioritized for the expanded testing as prescribed by DOH Department Memorandum 2020-0151 and Department Circular No. 2020-0179: (1) patients or healthcare workers (HCWs) with severe or critical symptoms and history of travel or exposure, and (2) patients or HCWs with mild symptoms, relevant history of travel or exposure, and considered vulnerable (e.g., 60 years old or older, has other illnesses such as hypertension and diabetes, or is immunocompromised).

Patients or HCWs who were not considered vulnerable but with mild symptoms and relevant history of travel or exposure, and those with no symptoms but have relevant history of travel or exposure were also tested under the expanded testing scheme.

On May 11, 2020, the DOH issued Department Memorandum 0220: Interim Guidelines on the Return-to-Work aimed to prevent, control, and reduce infection in the workplace, including proper

social distancing and disinfection in place, as well as effective screening and testing of staff.

On May 15, 2020, the Inter-Agency Task Force for the Management of Emerging Infectious Diseases (IATF-EID) issued the Omnibus Guidelines on the Implementation of Community Quarantine further clarifying the differences between the different types of community quarantine in place in the country, as outlined in the following table (Table 1).[3]

Table 1. Types and scope of community quarantine in the Philippines during the COVID-19 pandemic

TYPE	DETAILS
Enhanced Community Quarantine (ECQ)	temporary measures imposing stringent limit ations on movement and transportation of people, strict regulation of operating industries, provision of food and essential services, and heightened presence of uniformed personnel to enforce community quarantine protocols
Modified Enhanced Community (MECQ)	transition phase between ECQ and GCQ, when these temporary measures are relaxed: stringent limiting of movement and transportation of people, strict regulation of operating industries, provision of food and essential services, and heightened presence of uniformed personnel to enforce community quarantine protocols become less necessary
General Community Quarantine (GCQ)	temporary measures limiting movement and transportation, regulation of operating industries, and presence of uniformed personnel to enforce community quarantine protocols.
Modified General Community Quarantine (MGCQ)	transition phase between GCQ and the New Normal, when these temporary measures are relaxed: limiting movement and transportation, the regulation of operating industries, and the presence of uniformed personnel to enforce community quarantine protocols become less necessary.

On May 21, 2020, a media forum was hosted by the DOH, the Department of Trade and Industry and the Department of Labor and Employment (DOLE), where employers were reminded that COVID-19 testing is not a requisite before workers can return to work. Pursuant to the Bayanihan to Heal as One Act and Section VII of the Interim Guidelines on Workplace Prevention and Control of COVID-19, employers are expected to shoulder the costs for all tests and personal protective equipment (PPE) that employees would need during the pandemic.

The joint DTI and DOLE guidelines enumerated four minimum health standards aligned with the DOH recommendations: increasing physical and mental resilience, reducing transmission, reducing contact, and reducing the risk of infection.

Employers were enjoined to provide free medicines and vitamins to their employees and provide adequate referrals to workers needing counseling or presenting with mental health concerns. Employers were mandated to ensure constant and proper use of personal protective equipment (PPE) for those who need them, perform regular disinfection of the workplace, and observe physical distancing. There should be monitoring of employees' health by enforcing daily health symptoms questionnaires to be submitted to the company-designated safety officer. Alternative work arrangements, if feasible, such as work-from-home or rotating shifts must be adopted to limit face-to-face interactions. Workers showing symptoms of COVID-19 should be immediately isolated in a pre-designated area until attended to by clinic personnel in order to proactively manage the risk of infection.

WHO and DOH have not endorsed any rapid antibody tests, inspite of an increasing number being certified by the Food and Drug Administration (FDA). The gold standard for laboratory testing in the Philippines remains real-time polymerase chain reaction (RT-PCR).[4]

The unified COVID-19 algorithms for HCWs from both community and hospital levels issued *Section 4: Guidelines on Return to Work.* Earlier issued sections include guidelines for Primary Care, Hospital Care, and PPE Use by Healthcare Workers.

The unified COVID-19 algorithms were adapted from multiple guidelines released by the WHO, DOH, and other societies. This document was also reviewed by different experts with the end-goal of having a summarized and comprehensive compilation of guidelines that will aid in the management of COVID-19 patients by HCWs from both the community and hospital levels.

The Philippines on May 6, 2021 recorded 6637 new daily cases of COVID-19, bringing its total number of confirmed cases to 1,080,172 (Figure 1). Early April 2021 saw a surge, which recorded new daily cases as high as 15,310 during its peak. Updated COVID-19 local data can be viewed at https://doh.gov.ph/covid19tracker.

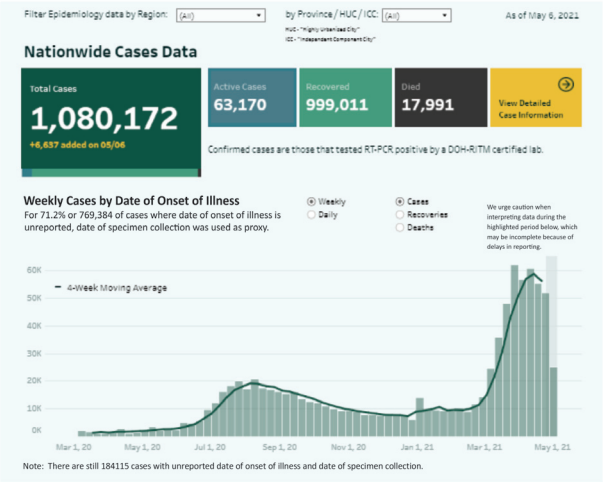

Figure 1. COVID-19 Case Tracker from DOH Philippines as of May 6, 2021 (C: https://doh.gov.ph/covid19tracker)

II. PREPAREDNESS

General Concerns:

A. Safety of the medical staff and the patient

Measures should be in place that will ensure the prevention of transmission of infection from patient to medical staff, vice versa, and from patient to patient.

B. The urgency of the surgery

Emergency surgeries may need to be performed even while awaiting determination of COVID-19 status of the patients, whereas elective surgeries may be deferred until the patient's negative test results are available.

C. Risk of viral transmission of surgery

Medical and patient care procedures that result in the production of infectious aerosols (aerosol-generating procedures) carry a higher risk of transmission due to the size of the droplet.[5,6]

D. Access to and availability of RT-PCR testing

Turnaround time of tests may vary from one laboratory to another and may affect scheduling of procedures.

E. Personal Protective Equipment (PPE)

Policies on the use of the minimum PPE to safely conduct surgery will be dictated by the availability and the prevailing institutional and national guidelines.

Recommendations:

1. *COVID-19 Risk Assessment for Patients about to Undergo Surgery*

Screening for fever and respiratory symptoms of COVID-19 infection (e.g., fever, cough, colds, difficulty of breathing), history of exposure to a suspected or confirmed COVID-19 patient or history of travel to or residence in a COVID-19 endemic community within the past 14 days should be done prior to any patient visit to the healthcare facility. Telephone screening may be performed 1 - 2 days prior to surgery. Screening at the healthcare facility on the day of the surgery may be done using a patient screening form (See Appendix A).[7] Similarly, HCWs need to undergo screening daily.

Symptomatic patients and HCWs should be referred to COVID triage for further evaluation.

1.1. Slit-lamp examination should be done as quickly as possible. The patient is also instructed to refrain from talking during the exam.[8] The use of breath shields is encouraged to minimize droplet infection.[9] After each patient, disinfection of possibly contaminated surfaces should be done. Examining lenses (e.g., high plus lenses) may

be disinfected by gently cleaning with soap and warm water.[10]

1.2. Chest x-ray may be requested, especially for the vulnerable population (e.g., elderly, patients with co-morbidities), as part of pre-surgery evaluation (cardiopulmonary clearance).[7]

1.3. RT-PCR may be requested at least 72 hours (or earlier, depending on the expected test result turnaround time) prior to surgery; but should be done as close as possible to the expected date of surgery. Patient needs to do home quarantine while awaiting result.[5,11] If possible, all emergency surgery patients should be tested for COVID-19.[12]

1.4. Tentative scheduling of surgery may be done while awaiting RT-PCR results, or once with clearance. Where possible, day-only surgical care should be undertaken.[12]

2. *Risk Stratification of Ophthalmic Surgery*

2.1. Urgency

2.1.1. Emergent procedures are for vision-threatening cases that may lead to blindness if not treated immediately or may lead to worsening of vision outcome.[13]

2.1.2. Non-emergent are routine or elective cases that are unlikely to cause permanent visual loss if delayed for several weeks to months.[13]

2.2. Risk Stratification of COVID-19 Transmission[7]

2.2.1. High Risk of Transmission

2.2.1.1. Emergency procedures during this pandemic require that patients be treated as potentially infectious. Due to exigency, these procedures would have to be done regardless of any symptoms-screening or SARS-COV-2 testing.

2.2.1.2. High risk procedures (e.g., aerosol-generating procedures) (see Annex B), surgeries involving the aerodigestive tract on patients who tested positive on RT-PCR for SARS-COV-2.

2.2.1.3. Low risk procedures on symptomatic patients who tested positive on RT-PCR for SARS-COV-2.

2.2.1.4. Patients in whom RT-PCR is recommended but cannot be done or results are unavailable at the time of intended surgery.

2.2.2. Low Risk for Transmission

2.2.2.1. Asymptomatic patients who will undergo low risk surgery.

2.2.2.2. Low risk procedures among symptomatic patients who tested negative for SARS-COV-2 RT-PCR.

2.2.2.3. High risk procedure on symptomatic patients but SARS-COV-2 RT-PCR is negative.

3. *Algorithm of Transmission Risk of Surgical Procedures*

Based on urgency, presence of symptoms of COVID-19, and inherent risk of the surgical procedure, the risk of infection transmission during surgery is determined using the algorithm recommended by the Philippine Society of Microbiology and Infectious Disease (PSMID) (Figure 2).[7]

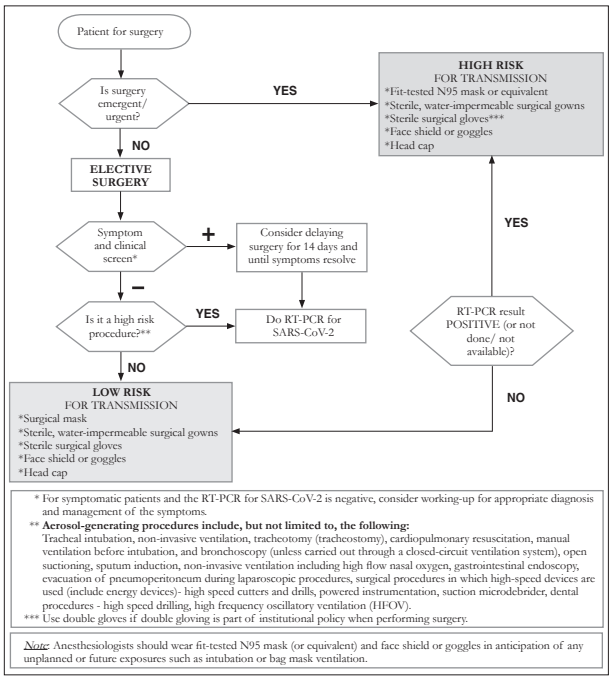

Figure 2. Algorithm for risk stratification of surgical procedure based on urgency of procedure, clinical assessment and RT-PCR results (Source: https://www.psmid.org/risk-assessment-of-surgeries-in-the-context-of-covid-19/)[7]

4. *Minimum Recommended PPE*

The type of PPE set to be worn in the operating room (OR) will depend on the risk of infection transmission during surgery.[7]

4.1. Patients should wear surgical masks over their nasal cannula during surgery.[10]

4.2. PPEs of surgeons, OR nurses, and technicians during low risk surgery include: a surgical mask; a sterile, water-impermeable surgical gown; face shields or goggles; sterile surgical gloves; and a head cap. PPE for high risk surgery is the same except that the surgical mask is changed to a fit-tested respirator mask (e.g., N95).[7]

4.3. Anesthesiologists are advised to wear the minimum PPE for high risk surgery, regardless of risk stratification, because of the possibility of requiring access and intervention in patient's airway any time during the procedure.[7]

Enhancement of the minimum PPE set may be considered, based on institutional policies. This includes wearing of coveralls and double gloves especially for high risk surgeries.[14]

5. *Infection Prevention and Control in the Operating Room (OR)*

5.1. Arrangement in the OR

5.1.1. Appropriate signage must be visible in the waiting area, OR, and Post-Anesthesia Care Unit (PACU). Signs to show direction, to identify donning and doffing areas, to serve as visual guides for donning and doffing, to remind about physical distancing and handwashing and wearing of masks must be placed in strategic locations.

5.1.2. Limit the number of personnel entering the OR to avoid cross contamination.

5.2. Disinfection

5.2.1. Topical povidone-iodine is effective against coronaviruses. Consider topical application as part of surgical prep. Repeat applications during surgery may done, provided there is no penetrating incision.[10]

5.2.2. Cleaning and disinfection of all potentially contaminated equipment inside the OR (e.g., microscope, phacoemulsification machine) may follow the standards set by the health-care facility.[8]

5.3. Aerosol-generating procedures (AGP)

5.3.1. Whenever possible, AGPs should be performed in a negative pressure room.[5] During such procedure, other personnel should leave the room to minimize exposure.[7]

5.3.2. The plume generated during cautery may be handled using smoke evacuators.[8] Alternately, vigorous irrigation using BSS may help dilute the plume.[10]

III. PATIENT ISSUES

1. *Patient Communication*

   Adapting to the new normal in resuming elective surgeries has resulted in restructuring the peri-operative procedures in health institutions. It is paramount that these changes be clearly communicated to the patient to avoid further delays and ensure cooperation.

   Hospitals and ambulatory surgical centers should have policies in place regarding elective surgeries so that patient messaging and communication will be organized.

   The American College of Surgeons has recommended that the following are potential messaging communication topics.[18]

   1.1. Procedure prioritization

   1.2. COVID-19 testing policies for patients

   1.3. COVID-19 counseling

   1.4. Safety for patients receiving care within the health care system: facilities, healthcare workers

   1.5. PPE use

   1.6. Patient family/visitor guidelines

   1.7. Post-discharge care/follow-up

   1.8. Advance directives

   1.9. All-payor class strategies:

      1.9.1. Philhealth

      1.9.2. Health maintenance organizations (HMOs)

      1.9.3. Out-of-Pocket

      1.9.4. Uninsured

2. *Prioritization Protocol*

   An organized prioritization protocol is vital to address the backlog created by the COVID-19 pandemic. This protocol should be adapted to the institutional, local, regional, and national recommendations and should also consider the rapidly changing information regarding the pandemic. A well-defined and transparent prioritization protocol will systematize the decision-making process and may also help lessen ethical issues that may be encountered in scheduling surgical cases.

   The following may be considered in formulating the prioritization protocol:[18]

   2.1. List of previously cancelled/postponed cases

   2.2. Consider objective priority scoring (e.g., Medically Necessary Time-Sensitive [MeNTS] Scoring System for prioritization[19])

   2.3. Defer to specialties' prioritization

   2.4. OR availability and expansion. Strategy for allotting daytime "OR time"– block time, revised blocks and prioritization

   2.5. Strategy for phased opening of ORs:

      2.5.1. All ORs

      2.5.2. 50 percent vs. 25 percent vs. out-patient/ambulatory first

   2.6. Consider local strategies for increasing OR time availability (e.g., weekends, extended hours)

      2.6.1. Supply chain

      2.6.2. PPE availability

      2.6.3. Establish review-governance committee to review issues as process of prioritization for ORs.

   2.7. The prioritization process and criteria may vary in real time according to institutional resources, capabilities, business priorities, and other issues. Issues in question should be evaluated in concert with the governance committee.

   2.8. Prioritization criteria will likely be modified as our knowledge of diagnosis and treat-

ments of COVID-19 evolve, and as more COVID-19-related surgical outcome data become available.

2.9. Prioritize/integrate emergent/urgent operative cases (e.g., trauma, emergency general surgery).

2.10. Issues associated with increased OR volume or OR expansion:

2.10.1. Ensure primary personnel availability commensurate with increased OR volume or hours (e.g., surgeon, anesthesia, nursing, housekeeping, engineering, etc.)

2.10.2. Ensure adjunct personnel availability (e.g., pathology, radiology, gastrointestinal, other). Ensure supply availability (e.g., medications, suture, minimally invasive surgery instruments, trocar desufflation filters, other – a more comprehensive list will be helpful)

2.10.3. Ensure hospital bed/ICU/ventilator availability

2.10.4. New staff training

3. *Risk Stratification per Ophthalmic Subspecialty Surgical Procedure*

Eye conditions are grouped into 3 categories.[22] High-risk patients are those with sight-and life-threatening conditions. Medium-risk patients are semi-urgent cases with sight-limiting, sight-threatening and life-threatening conditions. Low-risk patients are those conditions with low to no risk of sight loss or permanent harm to vision.

Surgical ophthalmologic risk stratification recommendations per subspecialty have been previously published by the Philippine Academy of Ophthalmology on April 14, 2020. Below are the updated risk-stratification recommendations (Tables 2 to 8):

Table 2. Risk-Stratification Recommendations for Vitreo-Retinal Surgery

VITREO-RETINAL SURGERY	HIGH RISK	MEDIUM RISK	LOW RISK
(prepared by the the Vitreo-Retina Society of the Philippines)	1. Macula-on retinal detachment 2. Macula-off retinal detachment in a monocular patient 3. Macula-off retinal detachment <4 weeks in a non-monocular patient 4. Vision-threatening traction retinal detachment in a one-eyed patient 5. Vitreous hemorrhage with suspected retinal tear or detachment 6. Subfoveal hemorrhage within 2 weeks 7. Uncontrolled IOP needing vitrectomy (retained less fragment, malignant glaucoma) 8. Acute infectious endophthalmitis 9. Posterior open globe injury with or without foreign body 10. Acute hemorrhagic or appositional choroidal detachment 11. Dense vitreous hemorrhage in a one-eyed patient 12. Infected scleral buckle or other ocular implants 13. Intraocular tumors requiring treatment	1. Retained lens fragment with medically-controlled IOP 2. Macula-off retinal detachment >4 weeks in a non-monocular patient 3. Macular hole <1-year duration 4. Dislocated IOL with vitreous traction 5. Diabetic vitreous hemorrhage with extramacular tractional retinal detachment 6. Vitreous hemorrhage with retinal breaks and retinal detachment ruled out clinically 7. Sub-macular hemorrhage >2 weeks duration 8. Vitreous hemorrhage/ pre-retinal hemorrhage in a child <6 y/o 9. Diagnostic vitrectomy for uveitis or lymphoma 10. Examination under anesthesia for vision-threatening issues that cannot be determined clinically 11. Rapidly progressive epiretinal membrane or vitreomacular traction 12. Scleral extrusion	1. Chronic nonprogressive epiretinal membrane 2. Macular hole >1-year duration 3. Silicone oil removal with normal IOP 4. Dislocated IOL without vitreous traction 5. Stable vitreo-macular traction syndrome

*IOP - intraocular pressure; IOL - intraocular lens

Table 3. Risk-Stratification Recommendations for Pediatric Ophthalmology and Strabismus Surgeries

PEDIA-OPHTHALMOLOGY AND STRABISMUS	HIGH RISK	MEDIUM RISK	LOW RISK
(prepared by the Philippine Society of Pediatric Ophthalmology and Strabismus)	1. High eye pressure uncontrolled medically with risk of rapid loss of vision 2. Cataract in children <8 months 3. Retinal tear/detachments 4. Acute eye emergencies or amblyogenic conditions 5. High risk vision loss for one-eyed patient 6. Sight- and life- threatening intra-ocular tumor 7. High risk premature infants with progressing ROP 8. Intravitreal injections for CNV in pediatric uveitis patients 9. Torn or lost muscle in strabismus surgery	1. Congenital cataract in the amblyopic period (8 months above) • Timing of surgery will depend on the severity and laterality of the cataract (whether surgery needs to be done immediately or not) 2. Elective strabismus surgery	*Postpone all* 1. Elective cases (non-sight/ life threatening cases) 2. Non-urgent examinations under anesthesia (EUA) 3. Elective strabismus surgery

*ROP – retinopathy of prematurity; CNV – choroidal neovascularization

Table 4. Risk-Stratification Recommendations for Corneal Surgery

CORNEAL SURGERY	HIGH RISK	MEDIUM RISK	LOW RISK
(prepared by the Philippine Cornea Society)	1. Tectonic/therapeutic penetrating keratoplasty for corneal perforation, impending corneal perforation from trauma, infection, etc or for corneal infections unresponsive to medical or other therapies	1. Pediatric patients who may become amblyopic if corneal surgery is delayed for a long period of time 2. Patients with bilateral corneal blindness and has limited access to a caregiver or support system.	Elective surgery in a patient with monocular corneal blindness

Table 5. Risk-Stratification Recommendation for Plastic, Lacrimal and Orbit Surgery

PLASTIC, LACRIMAL, ORBIT SURGERY	HIGH RISK
(prepared by the Philippine Society of Ophthalmic Plastic and Reconstructive Surgery)	1. Orbital hemorrhage 2. Orbital tumor with significant vision loss that is not attributable to other eye pathologies 3. Rapidly growing orbital mass and/or proptosis 4. Orbital fracture with the following scenarios: oculocardiac reflex, entrapped inferior rectus muscle on imaging, severe hypoglobus, severe enophthalmos 5. Lid laceration from trauma with or without involvement of the following: lid margin, canaliculus, or orbital fat 6. Necrotizing fasciitis

Table 6. Risk-Stratification Recommendation for Glaucoma Surgery

GLAUCOMA SURGERY (prepared by the Philippine Glaucoma Society)	1. Identify patients in need of immediate surgery based on the following factors: level of vision and extent of visual field loss, status of contralateral eye, level of IOP, rate of visual deterioration, access to temporizing medications 2. Choose surgical procedure that minimizes post-op follow-up visits, where safe. 3. Avoid procedures requiring intensive post-op follow up, anti-metabolite injections, or suture manipulation, if possible. 4. Perform all cases using local anesthesia and as out-patient cases, when possible. 5. Postpone operating on patients who may be symptomatic for COVID-19, febrile, or on quarantine due to exposure, unless high risk. 6. Delaying surgery may lead to vision loss in some, thus constant review of cases is needed. Work on re-triaging and stratifying whole population. 7. Defer cataract surgery by 6 months.

*IOP – intraocular pressure

Table 7. Risk-Stratification Recommendation for Ocular Oncology Surgery

OCULAR ONCOLOGY SURGERY (prepared by the Ocular Oncology Interest Group)	All ocular oncology surgery and management are expected to continue.

Table 8. Risk-Stratification Recommendation for Surgery for Patients with Uveitis

SURGERY FOR PATIENTS WITH UVEITIS (prepared by the Philippine Ocular Inflammation Society)	The risk of developing severe COVID-19 disease is increased in patients with the following:[20] 1. Degree of immunosuppression; 2. Co-morbidities, including cardiovascular disease, hypertension, COPD, asthma and diabetes mellitus; 3. Active systemic inflammatory disease activity; 4. Age 70 years or over' 5. BMI > 40 A patient is considered HIGH RISK for immunosuppression when one or more of the following criteria is fulfilled:[21] 1. Corticosteroid dose of ≥20 mg (0.5 mg/kg) per day for more than 4 weeks 2. Any 2 agents among immunosuppressive medications biologic/monoclonal or small molecule including Janus Kinase 1 inhibitors with a co-morbidity 3. Cyclophosphamide (any route) within the last 6 months 4. Corticosteroid dose of ≥5 mg prednisolone plus another immunotherapy (IMT) MEDIUM RISK patients are those who are well-controlled on one or two IMT and with no co-morbidities. Therapies that are not in high-risk category for infection are hydroxychloroquine, sulfasalazine, IVIg, and intravitreal steroid implants.

*BMI - body mass index; IVIg - intravenous immunoglobulin; COPD - chronic obstructive pulmonary disease

IV. DELIVERY OF SAFE AND HIGH-QUALITY CARE

In order to deliver safe and high-quality care in the OR setting during the COVID-19 pandemic, a strong and solid program for infection prevention and control based on the recommendations of WHO, Centers of Disease Control and Prevention (CDC), and PSMID should be implemented by the health facility.[7,23,24] Administrative, environment, and engineering controls should be put in place to ensure that the health facility is safe for the patient, surgeon, and other HCWs.

Prior to scheduling a patient for surgery, considerations regarding the need for the procedure, its risk to transmit the virus, pre-operative COVID-19 testing for patient, surgeon, and other HCWs, safety of patient, surgeon, and other HCWs, and PPE supply should have been evaluated (see sections on PREPAREDNESS and PATIENT ISSUES).[25]

Once the patient has been scheduled for surgery, the following general guiding principles may help secure a safe and high-quality care throughout the phases of operative care:

A. *Pre-operative Phase*

1. Patient screening for COVID-19-related symptoms and exposure and briefing may be repeated via a phone call 24 hours prior to the procedure. Patient should be instructed not to proceed to health care facility if symptoms develop to avoid COVID-19-positive patients presenting at the healthcare facility.[26]

2. Routinely screen surgeons and other HCWs for COVID-19-related symptoms and exposure.[26]

3. Prior to entry to the health care facility, screening questionnaire and temperature check can minimize the probability that a COVID-19-positive patient enters the facility.[26]

4. Physical distancing and wearing of masks must be strictly implemented at the pre-op waiting area.

5. Schedule patients accordingly such that waiting time may be minimized.

6. Allow ample time to prepare and disinfect the operating theater in between cases.

7. Prepare and sterilize instruments prior to the procedure to minimize the OR time.

8. A special informed consent covering the risk of transmission of SARS-CoV-2 while in the health care facility during the COVID-19 pandemic may be instituted.

B. *Intra-Operative Phase*

1. Ensure that the Anesthesia Guidelines for Post-ECQ Elective Surgeries of the Philippine Society of Anesthesia is being followed by the anesthesiologists and other health care workers.[27]

2. The health facility's guidelines for the appropriate PPE during surgery and donning/doffing of PPE must be clear and known to all HCWs in the health facility.

3. Povidone-iodine prep remains the standard of infection prevention because of its proven virucidal action against SARS-CoV, a structurally similar virus to SARS-CoV-2.[28]

4. Currently, there is no scientific evidence available regarding the additional benefit of shields and drapes attached on microscopes in the prevention of SARS-CoV-2 transmission between patient and surgeon. However, for as long as the surgery will not be compromised, these tools may be used.

C. *Post-Operative Phase*

1. Consider the use of electronic post-op instructions to minimize transmission of SARS CoV-2 thru printed materials possibly contaminated with fomites.

2. Post-op instructions may include reminders regarding monitoring for COVID-related symptoms and instructions on how to report if symptoms develop within 14 days of visit at the health facility.

3. Minimize the waiting time during the discharge process. Health facilities should review their systems if the discharge process is noted to be prolonged.

4. Try to minimize the number of follow-up visits of the patient and optimize each visit by scheduling necessary post-op procedures the same day. Teleconsultation may be employed in between face-to-face visits.

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APPENDIX A
OPD PATIENT SCREENING FORM[10]

In the past 2 weeks, did the patients have any of the following:	YES	NO
1. Respiratory symptoms		
Cough		
Shortness of breath		
Colds		
Throat pain		
Anosmia		
Other respiratory symptoms		
Influenza-like symptoms (headache, muscle and joint pains, diarrhea, lack of taste)		
2. Fever more than 38°C		
3. History of COVID-19 infection		
4. Household member diagnosed with COVID-19		
5. Travel or residence in an area reporting local transmission of COVID-19		
6. Contact or exposure to someone with recent travel to an area with local transmission of COVID-19		

APPENDIX B
LIST OF HIGH RISK/AEROSOL-GENERATING PROCEDURES[10]

1. Airway surgeries (e.g., ENT, thoracic, transsphenoidal surgeries
2. Autopsies
3. Bronchoscopy (unless carried out through a closed-circuit ventilation system)
4. Cardiopulmonary resuscitation
5. Dental procedures
6. Endotracheal intubation and extubation
7. Evacuation of pneumoperitoneum during laparoscopic procedures
8. Gastrointestinal endoscopy
9. High frequency oscillatory ventilation
10. Non-invasive ventilation (e.g., BiPAP, CPAP, high flow nasal oxygen)
11. Open suctioning of airways
12. Manual ventilation
13. Nebulization
14. Sputum induction
15. Surgical procedures using high-speed/high energy devices (e.g., high speed cutters, drills, powered instrumentation, suction microdebrider)
16. Tracheotomy/tracheostomy Procedures involving the nasal, nasolacrimal, or oral and endotracheal mucosa are considered high risk for transmission due to viral aerosolization.[19]