



Kuwait Association of Surgeons and Women Surgeons Committee, American College of Surgeons Kuwait Chapter Joint Recommendations for Managing COVID-19 Surgical Patients

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Overview

These recommendations were produced based on the best available scientific evidence to date and is consistent with international surgical societies and the global surgical community guidelines. They were tailored specifically to the current needs of the local health care system and regulations in Kuwait.

Despite early national measures and interventions taken by the Kuwait's Government and the Ministry of Health to contain the COVID-19 pandemic, the numbers of detected COVID19 patients are increasing, and it is evident that SARS-COV2 has reached the community. More recently, the numbers of affected healthcare workers (HCW) and front-liners have been on the rise.

The WSC, KAS and the American College of Surgeons Kuwait Chapter have issued this joint recommendations and statements as guidelines to promote safety of surgeons and HCW as well as patients and to provide guidance while combating this precedent crisis caused by SARS-COV2 in the surgical patients.

These recommendations are subject to change as the pandemic evolves and the evidence updates. The recommendations cover the following issues:

1. Work Organization and Preparedness When Caring for Surgical Patients in COVID-19 Pandemic.
2. Testing for COVID-19 in Surgical Patients.
3. Health Care Facilities & Operating Rooms for COVID-19 Patients.
4. Key Considerations When Operating on COVID-19 Surgical Patients.
5. Algorithm for COVID-19 Surgical Patients Pathway from Emergency Department to the Operating Room.
6. Triaging Surgical COVID-19 Cases and Special Considerations by Surgical Subspecialty: General Surgery, Otolaryngology, Plastic, Neurosurgery, Urology and Orthopedics.
7. Protective Personal Equipment When Managing COVID-19 Surgical Patients.
8. Utilization of Telemedicine and Virtual Care in Surgical Services During COVID-19 Pandemic.
9. Return to Scheduled Surgery.
10. Example of a COVID-19 Related Surgical Consent.

Organization of Work and Preparedness

We emphasize on the importance of leadership, adaptiveness and flexibility when building surgical teams caring for COVID-19 surgical patients and considering multidisciplinary team approach.

We suggest forming a national surgical COVID team committee that can oversee the preparedness plans, guidelines and protocols by surgical departments in governmental hospitals and provide support and guidance as well as to assure adherence to guidelines and review outcome of surgical COVID patients.

We recommend that surgical departments in all hospitals should have preparedness plans, guidelines and protocols that are implemented to reduce risks of virus transmission during the care of COVID-19 surgical patients that is accustomed to their manpower, infrastructure, and local resources.

Surgical departmental preparedness plans, guidelines and protocols should be explicit and adopt best evidence available, implemented, and periodically updated.

We recommend that each hospital forms surgical COVID committees or teams to provide insightful decisions in timely manner in semi-urgent surgical intervention when delay may result in adverse outcome.

We recommend that those committees or teams adopt the use of the Medically Necessary Time-Sensitive (MeNTS) Prioritization scoring system to help in making decisions for medically necessary operations considering resource constraints and increased risks posed by the COVID-19 pandemic.

We suggest that manpower should be divided into surgical teams treating COVID-19 positive or suspected cases and teams treating COVID negative cases. We recommend that teams should not mix and the teams should include a consultant, senior and junior staff.

We suggest that teams should alternate to cover for possibility of exposure/illness (for e.g. have 3 dedicated teams covering consults for COVID-19 cases, one works one week, then two weeks off to monitor symptoms).

We recommend that specialized surgical centers or services that cover multiple hospitals, such as otolaryngology, neurosurgery, plastic, vascular, orthopedics and hepatobiliary, should assign dedicated team(s) or personnel for the management of COVID-19 positive cases.

We recommend postponing all non-urgent outpatient clinics and limiting urgent visits (i.e. wound care, drain removal, and first post-operative visit) and utilizing telemedicine and virtual care as an alternative appropriately.



Testing for COVID-19 in Surgical Patients

We recommend screening and testing of all patients for SARS-COV2 who are undergoing emergency, urgent or scheduled surgical procedures, using SARS-COV2 molecular tests by nasopharyngeal NP- PCR swab as per MOH recommendation.

The purpose of the testing is to triage patients properly and to protect other patients and to reduce the risk of perioperative complications related to COVID-19 and the risk of health care workers exposure.

We encourage surgical departments to collaborate with infection control and preventative medicine personnel on site to organize and expedite testing, follow up of results of SARS-COV2 to identify the COVID-19 status for surgical patients.

We suggest considering periodic testing for HCW based on their exposure for COVID-19 positive patients. This processes of HCW testing should be organized and with clear criteria to ensure cost effectiveness.

Health Care Facilities & Operating Rooms for COVID-19 Patients

We recommend that surgical care of COVID-19 positive cases should be in designated hospitals, if that is not feasible, then in designated COVID-19 areas.

We recommend that hospitals assign designated wards, operating suite(s) or room(s), radiology suite(s), elevator(s), designated service(s), intensive care unit(s) and team(s) for suspected and confirmed cases of COVID-19 that is separate and isolated from other non-infected patients.

We recommend to further divide patients who are suspected to be COVID-19 to low-risk and high-risk patients and cohort each separately in the designated COVID-19 ward(s), room(s) and area(s) until confirmation of their COVID-19 status.

Key Considerations When Operating on COVID-19 Surgical Patients

General Considerations

We recommend considering the following protocols for COVID-19 surgical patients:

- Surgeries and procedures should be performed by the most experienced surgeon.
- Minimize operating room personnel and operating room time.
- Operating rooms should be equipped with negative pressure ventilation preferably.
- Aerosol-Generating Procedures (AGP), surgical and endoscopic procedures should be performed in negative pressure rooms, however, if negative pressure ventilated room is not available, we recommend to allow 30 minutes (10-12 cycle of air) after intubation prior to surgeons entering positive pressure operating room if possible,
- In positive pressure operating room, surgeons and nursing should leave the room prior to extubation, and then allow 30 minutes after extubation before patient exiting positive pressure operating room.
- Extubation and recovery should be done inside the operating room and with the presence of minimum necessary personnel only.
- The patient should be sent directly to the designated COVID-19 wards or ICU and not to recovery room.
- Use of HIPA filters if possible.
- Complications related to COVID-19 should be included in discussions when consenting for surgery in addition to other standard complications of any given procedure.

Prior to Sending COVID-19 Patients to the Operating Room

We recommend the following:

- The patient must be thoroughly evaluated and cleared from all relevant specialties for the planned intervention (surgery, endoscopy or AGP).
- Consents should be signed, blood requested, prophylactic VTE and Antibiotics as indicated, and any other relevant preparations needed.

Upon Arriving COVID-19 Patients to the Operating Room

We recommend the following:

- Handover & WHO check list reviewed over phone between COVID-19 Ward, ER, ICU and OR nurse prior to deployment.
- All required instruments and supplies should be prepared and available.
- Use proper airborne, contact & droplets PPE as indicated by MOH healthcare workers poster and as per local hospital protocol.



- Staff should leave all personal belongings in the changing rooms, change into scrubs & shoes that are only used for the procedure and then changed back to clean scrubs/clothes upon leaving the clean zone.
- Personal phones can be placed in labeled plastic bags and left with nurse manager in the clean zone if needed.

During Surgery for COVID-19 Patients

We recommend the following:

- Least possible and most experienced personnel in OR to minimize the time of exposure.
- Coordinate staff to minimize leaving and re-entering the OR via door management.
- Minimize movement of surgical and anesthetic equipment & medications.
- Communication to outside operating room can be challenging due to use of PPE, therefore, consider systems such as microphones, speakers, or intercom or other forms to minimize contamination.
- Use of personal cellphone during the procedure should be prohibited.

Anesthesia Precautions

We recommend the following:

- Use of local or regional anesthesia if possible.
- Contamination can occur when using manual documentation with paper intra-operatively for medications and charting and we suggest to find an alternative modality such as electronic health systems or communication with station outside the operating room over the phone to avoid manual documentation on papers.
- Use of Aerosol box and plastic covers to minimize the exposure.
- Negative pressure ventilation during intubation/extubation.

General Surgery Precautions

We recommend the following:

- Instruments to be kept clean of blood and other body fluids.
- Liberal suction to remove smoke/aerosol.
- Reduce Trendelenburg position time.
- Avoid ETT leakage.
- Use lowest electrocautery and ultrasonic power settings.
- Avoid long electrocautery or ultrasonic dissecting time on same spot to reduce surgical smoke.
- Avoid splashes.

- Avoid sharp injury of PPE.

Laparoscopy-Related Precautions

We recommend the following:

- Lowest pneumoperitoneum needed for exposure.
- Smooth and limited instrument changes.
- Use of smoke evacuation systems.
- Avoid two-way pneumoperitoneum insufflators.
- Controlled desufflation (CO₂ aerosol).
- Minimize blood loss.

After Surgery for COVID-19 Patients

We recommend the following:

- In case of gross contamination, must take a shower in the designated bathroom.
- If no contamination, then to change to another scrub & hand hygiene.
- Documentation of surgery, procedure notes after change in clean zone.

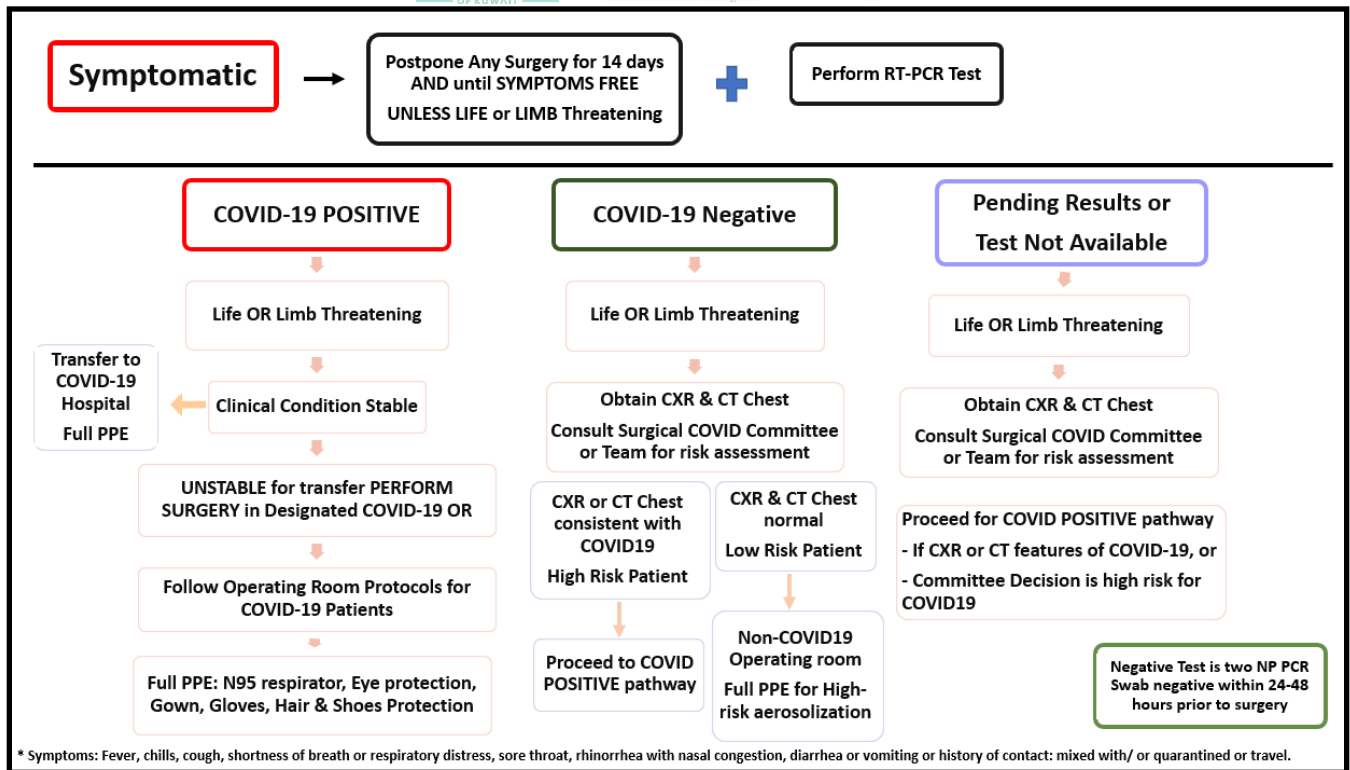
Algorithm for COVID-19 Surgical Patients Pathway from Emergency Department to the Operating Room

We suggest following the proposed two algorithms below, for patients presenting with surgical conditions to the emergency department or for patient referred from clinics in Non-COVID19 Hospital.

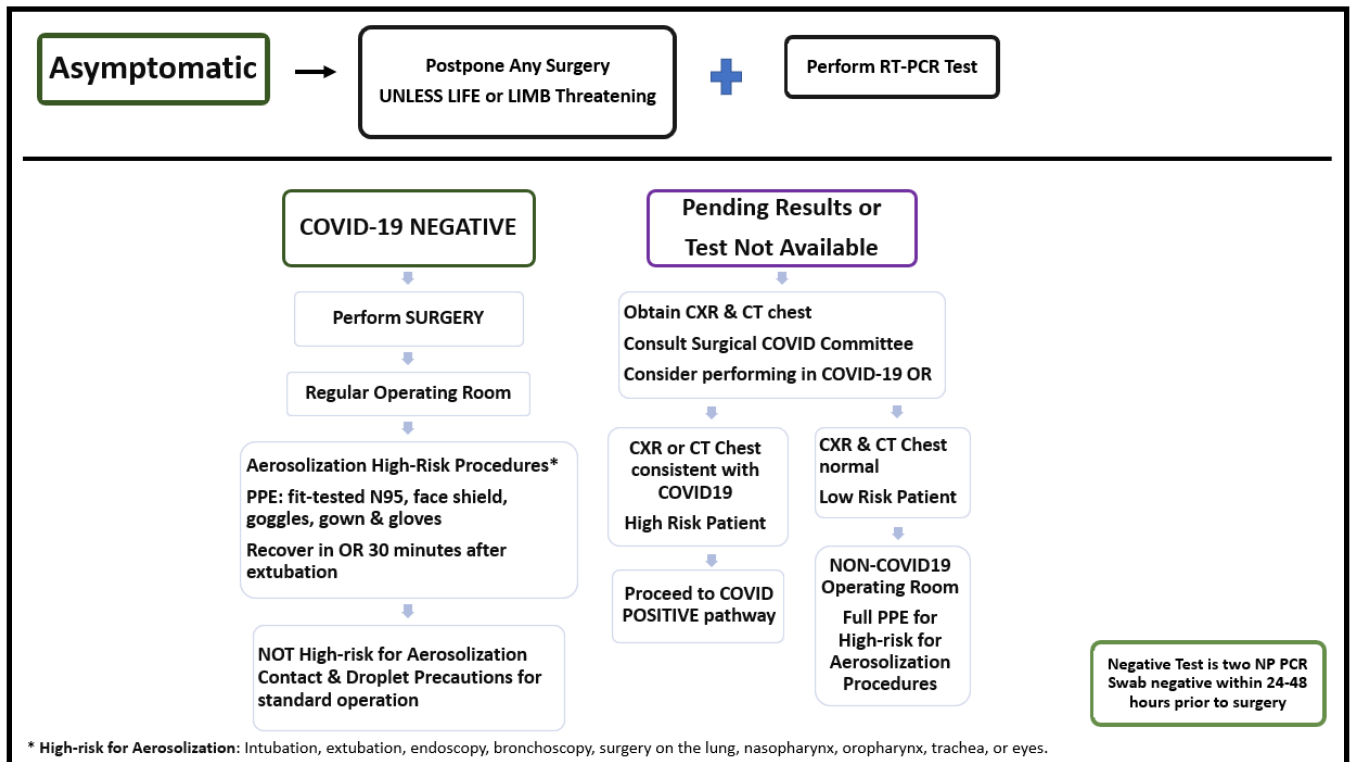
The first algorithm is for patients presenting with surgical condition and have symptoms suggestive of COVID-19 and the second algorithm is for patients presenting with surgical condition and do not have symptoms suggestive of COVID-19.

COVID19 symptoms include fever, chills, cough, shortness of breath or respiratory distress, sore throat, rhinorrhea with nasal congestion, diarrhea or vomiting or history of contact: mixed with/ or quarantined or travel.

Algorithm (1) shows the pathway for patients presenting with surgical condition and have symptoms suggestive of COVID-19 as demonstrated below:



Algorithm (2) shows the pathway for patients presenting with surgical condition and do not have any symptoms suggestive of COVID-19 as demonstrated below:



Triaging Surgical COVID-19 Cases and Special Considerations by Surgical Subspecialty: General Surgery, Otolaryngology, Plastic, Neurosurgery, Urology and Orthopedics

We recommend adopting the following surgical triage scheme for patients undergoing surgery during the COVID-19 pandemic. This triage system aims to protect patients from undergoing unnecessary surgery and be exposed to the high risk of perioperative mortality and morbidity associated with COVID-19.

Please note, in each surgical specialty, the triage lists selected provide suggestions and is not prescriptive or exhaustive. Ultimately, the surgeon's discretion is the most important factor and is indispensable.

We recommend triaging surgical patients into the following categories:

Triage Level	Estimated Time for Surgery
Level 1A Level 1B	Emergency (surgery needed within 24 hours) Urgent- Surgery needed within 72 hours
Level 2	Surgery needed within 1-2 weeks
Level 3	Surgery can be delayed for up to 4 weeks
Level 4	Surgery can be delayed for up to 3 months
Level 5	Surgery can be delayed for more than 3 months

Level 1A+B	Surgery to be done at whatever site they present
Level 2 +3	<ul style="list-style-type: none"> • Manage at COVID-free wards/anesthetic and surgical teams. • Test for COVID-19 at most 48 hours before surgery • Ask patients to self-isolate for at least 7 days prior to surgery. • Only patients asymptomatic for COVID-19 and that have been COVID-19 PCR negative should proceed with surgery. • Positive COVID, should be evaluated to be fit for surgery before proceeding by COVID-19 surgical committee or team. • Postoperative cancer patients must be counseled re-shielding and self-isolation as they fall in the high-risk category.
Level 4	<ul style="list-style-type: none"> • Defer surgery as long as possible. • Arrangements to follow up with care givers in person or virtually to review if condition worsens to provide treatment sooner if need be.
Level 5	<ul style="list-style-type: none"> • Defer surgery as long as possible. • Delay appointments if in person, if virtual appointments available then proceed.

General Surgery

We suggest the following **list for triaging General Surgery** cases as the following:

<p>Level 1A Emergency</p>	<ul style="list-style-type: none"> • Emergency Laparotomy (e.g. peritonitis/ perforation/ ischemia/ complete obstruction/ necrotizing fasciitis) • Appendectomy (complicated* or unresponsive to conservative Rx) • Intra-abdominal trauma that can't be managed conservatively • Drainage of localized sepsis if not responding to conservative Rx • Benign perforated esophagus/stomach
<p>Level 1B Urgent</p>	<ul style="list-style-type: none"> • Laparotomy-SBO not responding to conservative Rx • Colectomy for acute severe Ulcerative colitis not responding to conservative Rx • Colectomy large bowel obstruction not suitable for stenting • Failed conservative Rx of localized intra peritoneal infection • Acute cholecystitis not responding to conservative Rx • Perianal abscess • Breast abscess • Urgent nutrition access • Upper endoscopy for foreign body removal
<p>Level 2</p>	<ul style="list-style-type: none"> • Crohn's stricture/Fistula • Hepatobiliary/pancreatic/esophagogastric cancer causing obstruction • Goiter with mild/moderate strider • Adrenalectomy not responding to medical tx
<p>Level 3</p>	<ul style="list-style-type: none"> • MDT directed hepatobiliary/pancreatic/esophageogastric cancer causing obstruction • MDT directed Colon/rectal cancer resection • MDT directed Adrenal cancer surgery • MDT directed breast cancer resection
<p>Level 4</p>	<ul style="list-style-type: none"> • MDT directed colon/rectal cancer surgery • MDT directed hepatobiliary/pancreatic/esophageal cancers (not causing obstruction) • Hernia presenting with complications that settled with conservative Rx • Multidisciplinary directed-Thyroid/parathyroid cancer surgery • Adrenalectomy for adrenal cancer • Cholecystectomy- post acute pancreatitis

Level 5	<ul style="list-style-type: none">• All uncomplicated hernias• Abdominal wall reconstruction• Hartmann's reversal• Ileostomy closure• All benign anorectal procedures• Cholecystectomy for biliary colic• Benign thyroid/parathyroid conditions• All benign breast surgery
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** Perforated, has fecalith, or CT evidence of extension outside the right lower quadrant.*

Special consideration:

Perianal/perirectal and soft tissue abscesses and infections should be performed under local anesthesia when feasible.

Uncomplicated appendicitis (no fecalith, perforation, or CT evidence of extension beyond the right lower quadrant) should be managed conservatively with antibiotics.

Plastic Surgery:

Special Considerations: Burns:

- **Obligatory in-patients:**
For example, large burns that require admission and surgical management. Treatment must be expedited to avoid pre-operation delay and to expediate rehabilitation, to minimize length of stay. Attempt to work closely with rehab services, allied health services and anesthesia team to minimize admission and operative time.
- **Non-operative:**
Consider non-operative care if that avoids admissions for patients that can be reasonably managed by non-operative means, for example smaller and more superficial, socially non-complex burns
- **Burn Dressings Clinic:**
Avoid unproductive attendances at hospital and create protocols to identify those injuries that require no follow up.

Special Considerations: Breast Reconstructive Surgery:

- Delayed reconstruction and planned revision breast reconstruction are elective and should be postponed until elective surgery is deemed safe for patients
- Immediate reconstruction is less straightforward, as the patient is being brought to the operating room by general surgery/breast surgery. However, reconstructive procedures still utilize additional resources and increase the risk of complications depending on the procedure and increase the chance of needing to use a hospital bed. Certain procedures necessitate a number OPD visits (such as tissue expanders or for seromas or other complications), consume additional resources, such as personal protective equipment and increase risk of exposure.
 - The ASPS recommend:
 - Physicians should include as part of the informed consent, the issue of performing reconstructive surgery in the light of the COVID-19 pandemic and its potential consequences
 - In general, plastic surgeons should err on the side of caution and delay reconstruction
 - Immediate autologous flap reconstruction for breast reconstruction is elective and should be delayed
 - Immediate tissue expander or direct to implant reconstruction should be evaluation on a case-by-case basis. The decision should take into account the age and comorbidities of the patient and the likelihood of complications
 - Consider only addressing the cancer side and avoid prolonging surgery by performing contralateral balancing procedures
 - Consider using regional blocks, if possible, to facilitate same day discharge and minimized the number of people in the operating room to decrease exposure and to decrease PPE use

We suggest the following **list for triaging Plastic Surgery** cases as the following:

<p>Level 1A Emergency</p>	<ul style="list-style-type: none"> • Major burns- airway management, resuscitation, escharotomies/fasciotomies/amputations • Revascularization under certain situations • Some amniotic bands excisions, if limb threatening • Impending tissue necrosis • High pressure injection injuries • Certain chemical burns, especially hydrofluoric acid >2%/eye • Removal of prosthesis/washout for fulminant infection
<p>Level 1B Urgent</p>	<ul style="list-style-type: none"> • Some myelomeningocele repairs • Traumatic peripheral nerve repairs • Complex traumatic lacerations, especially on the face • Soft tissue injuries caused by human or animal bites • Abscesses +/- infected prosthesis /seromas/hematomas, not responding to conservative treatment • Vascular malformations causing significant bleeding, thrombocytopenia, or high output failure • Craniosynostoses causing signs of raised intracranial pressure
<p>Level 2</p>	<ul style="list-style-type: none"> • Flexor/extensor tendon repairs • Excision and grafting for certain burns • Complex infantile hemangiomas with significant ulcerations, bleeding or causing significant impediments such as vision obstruction, that are not responsive to medical therapy • Fingertip/nail-bed repair • Major limb trauma reconstruction, unsuitable for conservative treatment
<p>Level 3</p>	<ul style="list-style-type: none"> • Excision and grafting for certain burns
<p>Level 4</p>	<ul style="list-style-type: none"> • Some oncologic and trauma-related reconstructive procedures, especially for head and neck or perineal malignancies
<p>Level 5</p>	<ul style="list-style-type: none"> • All aesthetic surgeries • Most other craniofacial and reconstructive plastic surgery procedures

Neurosurgery:

We suggest the following **list for triaging Neurosurgery** cases as the following:

Level 1A Emergency	<ul style="list-style-type: none"> • Pediatric: CSF Disorders (acute/subacute hydrocephalus, shunt malfunction) • Spinal: Risk of permanent or reversible neurological deterioration e.g. spinal trauma with instability +/- reduction, fixation; compression from metastatic spinal requiring decompression; epidural spinal compression. • Trauma: Cranial (SDH, EDH, depressed skull) • Vascular: spontaneous intracranial bleeds, fracture) & spinal column injuries • CSF Path: EVD insertion, VP shunt, CSF leak requiring Lumbar drain +/-repair
Level 1B Urgent	<ul style="list-style-type: none"> • Pediatric: myelomeningocele repairs • Spinal: New or progressive foot drop or arm weakness related to compression of a specific nerve root. • Infectious: New or progressive foot drop or arm weakness related to compression of a specific nerve root. • Endonasal surgery: Pituitary apoplexy with substantial risk of visual loss
Level 2	<ul style="list-style-type: none"> • Pediatric: Infectious cases • Spinal: Progressive myelopathy in patients with a risk of falling, Severe radiculopathy causing severe pain. This pain is requiring extensive opioid use and emergency • Trauma: E.g. repair of frontal sinus injury • Oncology: Majority of cranial and spinal undiagnosed pathology lesions; recurrent symptomatic ones. • Functional: battery/pump replacement
Level 3	<ul style="list-style-type: none"> • Spinal: What does not fall under the previous is considered not of high acuity. E.g. nerve root schwannoma, herniated disc with controlled radiating pain • Oncology: with potential to progress (e.g. symptomatic meningioma, low grade glioma with little or no mass effect) • Epilepsy: VNS battery revision
Level 4	<ul style="list-style-type: none"> • Pediatric: Laser Ablation procedures • Trauma: e.g. cranioplasty
Level 5	<ul style="list-style-type: none"> • Pediatric: *Craniosynostosis, *Asymptomatic Occult spina bifida, *Epilepsy • Oncology: e.g. incidental meningioma • Vascular: Unruptured intracranial aneurysm or AVM • Epilepsy: Unoperated epilepsy foci, VNS insertion • Functional: non-operated cases

****Special consideration for endonasal surgery:**

An aerosol generating procedure (AGP) is considered one of the most high-risk neurosurgical case due the exceptionally high level of viral load in the endonasal passage areas and air sinuses that will be released on disruption of the mucosa.

Otolaryngology-Head and Neck Surgery:

Special Considerations: Tracheostomy/Tracheostomy tube change

Given that tracheostomy tube change and care is considered an aerosol-generating procedure, it should be considered high risk and follow the use of PPE table in the PPE section below.

Special Considerations: Fiberoptic Endoscopy

We recommend deferring endoscopy unless completely necessary
Consider all patients as COVID-19 positive and take all precautions for clinician and healthcare staff. (N95 mask with face shield to allow reuse, gloves, and gown)

We suggest the following **list for triaging Otolaryngology-Head and Neck** surgery cases as the following:

Level 1A Emergency	<ul style="list-style-type: none"> • Stridor • FB airway • Battery in esophagus • Neck trauma with vascular/airway injury • Orbital Abscess (cellulitis)
Level 1B Urgent	<ul style="list-style-type: none"> • Uncontrolled Epistaxis (with packing requiring SPA ligation, surgical control of bleeding) • Sinus surgery for impending catastrophe • Acute Mastoiditis not responding to conservative Rx • Traumatic facial nerve palsy • Traumatic injury to pinna • Head & neck infections not responding to conservative management
Level 2	<ul style="list-style-type: none"> • Excisional LN biopsy (for suspected lymphoma) • Direct Laryngoscopy + biopsy for suspected malignancy of the upper aerodigestive tract • Organic FB ear
Level 3	<ul style="list-style-type: none"> • Thyroid enlargement-with mild to moderate airway compromise • Thyroid/Parathyroid cancer • Thyrotoxicosis not responding to medical management • Oropharyngeal/Nasopharyngeal cancer surgery • Cochlear implantation post-meningitis • Barotrauma perilymph fistula • High grade salivary cancers • Sinus cancers

<p>Level 4</p>	<ul style="list-style-type: none"> • Diagnostic thyroid lobectomy • CSF fistula repair • Symptomatic mucocele • Cochlear implant in preverbal profound HL where delay may impact long term outcome
<p>Level 5</p>	<ul style="list-style-type: none"> • ALL other rhinology • CSOM surgery • Ossicular chain implants/middle ear surgery • Tympanoplasty • Tonsils/Adenoids/Grommet tube • Uncomplicated nasal bone fracture

Urology:

We suggest the following **list for triaging Urology** cases as the following:

Level 1A Emergency	<ul style="list-style-type: none"> • Renal obstruction with infection, not responding to conservative Rx • Testicular Torsion • Renal/ureteric trauma requiring open surgery • Bladder trauma requiring open surgery • Genital trauma/ amputation/ priapism (24hrs) • Hematuria/ uncontrolled hemorrhage causing hemodynamic instability and unresponsive to conservative Rx
Level 1B Urgent	<ul style="list-style-type: none"> • Upper urinary tract obstruction-pain/ impairment not responsive to conservative Rx • Penile fracture • Infected prosthesis - penile/testicular/stent (unless septic →1a)
Level 2	<ul style="list-style-type: none"> • MTD Testicular cancer surgery (non- metastatic) • MTD Bladder cancer surgery • MTD Renal cancer surgery (non-bleeding). • MTD Upper tract transitional cell cancer surgery • Acute Urinary Retention
Level 3	<ul style="list-style-type: none"> • Prostate cancer surgery • Stent removal/ exchange • Hematuria - investigation for non-visible
Level 4	<ul style="list-style-type: none"> • Female urology for benign conditions (e.g. incontinence/ prolapse/Sacral Nerve Stimulator/ fistula/urethral diverticulum) • Endourology- uncomplicated stones/ percutaneous nephrolithotomy/ pelviureteric obstruction • Andrology/GU Surgery (surgery for erectile dysfunction/ male fertility surgery/ urethral stricture/ gender reassignment. • Bladder outflow surgery

Orthopedics:

We suggest the following **list for triaging Orthopedics** cases as the following:

<p>Level 1A Emergency</p>	<ul style="list-style-type: none"> ● Trauma <ul style="list-style-type: none"> - Pelvis fractures with hemodynamic instability - Multiple long bone fractures (polytrauma) - Near amputation and mangled extremity - Acute Compartment syndrome - Fractures with nerve/ vascular injury ● Infection <ul style="list-style-type: none"> - Septic joint with systemic sepsis/shock
<p>Level 1 B Urgent</p>	<ul style="list-style-type: none"> ● Trauma <ul style="list-style-type: none"> - Hip fractures in medically clear geriatrics - Femur neck fractures in young adult - Femur shaft fracture - Open fractures - Dislocated joints with failed close reduction - Displaced talus neck fracture ● Infection <ul style="list-style-type: none"> - Septic joint <i>without</i> systemic sepsis ● Pediatric <ul style="list-style-type: none"> - Unstable slipped capital femoral epiphysis
<p>Level 2</p>	<ul style="list-style-type: none"> ● Trauma <ul style="list-style-type: none"> - Hip fractures in geriatrics (medically unfit as level 1b) - Pelvis and acetabulum stable fractures - Tibia fractures (nails /ORIF) - Periarticular complex fractures - Extensor mechanism fractures (olecranon and patella) - Forearm fractures ● Sport <ul style="list-style-type: none"> - Locked knee with entrapped meniscus ● Infection <ul style="list-style-type: none"> - Acute post-operative deep infections
<p>Level 3</p>	<ul style="list-style-type: none"> ● Trauma <ul style="list-style-type: none"> - Definitive fixation of fractures with high energy soft tissue injury (especially pilons, calcaneus, Lisfranc's midfoot and plateau fractures) - Isolated upper limb fractures (humerus shaft, clavicle, distal radius extraarticular fractures, scaphoid, metacarpals and fingers). ● Oncology <ul style="list-style-type: none"> - Soft tissue/bone sarcoma (biopsy, resection, construction) - Pathological fractures (other than hip/femur)

<p>Level 4</p>	<ul style="list-style-type: none"> ● Trauma <ul style="list-style-type: none"> - Reconstruction of critical bone defects (cement, graft) - Soft tissue reconstruction (with plastic surgeon) ● Pediatric <ul style="list-style-type: none"> - Containment hip procedures: Closed/open reduction, spica cast, pelvis /femoral osteotomies ● Sport <ul style="list-style-type: none"> - Multi ligamentous knee injury - Acute ACL with meniscal injury in young patient
<p>Level 5</p>	<ul style="list-style-type: none"> ● Trauma <ul style="list-style-type: none"> - Nonunion - Malunion - Implant removal (if indicated) ● Foot / hand reconstruction <ul style="list-style-type: none"> - Osteotomies - Arthrodesis - Arthroplasty: - Arthroscopy ● Arthroplasty <ul style="list-style-type: none"> - Total hip replacement (non-trauma cases) - Total knee replacement - Total shoulder /reverse total shoulder ● Sport <ul style="list-style-type: none"> - Knee Arthroscopic /open reconstructive procedures for meniscus/ligaments/tendons. - Shoulder Arthroscopic /open reconstructive procedures for labrum/rotator cuffs, AC joint, capsule plication. - Cartilage reconstruction procedures ● Deformity <ul style="list-style-type: none"> - Angular, rotational and axial (LLD) correction (ilizarov, TSF, nails)



Protective Personal Equipment When Managing COVID-19 Surgical Patients

We recommend using personal protective equipment (PPE) for every operative procedure performed on a patient with confirmed COVID-19 infection or a patient where there is suspicion for infection.

We recommend using N95 respirators or respirators that offer a higher level of protection should be used when performing or present for an **aerosol-generating procedure** in COVID-19 or suspected or infected patient.

We recommend fit testing for the respirators and masks to ensure proper mask fit and protection.

We suggest the following steps to:

Minimize the PPE use

- Use telemedicine and telephone hotlines (detailed below) to initially evaluate suspected cases of COVID-19.
- Use physical barriers to reduce exposure to the COVID-19 virus, such as glass or plastic windows.
- Postpone elective, non-urgent procedure, and hospitalizations.
- Designate dedicated health care workers/teams only for COVID-19 patient care so that they can use PPE for longer periods of time.
- Restrict the number of health care workers entering the rooms of COVID-19 patients if they are not involved in providing direct care.
- Consider using specific PPE only if in direct close contact with the patient or when touching the environment.

Use PPE Appropriately

We recommend the following table (adapted from JAMA) to optimize the use of PPE in the surgical setting:

Risk and Definition	Patient Wears	Clinician/Staff Wear
Non-Procedure Encounters in Non-Immune-Compromised Patients		
High risk to clinician: any examination in: <ul style="list-style-type: none"> • Patient with active SARS-CoV-2 infection • Patient with influenzas-like symptoms • Patient under evaluation for SARS-CoV-2 infection 	Surgical mask	<ul style="list-style-type: none"> • Single-use N95 mask • Goggles or face shield • Gown • Gloves
Moderate risk to clinician: examination of ear, nose, mouth or throat in asymptomatic patients	Nothing	Surgical mask with face shield to allow for reuse of the mask gloves
Low risk to clinician: other examination in asymptomatic patients	Nothing	Mask optional gloves
Aerosol-Generating Interventional Procedures		
Procedures including (but not limited to): intubation, extubation, office-based laryngoscopy and ear endoscopy, bronchoscopy, tracheostomy and tracheostomy care, nasal packing, foreign body management, powered instrumentation in the mucosa of the Head & Neck, laparoscopic surgery.		
High risk to clinician: consider delaying if possible: <ul style="list-style-type: none"> • Patient with active SARS-CoV-2 infection • Patient with influenzas-like symptoms • Patient under evaluation for SARS-CoV-2 infection 	Surgical mask	PAPR or single use N95 mask and Goggles or face shield Gown Double gloves
Low risk to clinician: Patients who are asymptomatic and SARS-CoV-2 negative in 48 hr preceding surgery	Nothing	N95 mask and Eye protection (consider face shield for reuse of mask) Gown Double gloves
Non-Aerosol-Generating Interventional Procedures		
Soft tissue surgery exposing blood (unless using energy devices it will not be aerosolized),		
High risk to clinician: consider delaying if possible: <ul style="list-style-type: none"> • Patient with active SARS-CoV-2 infection • Patient with influenzas-like symptoms • Patient under evaluation for SARS-CoV-2 infection 	Surgical mask	Single use N95 mask Goggles or face shield Gown Gloves
Low risk to clinician: Patients who are asymptomatic and SARS-CoV-2 negative in 48 hr preceding surgery	Nothing	Surgical mask Goggles or face shield Gown Goves



PPE Utilization

We suggest the hospitals should consider assessing the usage of personal protective equipment by using the **PPE burn rate calculator** to facilitate plans and optimize the use of PPE for response to COVID 19 in order to balance the demand and supply efficiently.

Link: <https://www.cdc.gov/coronavirus/2019-ncov/hcp/ppe-strategy/burn-calculator.html>

Extended Use

We recommend practicing extended usage of PPE. The CDC reports that prolonged N95 mask use (including between patients) can be safe for up to 8 hours, and encourages each user to review each manufacturer's recommendations prior to following this strategy. Current guidelines encourage wearing a face shield or surgical mask over the N95 to decrease the chances of soiling the mask.

Mask Reuse

We suggest following the CDC recommendations for the reuse of masks. If no soiling and minimal to no viral contamination to the mask, that masks can be re-used by the same person up to 5 times with the strategy of mask rotation:

- Acquire a set number of N95 masks (at least 5 per the CDC), and rotate their use each day, allowing them to dry for long enough that the virus is no longer viable (> 72 hours). Proper storage for this technique requires either hanging the respirators to dry, or keeping them in a clean, breathable container like a paper bag between uses.

We recommend educating staff about the strategies for reuse of masks.

Utilization of Telemedicine and Virtual Care in Surgical Services During COVID-19 Pandemic

'Telemedicine' in these guidelines is defined as providing medical care through electronic communication where the patient and provider are in different locations. "Telehealth" is defined as the utilization of electronic information and telecommunications technologies to support and promote clinical health care, patients, professional health education, public health and health administration.

We encourage surgeons and healthcare providers to utilize telemedicine and telehealth when possible during the COVID-19 pandemic while abiding to ethical standards and institutional and national regulations.

We suggest that phone, electronic medical records (EMR)-enabled virtual tools and/or video conferences can be used to:

- Triage for care and screen consults.
- Avoid unnecessary trips to the OPD for patients who are chronic or do not require a physical exam.
- Medication renewals.
- Re-scheduling surgery/procedures.

We recommend utilization of regulated virtual platforms and EMR-enabled tools if available.

We recommend taking precautions when unregulated platforms are used for virtual communication as follows:

- Carefully establish that the patient identity is correct.
- Record that verbal expressed consent was obtained in the patient's permanent record and record the following statement in the encounter note.
- Explain to patients at the start of the virtual encounter that unregulated virtual care technologies increase the risk of being intercepted or disclosed to third parties. During the COVID-19 pandemic, extraordinary circumstances and lack of regulated technologies has made it necessary to utilize this platform. It has been generally agreed upon by most regulatory authorities that the COVID-19 risks are thought to outweigh the risks of personal privacy breaches in this situation.
- Example of unregulated virtual platforms are Skype, Facetime, Zoom Basic (Zoom also has a regulated platform), Google Hangouts, WhatsApp by Facebook, Doxy.me, texting, regular email; they should be used with caution.

We emphasize on the importance of documentation of the informed verbal consent when using unregulated virtual care tools to communicate and provide virtual care. We recommend that the risks related to unauthorized disclosure of personal health information and steps taken that can help to protect that information should be explained.

We recommend utilizing telehealth to facilitate administrative surgical responsibilities and interdepartmental meetings, departmental educational activities, residency training educational activities and in research.



Return to Scheduled Surgery

We encourage national administrative and interdepartmental collaborations to carefully evaluate the health care facility capacity, manpower, infrastructure, and resources upon planning the appropriate timing of resuming scheduled surgeries. It is expected that this process will be lengthy and therefore should be carefully planned.

We advise to utilize the proposed triaging system in these guidelines for prioritization of the scheduled surgeries.

We recommend that scheduled surgeries should take place in hospitals or designated facilities for patients who have tested negative for COVID-19.



Appendix 1. Example of Surgical COVID-19 Related Informed Consent



This document is for reference purposes only. It is intended to provide general guidance, is not legal advice and is not a statement regarding any standard of care. This document does not take into account every law or requirement of federal, state or local authorities which may be applicable to you or your practice site(s).

Informed Consent

COVID-19 RISK

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Informed Consent – COVID-19 RISK



COVID-19 RISK INFORMED CONSENT

I _____ (patient name) understand that I am opting for an elective treatment/procedure/surgery that is not urgent and may not be medically necessary.

I also understand that the novel coronavirus, COVID-19, has been declared a worldwide pandemic by the World Health Organization. I further understand that COVID-19 is extremely contagious and is believed to spread by person-to-person contact; and, as a result, federal and state health agencies recommend social distancing. I recognize that Dr. Steve Sample and all the staff at _____ (practice name) and _____ (facility name) are closely monitoring this situation and have put in place reasonable preventative measures aimed to reduce the spread of COVID-19. However, given the nature of the virus, I understand there is an inherent risk of becoming infected with COVID-19 by virtue of proceeding with this elective treatment/procedure/surgery. I hereby acknowledge and assume the risk of becoming infected with COVID-19 through this elective treatment/procedure/surgery, and I give my express permission for Dr. Steve Sample and all the staff at _____ (practice name) and _____ (facility name) to proceed with the same.

I understand that, even if I have been tested for COVID and received a negative test result, the tests in some cases may fail to detect the virus or I may have contracted COVID after the test. I understand that, if I have a COVID-19 infection, and even if I do not have any symptoms for the same, proceeding with this elective treatment/procedure/surgery can lead to a higher chance of complication and death.

I understand that possible exposure to COVID-19 before/during/after my treatment/procedure/surgery may result in the following: a positive COVID-19 diagnosis, extended quarantine/self-isolation, additional tests, hospitalization that may require medical therapy, Intensive Care treatment, possible need for intubation/ventilator support, short-term or long-term intubation, other potential complications, and the risk of death. In addition, after my elective treatment/procedure/surgery, I may need additional care that may require me to go to an emergency room or a hospital.

I understand that COVID-19 may cause additional risks, some or many of which may not currently be known at this time, in addition to the risks described herein, as well as those risks for the treatment/procedure/surgery itself.

I have been given the option to defer my treatment/procedure/surgery to a later date. However, I understand all the potential risks, including but not limited to the potential short-term and long-term complications related to COVID-19, and I would like to proceed with my desired treatment/procedure/surgery.

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Patient Initials

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Informed Consent – COVID-19 RISK

INFORMED CONSENT FOR COVID-19 RISK

I UNDERSTAND THE EXPLANATION AND HAVE NO MORE QUESTIONS AND CONSENT TO THE PROCEDURE.

Patient or Person Authorized to Sign for Patient _____ Date/Time _____

Witness _____ Date/Time _____

I have been offered a copy of this consent form (patient's initials) _____

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Patient Initials

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