

# Levels of Surgeries and Procedures

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This guideline provides a framework that can be used in a pandemic or mass casualty scenario where resources are constrained and not all cases can safely be performed. Any orders coming from county, state or federal sources regarding restricting surgeries and procedures must be followed. Proactive labeling of cases based on severity and urgency allow for more expeditious planning in a potentially dynamic environment. Levels are defined from 1 (urgent/emergent that can't wait) to 4 (those that can be deferred for as long as the event might last). As resources become more constrained, cases will have to be deferred, starting with level 4 then potentially moving to level 3, and so forth. Physician judgment is very important in understanding the nature of the procedure, the patient's medical history and the likely severity/duration of the pandemic or mass casualty event.

**Level 1:** Patient has imminent risk to life or limb within 30 days if the surgery/procedure is not performed

Examples include, but are not limited to:

- **BRONCHOSCOPY:** Acute foreign body aspiration, massive hemoptysis without obvious source of embolization, severe symptomatic central airway obstruction, acute evaluation of existing airway stent. Pediatric bronchoscopy: admitted patients not improving on a course of therapy such as cystic fibrosis or interstitial lung disease that require change in their acute inpatient management.
- **CANCER HEALTH:** Emergent incision and drainage procedures, fasciotomies, hematoma decompression, vascular compromise, abdominal compartment syndrome, treatment of acute hemorrhage, gynecologic emergencies, tumor compression of vascular structures with compromise, tumor resection to address imminent vascular, neural, intestinal, or organ compromise, surgeries related to subacute infection treatment
- **CARDIOTHORACIC:** Uncontrolled severe heart failure requiring mechanical support, malfunctioning VAD, unstable angina requiring intraaortic balloon pump or escalating IV antianginals, papillary muscle rupture, VSD post-infarct, blown aortic prosthetic valve, active uncontrolled endocarditis, pericardial tamponade, post-surgical bleeding, aortic dissection, uncontrolled cath lab STEMI, acute hemoptysis of frank blood that cannot be controlled by non-surgical means, ECMO (with standard indications), inpatient NSTEMI or STEMI on IV heparin with controlled ischemia, controlled active endocarditis, valvular heart disease rescued from heart failure, heart failure dependent on IV inotropes
- **ELECTROPHYSIOLOGY:** Device implant for unstable bradyarrhythmia, Extraction with sepsis, Gen changes at EOL with pacer dependency or secondary prevention ICD, Ablation for VT storm, Ablation for tachy arrhythmias (AF or AFL) with inability to rate control, Device implant for syncope with bradycardia, Secondary prevention ICD implants, CRT implants for unstable heart failure, Pre-excited (WPW) ablation with documented AFib, Device Extraction with critical lead failure
- **ENDOSCOPY:** Acute active GI bleed, ascending cholangitis, Ogilvie's, esophageal foreign body/impaction, infected pancreatic necrosis, acute colonic pseudo-obstruction and emergent
- **ENT:** Airway obstructing head and neck cancer patients, tonsillar bleed, anaplastic thyroid cancer, peritonsillar or neck abscess
- **GENERAL:** Perforated viscus, ischemic/necrotic bowel, closed loop bowel obstruction/volvulus, fulminant colitis, strangulated hernia, necrotizing fasciitis, endoscopy for bleeding/obstruction, solid organ injury causing hemodynamic instability, acute cholecystitis/appendicitis with evidence of sepsis, malrotation with midgut volvulus, button battery ingestion, acute cholecystitis/severely symptomatic cholelithiasis, acute appendicitis, debridement of infected wound, diverticulitis unable to be resolved with antibiotic therapy, feeding tube placement, partial bowel obstructions/intra-abdominal infection related to inflammatory bowel disease, neonatal intestinal surgery, severely symptomatic pediatric IBD
- **INTERVENTIONAL CARDIOLOGY:** STEMI, Non-NSTEMI, Unstable Angina, pericardiocentesis, post-cardiac arrest, cardio
- **NEUROSURGERY:** Subdural Hematoma evacuation, Ruptured aneurysm clipping, ruptured AVM surgery, decompressive craniectomy, resection of brain or spine tumor with significant mass effect, evacuation of intracerebral hemorrhage, laminectomy/fusion for decompression of spinal cord for acute

- injury, surgery for brain or spinal cord abscess or hematoma, thrombectomy for stroke, new diagnosis of hydrocephalus or shunt malfunction with rapidly declining neurologic deficit in pediatric patients,
- resection of brain or spine tumor with mass effect, laminectomy/fusion for decompression of spinal cord with significant mass effect and neurological deficit, removal of infected hardware including spinal cord stimulator, brain implants and all other spine or brain implants.
  - OB/GYN: unscheduled c-section (in labor or with pregnancy complication requiring delivery), ovarian torsion, acute obstetric or gynecologic hemorrhage, group A strep or tubo-ovarian abscess with sepsis uncontrolled by medical management, ectopic pregnancy, rescue cerclage, scheduled c-section, scheduled cerclage, acute severe ongoing gynecologic bleeding not requiring transfusion and uncontrolled by medical management
  - OPHTHALMOLOGY: Retinal hemorrhage or other condition causing compression on optic nerve, ocular trauma
  - ORTHOPAEDICS: Septic joint/osteomyelitis, open fracture, multiple major long bone fractures, major pelvic/acetabular fractures, animal bites (deep/complex/infected), compartment syndrome, necrotizing fasciitis, mangled extremity, most long bone fractures, hip fractures, acute soft tissue infections without sepsis, acute total joint infection, SCFE
  - PLEURAL: Thoracentesis/chest tube for suspected empyema, hemothorax, pneumothorax, any pleural effusion causing acute respiratory failure
  - PODIATRY: Partial foot amputation (partial ray, TMA, toe amputation) for wet gangrene with evidence of sepsis. Incision and drainage of abscess in a patient with evidence of sepsis, Incision and drainage of abscess, partial foot amputation (partial ray, TMA, toe amputation) for wet gangrene without evidence of sepsis.
  - TRANSPLANT: cadaveric solid organ transplantation, cardiac/lung transplant
  - UROLOGY: obstructing kidney stone with infection, Fournier's gangrene, testicular torsion, urinary retention with urethral stricture and inability to place catheter, cystectomy patients with aggressive bladder cancer, T2+ kidney cancer, large or high risk TURBT, orchiectomy for testicular cancer, ureteral stones with uncontrolled pain and prolonging hospitalization/repeated ED visits, nephroureterectomy for high-risk urothelial cancer of the kidney, penile cancer
  - VASCULAR: Traumatic bleeding, acute aortic injury, critical limb ischemia with need for urgent/emergent revascularization, aortic dissection with visceral malperfusion, ruptured abdominal aortic aneurysm, acute mesenteric ischemia, compartment syndrome, amputations for wet gangrene with signs of sepsis, distal perfusion catheter placements and vascular repair (ECMO patients), symptomatic aortic aneurysm in urgent need of open/endovascular repair, symptomatic carotid artery disease, thoracic aortic aneurysm > 6.5cm, asymptomatic AAA > 7.0cm, amputation for wet gangrene without signs of sepsis, graft infections requiring explant, severe PAD with worsening tissue loss/rest pain, some ECMO decannulations, fistulograms in threatened AV fistulas with urgent need for dialysis, clotted AV fistulas, and other dialysis-related procedures

**Level 2:** Patient will face long-lasting harm with possible risk of mortality or metastases between 1 and 6 months if the surgery/procedure is not performed

Examples include, but are not limited to:

- BRONCHOSCOPY: Neutropenic fever with infiltrates and no clinical diagnosis or improvement, lung nodule or mass- suspected early stage in resectable patients, lung mass with adenopathy for staging known cancer, new lesion, or suspected disease progression when no other target present, suspected sarcoidosis with symptoms, acute lobar atelectasis, lung transplant patients with clinical decline or post-transplant surveillance done at 1, 3 and 6 months
- CANCER HEALTH: Biopsies/other diagnostic procedures, tumor resections to address likely vascular/neural/intestinal/organ compromise, tumor staging procedures, planned tumor resections following neoadjuvant treatment; surgeries aligned with completion of chemotherapy and radiotherapy should attempt to align to more optimal windows of timing when able
- CARDIOTHORACIC: Lung cancer, cancer metastatic to lungs, stable angina, stable valvular heart disease, stable heart rhythm disorder (e.g., atrial fibrillation requiring surgical ablation in patients who are not candidates for anticoagulation)
- ELECTROPHYSIOLOGY: Primary prevention ICD, Hybrid AF ablation patients still in AFib needing the Endocardial portion of procedure, Loop implant for cryptogenic CVA or recurrent syncope, Gen changes

for non-dependent patients with no history of tachytherapies at ERI, Watchman, Lead extraction for device upgrade, Persistent AF ablation patients with rates well controlled, Pacer implants for chronotropic incompetence, CRT implants for stable heart failure, PVC ablation with concomitant low EF

- ENDOSCOPY: abnormal imaging with high pre-test probability of new malignancy, known malignancy with need for tissue sampling or staging to guide therapy, clinically stable active GI bleeding, biliary obstruction without infection, luminal stenting, moderate-severe active intestinal inflammatory condition
- ENT: thyroidectomy for malignancy or tracheal compression, other routine head/neck cancer patients, T&A for obstructive sleep apnea, bilateral myringotomy tubes for significant hearing loss, pediatric tracheostomy
- GENERAL: Hernia repairs with high risk of strangulation, port placements, repeated episodes of infection secondary to diverticular disease or fistula(e), intra-abdominal pediatric tumors
- INTERVENTIONAL CARDIOLOGY: LAO, Percutaneous valve repair, diagnostic study for surgical work up/follow up (TAVR, transplant, VAD)
- NEUROSURGERY: Resection of brain or spine tumor without major mass effect, elective aneurysm surgery/procedure, elective AVM surgery/procedure, tethered cord release in symptomatic patients, epilepsy surgery
- OB/GYN: Hysterectomy and/or oophorectomy for malignancy, prolapse with ureteral obstruction that cannot be temporarily alleviated by pessary, post-partum sterilization in patients for whom a subsequent pregnancy would be a life-threatening condition
- ORTHOPAEDICS: chronic soft tissue wounds or chronic total joint infections, most ortho/onc resections, congenital hip dislocation, skeletally immature scoliosis, unstable SCFE
- PLASTICS: skin grafting, craniosynostosis with documented increased ICP or globe exposure
- PLEURAL: Medical thoracoscopy/pleuroscopy for pleural effusion of unclear etiology, staging and palliation of suspected symptomatic malignant pleural effusion, PleurX catheter for symptomatic pleural effusion requiring recurrent thoracentesis, to obtain additional tissue to guide treatment decisions
- PODIATRY: Toe or partial foot amputation for a metastatic cancer (malignant melanoma on a toe)
- UROLOGY: T1 kidney cancer, high risk prostate cancer, cystectomy for lower risk bladder cancer, pediatric ureteral deflux injection
- VASCULAR: AAA 5.5-7.0 cm with risk of rupture if delayed greater than 6 months (per judgment), chronic mesenteric ischemia, carotid disease with string sign, PAD with more stable symptoms/minor tissue loss, AV fistula surgery/revision (for infection, thrombosis, ulceration)

**Level 3:** Postponement could impact the health, safety, and welfare of the patient. This includes surgeries/procedures done to curtail pain requiring escalating doses of opioids, to preserve the ability for self-care, to complete staged procedures which are time-sensitive in nature and/or would otherwise require a different operative plan if not completed.

Examples include, but are not limited to:

- BRONCHOSCOPY: Airway inspection for cough or minor hemoptysis, chronic lobar atelectasis, post lung transplant surveillance done at greater than 6 months
- CANCER HEALTH: Failed implant or reconstruction revision procedures (failed hardware/implant without infection), resections of precancerous masses or masses with low suspicion for malignancy, resection of masses with malignant potential (IPMN, asymptomatic neuroendocrine tumors, DCIS, etc.)
- CARDIOTHORACIC: Therapeutic pleural procedure in the absence of respiratory compromise, diagnostic thoracic procedure with concern for infection/inflammatory process (not malignancy), stable atrial fibrillation maintained on anticoagulation (Convergent Procedure), sternal wire removal due to pain
- ELECTROPHYSIOLOGY: SVT ablation, Paroxysmal AFib ablation, AFL ablation with rates well controlled and no heart failure, PVC ablation with normal EF
- ENDOSCOPY: Active digestive or abdominal symptoms with high pre-test probability for a condition needing urgent endoscopic diagnosis or therapy (inability to tolerate oral intake, weight loss, anemia, elevated inflammatory markers, etc.), non-occluded biliary stent removal
- ENT: children with fever/pain with antibiotic failure requiring ear tube placement, children with severe sleep apnea requiring adenotonsillectomy, complex pediatric airway cases (supraglottoplasty for newborn stridor), pediatric cochlear implant, mastoidectomy for infection, cholesteotoma, nasal/sinus surgery, adult ear surgery, salivary gland surgery, routine tonsillectomy, routine laryngoscopy, goiter

with dysphagia, ear surgery for perforation

- GENERAL: severely symptomatic anorectal disease (fistulae, abscesses), inguinal hernia repairs for patients <2 yrs of age, gastrocutaneous fistula repair, anal dilations for staged pediatric colonic disease, frequent but self-limiting biliary colic, symptomatic (painful) inguinal/ventral/umbilical hernias without evidence of strangulation/incarceration, reflux procedures, hemorrhoid surgery with history of thrombosis, ostomy takedown due to high output, refractory to medical management with need for chronic infusion therapy, or with ill-fitting appliance/skin maceration, recurrent diverticular disease without evidence of fistulization, procedures to prevent/ameliorate debilitating fecal incontinence, pediatric inguinal hernias > 2 yrs of age, symptomatic pectus excavatum
- INTERVENTIONAL CARDIOLOGY: ASD/PFO Closure, RHC Challenge, CTO, Cardiomechs
- NEUROSURGERY: Placement of spinal cord stimulator, spinal surgery for radiculopathy without weakness, movement disorder surgery, removal of spinal cord stimulator, removal of hardware, replacement of cranial bone flap, deep brain stimulation surgery, epilepsy surgery, low risk aneurysms and AMS, battery changes for neuropace/spinal cord stimulators/movement disorder patients.
- OB/GYN: evaluation for malignancy (biopsy, D&C) with high clinical suspicion, adnexal mass with risk for torsion (>6cm) accompanied by significant pain, high grade dysplasia (VIN3, VAIN3, CIN3), hysterectomy or myomectomy with ongoing bleeding and significant anemia (Hgb <10) that has failed or is contraindicated for medical management, hysterectomy for all other indications not listed above, prolapse and incontinence surgery without ureteral obstruction, endometriosis surgery, cystoscopy hydrodistention, pelvic injections, adnexal masses not otherwise included in levels 1-4, post-partum tubal ligation
- OPHTHALMOLOGY: Acute influence upon vision that would lead to long term vision impairment if surgery is not done within 6 months; pediatric strabismus surgery, cataracts limiting function or that result in increased need for support for daily life/activities due to severe impairment; chronic glaucoma surgery where progressive loss of vision is anticipated with delay
- ORTHOPAEDICS:
  - Adult Reconstruction and Joint Replacement: revision joint arthroplasty secondary to chronic infection; dislocation; significant instability within ability to safely bear weight, revision joint with impending failure
  - Sports Medicine: loose joint body floating with potential for joint damage, OATS procedure wherein performance outside of 60 day window will cause further joint impairment, worsening joint arthrofibrosis unresponsive to conservative care, joint manipulation under anesthesia and/or lysis of adhesions, acute/subacute traumatic joint dislocation within 3 months requiring surgical intervention secondary to functional instability or concurrent cartilage damage, shoulder labral repair, elbow ligament reconstruction, patellar ligament (MPFL) reconstruction, traumatic injury to Isolated ligament, cartilage, meniscus with potential to cause joint damage if delayed > 3 months or injury occurred within the last 3 months, acute meniscus repair/menisectomy, acute ligament reconstruction (ACL, PCL, MPFL), microfracture/cartilage preserving procedure, multi-ligament knee, acute ligament avulsions, ACL with unstable meniscus or gross instability, patella dislocations with loose joint body, tendon repair, joint manipulation following arthroplasty, minimally displaced fractures, meniscus root repair,
  - Foot and Ankle: non-unions with compromised hardware that need revision stabilization, hardware removals for broken/loosening instrument causing functional compromise, neurological conditions (tarsal tunnel; exercise induced compartment syndrome), achilles repair, avulsion fractures, external fixator removal after limb lengthening
  - Hand and Upper Extremity: progressive worsening digital motion loss after failure of conservative treatment, tenolysis, tendon/ligament release, neurological conditions where delay > 3 months would cause irreversible effects, carpal tunnel/cubital tunnel/nerve releases, tendon repair/reconstruction for partial ruptures, FPL reconstruction, volar plate repairs/reconstruction, carpal tunnel release for patients with neurological deficit, ulnar nerve release for patients with neurological deficit,
  - Hip Preservation (Hip Arthroscopy Age <60): acute/subacute traumatic joint dislocation/injury within 3 months requiring surgical intervention secondary to functional instability or concurrent cartilage damage, hip labral repair with (femoral/acetabular osteoplasty when necessary), hip tendon repair, hip cartilage preservation procedure (microfracture, cartilage repair/transplant), lysis of adhesions

- Pediatric Ortho: Club foot reconstruction, chronic patellar/ankle instability, skeletally mature scoliosis
- UROLOGY: lower risk bladder cancer, intermediate risk prostate cancer, hydrodistention, BPH requiring catheterization, hypospadias repair, circumcision revision
- VASCULAR: asymptomatic carotid high-grade stenosis, temporal artery biopsy, AV fistulas or grafts, first rib resection (thoracic outlet syndrome), carotid subclavian bypass or debranching done for future endovascular repair of aneurysm, hypogastric or branch vessel coiling done for future repair of aneurysm
- PLASTICS: breast reconstruction when done in conjunction with mastectomy as a dual case
- PLEURAL: Thoracentesis for suspected transudative pleural effusions (CHF related)
- TRANSPLANT: living donor kidney transplantation

**Level 4:** Postponement would NOT significantly impact the health, safety, and welfare of the patient for the anticipated duration of the situation. All other cases not meeting any above criteria.

Examples include, but are not limited to:

- BRONCHOSCOPY: Tracheostomy changes, BAL for suspected indolent infection (asymptomatic) or other atypical chronic symptoms, bronchial thermoplasty, bronchoscopic lung volume reduction
- CANCER HEALTH: prophylactic mastectomy, benign breast disease
- CARDIOTHORACIC: not applicable
- DENTISTRY: Oral restoration; cosmetic dental cases
- ELECTROPHYSIOLOGY: ICM removal
- ENDOSCOPY: screening scopes and surveillance for higher risk conditions without active symptoms where endoscopy interval was less than 12 months (well controlled IBD, polyps, asymptomatic nondysplastic Barrett's f/u), active symptoms but no red flags and low pre-test probability, EUS for submucosal lesions, all screening and surveillance procedures where the endoscopy interval was 12 months or longer
- ENT: adult cochlear implants
- GENERAL: Bariatric surgery, lipomas, sebaceous cysts, cholecystectomy for abdominal pain of unclear etiology (i.e., all workup negative), prophylactic colon resection for hereditary conditions or IBD, asymptomatic or minimally symptomatic hernias; anal sphincterotomy, stable non-infected pilonidal disease, stable non infected hidradenitis, pediatric ventral hernias
- INTERVENTIONAL CARDIOLOGY: not applicable
- NEUROSURGERY: excision of wound scar, repositioning of stimulator battery
- OB/GYN: laparoscopic tubal ligation (in the absence of maternal risk factors if delayed); labioplasty, condyloma excision; infertility procedures (hysterosalpingograms, most elective embryo transfers); mid-urethral sling for stress incontinence
- OPHTHALMOLOGY: Cataracts where patient is functional independently, adult strabismus surgery
- ORTHOPAEDICS:
  - Adult Reconstruction and Joint Replacement: elective joint replacement hip/knee
  - Sports Medicine: elective Shoulder/elbow replacement, degenerative tendon/ligament/cartilage procedures, knee arthroscopy debridement/chondroplasty/plica excision, knee meniscectomy/repair >3 months, knee ligament reconstruction >3 months, shoulder arthroscopy debridement, decompression, distal clavicle excision, shoulder Rotator cuff/Biceps repair for degenerative tendinopathy/partial tears, shoulder Latarjet and other bone block procedures, elbow arthroscopy, elbow tendonitis procedures
  - Foot and Ankle: degenerative/chronic conditions, fusions/bunion surgery, forefoot & hindfoot reconstructions, tendon repairs/debridement for tendinopathy/partial tears, implant arthroplasty
  - Hand and Upper Extremity: degenerative/chronic conditions, fusions, LRTI, implant arthroplasty, tendon debridement/decompressions for tendinopathy/tendonitis, DeQuervians
  - Hip Preservation (Hip Arthroscopy): chronic/degenerative conditions, hip labral repair/labral reconstruction, debridement/chondroplasty, tendon releases, FAI treatment for chronic conditions, femoral/acetabular osteoplasty
- PLASTICS: Cosmetic surgery
- PLEURAL: Thoracentesis for small asymptomatic pleural effusions
- TRANSPLANT: not applicable

- UROLOGY: BPH therapy, circumcisions, non-obstructive kidney stone surgery, vasectomy, penile implants
- VASCULAR: interventions for life-limiting claudication, venous procedures for venous insufficiency or May Thurner Syndrome