

PROCEDURE GUIDELINES

⇒ Stopping Anticoagulants Before Surgery Guide

Patients taking anticoagulants (blood thinners) should stop them before any invasive procedure(s). The concern is uncontrolled bleeding. This **must be discussed with the surgeon** prior to having any invasive procedure.

Examples of prescription blood thinners include:

- **Coumadins:** Coumadin (warfarin), Jantoven (warfarin)
- **Antiplatelet drugs:** Agrylin (Anagrelide), Plavix (clopidogrel), Ticlid (ticlopidine), Dipyridamole (Aggrenox, Persantine), Pentoxifylline (Trental), Cilostazol (Pletal), Effient (prasugrel), Brilinta (Ticagrelor)
- **Heparin Anticoagulants:** Lovenox (enoxaparin, LMWH), Heparin (unfractionated), Fragmin (Dalteparin)
- **Other Anticoagulants:** Xarelto (rivaroxaban), Pradaxa (dabigatran), Eliquis (apixaban), Arixtra (fondaparinux)

Examples of over the counter blood thinner medications:

- **NSAID's :** Aspirins and NSAID's (Advil/ibuprofen, Motrin, Aleve, celebrex, diclofenec, indomethacin, bextra...)

Tylenol is not a blood thinner. It is safe to use when off your blood thinners/around surgery time.

WHEN TO STOP

- STOP Coumadins,** for at least 5 full days before an invasive procedure.
STOP ALL Antiplatelet Drugs, for at least 7 full days before an invasive procedure
STOP Heparin Anticoagulants, for at least 24hrs before an invasive procedure
STOP All Other Anticoagulants Drugs, for at least 2 full days (if have renal disease/failure 5 days) before an invasive
STOP ALL NSAID's, for 7 full days before an invasive procedure.

WHEN TO RESTART

RESTART Most Anticoagulants can be restarted the evening of your procedure or the next day after the invasive procedure. Must Speak with surgeon prior to restarting after the invasive procedure is completed.

WHILE OFF ANTICOAGULANTS

WHILE off Blood Thinner(s), patient may require a different blood thinner to protect them while off their regular anticoagulant. Patient history is very important to if another anticoagulant is required during the period patient is off their regular blood thinner. Please review Peri-Operative Anticoagulation Guidelines as needed.

WHAT TO TELL THE PATIENT

STOP (drug name): _____

STOP ON (date): _____ **RESTART ON** (date): _____

NEXT PT/INR (date): [] Not applicable _____ (in AM)

[] Not Applicable

START NEW DRUG (drug name): _____

START ON (date): _____ **STOP ON** (date): _____

Common procedures and associated bleeding risks

- Low and high bleeding risk procedures below are in reference to pts on **warfarin**
- Less data is available for pts on **oral direct factor** inhibitors (apixaban, dabigatran, rivaroxaban, or edoxaban). Collaboration w/ proceduralist is highly recommended
- Contact proceduralist/surgeon for specific indications or questions in individual pt clinical scenerios

If procedure not listed, check w/ procedural area:

Anesthesiology/Pain medicine/Radiology <i>(See also Interventional Radiology)</i>	
High-risk bleeding	Non high-risk bleeding
<ul style="list-style-type: none"> • Facet joint and medial branch nerve blocks (MBNB) (c,t)* • Facet joint radiofrequency ablation (RFA) (c,t,l)* • Interlaminar epidural injections (c,t,l)* • Intradiscal procedures (c,t,l)* • Paravertebral block (c,t,l)* • Selective nerve root blocks (c,t,l)* • Spinal and epidural anesthesia • Sympathetic and neurolytic blocks • Transforaminal epidural injections (c,t,l)* 	<ul style="list-style-type: none"> • Endotracheal intubation • Face joint and medial branch blocks (lumbar) • Peripheral musculoskeletal (MSK), joint, and nerve injections • Sacroiliac joint injection and sacral lateral branch blocks (SLBB) • Trigger point injections, incl piriformis
c=cervical; t=thoracic; l=lumbar * Potential for profound neurologic consequences	

Breast/Breast reconstruction	
High-risk bleeding	Non high-risk bleeding
<ul style="list-style-type: none"> • Any breast surgery 	<ul style="list-style-type: none"> • Breast fine needle biopsy (FNA) (if INR <2.5)

	<ul style="list-style-type: none"> Breast core needle biopsy (if INR <2.5)
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Cardiac surgery	
High-risk bleeding	Non high-risk bleeding
<ul style="list-style-type: none"> All 	<ul style="list-style-type: none"> None

Cardiovascular	
High-risk bleeding	Non high-risk bleeding
<ul style="list-style-type: none"> Diagnostic coronary angiography† (femoral and brachial access) Cardiac implantable electronic devices (pacemaker, ICD) <ul style="list-style-type: none"> Device removal Lead extraction Pocket revision Transcatheter valve therapies 	<ul style="list-style-type: none"> Ablation, radiofrequency Bx, right ventricle; trans-septal procedures (if INR, 1.5) Defibrillator threshold testing† Diagnostic coronary angiography† (radial access) Electrophysiology testing and/or ablation† <p>In general pacemaker procedures (pacemaker generator change, LV and standard lead placement)† are low bleeding risk. Pacemaker/defibrillator placement while on therapeutic warfarin carries slightly increased bleeding risk. Use of bridging anticoagulation greatly increases bleeding risk. Questions should be directed to the procedural area.</p>
† Consider contacting procedural area with any questions	

Dental	
High-risk bleeding	Non high-risk bleeding
<ul style="list-style-type: none"> Reconstructive procedures Tooth extraction 	<ul style="list-style-type: none"> Endodontic procedures (root canal)

Dermatology	
High-risk bleeding	Non high-risk bleeding
<ul style="list-style-type: none"> • None 	<ul style="list-style-type: none"> • Major procedures (wide excision of melanoma) • Minor skin procedures (excision of basal and squamous cell cancers, nevi, actinic keratoses, premalignant lesions)

Gastroenterology	
High-risk bleeding	Non high-risk bleeding
<ul style="list-style-type: none"> • Large polypectomy (>1 cm) • Endoscopic mucosal and submucosal dissection • Biliary or pancreatic sphincterotomy • Percutaneous endoscopic gastrostomy • Endoscopic US w/ fine-needle aspiration or needle bx • Coagulation or ablation of tumors, vascular lesions • Percutaneous liver bx • Variceal band ligation (controversial) • Laser ablation and/or coagulation 	<ul style="list-style-type: none"> • Passage of endoscope for dx purposes (including balloon enteroscopy) w/ or w/o mucosal bx • Endoscopic retrograde cholangiopancreatography w/o sphincterotomy • Endoscopic US w/o fine-needle aspiration • Nonthermal (cold) snare removal of small polyps • Luminal self-expanding metal stent placement (controversial) • Enteroscopy (incl balloon assisted) • Capsule endoscopy

General surgery	
High-risk bleeding	Non high-risk bleeding
<ul style="list-style-type: none"> • Major tissue injury 	<ul style="list-style-type: none"> • Suture of superficial wound

<ul style="list-style-type: none"> • Vascular organs (spleen, liver, kidney) • Bowel resection • Laparoscopy 	
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Hematology	
High-risk bleeding	Non high-risk bleeding
<ul style="list-style-type: none"> • None 	<ul style="list-style-type: none"> • Bone marrow bx

Interventional Radiology	
<i>(See also Anesthesiology/Pain medicine/Radiology)</i>	
High-risk bleeding	Non high-risk bleeding
Spine procedures	
<ul style="list-style-type: none"> • Epidural injection • Epidural blood patch • Lumbar punctures (spinal tap) • Myelogram • Vertebroplasty/kyphoplasty/sacroplasty • Facet joint and medial branch nerve blocks (MBNB) (c,t)* • Facet joint radiofrequency ablation (RFA) (c,t,l)* • Interlaminar epidural injections (c,t,l)* • Intradiscal procedures (c,t,l)* • Selective nerve root blocks (c,t,l)* • Transforaminal epidural injections (c,t,l)* 	<ul style="list-style-type: none"> • Facet joint and medial branch blocks (lumbar) • Sacroiliac joint injection and sacral lateral branch blocks (SLBB) • Trigger point injections, incl piriformis
High-risk bleeding	Non high-risk bleeding
Non-spine procedures	
<ul style="list-style-type: none"> • Aggressive manipulation of drains or dilation of tracts • Angiography/arterial stenting 	<ul style="list-style-type: none"> • Aspiration of abdominal or pelvic abscesses, placement of small-caliber drains

<ul style="list-style-type: none"> • Arterial access (eg, femoral or brachial) • Bx of organs (liver, lung, kidney) • Deep bone bx • Deep organ or soft tissue bx or drain <ul style="list-style-type: none"> ○ Percutaneous drainage of liver abscess ○ Cholecystostomy ○ Nephrostomy • Hickman and tunneled dialysis catheter placement • Percutaneous transhepatic cholangiography (PTC) • Percutaneous tumor ablation (RFA, cryoablation) • Transjugular intrahepatic portosystemic shunt (TIPS) • Transjugular liver bx 	<ul style="list-style-type: none"> • Central line placement, internal jugular and subclavian central • Central line removal • Chest tube placement • Dialysis access interventions, incl temporary dialysis catheter placement • Inferior vena cava (IVC) filter placement • Paracentesis • Peripheral catheter placement, nontunneled catheter (eg, PICC) placement • Peripheral MSK, joint, and nerve injections • Simple catheter exchange in well-formed, nonvascular tracts (eg, gastrostomy, nephrostomy, cholecystostomy tubes) • Superficial bx/drainage • Superficial bone bx • Thoracentesis • Transarterial chemoembolization • Venous ablation • Venography/venous interventions • Breast fine needle biopsy (FNA) (if INR <2.5) • Breast core needle biopsy (if INR <2.5)
<p>c=cervical; t=thoracic; l=lumbar * Potential for profound neurologic consequences</p>	

Intravascular procedures	
High-risk bleeding	Non high-risk bleeding
<ul style="list-style-type: none"> • Arterial puncture • Transvenous ablation 	<ul style="list-style-type: none"> • Venous access

Neurosurgery	
High-risk bleeding	Non high-risk bleeding
<ul style="list-style-type: none"> • Intracranial, spinal surgery* • Lumbar punctures (spinal tap) 	<ul style="list-style-type: none"> • None
* Potential for profound neurologic consequences	
Obstetrics and Gynecology	
High-risk bleeding	Non high-risk bleeding
<ul style="list-style-type: none"> • Cesarean delivery • Operative vaginal delivery • Hysterectomy • Laparotomy • Oophorectomy • Oncologic surgery • Bowel resection • Operative laparoscopy 	<ul style="list-style-type: none"> • Colposcopy • Hysteroscopy • Dilation and curettage • Endometrial bx • Insertion of IUD

Ophthalmology	
High-risk bleeding	Non high-risk bleeding
<ul style="list-style-type: none"> • All others 	<ul style="list-style-type: none"> • Cataract

Orthopedic procedures	
High-risk bleeding	Non high-risk bleeding
<ul style="list-style-type: none"> • Joint replacement • Arthroscopy • Some head and neck injections • Lumbar facet joint injections 	<ul style="list-style-type: none"> • Arthrocentesis • Sacroiliac joint injections • Peripheral joint injections • Trigger point injections (possibly w/ exception of head and neck injections)

Otolaryngologic surgery	
High-risk bleeding	Non high-risk bleeding

<ul style="list-style-type: none"> • Any sinus surgery • Biopsy or removal of nasal polyps • Thyroidectomy • Parotidectomy • Septoplasty • Turbinate cauterization 	<ul style="list-style-type: none"> • Diagnostic fiberoptic laryngoscopy or nasopharyngoscopy, sinus endoscopy • Fine-needle aspiration • Vocal cord injection
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Plastic surgery	
High-risk bleeding	Non high-risk bleeding
<ul style="list-style-type: none"> • Reconstructive surgery • Aesthetic (cosmetic) surgery • Hand surgery • Breast implant surgery 	<ul style="list-style-type: none"> • Injection tx (Botox, fillers) • Laser tx

Pulmonary	
High-risk bleeding	Non high-risk bleeding
<ul style="list-style-type: none"> • Endobronchial tumor removal (laser, rigid bronchoscopy) • Transbronchoscopic bx, cryobiopsy • Stricture dilation 	<ul style="list-style-type: none"> • Diagnostic bronchoscopy w/ or w/o bronchioalveolar lavage • Endobronchial fine-needle aspirate • Airway stent placement

Rheumatology	
High-risk bleeding	Non high-risk bleeding
<ul style="list-style-type: none"> • None 	<ul style="list-style-type: none"> • Arthrocentesis

Urology	
High-risk bleeding	Non high-risk bleeding
<ul style="list-style-type: none"> • Extracorporeal shock-wave lithotripsy • Transurethral prostatectomy • Bladder resection • Tumor ablation • Kidney bx 	<ul style="list-style-type: none"> • Circumcision • Cystoscopy w/o bx

Vascular surgery

High-risk bleeding

- Carotid endarterectomy
- Open or endovascular aneurysm repair
- Vascular bypass grafting
- Arterial stenting
- Venous phlebectomy

Non high-risk bleeding

- Venous ablation