



HACKENSACK UNIVERSITY MEDICAL CENTER

Surgical Risk Assessment Form for "Surgical Clearance"

AFFIX PATIENT INFO LABEL HERE

Patient Name _____ MR# _____

Name: _____ Age: _____ Date of Birth: _____

Today's Date: _____ Anticipated Date of Surgery: _____

To Be Completed by Surgeon or Information from Surgeon/Anesthesiologist (If Surgery Anticipated)

Name of Surgeon: _____

Type of Surgery: _____

ASA Score: _____

Type of Anesthesia: _____

Estimated Length of Operation: _____

Potential for: Blood Loss _____

GI or Respiratory Compromise _____

To Be Completed by Internist or Family Physician

Chief Complaint / Reason for Surgical Procedure: _____

History of Present Illness: _____

Past Medical / Surgical History: _____

Functional status prior to acute illness or elective surgery (ambulation, eating, falls): _____

Family History: _____

Social History (including smoking within past year, alcohol & HIV risk): _____

Medications (state purpose, include over-the-counter medications, vitamins & other supplements): _____



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Allergies: _____

Review of Systems:

EENT		Gastrointestinal	
Skin		Genitourinary	Need for treatment of urinary tract infection
Lymphatic		Musculoskeletal	
Cardiovascular	Note if any ischemic, arrhythmia, CHF, HTN, or prophylaxis for valve surgery	Hematological	Need for transfusion or DVT prophylaxis
Respiratory	Note if COPD, respiratory failure, sleep disorder, upper airway compromise (cough or mucous production), need for aspiration prophylaxis	Endocrine	Note if diabetic or needs sugar control, electrolyte balance, steroid use, and thyroid disease
Neurological	Note carotid bruit, risk of stroke, dementia, delirium, falls	Immunologic / Allergic	Note all allergies, documented latex allergy, and other drug considerations
Psychiatric		Renal & Electrolyte Imbalance	

PHYSICAL EXAM: Circle normal findings or document as appropriate

Constitutional:

Temp: _____ P: _____ R: _____ Wt: _____ Ht: _____ BP: _____

Pain (describe location and severity): _____

General Appearance:

well developed well nourished well groomed obese thin cachetic

Eyes: Conjunctiva - *normal* _____ Lids - *normal* _____ PERL - *normal* _____

Pupil size: _____ EOM - *normal* _____ Eye Exam - *normal* _____

Ears, Nose, Mouth & Throat: External inspection of Ears - *normal* _____
External inspection of Nose - *normal* _____
Lips - *normal* Teeth - *normal* Gums - *normal* _____

Skin: *normal*; rash (describe) _____

Lymph Nodes: *normal*, shotty; enlarged; tender (location) _____

Neck: Neck: supple, masses - *normal* _____
Thyroid: *normal* _____

Cardiovascular: Auscultation - *normal*, murmur, clicks, rubs _____
Regular rate & rhythm _____ S1, S2 - *normal* _____ S3, S4 - absent _____

Lungs: Respiratory effort - *normal* _____ Percussion - *normal* _____
Auscultation - *normal* _____



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Gastrointestinal: Abdomen - *normal* _____

Bowel sounds - *normal* _____ Rectum - *normal* _____

Genitourinary (male): Scrotum - *normal* _____

Penis - *normal* _____ Prostate - *normal* _____

Genitourinary (female): External - *normal* _____

Genital - *normal* _____ Pelvic - *normal* _____

Musculoskeletal (status of joints and extremities): *normal* _____

Neurologic: DTRs - *normal* _____

Sensory/Motor - *grossly normal* _____

Psychiatric: Orientation, time, place, person, situation - *normal* _____

Mood/Affect - depressed; flat; anxious; agitated - *normal* _____

Relevant Laboratory Data:

ASSESSMENT (Current diagnoses and risk assessment):

PLAN for dealing with current diagnoses and expected risks; recommendations for surgeon and anesthesiologist:

Surgery is indicated, risks have been assessed, and patient is ready for surgery:

Physician Signature: _____

Date: _____

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NOTE: All testing results, H & P and Consent/Consent Order required 72 hours before admission.
 STAT on admission PAT not permitted.
 Abnormals must be addressed in the medical record, i.e., initialed on clinical results or documented in H & P.

Required Minimum Preoperative Testing

Patient Condition	CBC	Plts	PT/PTT	Mini Screen	Chem Screen	EKG	CXR	UA	T/S
Surgery c blood loss	X								X
Surgery s blood loss									
Age < 1 year									
Age 50 - 59						X			
Age >60	X					X			
CV Disease				X		X	X		
Pulmonary Disease						X	X		
Renal Disease	X			X					
Hepatic Disease			X		X				
Diabetes				X		X			
Tobacco >20 pk / year	X						X		
Bleeding Disorders	X	X	X						
Anticoagulant use	X		X						
Diuretic use				X					

Time Frames: Labs: 30 days maximum or as otherwise clinically indicated.
 EKG: 4 months maximum or as otherwise clinically indicated.
 CXR: 1 year maximum or as otherwise clinically indicated.

Procedures Approved for Type and Cross (# of units) or Type and Screen (T/S)

GENERAL		VASCULAR		UROLOGY		NEURO	
Abd. Per. Resection	2	AAA, Aortic - Fem	4	Adrenalectomy	1	Burr Holes - Flap	T
Lap. Adrenalectomy	T	Aortic Stenting	T	Partial Cystectomy	T	Craniotomy - aneurysm	2
Lap. Bowel	T	A-V Shunt Revision	T	Cystectomy [Rad, Ileal Con.]	2	Craniotomy - other	T
Chamberlain Mediast	T	A-V Shunt Declothing	T	Kidney Transplant	T	Endoscopic Ventriculostomy	T
Colectomy (Hartman)	T	Brachial artery repair & embolectomy	T	Open Nephrectomy	1	Skull Fracture - depressed	T
Thoracotomy / Lobectomy	T	Ax-Ax& Ax-Fem	T	Lap. Nephrectomy	1	VP Shunt	T
Thymectomy	T	Ax-Brachial Shunt	T	Pelvic Lymph Node Dissect	T	Lumbar Laminectomy	T
Pericardial Window	T	Carotid	T			360 Laminectomy	2
Pneumonectomy	2	Fem - Pop & Fem - Tib	T	Perc Nephrolithotomy	T	Thoracic Lami - Posterior	T
Esophagogastrectomy	2	Femoral repair, bypass & embolectomy	T	Prostatectomy (radical, retro- & supra pubic)	2	Thoracic Lami - Anterior	2
Gastric bypass	T	Angioplasty	T	TURP	T	Cervical Lami (including Cloward, Casper, etc.)	T
Amputation, AKA & BKA	T			Urethral Re-implantation	T	Lami with instrumentation (e.g., BAK, Isola, Steffe)	2
Liver Resection	4	Porto- & Meso-caval Shunt	4	Urethroplasty	T		
Pancreatectomy	2	Spleno-Renal Shunt	4				
Rectal Prolapse Repair	T	Thrombectomy	1				
Splenectomy	2						
Whipple	2						
Wilms Tumor Resection	2						
ORTHO		PLASTICS		ENT		OB / GYN	
Hips Fx & Replace - all	T	Breast Reconstruction	2	Laryngectomy/Rad. Neck	1	TAH / BSO	T
Knee Replace - all	T	Cranio-Facial Recons	2			Radical Hysterectomy	2
Pelvis - all	T	Finger Replant	T			LAVH	T
Humerus fracture - all	T	Free Flap Transfer	2			Vag. Hysterectomy	T
Shoulder Prosthesis	T					Lap. Operative / Diag	T
Tibia/Fibula; plateau	T					Pelvic Exenteration	2
DENTAL		CARDIAC				Vag. Reconstruction	T
Open Facial Fracture	T	Bypass or Valve	4			Open Laparotomy	T
Sagittal Split [LeForte]	2	Aneurysm	4			Vulvectomy	T

Issues Related to Surgical Risk Assessment

Surgical Risk Assessment

No one can "clear" a patient for surgery. Being "cleared" for surgery implies there is no risk. Clinicians cannot guarantee the absence of surgical or medical complications. Risk assessment should be stated to a patient and referring physician as:

- Low, intermediate or high risk for the stated surgical procedure.
- To assess and potentially lower this risk, the clinician should suggest the measures to be taken before surgery is performed.

Operative Risk Issues by Underlying Illnesses:

- Cardiovascular disease
- Pulmonary disease
- Anemia and Bleeding disorders
- Coumadin
- Allergic reactions and immune deficiency
- Liver Disease and ETOH
- Diabetes
- Hypertension
- Renal and electrolyte imbalance
- Preventing
 - thromboembolic events
 - infection
 - adverse drug reactions

ASA(Anesthesiology Society of America) Scores

Class	Physical Status	Example
#1	A completely healthy patient	A fit patient with an inguinal hernia
#2	A patient with mild systemic disease	Essential hypertension, mild diabetes, without end organ damage
#3	A patient with severe systemic disease that is a constant threat to life	Angina, moderate to severe (COPD)
#4	A patient with incapacitating disease that is a constant threat to life	Advanced COPD, cardiac failure
#5	A moribund patient who is not expected to live 24 hours with or without surgery	Ruptured aortic aneurysm, massive pulmonary embolism
E	Emergency case	

Issues Related to Surgical Risk Assessment

CARDIAC RISK:

Clinical Cardiovascular Preoperative Evaluation

The initial history, physical examination, and electrocardiographic assessment should focus on the identification of potentially serious cardiac disorders, including coronary artery disease (e.g., prior myocardial infarction, angina pectoris), heart failure, and electrical instability (symptomatic arrhythmias).

In addition to identifying the *presence* of preexisting manifested heart disease, it is essential to define disease *severity*, *stability*, and prior *treatment*. Other factors that help determine cardiac risk include functional capacity, age, comorbid conditions (diabetes, peripheral vascular disease, renal dysfunction, chronic pulmonary disease), type of surgery (vascular procedures and prolonged complicated thoracic, abdominal, and head and neck procedures are considered higher risk).

Clinical Predictors of Perioperative Cardiovascular Risk

MAJOR: Unstable coronary syndromes, decompensated heart failure, significant arrhythmias (high grade AV block, symptomatic ventricular arrhythmias in presence of heart disease, SVT with uncontrolled ventricular rate, severe valvular disease.

INTERMEDIATE: Mild angina pectoris, old myocardial infarction, compensated or prior heart failure, diabetes mellitus (particularly insulin-dependent), renal insufficiency.

MINOR: Advanced age, abnormal electrocardiogram (LVH, LBBB, ST-T abnormalities), rhythm other than sinus (AF), low functional capacity (<4METS, e.g., inability to climb one flight of stairs with a bag of groceries), history of stroke, uncontrolled systemic hypertension.

Risk Stratification for Non-Cardiac Surgical Procedures

HIGH (cardiac risk >5%): Emergent major operations especially in the elderly, aortic and other major vascular surgery, major peripheral vascular surgery, anticipated prolonged surgical procedures associated with large fluid shifts and/or blood loss.

INTERMEDIATE (cardiac risk <5%): Intraperitoneal and intrathoracic surgery, carotid endarterectomy surgery, head and neck surgery, orthopedic surgery, prostate surgery.

LOW (cardiac risk <1%): Endoscopic procedures, superficial procedures, cataract surgery, breast surgery.

The decision to do non-invasive testing or delay or cancellation of surgery should be based on the above principles. High clinical predictors and high risk surgery generally need further evaluation while low clinical predictors generally do not need further evaluation.

Issues Related to Surgical Risk Assessment

Beta-Blockers

Current studies suggest that appropriately administered beta-blockers reduce perioperative ischemia and may reduce the risk of MI and death in high risk patients. When possible, beta blockers should be started days or weeks before elective surgery, with the dose titrated to resting heart rate between 50-60. Beta-blockers should be continued in the perioperative period. It is vital that beta-blockers not be discontinued in the perioperative period in patients on them preoperatively.

Consider using Goldman's cardiac risk index shown below. Also shown is the likelihood of complications.

PULMONARY RISK:

Pulmonary Risk Evaluation

1. Type of surgery:
 - a. Risk increased with chest, abdominal and pelvis surgery
 - b. Risk increased with long surgeries with major fluid shift (i.e., AAA surgery)
 - c. Local anesthesia does not decrease the risk

2. Type of pulmonary disease:
 - a. Often unknown; look for H/O cough, bronchitis, exertional SOB with stairs and wheezing
 - b. Ask about smoking; do smoking cessation eight (8) weeks before surgery, if possible,
 - c. Instruct on incentive spirometry
 - d. Look for pulmonary HTN

3. Recommended W/U:
 - a. PFT, ABG, CXR

4. Post-op:
 - a. Look for difficulty coughing, slight drop in SO₂ or shallow rapid breathing. This is the first sign of problems.

OBESITY AND SLEEP APNEA:

1. Patients with obesity and sleep apnea have difficulty in post-op period.
 - a. Ask for snoring, restless sleep and tiredness in the morning or during the day
 - b. BMI of 40 indicates a major risk factor
 - c. Look for undiagnosed cardiomyopathy

Issues Related to Surgical Risk Assessment

2. Anticipated risks include:
 - a. Post-op extubation period is risky
 - b. These patients often have undiagnosed cardiomyopathy
 - c. Increased risk of atelectasis, hypoxemia, DVT/pulmonary emboli, aspiration and CHF in these patients should be anticipated
 - d. Sedation and analgesics may pose an increased risk
 - e. Upper airway surgeries have a particularly increased risk

ANEMIA AND BLEEDING DISORDERS:

- Evaluate PT/PTT and follow-up abnormal results in patients not taking Coumadin

Is your patient taking Coumadin (warfarin)?

Issues Related to Surgical Risk Assessment

Management of Anticoagulated Patients Who Require Surgery

Several approaches can be taken according to the risk of thromboembolism. In most patients, warfarin is stopped 4 to 5 days preoperatively, thereby allowing the INR to return to normal (<1.2) at the time of procedure. Such patients remain unprotected for about 2 to 3 days preoperatively. Heparin can be given preoperatively to limit the period of time that the patient remains unprotected, and anticoagulant therapy can be recommended postoperatively once it is deemed safe to restart treatment.

General Guidelines:

Patients at low risk of thromboembolism (including atrial fibrillation). The dose of warfarin can be reduced 4 to 5 days in advance of surgery to allow the INR fall to normal or near normal (1.3-1.5) at the time of surgery. The maintenance dose of warfarin is resumed post-operatively and can be supplemented with low dose heparin or LMWH, if necessary.

Patients at moderate risk of thromboembolism: Stopping warfarin and use of prophylactic doses of 5000U or prophylactic doses of LMWH every 12 hours prior to surgery. The maintenance dose of warfarin is resumed post-operatively and can be supplemented with low dose heparin or LMWH until the INR is therapeutic.

Patients at high risk of thromboembolism: When warfarin is withdrawn, patients should be treated with therapeutic doses of heparin (15,000 U ever 12 hours s.c. or LMWH 100U/kg every 12 hours s.c.). These can be administered on ambulatory basis or in a hospital with discontinuance 24 hours before surgery with their expectation that their effect will last until 12 hours before surgery. The maintenance dose of warfarin is resumed postoperatively and can be supplemented with low dose heparin or LMWH until the INR is therapeutic.

Antiplatelet Therapy and Surgery

Aspirin should be stopped about seven (7) days before surgery.

Plavix should be withdrawn at least five (5) days before surgery.

Herbal agents which are antiplatelet, such as ginger, garlic, ginkgo, and feverfew, should be withdrawn about seven (7) days before surgery.

Is patient an alcoholic?

- Defer surgery and detox patient or alert anesthesia
- Give thiamine and other multivitamins
- Give pre- and intra-operative benzodiazepine

Issues Related to Surgical Risk Assessment

Does your patient have liver disease?

- Elective surgery is contraindicated for
- Acute hepatitis
 - alcoholic hepatitis
 - severe chronic hepatitis
 - obstructive jaundice is high risk
- Mild chronic hepatitis, fatty liver, NASH, autoimmune hepatitis, hemochromatosis, and Wilson's Disease are all low risk

Diabetes:

- If your patient has diabetes:
 - Are they on insulin, oral agents, or oral agents plus insulin?
- What is the hemoglobin A1c?
- Do they have heart, kidney, nerve, or eye complications?
- Has a cardiac risk assessment been done?
- If they are on insulin, schedule the patient as an early case, if possible, and give instructions on what doses should be prescribed.
- What plans have been made to assure perioperative glucose control -- such as monitoring of bedside glucose values and provision of insulin.

Medication changes (see common medication list below):

- Discontinue all herbal drugs
- Discontinue unnecessary medications
- Have a plan for the rest
- For geriatric patients:
 - prevent delirium from medications
 - maximize function as soon as possible after surgery
 - do not use Demerol

Issues Related to Surgical Risk Assessment

Common Medications

AGENT	IF NPO BRIEFLY, then	IF NPO LONGER, then
B-Blockers	Continue	Use IV Prep
Alpha-agonist	Continue	Transdermal
CCB	Continue	Resume with PO
ACEI HBP	Continue	IV B-Blocker
ACEI-CHF	D/C AM surg	Nitrate/Hydral PRN
Diuretics	D/C AM surg	Use IV PRN
Statins	Continue	Resume with PO
Other Lipid	D/C 1 day pre-op	Resume with PO
NSAIDS	D/C 3 day pre-op	Resume with PO
Corticosteroids	IV steroids stress dose	IV steroids @ usual dose
Immunosuppressives/ Anti-metabolics	D/C	Resume 1 wk post-op with DO
COX II Inhibitors	D/C AM surg	Resume PAN
Antiplatelets	D/C 3-7 days pre-op	Resume w/PO

Prevention of DVT:

- All patients should be encouraged to ambulate early
- Low risk patients -- no other prophylaxis
- Other patients should get:
 - Heparin 5000 subcutaneously every eight (8) hours; or
 - Enoxaparin 40 mg subcutaneously daily -- start two (2) hours post-op for most

Risk Factors for DVT:

- Prior DVT/PE
- Obesity
- CHF
- Paralysis
- Hypercoagulable state

Category	Age	Procedure Duration	Risk Factors	DVT Risk	Fatal PE Risk
Low	<40	<30"	None	<1%	<.01%
Medium	>40	>30"	1 or more	2 - 10%	.1 - .7%
High	>40	Malignancy	Inhibitor Deficiency	10 - 20%	1 - 5%

Issues Related to Surgical Risk Assessment

Renal and Electrolyte Imbalances

Pre-operative Evaluation of Renal Patients

Renal Failure is a significant risk factor for patients undergoing surgery. The increased mortality and morbidity depends on the type of surgery. For those patients undergoing general surgery, the combined mortality in eight published reviews was 4% and morbidity 54% (12% - 64%).

Cardiac surgery resulted in 10% mortality and an average 46% morbidity. To note that ESRD patients are 10 times more likely to die of cardiovascular death than the general population.

Pre-operative management of the non-emergency surgical patients with renal disease, therefore, should pay special attention to the following:

1. There should be no EKG findings suggestive of hyperkalemia. Serum potassium should be less than 5.2 mEq/liter. To note, however, that chronic hemodialysis patients have an increased tolerance for hyperkalemia.
2. The patient should be as close as possible to euvolemia. In dialysis, the patient weight should be within 5% of "dry" weight as determined by the nephrologist.
3. Bleeding diathesis should be avoided by avoiding heparin in the previous dialysis. Platelet function should be assessed in patients where it is an obvious problem, such as ecchymoses, Hx of epistaxis, particularly in closed procedures (i.e., biopsies) and, when abnormal, should be corrected with intensive hemodialysis, DDAVP, or cryoprecipitate.
4. Every effort should be made to preserve the arm veins and avoid subclavian vein cannulation.
5. For patients undergoing general and/or cardiac surgery, pre-operative cardiac evaluation should be more extensive than the average cardiac patient.
6. IV fluids administration should always include D/W. Ringers Lactate should be prohibited during the surgery.
7. Every effort should be made to coordinate the dialysis with the operative schedule.

Preventing surgical site infections:

- Resolve any active infection
- Stop smoking 30 days before surgery
- Take preoperative bath or shower
- Avoid shaving
- Bowel prep, when indicated
- Blood sugar control
- Antibiotic prophylaxis, when indicated, with appropriate antibiotic and appropriate duration
 - clarification of any antibiotic allergy