



Peri operative care & post-operative complications

Albandri Hamdan Jabr

Ala Mohammad Rawashdeh

Zaid A'sem Alsughyer

Mariana Mowafaq Haddadin

Hala Mousa Bydoon

Layan Nael sammour



PREOPERATIVE EVALUATION AND MANAGEMENT



A. General Evaluation of the Surgical Patient

The goals of preoperative evaluation

- Identify the patient's medical problems.
- Determine if further information is needed to characterize the patient's medical status.
- Establish if the patient's condition is medically optimized.
- Confirm the appropriateness of the planned procedure.

What are the steps of general evaluation of the surgical patient?

- **History and physical examination.**

A thorough history and physical are essential in evaluating surgical patients.

- **Routine diagnostic testing.**

CBC, Urinalysis, serum electrolytes, creatinine and BUN

- **Preoperative medications.**

In general, patients should continue their medications in the immediate preoperative period. Exceptions to this rule include diabetic medications, anticoagulants and antiplatelet agents.



B. Specific Considerations in Preoperative Management

I. Cerebrovascular disease

- Perioperative stroke is an uncommon surgical complication, occurring in less than 1% of general patients and in 2% to 5% of cardiac surgical patients. The majority (>80%) of these events are postoperative.

Risk factors of Cerebrovascular disease

- Previous CVA.
- Age.
- Hypertension.
- Coronary artery disease (CAD).
- Diabetes Mellitus.
- Tobacco use.

Known or suspected cerebrovascular disease requires special consideration

- **The asymptomatic carotid bruit**

Relatively common, fewer than 50% of bruits reflect hemodynamically significant disease and No increase in risk of stroke has been demonstrated during noncardiac surgery.

- **Patients with recent transient ischemic attacks (TIAs)**

Increased risk for perioperative stroke and should have preoperative neurologic evaluation.

- **Elective surgery for patients with a recent CVA**

Should be delayed for a minimum of 2 weeks, ideally for 6 weeks.

II. Cardiovascular disease

- One of the leading causes of death after noncardiac surgery, patients who experience a myocardial infarction (MI) after noncardiac surgery have a hospital mortality rate of 15% to 25% .

Risk factors of Cardiovascular disease

- The patient's age (>70 years)
- Unstable angina
- Recent MI
- Untreated CHF
- Diabetes mellitus
- Valvular heart disease
- Arrhythmias and conduction defects
- Peripheral vascular disease (PVD).
- Type of procedure

Revised cardiac risk index

| Risk factor | Comment |
|---|---|
| High-risk surgery | Intrathoracic, intraperitoneal, major vascular |
| Ischemic heart disease | History of myocardial infarction, positive exercise test, angina, nitrate therapy, electrocardiogram with abnormal Q waves |
| History of CHF | History of CHF, pulmonary edema, or paroxysmal nocturnal dyspnea, bilateral rales, S ₃ gallop, chest X-ray showing pulmonary vascular redistribution |
| History of cerebrovascular disease | History of transient ischemic attack or stroke |
| Preoperative insulin therapy for diabetes | |
| Preoperative serum creatinine >2 mg/dL | |

Preoperative testing of Cardiovascular disease

- **A preoperative (ECG)**

warranted in intermediate- or high-risk patients with a history of recent chest pain scheduled for an intermediate- or high-risk procedure.

- **Noninvasive testing**

We have three types (Exercise stress testing, Dipyridamole thallium imaging and Dobutamine stress echocardiography).

- **Invasive testing**

Patients identified as high risk on noninvasive testing can be further evaluated with angiography.

Some cardiovascular conditions require special consideration

- **Patients with pacemakers**

should have their pacemakers turned to the uninhibited mode before surgery.

- **Patients with internal defibrillators**

should have these devices turned off during surgery.

- **Perioperative beta-blockade**

should be considered as part of a thorough evaluation of each patient's clinical and surgical risk.

- **Patients with recent angioplasty or stenting.**

Several studies have shown a high incidence of cardiovascular complications when noncardiac surgery is performed shortly after coronary angioplasty or stenting

III. Pulmonary diseases

- Preexisting lung disease confers a dramatically increased risk of preoperative pulmonary complications.

Risk factors of pulmonary diseases

- **Chronic obstructive pulmonary disease (COPD)**

The most important risk factor, increasing the rates of pulmonary complications three to fourfold.

- **Smoking**

- **The patient's age (>60 years)**

- **Obesity. Body mass index (BMI) greater than 30 kg/m²**

- **Acute respiratory infections.**

What are the signs of lung disease that you should pay attention to in the physical examination?

- Wheezing
- Prolonged expiratory–inspiratory ratio
- Clubbing
- Use of accessory muscles of respiration

Diagnostic evaluation of pulmonary diseases

- **Chest X-ray**

should be done for acute symptoms related to pulmonary disease.

- **Arterial blood gas (ABG)**

should be considered in patients with a history of lung disease or smoking

- **Preoperative pulmonary function testing**

controversial and probably unnecessary in stable patients

Preoperative prophylaxis and management of pulmonary disease

- **Pulmonary toilet**

Increasing lung volume by the use of preoperative incentive spirometry.

- **Antibiotics**

Elective operations should be postponed in patients with respiratory infections. If emergent surgery is required, patients with acute pulmonary infections should receive intravenous antibiotic therapy.

- **Cessation of smoking**

- **Bronchodilators**

In patients with obstructive airway disease.



IV. Renal disease

A. Preoperative evaluation of patients with existing renal insufficiency

1. Risk factors

- Additional underlying medical disease. The incidence of chronic renal insufficiency (CRI) is higher in patients who have diabetes or hypertension.
- Metabolic and physiologic derangements of CRI. These include alterations in electrolyte concentrations, acid-base balance, platelet function, the cardiovascular system, and the immune system.
- Type of operative procedure. Minor procedures are well tolerated in patients with CRI. However, major procedures are associated with increased morbidity and mortality.

2. Evaluation

- **History**

It is important to ascertain the specific etiology of CRI because patients with hypertension or diabetes and CRI are at a substantially increased risk of perioperative morbidity and mortality.

- **Physical examination**

Elevated jugular venous pulsations or crackles on lung examination can indicate intravascular volume overload.

- **Diagnostic testing**

A complete blood count, Serum sodium, potassium, calcium, phosphorus, magnesium, bicarbonate levels, blood urea nitrogen (BUN), creatinine levels and noninvasive cardiac evaluation

3. Management

- **Timing of dialysis**

Dialysis should be performed within 24 hours of the planned operation.

- **Intravascular volume status**

Patients with CRI may require invasive monitoring in the intraoperative and postoperative period.

B. Patients at risk for perioperative renal dysfunction

1. Risk factors

- Elevated preoperative BUN or creatinine,
- CHF,
- Advanced age,
- Intraoperative hypotension,
- Sepsis,
- Administration of nephrotoxic drugs.

2. Prevention

- Intravascular volume expansion
- Radiocontrast dye administration.
- Judiciously use of nephrotoxins including aminoglycoside antibiotics, nonsteroidal anti-inflammatory drugs (NSAIDs), and various anesthetic drugs.

V. Infectious complications

- Infectious complications may arise in the surgical wound itself or in other organs. It is important to overemphasis the importance of frequent hand washing or antiseptic foam use by all healthcare workers to prevent the spread of infections.

Assessment of risk of Infectious complications

- **Procedure specific risk factors** include the type of operation, the degree of wound contamination, and the duration and urgency of the operation.
- **Patient specific risk factors** include age, diabetes, obesity, immunosuppression, malnutrition, preexisting infection, and other chronic illnesses.

Prophylaxis

- **Non- antimicrobial strategies** documented to decrease the risk of infection include strict sterile technique, maintaining normal body temperature, maintaining normal blood glucose levels, and hyperoxygenation.
- **Antibiotic prophylaxis** has contributed to a reduction in superficial wound infection rates (see the table in the next slide).
- **Preoperative skin antisepsis** also plays an important role in preventing post surgical infection.
- **Respiratory infections.**
- **Genitourinary infections.**

TABLE 1-4

Classification of Surgical Wounds

| Wound Class | Definition | Examples of Typical Procedures | Wound Infection Rate (%) | Usual Organisms |
|--------------------|---|--|--------------------------|-------------------------------|
| Clean | Nontraumatic, elective surgery; no entry of GI, biliary, tracheobronchial, respiratory, or GU tracts | Wide local excision of breast mass | 2 | <i>Staphylococcus aureus</i> |
| Clean-contaminated | Respiratory, genitourinary, GI tract entered but minimal contamination | Gastrectomy, hysterectomy | <10 | Related to the viscus entered |
| Contaminated | Open, fresh, traumatic wounds; uncontrolled spillage from an unprepared hollow viscus; minor break in sterile technique | Ruptured appendix; resection of unprepared bowel | 20 | Depends on underlying disease |
| Dirty | Open, traumatic, dirty wounds; traumatic perforated viscus; pus in the operative field | Intestinal fistula resection | 28–70 | Depends on underlying disease |

VI. Diabetes mellitus

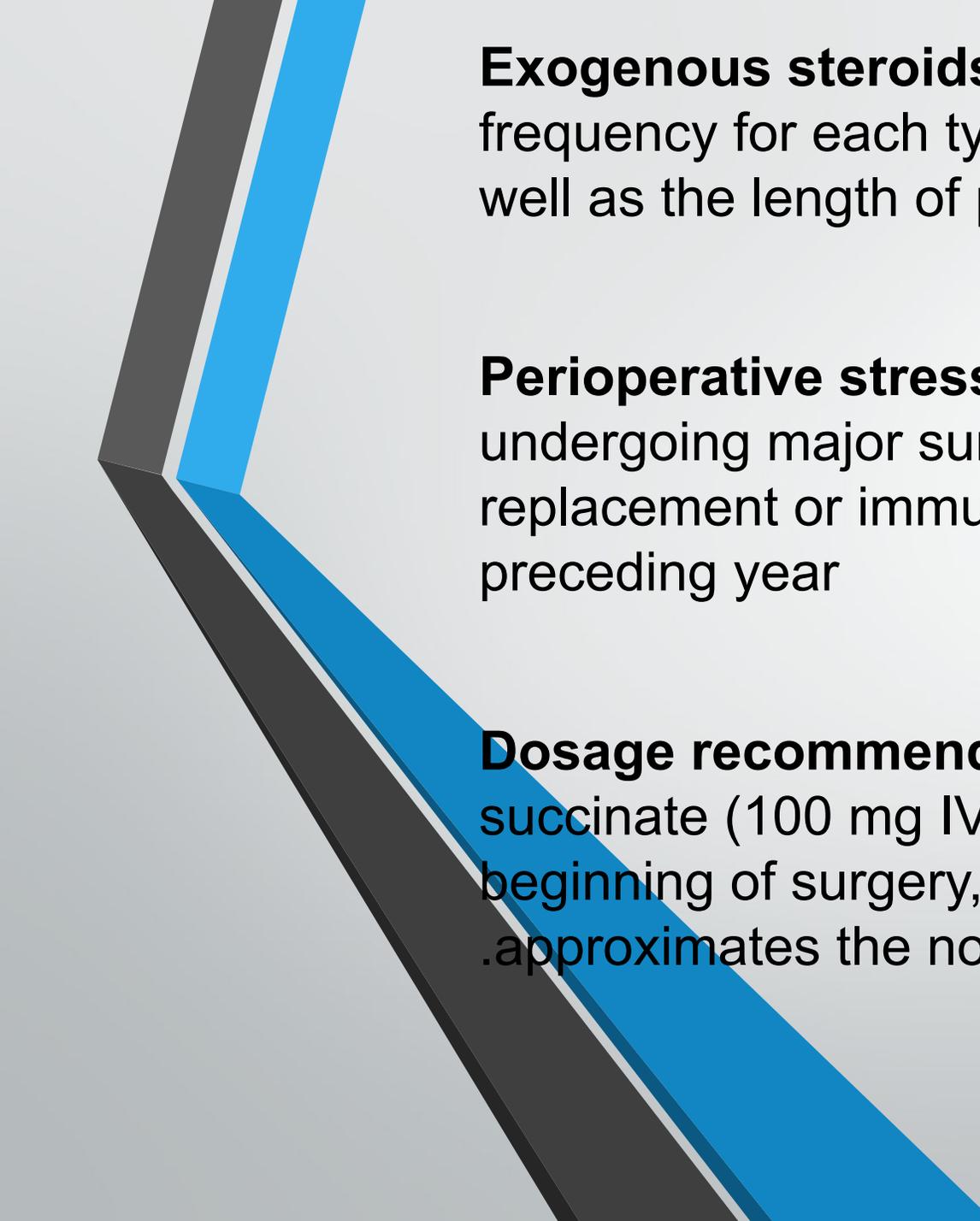
- Diabetic patients experience significant stress during perioperative period and are at an estimated 50% increased risk of morbidity and mortality versus non diabetic patients. They experience more infectious complications and have impaired wound healing.

Perioperative evaluation of Diabetes mellitus

- All diabetic patients should have their blood glucose checked on call to the operating room and during general anesthesia to prevent unrecognized hyperglycemia or hypoglycemia.
- Patients with diet-controlled diabetes mellitus can be maintained safely without food or glucose infusion before surgery.
- Patients who are taking oral hypoglycemic agents should discontinue their medications the evening before scheduled surgery. Patients who take long-acting agents such as chlorpropamide or glyburide should discontinue these medications 2 or 3 days before surgery.
- Patients who normally take insulin require insulin and glucose preoperatively to prevent ketosis and catabolism. Patients undergoing major surgery should receive one half of their morning insulin dose and 5% dextrose intravenously at 100 to 125mL/hour.



VII. Adrenal insufficiency and steroid dependence



Exogenous steroids: requires knowledge of the dose amount and frequency for each type of steroid (long-acting vs. short-acting) as well as the length of preoperative treatment

Perioperative stress-dose steroids are indicated for patients undergoing major surgery who have received chronic steroid replacement or immunosuppressive steroid therapy within the preceding year

Dosage recommendations: A regimen of hydrocortisone sodium succinate (100 mg IV) on the evening before major surgery, at the beginning of surgery, and every 8 hours on the day of surgery approximates the normal adrenal stress response

VIII. Anticoagulation

- Indications for warfarin therapy are atrial fibrillation, venous thromboembolism (VTE), and mechanical heart valves.
- Weigh the risks of subtherapeutic anticoagulation against the benefits

Preoperative anticoagulation: (measure INR the day before)

If INR < 1.5: safe to perform surgery

If between 2 and 3: withhold medications 4 days pre-op

If more than 3: withhold for longer than 4 days.

Postoperative anticoagulation:

in patients who can tolerate oral or nasogastric medications, warfarin therapy can be resumed on postoperative days 1 or 2.

In patients with atrial fibrillation, mechanical heart valve, or VTE, those deemed to be at high risk for thromboembolism should be bridged with therapeutically dosed SC low molecular weight heparin (LMWH)



Emergent procedures: plasma products must be administered. In addition, Factor VII can have immediate effects, whereas vitamin K will have observable effects within 8 hours.



POSTOPERATIVE CARE OF THE PATIENT

A. Routine Postoperative Care

1. **Intravenous fluids:** until they are tolerating oral intake
2. **Deep venous thrombosis prophylaxis** (check table in the next slide)
3. **Pulmonary toilet:** patients with inadequate pulmonary toilet can develop fevers, hypoxemia, and pneumonia. Avoided by early mobilization, incentive spirometry, and cough and deep breathing exercises



TABLE 1-6

Levels of Thromboembolism Risk and Recommended Thromboprophylaxis in Hospital Patients

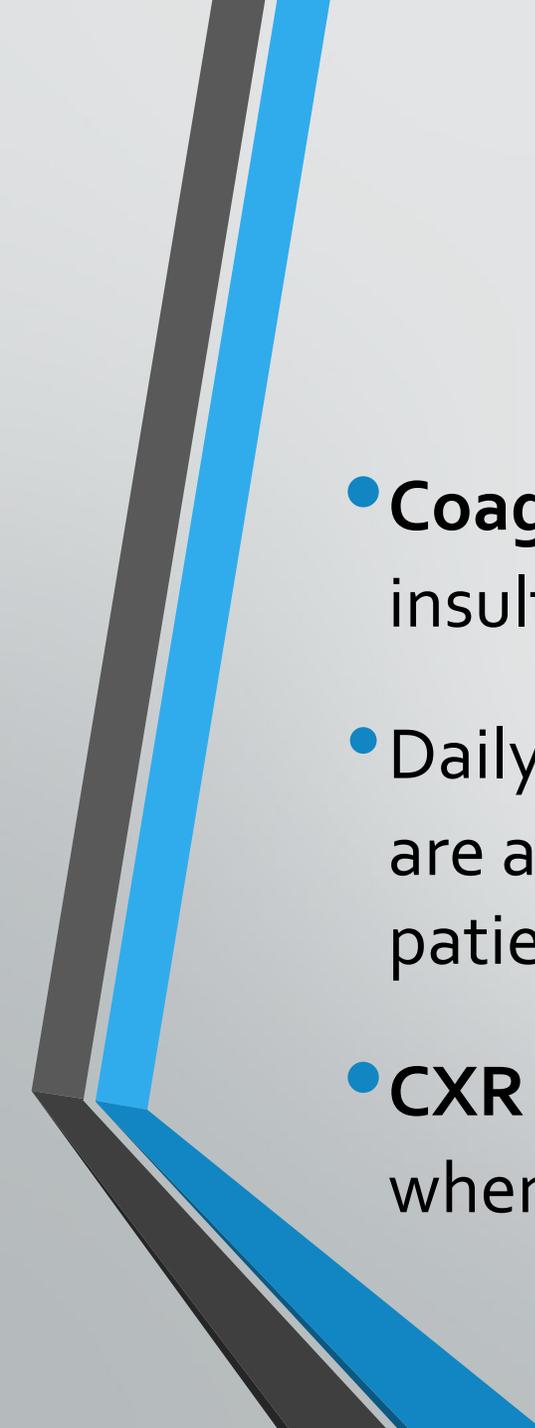
| Level of Risk | | Approximate DVT Risk w/o Prophylaxis (%) | Suggested Thromboprophylaxis Options |
|---------------|--|--|---|
| Low | Minor surgery in mobile patients Medical patients who are fully mobile | <10 | Early and “aggressive” ambulation |
| Moderate | Most general, open gynecologic or urologic surgery patients Medical patients who are on bed rest, “sick” Moderate VTE risk plus high bleeding risk | 10–40 | LMWH, unfractionated SC heparin BID or TID, fondaparinux Mechanical thromboprophylaxis |
| High | THA, TKA, HFS Major trauma Spinal cord injury High VTE risk plus high bleeding risk | 40–80 | LMWH, fondaparinux, warfarin (INR 2–3) Mechanical thromboprophylaxis |

4. Medications

- a. **Antiemetics:** nausea is common in patients after general anesthesia and in patients receiving narcotics.
- b. **Ulcer prophylaxis:** acid-reducing agents or cytoprotective agents, such as sucralfate
- c. **Pain control:** Inadequate pain control can slow recovery or contribute to complications
- d. **Antibiotics.**

Laboratory test

- **CBC** should be obtained in the immediate postoperative period and on subsequent postoperative days in any procedure in which significant blood loss occurred.
- **Serum electrolytes, BUN, and creatinine** are important in patients on (NPO) status, with renal insufficiency, or who are receiving large volumes of IV fluids, (TPN), or transfusions. In patients with large transfusion requirements, it is important to keep track of **calcium and magnesium** levels.

- 
- **Coagulation** studies are important in patients who have had insults to the liver or large transfusion requirements.
 - Daily **ECGs** and a series of three **troponin I** levels 8 hours apart are appropriate ways to monitor for myocardial ischemia in patients with significant cardiac risk factors.
 - **CXR** after any procedure in which the thoracic cavity is entered or when central venous access is attempted.



COMPLICATIONS



I. Neurologic Complications

1. Perioperative stroke

- **A. Presentation.**

Patients usually describe a rapid onset of focal loss of neurologic function.

- **B. Examination.**

A thorough neurologic examination, vital signs, finger-stick glucose, and pulse oximetry.

- **C. Evaluation**

Laboratory evaluation (CBC, electrolytes, BUN, creatinine, and coagulation studies), A CT scan of the head, echocardiography, carotid and transcranial ultrasound, and magnetic resonance imaging (MRI).

2. Treatment

- supplemental oxygen and IV fluid.
- Aspirin.
- Thrombolysis.

3. Seizures

- Evaluation and treatment of postoperative seizures involve the same principles as those encountered in other settings such as:
 - 1-Determine from patient history whether a true seizure was witnessed.
 - 2-Complete physical and neurologic examination
 - 3-Laboratory and diagnostic studies (vital signs, a blood glucose determination, CBC, and serum chemistries, including calcium and magnesium)

4. Delirium

(impaired memory, altered perception, and paranoia)

- Delirium is fairly common in patients (especially the elderly) who undergo the stress of an operation.
- Management begins with eliminating the possibility of an underlying physiologic or metabolic derangement.

5. Alcohol withdrawal

- Minor withdrawal can begin 6 to 8 hours after cessation of alcohol intake and is characterized by anxiety, tremulousness, anorexia, and nausea. Signs include tachycardia, hypertension, and hyperreflexia.
- Delirium tremens typically occurs 72 to 96 hours or longer after cessation of alcohol intake and is characterized by disorientation, hallucinations, and autonomic lability that includes tachycardia, hypertension, fever, and profuse diaphoresis.
- Treatment by Benzodiazepines, Clonidine and General medical care.



II. Cardiovascular Complications

1. Myocardial ischemia and infarction

- The presentation of myocardial ischemia in the postoperative patient is often silent or presents with dyspnea, hypotension, or atypical pain.
- Differential diagnosis of postoperative chest pain includes myocardial ischemia or infarction, PE, pneumonia, pericarditis, aortic dissection, and pneumothorax.

Evaluation of Myocardial ischemia and infarction

- Physical examination
- Diagnostic testing (ECG)
- Laboratory data (Cardiac enzymes, Routine serum chemistries, CBC and Oxygen saturation)

Treatment of Myocardial ischemia and infarction

- Telemetry
- Oxygen therapy
- Pharmacologic therapy (Nitrates, betablockers, Morphine sulfate and Antiplatelet therapy)

2. Congestive heart failure

- CHF can occur immediately postoperatively as a result of excessive intraoperative administration of fluids or 24 to 48 hours postoperatively related to mobilization of fluids that are sequestered in the extracellular space.
- Differential diagnosis of shortness of breath or hypoxia in the perioperative period includes CHF, pneumonia, atelectasis, PE, reactive airway disease (asthma, COPD exacerbation), and pneumothorax.

Evaluation of Congestive heart failure

- History
- Physical examination
- Diagnostic testing (Laboratory data, Pulse oximetry, ECG and CXR)

Management of congestive heart failure

- Supplemental oxygen
- Diuretics
- Morphine
- Arterial vasodilators
- Inotropic agents

III. Pulmonary Complications

- The differential diagnosis of dyspnea includes atelectasis, lobar collapse, pneumonia, CHF, COPD, asthma exacerbation, pneumothorax, PE, and aspiration.

Evaluation of Pulmonary Complications

- History
- Physical examination
- Diagnostic testing (CBC, chemistry profile, ABG, ECG and CXR)

Management of specific pulmonary conditions

- Atelectasis

For most patients, deep breathing and coughing along with the use of incentive spirometry are adequate.

- Gastric aspiration

Therapy is supportive, and antibiotics are typically not given empirically.

- Pneumothorax

Treated with tube thoracostomy

- COPD and asthma exacerbations

Acute therapy includes administration of supplemental oxygen and inhaled beta-adrenergic agonists

III. Renal Complications

- **Acute renal failure**
- Causes:
 - (1) Prerenal azotemia
 - (2) Intrinsic renal
 - (3) Postrenal

General evaluation

- History and physical examination
- Laboratory evaluation : Urinalysis with microscopy and culture, Serum chemistries, Urinary indices: Fractional excretion of sodium (FENa) can be calculated from $FENa = (UNa/PNa)/(UCr/Pcr)$
- Other diagnostic testing: Renal ultrasound, etc.

TABLE 1-8 Laboratory Evaluation of Oliguria and Acute Renal Failure

| Category | FE _{Na} | U _{Osm} | RFI | U _{Cr} /P _{Cr} | U _{Na} |
|--------------------------------|------------------|------------------|-----|----------------------------------|-----------------|
| Prerenal | <1 | >500 | <1 | >40 | <20 |
| Renal (acute tubular necrosis) | >1 | <350 | >1 | <20 | >40 |
| Postrenal | >1 | <50 | >1 | <20 | >40 |

Management of specific problems

- **Oliguria:**
- Evaluation: Cardiac echocardiography, central venous pressures, and pulmonary artery pressures can assist with the evaluation of volume status
- Management:
- Prerenal: fluid (normal saline)
- Intrinsic renal. Treat the underlying cause, if possible, and manage volume status.
- Postrenal: percutaneous nephrostomy tubes, Foley catheter or a suprapubic catheter.

- **Elevated creatinine and ARF:**
- Evaluation: similar to oliguria.
- Management: The patient should be weighed daily, and intakes and outputs should be recorded carefully. Serum electrolytes should be monitored closely. The patient should be maintained in a euvolemic state. Hyperkalemia, metabolic acidosis, and hyperphosphatemia are common problems in patients with ARF and should be managed

Dialysis :

IV. Infectious Complications

Management of infection and fever

- Evaluation of fever:
- Intraoperative fever: e secondary to malignant hyperthermia, a transfusion reaction, or a preexisting infection
- High fever ($>39^{\circ}\text{C}$) in the first 24 hours : streptococcal or clostridial wound infection, aspiration pneumonitis, or a preexisting infection
- Fever that occurs more than 72 hours after surgery: pneumonia, urinary tract infection, thrombophlebitis, wound infection, intraabdominal abscess, and drug allergy

- 
- Diagnostic evaluation: fever or leukocytosis. inspect all wounds, tubes, and catheter sites
 - Specific laboratory tests: (1) CBC. (2) Urinalysis. (3) CXR. (4) Gram stain/culture
 - Antibiotics
 - Imaging studies: ultrasound or CT

Management of specific infectious etiologies

- **Wound infection:** diagnosed by local erythema, swelling, pain, tenderness, and wound drainage. Fever and leukocytosis.
- If superficial, antibiotics are not required
- If erythema is extensive, parenteral antibiotics should be initiated
- More aggressive infections with involvement of underlying fascia require emergent operative débridement and broad-spectrum IV antibiotics

- **Respiratory infections:** fever, leukocytosis, purulent sputum production, and an infiltrate on CXR

Gram stain and culture of the sputum and blood is performed, empiric antibiotics can be started

- **Gastrointestinal infections:** fever, leukocytosis, and diarrhea. Clostridium difficile is a common cause.

fluid resuscitation and metronidazole or vancomycin

- **Intraabdominal abscess or peritonitis:** fever, leukocytosis, abdominal pain, and tenderness.

generalized peritonitis, emergency laparotomy is indicated.

If the inflammation is localized, do a CT scan of the patient's abdomen and pelvis
management of an intraabdominal abscess is drainage. In many circumstances, this can be performed percutaneously with radiologic guidance. In other situations, operative drainage is required

- **Genitourinary infections:** After the urine is cultured, simple lower tract infections can be managed with oral antibiotics
- **Prosthetic-device–related infections:** fever, leukocytosis, and systemic bacteremia. Infection of prosthetic valves may present with a new murmur.
remove infected device and use of long-term antibiotics
- **Catheter-related infections:** fever, leukocytosis, and systemic bacteremia. Local erythema and purulence may be present around central venous catheter insertion sites. a tender thrombosed vein, or lymphangitis near infected iv line.
remove catheter and use iv antibiotic coverage

- **Fascial or muscle infections:** hemorrhagic bullae over the infected area, rapidly progressive edema with foul-smelling pus, erythema, pain

Therapy includes emergent operative débridement, management of shock, and broad-spectrum antibiotics

- **Viral infections:** uncommon in immunocompetent patients

- **Fungal infections:** commonly after long-term antibiotic administration

Therapy includes amphotericin B, fluconazole, or micafungin

V. Deep Venous Thrombosis and Pulmonary Embolism

- **Diagnosis of DVT:**

- **symptoms** include pain and swelling of the affected extremity distal to the site of venous obstruction. Signs of DVT on physical examination may include edema, erythema, warmth, a palpable cord, or calf pain with dorsiflexion of the foot (Homan's sign)
- **Noninvasive studies:** B-mode ultrasonography, color Doppler (duplex scanning) and contrast venography is the gold standard for diagnosis of DVT

Diagnosis of PE

- **symptoms** May include mental status changes, dyspnea, pleuritic chest pain, cough and hemoptysis might occur, tachypnea and tachycardia. Patients with massive PE may experience syncope or cardiovascular collapse.
- **Laboratory studies:** noninvasive assessment of arterial oxygen saturation, ECG, and CXR, ABG
- **Imaging studies:** Spiral CT scan (primarily) , V/Q scan, Pulmonary angiography

Treatment of PE

- Supportive measures: administration of oxygen to correct hypoxemia and IV fluids to maintain blood pressure.
- Anticoagulation with intravenous UFH or SC LMWH: should continue for 6 months unless risk factors persist or DVT recurs
- Inferior vena caval filter placement: when a contraindication to anticoagulation exists, a bleeding complication occurs while receiving anticoagulation, or a DVT or PE recurs during anticoagulation therapy

Complications of Diabetes

- **Tight blood glucose control:** 80-110 mg/dl
- **Diabetic ketoacidosis (DKA)** : in any diabetic patient who is sufficiently stressed by illness or surgery
- Laboratory tests should include blood glucose, CBC, serum electrolytes, serum osmolarity, and ABG
- Restoration of intravascular volume should be initiated with isotonic (0.9%) saline
- Correction of acidosis with bicarbonate therapy if the blood pH is less than 7.1 or shock is present
- Potassium replacement should be instituted immediately unless hyperkalemia with ECG changes exists
- Blood glucose can be controlled with 10 units of insulin as an IV bolus followed by insulin infusion at 2 to 10 units per hour r to a target range of 200 to 300 mg/dL

- **Nonketotic hyperosmolar syndrome** is characterized by severe hyperglycemia and dehydration without ketoacidosis in elderly noninsulin-dependent diabetes mellitus patients with renal impairment and may be precipitated by surgical illness or stress

Therapy is similar to that for DKA but with two notable exceptions: (1) Fluid requirements are often higher, and replacement should be with 0.45% saline; and (2) total insulin requirements are less.

Hypertension

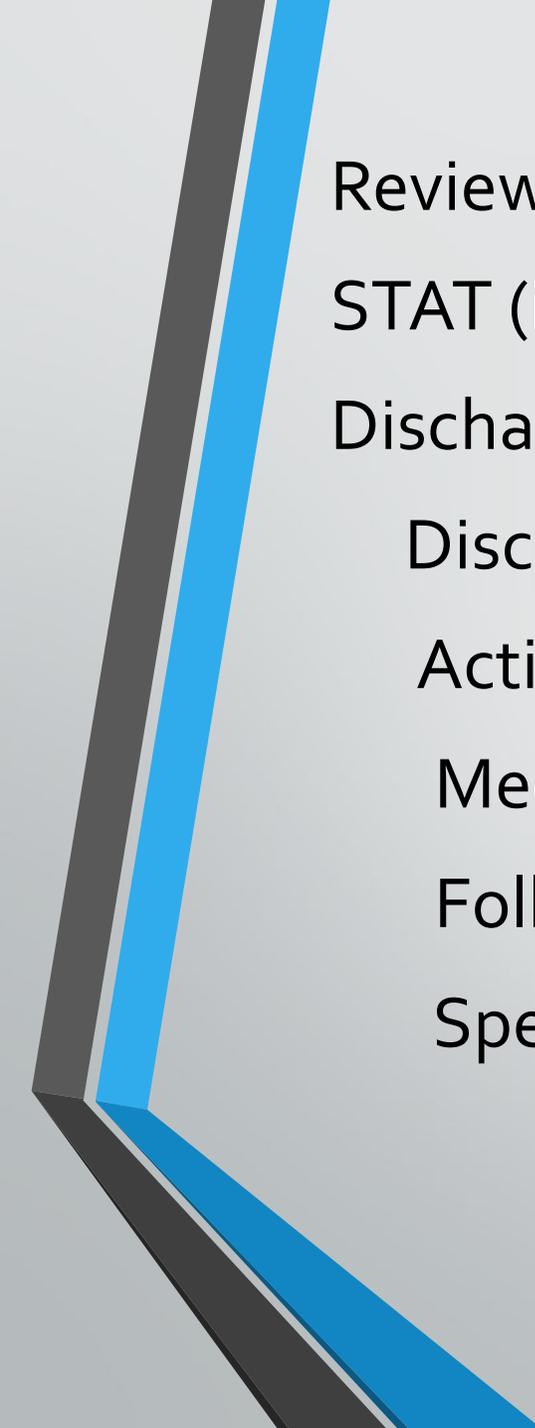
- A reasonable goal of therapy for acute postoperative hypertension is within 10% of the patient's normal BP.
- Treatment: treat potentially correctable underlying causes, such as pain, hypoxemia, hypothermia, and acidosis
- Acute hypertension can be managed with clonidine, hydralazine, labetalol, or a nitroprusside drip



DOCUMENTATION

Hospital Orders: Admission orders

- 
- Admit
 - Diagnosis
 - Condition
 - Vitals
 - Allergies
 - Activity
 - Nursing orders
 - Diet
 - IV fluids
 - Medications
 - Laboratories



Review orders with nursing staff

STAT (immediate) orders

Discharge orders:

Discharge

Activity limitations

Medicines

Follow-up

Special

Hospital Notes

- History and physical examination.
- Preoperative notes
- Operative notes
- Postoperative check
- Discharge summary

INFORMED CONSENT

- Obtaining Informed Consent
- Documentation of Informed Consent

ADVANCE DIRECTIVES:

legal documents that allow patients to provide specific instructions for health care treatment in the event that the patient is unable to make or communicate these decisions personally

- Living Wills
- Durable Powers of Attorney for Health Care
- Implementation
 1. Intravenous fluids
 2. Enteral and parenteral nutrition
 3. Medicines
 4. Inotropic support
 5. Renal dialysis
 6. Mechanical ventilation
 7. Cardiopulmonary resuscitation

| TABLE 1-9 | Preoperative Note |
|-----------|---|
| | Preoperative diagnosis |
| | Procedure planned |
| | Attending physician |
| | Laboratory investigations |
| | Electrocardiogram (if applicable) |
| | Chest X-ray and other radiology (if applicable) |
| | Informed consent |
| | NPO (nothing by mouth) past midnight |
| | Type and screen/cross (if applicable) |

| TABLE 1-11 | Discharge Summary (Dictated) |
|------------|---|
| | Your name, date, and time of dictation |
| | Patient name |
| | Patient registration number |
| | Attending physician |
| | Date of admission |
| | Date of discharge |
| | Principal diagnosis |
| | Secondary diagnosis |
| | Brief history and physical examination |
| | Laboratory/radiographic findings |
| | Hospital course |
| | List of procedures performed with dates |
| | Discharge instructions |
| | Discharge condition |
| | Copy distribution |

| TABLE 1-10 | Brief Operative Note |
|------------|--|
| | Preoperative diagnosis |
| | Postoperative diagnosis |
| | Procedure performed |
| | Attending surgeon |
| | Assistant/resident surgeons |
| | Type of anesthesia |
| | Operative findings and complications |
| | Specimens removed |
| | Packs, drains, and catheters |
| | Estimated blood loss |
| | Urine output |
| | Fluids administered |
| | Blood products administered |
| | Antibiotics administered |
| | Documentation that "time-out" to verify correct patient, procedure, and site was performed |
| | Patient disposition and condition |



Thank you