General complications of surgery

Objectives:

- Not given

Resources:

- Slides
- Davidson's
- Doctor's notes
- Raslan

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[Color index | Important | Notes | Extra]
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Once you stop learning
you start dying.

Introduction:

Preoperative evaluation:

- History & Physical Examinations

Hx and P/E should be the thing you start with. You want to know from history about the factors that you should be aware of to prevent complications? For example a male patient who came for hernia repair, So The age of the patient is important. A 20 year old is different from a 60 year old. Why? The muscle of a 60 year old are much more weaker than a 20 year old. Someone might consider the occupation, to consider heavy lifting is important but it's not considered a risk factor to prevent infection.
So an MCQ could come as this: which of the following factors would determine the risk of infection? Past medical history and examination is important.
Why? Which disease could interfere with your surgery?

CASES:
1. Patient with HbA1C of 10 (uncontrolled), what will you do? You will send him to an endocrinologist, they will fix the patient then send him back to you so you can perform the surgery.
2. A patient is on steroids, known case of paget's disease, would you perform his surgery? No, high cortisol will lead to decreased wound healing. And if you cut the steroids and do his surgery this will lead the adrenals to crash and shut down. For this reason you should delay his surgery and when you decide to do it, **you give him a stress dose.**
This way you avoided complications using history alone.
Examination is also important.

CASE:
A patient came for elective laparoscopic cholecystectomy, history was negative apart from pain radiating to the shoulders and aggravated by fatty meals. I did the examination and found that his right leg was thick and swollen. What will you do? it could be a DVT and you want to prevent any complications during the surgery so you should perform a doppler before the surgery to rule it out. If you did the surgery without performing a doppler, you could end up with a pulmonary embolism.

- Investigations, radiologic diagnostic tools, routine lab, EKG and etc.

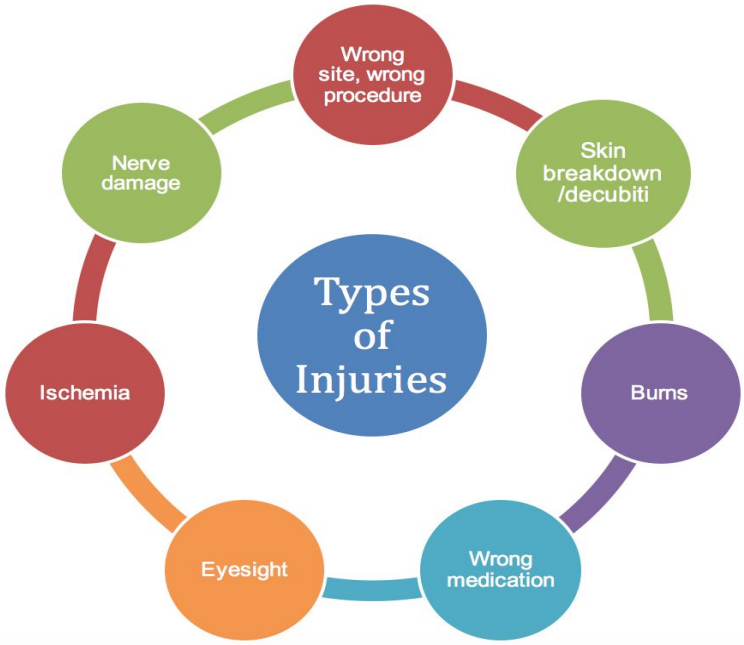
There are clear guidelines for any patient who goes for surgery:
- >40 year old → should perform CXR and ECG.
- Young patient with known case of CAD → Do an ECG regardless of the age.
- 40 yo you did an ECG, he is a known case of high cholesterol, heavy smoker, and obese. You found some changes in QRS what should you do and why? Hx of cholesterol is a red flag for me along with his obesity and smoking, this guy is at a **high risk of MI** then you should refer him to cardiology to clear him for surgery.

<table>
<tr><th colspan="3">In preparation for surgery</th></tr>
<tr><th colspan="2">Pre-operative Preparation</th><th>Patient/Procedure Confirmation</th></tr>
<tr><td>Testing</td><td>• Determines ability to sustain surgical insult
• Determines type of anesthesia delivery
• Blood Pressure, Diabetes, EKG, Liver function, CBC, Chest X-ray, UA</td><td rowspan="2">• Surgical Consent.
• Pre-operative marking.
• “Time Out” in the operating room.
  </td></tr>
<tr><td>Medications</td><td>• Day before surgery, anti-inflammatory (remember the steroid example mentioned above)
• Day of surgery, antibiotics
• Post op pain meds
• Smoking cessation?
You have to make them stop smoking 6 weeks before and 6 weeks after surgery</td></tr>
</table>

Types of injuries:

***Nerve damage** happens due to improper positioning, especially in obese patients who undergo bariatric surgery, you will place him in a 45 degree (proper position) but his weight will compress the femoral nerve → partial ischemia→ numbness in the area supplied by that nerve.

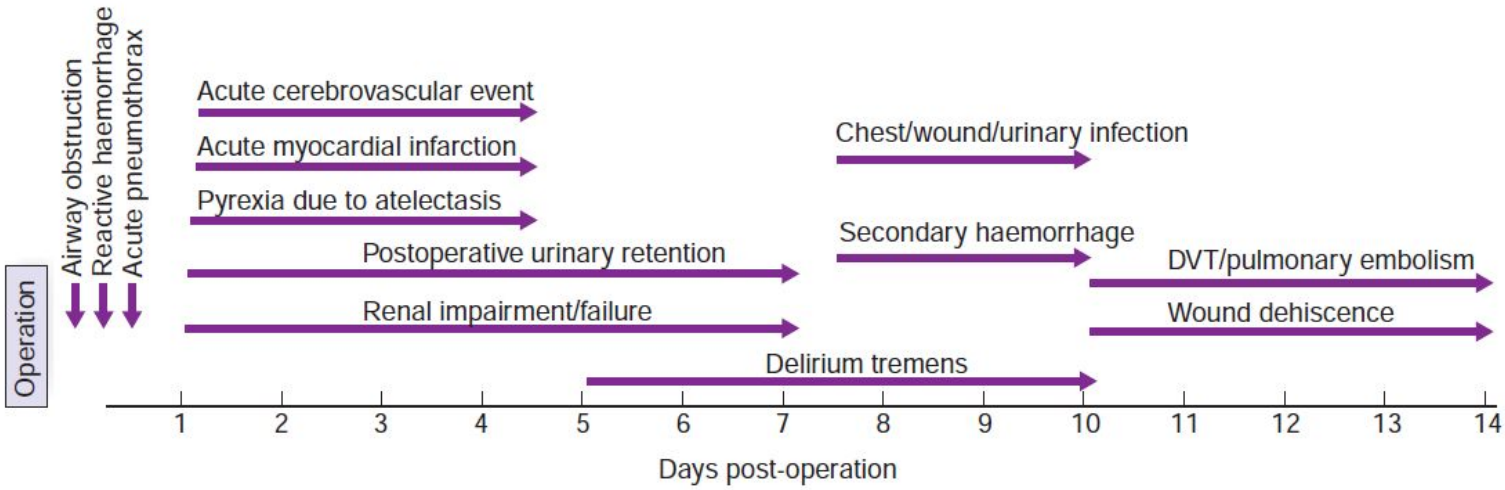
***Burns** as a result of diathermy



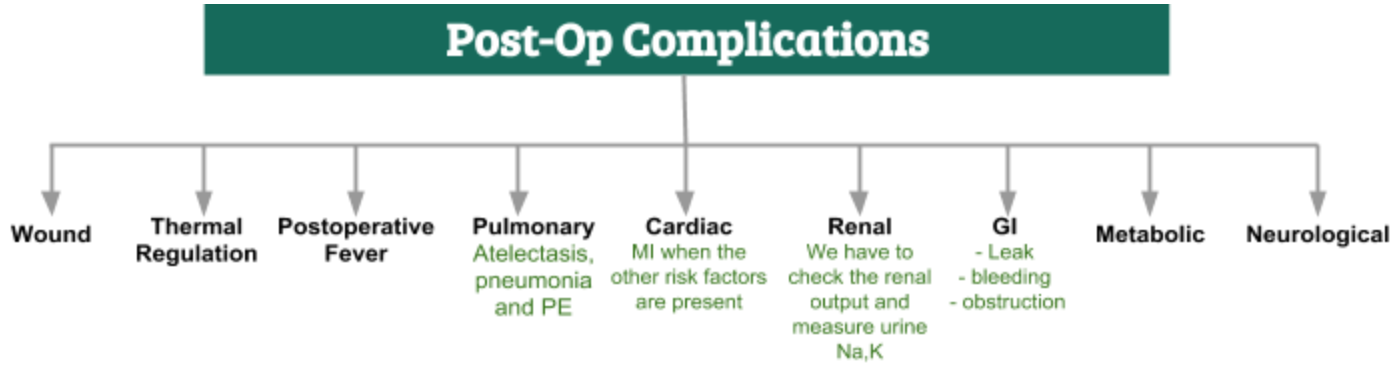
Classification of Post-Operative Complications:

- Avoidable (Preventable, non Preventable)
- Physiological eg. Malignant hyperthermia - Biochemical eg. drug adverse effects - Anemia - Coagulopathy Factor 8 deficiency
- Related to timing

Complications classified in relation to TIMING You need to know when was the surgery done to be able to make a list of DDx		
Immediate 0-24 Hrs	Intermediate 1-30 days (7 days in average) (LOS[1])	Late > 30 Days, after discharge
• Anesthesia eg. Hypotension caused by painkillers • Pain • Bleeding • Shock, Renal failure	• Organ (kidney problem) • Systems (UTI) • Other Systems (Sepsis)	Not necessarily related to the surgery.



[1] length of stay



General complication:

Nausea/ vomiting	caused by surgery and/or anaesthesia, antiemetics can be given to stop vomiting in severe cases.
Persistent hiccups	due to diaphragmatic irritation, gastric distension or metabolic causes, such as renal failure *gastrointestinal peristalsis can be greatly reduced and as a result gas can build up in the stomach causing gastric distension, this can be corrected by decompressing the stomach with a nasogastric tube.
Headache	Spinal anaesthesia may cause headache as a result of leakage of cerebrospinal fluid
IV site	Intravenous administration of irritant drugs or solutions can cause bruising, haematoma, phlebitis and venous thrombosis.

Pulmonary Complications: To prevent this we encourage spirometry.

- Largest single cause of post-op. Morbidity.
- 2nd most common cause of death in over 60 age.
- Higher risk to patients with chronic pulmonary disease (COPD).

pulmonary collapse (Atelectasis)	• the primary cause of pulmonary collapse after surgery is the inability to breathe deeply and cough up bronchial secretions, which will build up and collapse the airway. • It can be due to paralysis of cilia (by anaesthetics), impairment of diaphragmatic movement, abdominal distension and wound pain. • Usually occurs within 24 hours • **Sx:** Tachypnoea, tachycardia, mild fever (most common cause of post-op fever), ↓ breath sound on affected side, ↓PaO2 • **Dx**: Chest X-ray areas of opacification • **PPx:** pre-op: stop smoking, physiotherapy for COPD and delay surgery if chest infection • post-op: Incentive spirometry. • **Tx**: encourage deep breathing/cough, mobilization, analgesia, chest physiotherapy.
Pulmonary Infection (pneumonia)	• Commonly follows atelectasis or gastric aspiration (aspiration pneumonitis is reduced by pre-op fasting, protonix, cricoid pressure) • Most common agents: *Streptococcus pneumoniae* and *Haemophilus influenzae* or gram negatives (in aspiration pneumonitis) • **Sx:** Pyrexia, tachypnoea, greenish sputum, ↓ breath sounds, coarse crepitations and bronchial breath. • **Dx**: Chest X-ray: patchy fluffy opacities • **Tx**: antibiotics and encourage to cough, in severe cases: O2, bronchoscopy, ventilation
Pleural effusion	• **Causes:** usually happens after surgery only if the patient has another form of pulmonary pathology like: collapse, consolidation, infarction, tumour deposit. Also as a result in abdominal pathology: subphrenic abscess • **Approach:** Small effusions left to reabsorb, while large effusions aspirated for culture/ cytology.

Pneumothorax	● The most common cause of postoperative pneumothorax is the insertion of a central venous line ● CXR after insertion central venous line is necessary to exclude this complication. ● **Tx:** Drained by underwater seal
Respiratory failure	● Definition: Inability to maintain normal PaO2 & PaCO2 levels: ● Normal PaO2= 11.6 -13 kPa ● Resp. failure PaO2 < 6.7 kPa ● Central cyanosis ● ABG- key to early recognition ● Tx:: Intubation and ventilation
Acute respiratory distress syndrome (ARDS)	● Characterized by: Impaired oxygenation, diffuse lung opacification and lung stiffness (↓ compliance) ● **SX:** Tachypnoea, ↑ventilatory effort, confusion, hypoxia ● **Causes:** Systemic/lung sepsis, massive Blood transfusion, aspiration of gastric contents ● **Pathophysiology:** Endotoxin activated leukocyte → oxygen-derived free radicals, cytokines & chemical ↑capillary permeability →interstitial & alveolar oedema ● Dx: CXR- bilateral diffuse fluffy opacities ● Tx: is ventilation PEEP, treatment of sepsis, hypovolemia ● Mortality: 50%

Cardiac Complications:

- The risks of anaesthesia and surgery are increased in patients suffering from cardiovascular disease. Whenever possible, arrhythmias, valvular diseases, unstable angina, heart failure or hypertension should be corrected before surgery
- Carefully monitor IV fluid administration
- Aortic stenosis impairs heart response to increased postoperative demand

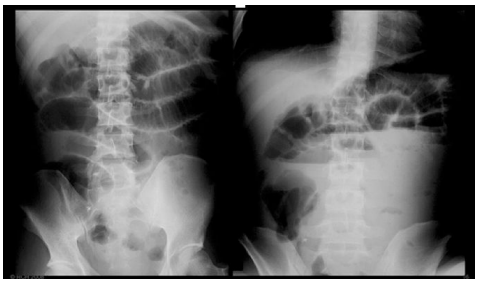
Ischemia/ Infarction	● Leading cause of death in any surgical patient, 1/3rd postoperative MI are fatal ● Key to treatment → prevention ○ **MONA: M**orphine, **O**xygen, **N**itrates, **A**spirin ● Usually history of preceding cardiac disease ● Patients my experience Gripping chest pain. ● Sometimes **hypotension is the only sign**. This is greatly due to the anaesthetics/ postoperative analgesics, where these drugs mask the other symptoms of ischemia/MI. ● **If ischemia is suspected:** ECG changes, Cardiac enzymes should be obtained, and Cardiologist should be consulted.
Arrhythmias	● >30 seconds of abnormal cardiac activity ● Key to treatment → correct underlying medical condition. ● **Sinus tachycardia:** hypovolaemia, hypotension, pain, fever, restlessness ● **Sinus bradycardia:** anaesthetic agents, pharyngeal suction ● **Atrial fibrillation** is the most common postoperative arrhythmia and may need medications
Post-op shock	The three main types are hypovolaemic, cardiogenic and septic shock. ● Hypovolaemic: Inadequate fluid replacement, bleeding ● Cardiogenic: acute MI, arrhythmias Hypovolemic and cardiogenic shock are characterized by tachycardia, hypotension, sweating, pallor and vasoconstriction. ● Septic: ○ Early: hyperdynamic circulation, bounding pulse, fever, rigor and warm extremity. ○ Later: hypotension and peripheral vasoconstriction Without appropriate management, shock will result in oliguria and the development of multisystem organ failure, and may lead to death.
Heart failure	Happens in context of Ischaemic or valvular diseases, arrhythmia ● Causes: is commonly caused by excessive fluid administration in a patient with limited Cardiac reserve. ● Signs: Progressive dyspnoea, hypoxaemia and diffuse pulmonary congestion on x-ray ● Treatment: ○ Avoid fluid overload ○ CVP monitoring ○ Diuretics, cardiac

Urinary Complications:

- Associated with: Groin, pelvic, perineal surgery, operations under spinal/epidural anaesthesia
- Causes: Pain, effect of anaesthetic drugs, lying/sitting position, BPH
- Males > females, especially when men have prostate problems.
- Signs: Palpable distended bladder.
- Treatment: Catheterization.

Urinary Retention	● Common post-op reversible complication (Male predominance). ● Either duo to groin, pelvic or perineal operations, or operations under spinal/epidural anaesthesia). ● Indicated by Frequent dribbling or the passage of small volumes of urine. ● Distended bladder on examination. ● Remove the catheter after 2-3 days.
Urinary tract infection.	● Most common nosocomial infection, including in postoperative patients. ● Pre-existing UTI, urinary retention, catheterization ● Frequency, dysuria & fever (Cystitis), flank tenderness (Pyelonephritis). ● Urine culture ● Treatment: Adequate hydration, urinary drainage and appropriate antibiotics
Acute Renal Failure	**Prerenal**: The most common cause of postoperative oliguria is pre-renal vascular insufficiency from hypovolaemia. (dehydration) ● Protracted inadequate renal perfusion ● Causes: Hypovolaemia (most common cause), sepsis, nephrotoxic drugs like certain antibiotics Patients with **pre-existing renal disease**, jaundice are the most susceptible ● Prevention: adequate IV fluid, urine □ 0.5ml/kg/hr ● Treatment: ○ Replace fluid loss. ○ Restrict dietary protein to < 20Gm/day ○ Serum Urea & Electrolytes monitoring, haemodialysis. The patient will then enter a polyuric phase, in which fluid and electrolyte balance requires careful monitoring. To differentiate between renal and prerenal, you check the urine output and the urine electrolyte (check the Na,K). You have a pt with low urine output If the kidney is functioning normally then the Na will be low in the urine (Pre-renal) and if its not functioning it will be high in the urine.

Gastrointestinal Complications:

Postoperative ileus	Lack of function without definitive obstruction. ● **Prolonged by**: ○ Extensive operative manipulation ○ SB injury ○ Narcotic use ○ Abscess ○ Pancreatitis Usually resolves within 5 days.  **Must be distinguished from SBO:** Flat and upright abdominal X-ray ● **Ileus** → Dilated bowel throughout, air in colon & rectum. ● **SBO** → Air fluid levels, **No** colonic or rectal air. To differentiate between ileus and obstruction you will perform **BOTH erect and supine x ray:** Erect you will notice air fluid levels: if it was significant air fluid (more than five) then it is suggestive of obstruction. If there was air in the rectum it's unlikely to be an obstruction.

GI Bleeding	• From any source (get a detailed history) • Gastric stress ulcers (Curling's Ulcer)[2] secondary to the stress of the surgery.
Pseudomembranous colitis	• Superinfection with **C difficile** • Alteration of intestinal flora by perioperative antibiotics • Toxic colitis is a surgical emergency (mortality of 20-30%)
Ischemic Colitis	• Bowel affected helps determine cause. • Surgical devascularization, hypercoagulable state, hypovolemia and emboli
Anastomotic leak	To decrease the complication of a leak, you will have to **check the nutrition status of the pt, more importantly the Albumin level.** If it's more than 35 it good for the patient. According to the literature if albumin was 25 or less there is a 50% risk of leaking.
Enterocutaneous fistula	The most complex and challenging surgical complication.

Metabolic Complications:

Adrenal Insufficiency	• Uncommon but potentially lethal.
	• Sudden cardiovascular collapse
	  ○ Hypotension, fever, confusion, abdominal pain
	• "Stim" test, administration of hydrocortisone.
	  ○ Baseline serum cortisol, 30 min, 60 min

Hyper/Hypothyroidism	-
SIADH	• Continued ADH secretion despite hyponatremia. • Neurosurgical procedures, trauma stroke, drugs (ACEI, NSAIDs)

Neurologic Complications:

Cerebrovascular accidents (CVA)	These are usually precipitated by **sudden hypotension** during or after surgery **in elderly hypertensive patients with severe atherosclerosis.** • They are a specific complication of **carotid endarterectomy,** occurring in 1–3% of cases, but may also complicate cardiac surgery.
Neuropsychiatric disturbances	• The most common is mental confusion with agitation, restlessness and disorientation, and is known as delirium • **Dementia due to cerebral atrophy** and use of sedatives or hypnotics
Acute toxic confusion	• Acute psychiatric disorder that **occurs in some patients during a serious illness or after a major surgical intervention.** • occurs in some patients during a serious illness or after a major surgical intervention • Many factors can contribute, and it is important to look for a treatable cause, such as hypoxia, sepsis, or a metabolic disturbance such as uraemia or electrolyte imbalance.
Sleep deprivation	• particularly in intensive care units, can also cause severe mental disturbance.
Delirium tremens (acute alcohol withdrawal syndrome)	• Delirium tremens **occurs in alcoholics who stop drinking suddenly.** • Prodromal symptoms include personality changes, anxiety and tremors • The fully developed condition is characterized by extreme agitation, visual hallucinations, restlessness • treatment involves the prescription of oral diazepam and vitamin B (thiamine). • Control of extreme agitation may require intravenous administration of diazepam, or

[2] uncommon with invention of H2 Blockers and PPIs

	haloperidol.

Deep vein thrombosis (DVT) :

- **Virchow's triad:** stasis, ↑coagulability, vessel wall injury
- **Risk factors:** old age, obesity, prolonged surgery, pelvic/ hip surgery malignancy, past DVT, varicose veins, pregnancy, use of OCP
- **Presentation:** painful swollen tender calf & fever.
- **Diagnosis:** Duplex ultrasonography
- **Prevention:** Compression stockings, mechanical compressions of calf during surgery, subcutaneous heparin
- **Treatment:** IV bolus/ infusion heparin, LMWH, Warfarin for 3-6 months (INR 2-3 times normal)

Pulmonary Embolism (PE):

- **Massive PE:** severe chest pain, pallor & shock
- **Small PE:** chest pain, tachypnoea, haemoptysis
- **Diagnosis:**CXR, ECG , V/Q scan, CTA
- **Treatment:** cardiopulmonary resuscitation, heparinization, streptokinase/urokinase[3] (if 6 days post surgery) or open pulmonary embolectomy (in extreme cases)
- **Prevention:** by preventing DVT

Wound Complications:

Wound Dehiscence	• **Separation of facial layers** the fascia is seperated and you can see the viscera • **Serosanguinous drainage.** • **Technical Complication:** The most important causes are poor surgical techniques • **Risk Factors:** Obesity, smoking, respiratory disease, obstructive jaundice, nutritional deficiencies, renal failure, malignancy, diabetes and steroid therapy • **Mortality approaches 30%** • **Evisceration:** The extrusion of abdominal viscera through a complete abdominal wound dehiscence is known as evisceration **Just know that in dehiscence organs will be inside while in evisceration organs will be outside.** If you see a patient day one post op, with high fever and redness, think about necrotizing fasciitis (Group A Strep)  Dehiscence  Evisceration
Seroma	Usually in patients undergoing abdominal surgery • Collection of **liquefied fat**, serum and lymphatic fluid under the incision • Benign • No erythema or tenderness • Mastectomy, axillary and groin dissections • Treatment: Don't touch it unless: 1. It is infected or 2. There are symptoms. Then you should drain it.

Hematoma	• Abnormal collection of blood
	  ○ Discoloration of the wound edges (purple/blue)
	  ○ Blood leaks through skin sutures
	• Imperfect hemostasis
	• Potential for secondary infection
	• Neck hematomas can be dangerous

[3] Fibrinolytic agents

	Mostly there's no need to interfere unless it gets infected or symptomatic. Or if it's not controlled.
Infection	● Major problem, can be ○ Superficial ○ Deep ○ Organ space ● Most commonly occur **4-6 days post-op** ● Erythema, tender, edema ● 2.5% of abdominal incisions dirty area ● Staphylococcus aureus ● **Necrotizing fasciitis:** أهم شي تعرفون انها بسبب Group A strep ○ Bacterial infection of underlying fascia ○ Classically **Streptococcus, most often polymicrobial with anaerobes/GNR** ○ Surgical debridement and IV antibiotics. Picture on the right could come in OSCE, what made you think this is necrotizing fasciitis? 1. Bullae 2. Redness (irregular border) 3. Not responding to treatment. ● **Clostridial Myositis:** ○ Clostridial muscle infection (myonecrosis and gas gangrene) ○ ***Clostridium perfringens*** ○ Surgical debridement and IV antibiotics Antibiotics are only required if there is evidence of associated cellulitis or septicaemia. If the wound infection is chronic, the presence of a suture sinus or an enterocutaneous fistula must be excluded. 
Incisional Hernia	if you see **bulge with scar over it,** this is incisional hernia

Complications of Thermal Regulation:

Hypothermia ما له داعي تعرفونها
Drop in body temperature of 2℃ **Causes:** ● Body's response (shivering and vasoconstriction) ● Temperature below 35℃ - Coagulopathies - Platelet Dysfunction **Mild** → 32 - 35 ℃ = 90-95℉ **Mod** → 28-32 ℃ = 82-90 ℉ **Severe** → 25- 28℃ = 77-82 ℉ **Extreme**
Malignant Hyperthermia اهم شي عندي تعرفون التريتمنت
● Rare, autosomal dominant ● Fever , tachycardia, rigidity, cyanosis. - ***First sign*** is increased end tidal CO2 - Occurs often within 30 mins after surgery. **Treatment:** ● **Dantrolene** ● Correct electrolytes ● Cooling blanket If you see postoperative patient with **fever** you have to ask when was his surgery, Bc **there are several causes of fever depend on the day of surgery**.. table below summarize the causes

Postoperative Fever:

- The **5 W's:**
  1. **Wind:** Pneumonia
  2. **Wound:** Infections, Abscess
  3. **Water:** UTI
  4. **Walking:** DVT (possible PE)
  5. **Wonder drugs:** Medication

- **Infectious**
  - Within the first 48-72 hours

- **Non Infectious**
  - Fevers POD 3-8
  - Standard work up includes
    - Blood Culture
    - UA and Urine Culture
    - CXR
    - Sputum Culture
    - Tylenol / Motrin

Postoperative fever classification in relation to time (VERY IMPORTANT)				
Day 0	**POD 1- 2**	**POD 3-5**	**POD 5-7**	**POD 7-10**
1.Anesthesia 2.Drug adverse effect 3. Previous infection (missed pneumonia) 4.Blood transfusion reaction 5.Tumor or abscess manipulation (dirty surgery) 6. Physiological as response to tissue injury	1.Atelectasis 2.Pneumonia 3.Wound infection (**Necrotizing fasciitis, Group A strep**) 4.Thrombophlebitis (examine the hand)	1. UTI 2. Intra-abdominal collection 3. Biliary or urinary sepsis	1. DVT 2. PE 3. Enteric anastomotic leak	1. Wound infection 2. Septicaemia.

To sum up:
Prevention of complication is the most important thing, starting with history and examination as well as doing blood tests to try and prevent a complication.
When you're doing surgery you have to take consent, mark the pt, time out.
For each system there is a common complication.
The most common classification or system they use for complications is **TIMING**

Causes of a fever in a postoperative patient
Days 0–2 • Physiological as response to tissue injury – low grade • Pulmonary collapse / atelectasis • Blood transfusions • Thrombophlebitis
Days 3–5 • Sepsis – wound infection • Biliary or urinary sepsis • Intra-abdominal collection • Pneumonia
Day 5–7 • Deep vein thrombosis (DVT) • Enteric anastomotic leak
> 7 Days • Intra-abdominal collection • DVT • Septicaemia.

Recall :

What is Atelectasis?
Collapse of the alveoli
What is the etiology?
Inadequate alveolar expansion (e.g., poor ventilation of lungs during surgery, inability to fully inspire secondary to pain), high levels of inspired oxygen
What are the signs?
Fever, decreased breath sounds with rales, tachypnea, tachycardia, and increased density on CXR
What are the risk factors?
Chronic obstructive pulmonary disease (COPD), smoking, abdominal or thoracic surgery, oversedation, poor pain control (patient cannot breathe deeply secondary to pain on inspiration)
What prophylactic measures can be taken?
Preoperative smoking cessation, incentive spirometry, good pain control
What is the treatment?
Postoperative incentive spirometry, deep breathing, coughing, early ambulation, NT suctioning, and chest PT
What is Respiratory Failure?
Respiratory impairment with increased respiratory rate, shortness of breath, dyspnea
What is the differential diagnosis?
Hypovolemia, pulmonary embolism, administration of supplemental O2 to a patient with COPD, atelectasis, pneumonia, aspiration, pulmonary edema, abdominal compartment syndrome, pneumothorax, chylothorax, hemothorax, narcotic overdose, mucous plug
What is the treatment?
Supplemental O2, chest PT; suctioning, intubation, and ventilation if necessary
What are the indications for intubation and ventilation?
Cannot protect airway (unconscious), excessive work of breathing, progressive hypoxemia ($PaO_2 < 55$ despite supplemental O2), progressive acidosis (pH < 7.3 and PCO2. 50), RR. 35
What is a Pulmonary Embolism (PE)?
DVT that embolizes to the pulmonary arterial system
Is DVT more common in the right or left iliac vein?
Left is more common (4:1) because the aortic bifurcation crosses and possibly compresses the left iliac vein
What are the signs/symptoms of DVT?
Lower extremity pain, swelling, tenderness, Homan's sign, PE
Up to 50% can be asymptomatic!
What is Homan's sign?
Calf pain with dorsiflexion of the foot seen classically with DVT, but actually found in fewer than one third of patients with DVT
What are the risk factors for DVT and PE?
Postoperative status, multiple trauma, paralysis, immobility, CHF, obesity, BCP/tamoxifen, cancer, advanced age, polycythemia, MI, HIT syndrome, hypercoagulable state (protein C/protein S deficiency)
What are the signs/symptoms of PE?
SOB, tachypnea, hypotension, occasionally fever, loud pulmonic component of S2, hemoptysis with pulmonary infarction
What is Aspiration Pneumonia?
Pneumonia following aspiration of vomitus
What are the risk factors?
Intubation/extubation, impaired consciousness (e.g., drug or EtOH overdose), dysphagia (esophageal disease), nonfunctioning NGT, Trendelenburg position, emergent intubation with full stomach, gastric dilatation
What are the signs/ symptoms?
Respiratory failure, increased sputum production, fever, cough, mental status changes, tachycardia, cyanosis, infiltrate on CXR
What are the associated CXR findings?
Early— fluffy infiltrate or normal CXR
Late—pneumonia, ARDS
Which lobes are commonly involved?
Supine—RUL
Sitting/semi recumbent—RLL
Which organisms are commonly involved?
Community acquired—gram-positive/ mixed
Hospital/ICU—gram-negative rods
Which diagnostic tests are indicated?

CXR, sputum, Gram stain, sputum culture, bronchoalveolar lavage

What are the risk factors of gastric dilatation?
Abdominal surgery, gastric outlet obstruction, splenectomy, narcotics
What are the signs/symptoms?
Abdominal distension, hiccups, electrolyte abnormalities, nausea
What is the treatment?
NGT decompression
What do you do if you have a patient with high NGT output?
Check high abdominal x-ray and, if the NGT is in duodenum, pull back the NGT into the stomach
What causes SBO?
Adhesions (most of which resolve spontaneously), incarcerated hernia (internal or fascial/dehiscence)
What causes ileus?
Laparotomy, hypokalemia or narcotics, intraperitoneal infection
What are the signs of resolving ileus/SBO?
Flatus PR, stool PR
What is the order of recovery of bowel function after abdominal surgery?
First—small intestine
Second—stomach
Third—colon
What are the signs/ symptoms of wound Infection?
Erythema, swelling, pain, heat (rubor, tumor, dolor, calor)
What is the treatment?
Open wound, leave open with wet to dry dressing changes, antibiotics if cellulitis present
What is fascial dehiscence?
Acute separation of fascia that has been sutured closed
What is the treatment?
Bring back to the O.R. emergently or reclosure of the fascia
What is Wound Hematoma?
Collection of blood (blood clot) in operative wound
What is the treatment?
Acute: Remove with hemostasis
Subacute: Observe (heat helps resorption)
What is Wound Seroma?
Postoperative collection of lymph and serum in the operative wound
What is the treatment?
Needle aspiration, repeat if necessary (prevent with closed drain)
What are the signs/symptoms of Pseudomembranous Colitis?
Diarrhea, fever, hypotension/tachycardia
What is the incidence of bloody diarrhea?
10%
What classic antibiotic causes C.difficile?
Clindamycin (but almost all antibiotics can cause it)
How is it diagnosed?
C. difficile toxin in stool, fecal WBC
What is the treatment?
1. Flagyl (PO or IV)
2. PO vancomycin if refractory to Flagyl
What is the indication or emergent colectomy?
Toxic megacolon

MCQS

1) A 65-year-old man undergoes a low anterior resection for rectal cancer. On the fifth day in hospital, his physical examination shows a temperature of 39°C (102°F), blood pressure of 150/90 mm Hg, pulse of 110 beats per minute and regular, and respiratory rate of 28 breaths per minute. A computed tomography (CT) scan of the abdomen reveals an abscess in the pelvis. Which of the following most accurately describes his present condition ?

A. Systemic inflammatory response syndrome (SIRS)
B. Sepsis
C. Septic shock
D. Septicaemia

2) On postoperative day 5, an otherwise healthy 55-year-old man recovering from a partial hepatectomy is noted to have a fever of 38.6°C (101.5°F). Which of the following is the most common nosocomial infection postoperatively ?

A. Wound infection
B. Pneumonia
C. Urinary tract infection
D. intra-abdominal abscess

3) A 12-year-old boy with a femur fracture after a motor vehicle collision undergoes operative repair. After induction of anesthesia, he develops a fever of 40°C (104°F), shaking rigors, and blood-tinged urine. Which of the following is the best treatment option ?

A. Alkalinization of the urine, administration of mannitol
B. Administration of dantrolene sodium and termination of the procedure
C. Administration of intravenous steroids and an antihistamine agent with termination of the procedure
D. Put cooling blanket and continue the procedure

4) 60 y old female admitted for hepatic hydatid cystectomy, which was done but the patient was not effectively mobilized in the ward. On the 10th day she complained of shortness of breath ,but no chest pain ,cough or fever, her oxygen saturation was 75% on room air. Which of the following is the likely diagnosis?

A. Pneumonia
B. Pleural effusion
C. Pneumothorax
D. Pulmonary embolism

5) A 19-year old patient presented with right lower quadrant pain with positive rebound tenderness. The diagnosis of appendicitis was confirmed and the appendectomy was done.
One day following the surgery he developed a fever. What is the most likely diagnosis?

A. Atelectasis
B. UTI
C. Thrombophlebitis
D. Wound infection

6) Patient came after 3 days postoperatively with pyrexia, cough and green sputum. X ray shows patchy opacities. What is the differential diagnosis?

A. Pulmonary collapse
B. Pulmonary infection
C. Pneumothorax
D. Pulmonary embolism

Answers: 1- B 2- C 3- B 4- D 5- A 6- B