MEDICAL-SURGICAL NURSING I · STUDY GUIDE

Exam 5 Study Guide

This guide covers chapters 9 and 10. You will learn to read a strip, sort a rhythm emergency by pulse and stability, and tell an arterial leg from a venous one, then work through anemia, bleeding and clotting, safe transfusion and the oncologic emergencies. Work one chapter at a time. Read the "what to know" paragraphs, copy the tables out by hand, then try each worked case with the steps covered. Finish each chapter with its ten self-test items. The cram sheet at the end puts every number and rule in one place.

WHAT THIS GUIDE COVERS

- Chapter 9 · the conduction system and normal intervals, the six-step strip, stable versus unstable, bradycardia, electrolytes and the QT, atrial fibrillation and CHA2DS2-VASc, SVT and adenosine, ventricular rhythms, defibrillation versus cardioversion, the AV blocks, pacemakers and ICDs, valve lesions, endocarditis, arterial versus venous disease, VTE, aneurysm, dissection and hypertensive emergency.
- Chapter 10 · anemia buckets, MCV and reticulocytes, iron, B12 and folate, sickle cell crisis, transfusion thresholds, platelet versus factor bleeding, ITP, HIT, TTP and DIC, hemophilia, anticoagulant tests and antidotes, components and the transfusion procedure, reactions, leukemia, lymphoma and myeloma, the ANC and febrile neutropenia, chemotherapy toxicity, extravasation and the oncologic emergencies.

CHAPTER 9

Cardiac Disorders: Dysrhythmias, Valves and Vascular Disease

Read it in full: **Chapter 9 in the textbook**. Practice it in the lab: **The Six-Step Strip Bench** and **The Atrial Fibrillation Decision Bench**.

What to know

The SA node fires 60 to 100 times a minute; the AV node delays the impulse so the atria can empty (the PR interval, 0.12 to 0.20 s); the bundles and Purkinje fibers make a narrow QRS (0.06 to 0.10 s). A wide QRS means a ventricular origin or a blocked bundle. Escape rhythms: junctional 40 to 60, ventricular 20 to 40; never suppress them. QTc over 0.50 s risks torsades. The

atrial kick adds about 20 to 30% of output. **Electricity is not perfusion**: check the patient and a pulse first.

Read every strip in six steps: rate, rhythm, P waves, P to QRS, PR interval, QRS width. Rate: QRS in 6 seconds x 10, or 300 ÷ large boxes. Then ask the only sorting question: is the patient **unstable** (hypotension, altered mentation, shock, ischemic pain, acute heart failure) because of the rhythm? Verify alarms at the bedside; artifact lets you march QRS complexes through the noise.

Symptomatic bradycardia: atropine 1 mg IV every 3 to 5 minutes to 3 mg, then pacing or a dopamine or epinephrine infusion. Atropine should not delay pacing in Mobitz II or third-degree block. Sinus tachycardia is a symptom; treat the cause. Potassium 3.5 to 5.0 and magnesium matter; potassium is never pushed. QT prolongers include amiodarone, sotalol, haloperidol, ondansetron, methadone, levofloxacin and azithromycin. Digoxin: hold for apical pulse under 60.

Atrial fibrillation is irregularly irregular with no P waves. It loses the atrial kick and grows clot in the left atrial appendage. Take an apical pulse for a full minute (pulse deficit). Unstable: synchronized cardioversion 120 to 200 J. Otherwise rate control (metoprolol, diltiazem; check pulse and BP before and after; avoid diltiazem with reduced EF). If AF has lasted **over 48 hours or is unknown**, no conversion without three weeks of anticoagulation or a clot-free TEE, then four weeks after. CHA2DS2-VASc of 2 or more in men or 3 or more in women warrants anticoagulation; aspirin alone is not enough. DOACs are not used with mechanical valves or moderate to severe mitral stenosis.

PSVT is regular and narrow at 150 to 250. Start with vagal maneuvers; then adenosine 6 mg rapid push with a 20 mL flush, then 12 mg. Warn of brief asystole and a sense of doom. A regular narrow rhythm at exactly 150 may be flutter with 2:1 block.

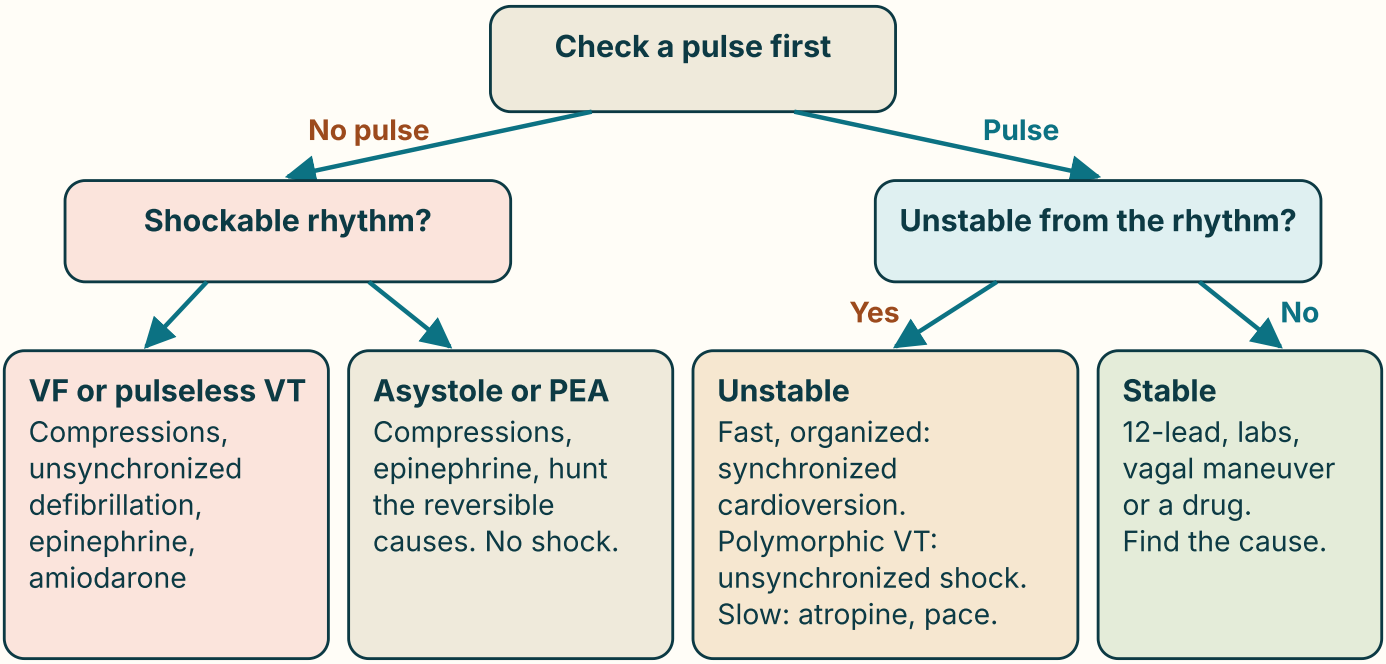
Three or more PVCs in a row is VT. A wide tachycardia in an adult with heart disease is VT until proven otherwise. **Check for a pulse**: stable VT gets amiodarone 150 mg over 10 minutes; unstable monomorphic VT with a pulse gets synchronized cardioversion; pulseless VT and VF get compressions and **unsynchronized** defibrillation, epinephrine 1 mg every 3 to 5 minutes and amiodarone 300 then 150 mg. Torsades gets magnesium 1 to 2 g; if unstable it is shocked unsynchronized because there is no steady R wave. Asystole and PEA are not shocked. Mobitz I

lengthens the PR then drops a beat (atropine works); Mobitz II drops without warning (pace); third degree has P waves and QRS complexes marching separately.

Pacemaker problems: failure to capture (spike, no complex), failure to sense (spikes in the wrong place), failure to pace (no spike). After implantation, no arm above the shoulder or lifting over 10 lb for 4 to 6 weeks. ICD shock: one with recovery, call the clinic; more than one in 24 hours or with symptoms, call 911.

Stenosis loads **pressure** and causes hypertrophy; regurgitation loads **volume** and causes dilation. Aortic stenosis gives syncope, angina and dyspnea with a systolic murmur to the carotids; it is preload dependent, so be cautious with nitrates and brisk diuresis. Mitral stenosis causes AF and needs warfarin, not a DOAC. Mechanical valves need lifelong warfarin (INR 2.0 to 3.0 aortic, 2.5 to 3.5 mitral). Endocarditis: fever plus a new murmur, Osler nodes, Janeway lesions; draw three sets of cultures before antibiotics; high-risk patients take amoxicillin 2 g before dental work.

Arterial disease: claudication, rest pain relieved by dangling, cool hairless skin, weak pulses, punched-out painful toe ulcers; keep legs dependent, no heat, ABI 0.90 or less. Six P’s of acute limb ischemia: pain, pallor, pulselessness, paresthesia, poikilothermia, paralysis. **Venous disease**: warm, edematous, brown-stained leg with a shallow medial malleolus ulcer; elevate and compress, but only after the ABI rules out arterial disease. HIT: stop all heparin. Dissection: tearing pain to the back, arm BP difference over 20; beta blocker first, then vasodilator. Hypertensive emergency: lower the MAP no more than about 25% in the first hour.



Two questions, in order. The rhythm name matters less than whether there is a pulse and whether the rhythm is causing instability.

LOCK THESE IN

- PR 0.12 to 0.20 s; QRS 0.06 to 0.10 s; QTc over 0.50 s is dangerous.
- Six steps: rate, rhythm, P, P to QRS, PR, QRS. Then stable or unstable.
- AF over 48 h: no conversion without 3 weeks anticoagulation or a clean TEE.
- CHA2DS2-VASc: 2 or more (men), 3 or more (women) means anticoagulate.
- Adenosine 6 mg rapid push with a 20 mL flush, then 12 mg.
- No pulse: VF/pVT shock unsynchronized; asystole and PEA are not shocked.
- Mobitz I: atropine helps. Mobitz II and third degree: pace.
- Arterial leg: dependent, no heat. Venous leg: elevate, compress after ABI.

Normal ECG values

Feature	Normal	Abnormal suggests
Rate	60 to 100/min	QRS in 6 s x 10, or 300 ÷ large boxes
PR interval	0.12 to 0.20 s	Long in first-degree block; varies in third degree
QRS	0.06 to 0.10 s (up to 0.12)	Wide: ventricular origin, bundle block, paced, high K
QTc	Under 0.44 s men, 0.46 s women	Over 0.50 s: torsades risk; hold the drug and call
ST segment	Isoelectric	Elevation injury; depression ischemia or digoxin

The AV blocks

Block	Strip	Management
First degree	PR over 0.20 s, constant	Usually benign; review AV nodal drugs
Mobitz I	PR lengthens, then a dropped QRS	Treat only if symptomatic; atropine works
Mobitz II	Constant PR, sudden dropped QRS	Prepare to pace; atropine usually ineffective
Third degree	P and QRS independent	Pacing and chronotropic infusion; hold AV blockers

CHA2DS2-VASc

Letter	Risk factor	Points
C	Heart failure or LV dysfunction	1
H	Hypertension	1
A2	Age 75 or older	2
D	Diabetes	1
S2	Prior stroke, TIA or thromboembolism	2
V	Vascular disease	1
A	Age 65 to 74	1
Sc	Female sex	1

Arterial versus venous ulcer

Feature	Arterial	Venous
Location	Toes, heels, lateral malleolus	Medial malleolus
Look	Round, punched-out, pale base	Shallow, irregular, red base
Pain	Severe; worse with elevation	Aching; better with elevation
Pulses	Weak or absent	Usually present
Position	Dependent	Elevated, compressed

Worked cases

WORKED CASE 1 · READING A STRIP IN SIX STEPS

A six-second strip on Mr. Hale shows 8 QRS complexes. R to R is regular at 4 large boxes. P waves are upright, one before each QRS; PR 0.28 s and constant; QRS 0.08 s.

STEP 1 · RATE

8 x 10 = 80, and 300 ÷ 4 = 75. Both put him in the 60 to 100 range.

STEP 2 · RHYTHM AND P WAVES

Regular, with one upright P for every QRS.

STEP 3 · PR

0.28 s is over 0.20 s and constant: first-degree AV block.

STEP 4 · QRS

0.08 s is narrow: supraventricular origin.

STEP 5 · ACT

Usually benign. Review his AV nodal blocking drugs and monitor.

WORKED CASE 2 · SCORING STROKE RISK IN AF

Mrs. Ortega, 78, has new AF, hypertension and diabetes. No heart failure, stroke or vascular disease.

STEP 1 · ADD POINTS

Age 75 or older: 2. Female: 1. Hypertension: 1. Diabetes: 1.

STEP 2 · TOTAL

2 + 1 + 1 + 1 = **5**.

STEP 3 · DECIDE

5 is well above the 3 point line for women: long-term oral anticoagulation. Aspirin alone is not adequate.

STEP 4 · RATE DRUG

If diltiazem 0.25 mg/kg is ordered and she weighs 80 kg: 0.25 x 80 = **20 mg** over two minutes, with pulse and BP before and after.

SAFETY

Onset time unknown: no cardioversion until three weeks of anticoagulation or a clot-free TEE.

WORKED CASE 3 · A DISSECTION CALL

Mr. Prentiss has sudden tearing pain to his back. BP 214/118 right arm, 178/96 left. HR 112.

STEP 1 · COMPARE ARMS

214 minus 178 = **36 mm Hg**, more than 20: suspicious for dissection.

STEP 2 · DRUG ORDER

IV beta blocker first (esmolol or labetalol) to bring HR under 60, then a vasodilator if needed. A vasodilator alone causes reflex tachycardia.

STEP 3 · TARGET

SBP about 100 to 120 within about 20 minutes, with opioid analgesia.

STEP 4 · COMMUNICATE

SBAR naming the concern, requesting CT angiography, type and crossmatch, and IV beta blockade.

WORKED CASE 4 · ARTERIAL OR VENOUS, AND THE ABI

Ms. Wynn has a painful round ulcer on her toe, cool hairless skin and weak pulses. Ankle systolic 72, brachial 144.

STEP 1 · COMPUTE

ABI = 72 ÷ 144 = **0.50**.

STEP 2 · CLASSIFY

0.41 to 0.90 is mild to moderate peripheral arterial disease.

STEP 3 · POSITION

Keep the leg dependent or level, not elevated. No heating pad.

SAFETY

Compression stockings are not applied to a leg with significant arterial disease.

TRAPS PEOPLE FALL INTO

- **Treating the monitor instead of the patient.** Check a pulse and a pressure. Loose leads make scary artifact.
- **Suppressing an escape rhythm.** Remove it and you are left with asystole.
- **Cardioverting AF of unknown duration.** It can fire a clot into the brain.
- **Pushing adenosine slowly.** Its half-life is under 10 seconds; push fast with a flush.
- **Shocking asystole.** Compressions, epinephrine and reversible causes.
- **Giving atropine and waiting in Mobitz II.** Prepare to pace.
- **Elevating an arterial leg or using a heating pad.** Keep it dependent and warm with socks only.
- **Giving a vasodilator alone in dissection.** Reflex tachycardia can extend the tear.

Chapter 9 self-test · ten items

1. A six-second strip shows 7 QRS complexes. What is the rate?

A. 70/min
B. 42/min
C. 7/min
D. 140/min

A. 70/min QRS in six seconds x 10.

2. Which finding makes a tachycardia unstable?

A. A heart rate of 112 per minute
B. New confusion from the rhythm
C. Mild palpitations at rest
D. An irregularly irregular rhythm

B. New confusion from the rhythm Instability means hypotension, altered mentation, shock, ischemic pain or acute HF caused by the rhythm.

3. A patient has AF of unknown duration and is stable. Before cardioversion what is required?

A. A normal potassium level only
B. A single dose of heparin
C. Nothing; convert the rhythm at once today
D. 3 weeks anticoagulation or a clean TEE

D. 3 weeks anticoagulation or a clean TEE An unknown duration is treated as over 48 hours.

4. A 70-year-old man has AF and hypertension only. What is his CHA2DS2-VASc score?

A. 1
B. 3
C. 2
D. 4

C. 2 Age 65 to 74 is 1 and hypertension is 1.

5. How is adenosine given?

A. Rapid push and 20 mL flush
B. Slow push over 5 minutes
C. IV infusion over 1 hour
D. Intramuscular injection

A. Rapid push and 20 mL flush It works for seconds only, so it must reach the heart fast.

6. A patient in VT has no pulse. What is the treatment?

A. Synchronized cardioversion
B. IV adenosine 6 mg push
C. Atropine 1 mg IV push
D. Unsynchronized defibrillation

D. Unsynchronized defibrillation Pulseless VT is treated like VF.

7. The PR interval lengthens until a QRS drops, then repeats. What is this?

A. Mobitz II
B. Third degree
C. Mobitz I
D. First degree

C. Mobitz I Progressive lengthening before a dropped beat is Wenckebach.

8. A pacemaker spike appears with no QRS after it. What is this?

A. Failure to sense
B. Failure to capture
C. Failure to pace
D. Normal pacing

B. Failure to capture The pacer fired but the myocardium did not respond.

9. Which drug should be used with caution in severe aortic stenosis?

A. Nitroglycerin
B. Acetaminophen
C. Amoxicillin
D. Pantoprazole

A. Nitroglycerin The stiff ventricle depends on preload, which nitrates remove.

10. A venous ulcer is being treated. Before compression, what must be checked?

A. Serum albumin
B. Ankle-brachial index
C. Calf circumference
D. Pedal edema grade

B. Ankle-brachial index Compression on an arterial leg causes necrosis.

CHAPTER 10

Hematologic and Oncologic Disorders

Read it in full: **Chapter 10 in the textbook**. Practice it in the lab: **The Anemia Workup: Name the Bucket, Not Just the Number** and **Stop the Line: A Transfusion Reaction Simulator**.

What to know

Anemia is a finding, not a diagnosis. Hgb is about 14 to 18 g/dL in men and 12 to 16 in women. Every anemia fits one bucket: **loss**, **destruction** or **failed production**. Symptoms track speed as well as depth: a fast bleed at Hgb 9 can cause shock, while a slow bleed at 6 may cause only fatigue. MCV (80 to 100 fL) sorts size: microcytic points to iron, macrocytic to B12 or folate. Reticulocytes (0.5 to 2%) show whether the marrow is trying. Ferritin under 30 ng/mL is diagnostic of iron deficiency, but inflammation can hide it.

Ferrous sulfate 325 mg gives about 65 mg of elemental iron; give it on an empty stomach with vitamin C, two hours from antacids, calcium, dairy, tea, coffee and levothyroxine. Dark green or black stools are expected; tarry, sticky, foul stools are melena. B12 deficiency causes neurologic signs (fall precautions, lifelong IM B12); never treat macrocytosis with folate alone. Every new iron deficiency over age 50 needs a GI workup.

In **sickle cell crisis**, give scheduled or PCA opioids, hydration and warmth (never cold), and oxygen only if below baseline; avoid meperidine. Acute chest syndrome is the leading cause of

death. Baseline Hgb is often 6 to 9; do not transfuse toward normal. Transfuse most adults below 7 g/dL, below 8 with heart disease or orthopedic surgery, and any symptomatic patient.

Platelet problems bleed into skin and mucosa (petechiae, gums, nose); factor problems bleed into joints and muscle. Platelets 150,000 to 400,000: precautions from about 50,000, strict below 20,000, intracranial risk below 10,000. PT/INR tracks warfarin and the liver; aPTT tracks heparin and hemophilia. **HIT** drops platelets over 50% at 5 to 10 days and causes clotting: stop all heparin, use argatroban or similar, no platelets, no warfarin until recovery. TTP needs plasma exchange (no platelets). DIC prolongs PT and aPTT, lowers fibrinogen and raises D-dimer.

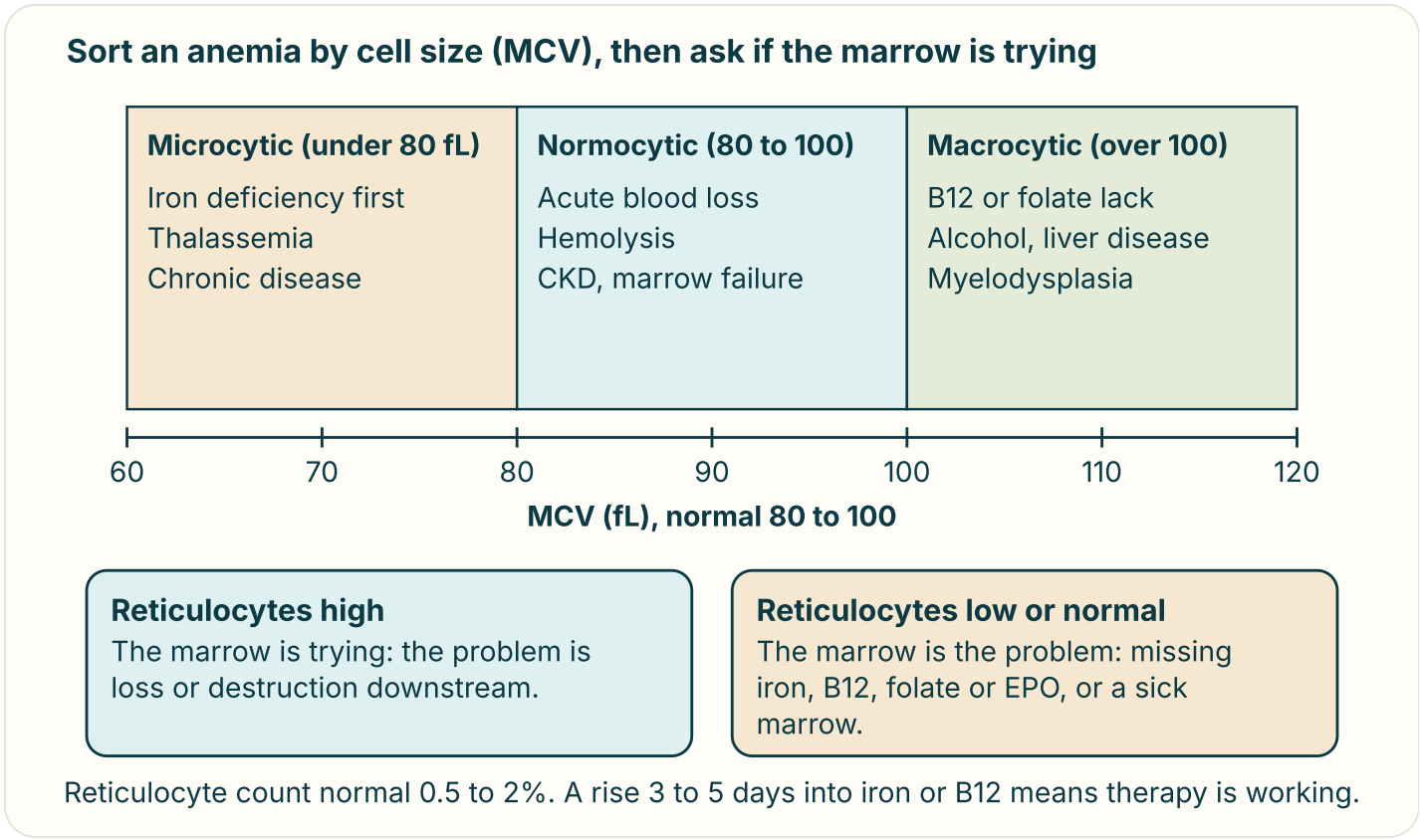
Heparin: aPTT about 1.5 to 2.5 x control; antidote protamine. Enoxaparin: abdomen two inches from the navel, keep the air bubble, do not rub. Warfarin: INR 2 to 3 (2.5 to 3.5 mechanical mitral); antidote vitamin K; keep vitamin K intake consistent. DOACs: four-factor PCC for Xa inhibitor bleeding (andexanet was withdrawn in December 2025), idarucizumab for dabigatran. Sudden headache or weakness on an anticoagulant is an intracranial bleed until proven otherwise.

One unit of red cells raises Hgb about 1 g/dL. **Transfusion**: consent, type and crossmatch, an 18 or 20 gauge IV, baseline vitals with temperature, **0.9% saline only**, two licensed people verify at the bedside, start within 30 minutes of release, run about 2 mL/min and **stay for the first 15 minutes**, finish within 4 hours. Only the RN initiates and evaluates. For any reaction: stop, keep the line open with saline through new tubing, notify, send the bag. TACO has high BP and full neck veins and responds to diuretics; TRALI has low BP and flat neck veins and does not.

Leukemia crowds the marrow: anemia, bleeding and infection at once. The nadir is about 7 to 14 days after chemotherapy. Myeloma is CRAB (calcium, renal, anemia, bone): hydrate at least 3 L a day, handle gently, report new back pain. Denosumab needs no renal dose change but causes low calcium; zoledronic acid needs renal adjustment.

ANC = WBC x (% segs + % bands). Under 500 is severe. Without neutrophils there is no pus or infiltrate; fever may be the only sign. Febrile neutropenia: notify, cultures peripheral and from every lumen, broad antibiotics within 60 minutes, no acetaminophen before cultures. Hand hygiene is the most effective precaution.

Chemotherapy toxicities are predictable: anthracyclines hurt the heart, cisplatin the kidneys and ears, vincristine the nerves (IV only, never intrathecal), cyclophosphamide the bladder (mesna, fluids), bleomycin the lungs. Extravasation: stop, do not flush, aspirate, then cold for anthracyclines and warm for vinca alkaloids. Emergencies: tumor lysis (high K, phosphorus and uric acid, low calcium; fluids, monitor, allopurinol to prevent and rasburicase to treat after checking G6PD), cord compression (back pain first; dexamethasone, MRI), SVC syndrome (head up, no arm IVs or BPs), hypercalcemia (saline first, then calcitonin and a bisphosphonate or denosumab).



Size, then response. MCV names the likely cause; the reticulocyte count says whether the marrow is answering.

LOCK THESE IN

- Buckets: loss, destruction, failed production. MCV under 80 iron; over 100 B12 or folate.
- Reticulocytes high: marrow trying. Low: marrow is the problem.
- Transfuse below 7 g/dL (8 with heart disease). One unit raises Hgb about 1 g/dL.
- Platelets: skin and mucosa. Factors: joints and muscle.
- HIT: platelets fall over 50% at 5 to 10 days; stop all heparin; no platelets.
- Blood: saline only, two-person check, stay 15 min, finish in 4 h.
- Any reaction: stop, saline through new tubing, notify, send the bag.
- Febrile neutropenia: antibiotics within 60 min; no antipyretic before cultures.

Anemias at a glance

Type	Signature labs	Nursing focus
Iron deficiency	MCV under 80, ferritin under 30, TIBC high	Find the bleed; teach oral iron
B12 / pernicious	MCV over 100, B12 under 200	Fall precautions; lifelong IM B12
Folate deficiency	MCV over 100, folate under 3; no neuro signs	Check B12 before treating
CKD	Normocytic, low retics	Iron first; Hgb target 10 to 11
Aplastic	Pancytopenia, low retics	Infection and bleeding precautions
Sickle cell	Hgb 6 to 9, retics, LDH, bilirubin high	Analgesia, fluids, warmth, watch acute chest

Bleeding disorder panel

Test	DIC	ITP	HIT	Hemophilia A
Platelets	Low	Very low	Falls over 50%	Normal
PT/INR	Long	Normal	Normal	Normal
aPTT	Long	Normal	Normal	Long
Fibrinogen	Low	Normal	Normal	Normal
Picture	Bleeds and clots	Skin bleeding	Clots	Joint bleeds

Transfusion reactions

Reaction	Clues	Key action
Acute hemolytic	Minutes in: fever, back pain, hypotension, dark urine	Stop, saline new tubing, notify, send bag and samples
Febrile nonhemolytic	Temp up 1 °C or more, chills; no hypotension	Stop, evaluate, antipyretic
Mild allergic	Hives, itch only	Stop, antihistamine; may resume per policy
Anaphylactic	Wheeze, stridor, hypotension	Stop, airway, epinephrine
TACO	Dyspnea, crackles, high BP, full neck veins	Stop or slow, sit up, oxygen, diuretic
TRALI	Hypoxemia, low BP, flat neck veins	Stop, oxygen, support; no diuretic
Bacterial	High fever, rigors, hypotension	Stop, culture, antibiotics

Worked cases

WORKED CASE 1 · A FEBRILE NEUTROPENIC PATIENT

Ms. Ford is on day 11 after chemotherapy. WBC 1,600 with 25% segs and 5% bands. Temperature 38.4 °C. She feels fine.

STEP 1 · COMPUTE THE ANC

1,600 x (0.25 + 0.05) = 1,600 x 0.30 = **480**.

STEP 2 · CLASSIFY

Under 500 with one temperature of 38.3 or more: febrile neutropenia, an emergency.

STEP 3 · SEQUENCE

Vital signs, notify, cultures peripheral and from every lumen, broad antibiotics within 60 minutes.

SAFETY

No acetaminophen before cultures, no rectal temperature. Her feeling fine is not reassurance; she cannot mount the usual signs.

WORKED CASE 2 · TWO UNITS AND A RECHECK

Mr. Dent has Hgb 6.8 g/dL with dizziness and tachycardia. Two units of red cells are ordered.

STEP 1 · IS IT INDICATED

Below 7 and symptomatic: yes.

STEP 2 · PREDICT THE RESULT

About 1 g/dL per unit: 6.8 + 2 = about **8.8 g/dL**. A much lower result suggests ongoing loss or hemolysis.

STEP 3 · FIRST 15 MINUTES

At about 2 mL/min, the first 15 minutes delivers about **30 mL**; stay at the bedside.

THE RATE

If a 300 mL unit must run over 3 hours: 300 ÷ 3 = **100 mL/hr**, inside the 4 hour limit.

WORKED CASE 3 · TACO OR TRALI

Two hours into a second unit, Mrs. Abbott, 82, is short of breath with crackles. BP 176/94, neck veins full, SpO_2 89%.

STEP 1 · STOP

Stop the transfusion and keep the line open with saline through new tubing.

STEP 2 · DISCRIMINATE

High BP and full neck veins point to TACO, a pressure problem. TRALI would show low BP and flat veins.

STEP 3 · ACT

Sit her up with legs dependent, oxygen, notify, and expect a diuretic.

STEP 4 · PREVENTION

Older adults tolerate volume poorly. Run units slowly, over 3 to 4 hours when possible, and listen to the lungs before, during and after.

WORKED CASE 4 · ORAL IRON TEACHING

Mr. Lyle starts ferrous sulfate 325 mg three times a day.

STEP 1 · ELEMENTAL IRON

65 mg per tablet x 3 = **195 mg** of elemental iron a day.

STEP 2 · TIMING

Empty stomach with orange juice; two hours away from his antacid, calcium, dairy, coffee and levothyroxine.

STEP 3 · EXPECT

Dark green or black stool is expected. Tarry, sticky, foul stool or red blood must be reported.

STEP 4 · COMFORT

Start a stool softener the same day. Retics should rise in 3 to 5 days.

TRAPS PEOPLE FALL INTO

- **Transfusing a sickle cell patient toward a normal Hgb.** Baseline is often 6 to 9.
- **Applying ice to sickle cell pain.** Cold promotes sickling; use warmth.
- **Giving platelets in HIT or TTP.** They fuel clotting.
- **Starting warfarin in acute HIT.** Wait for platelets to recover.
- **Hanging blood with D5W or lactated Ringer's.** Only 0.9% saline.
- **Leaving after starting a unit.** Severe reactions show in the first 15 minutes.
- **Giving a diuretic for TRALI.** It is a leak, not volume; diuresis worsens it.
- **Flushing an extravasation.** Stop, aspirate, then the drug-specific antidote and compress.

Chapter 10 self-test · ten items

1. Which lab pattern fits iron deficiency?

A. MCV 112, B12 150
B. MCV 90, retics 6%
C. MCV 88, ferritin 200
D. MCV 72, ferritin 12

D. MCV 72, ferritin 12 Microcytosis with low ferritin is iron deficiency.

2. A patient with macrocytic anemia reports numb feet and unsteadiness. Which deficiency fits?

A. Folic acid
B. Vitamin B12
C. Ferritin iron
D. Vitamin C

B. Vitamin B12 B12, not folate, causes neurologic signs.

3. Which is correct during sickle cell crisis?

A. Warm packs and fluids
B. Ice to painful joints
C. Meperidine for pain
D. Oxygen for everyone

A. Warm packs and fluids Warmth and hydration reduce sickling; oxygen only if below baseline.

4. Which finding suggests a platelet problem rather than a factor problem?

A. A swollen hot knee
B. A deep thigh hematoma
C. Petechiae and gum bleeding
D. Delayed bleed after surgery

C. Petechiae and gum bleeding Primary hemostasis failure shows in skin and mucosa.

5. Which test monitors unfractionated heparin?

A. INR
B. aPTT
C. Platelets
D. D-dimer

B. aPTT aPTT follows the intrinsic pathway.

6. Which IV fluid is hung with packed red cells?

A. D5W
B. Lactated Ringer’s
C. 0.45% sodium chloride
D. 0.9% sodium chloride

D. 0.9% sodium chloride Dextrose lyses cells; calcium in LR can clot the line.

7. Ten minutes into a unit, a patient reports low back pain and chills. What first?

A. Stop the transfusion
B. Slow the rate by half
C. Give acetaminophen
D. Finish the unit fast

A. Stop the transfusion Possible acute hemolytic reaction: stop, saline through new tubing, notify.

8. WBC 3,000, segs 20%, bands 5%. What is the ANC?

A. 3,000
B. 600
C. 750
D. 75

C. 750 3,000 x 0.25 = 750, moderate neutropenia.

9. A vincristine IV site burns and swells. Which compress is used?

A. Cold compress
B. Warm compress
C. No compress
D. Ice then heat

B. Warm compress Warm for vinca alkaloids; cold for anthracyclines.

10. A myeloma patient reports new back pain and leg weakness. What is suspected?

A. Spinal cord compression
B. Tumor lysis syndrome
C. Simple back muscle strain
D. Hypokalemia

A. Spinal cord compression Back pain comes first; dexamethasone and urgent MRI.

ONE PAGE

Cram sheet

Everything from chapters 9 and 10 in one place. Cover the right column and see if you can rebuild each row.

Numbers to know

Item	Value	Note
Intervals	PR 0.12 to 0.20 s; QRS 0.06 to 0.10 s	QTc over 0.50 s: hold the drug, call
Escape rates	Junctional 40 to 60; ventricular 20 to 40	Never suppress
Atropine	1 mg every 3 to 5 min, max 3 mg	Then pace or infusion
Adenosine	6 mg, then 12 mg rapid push	20 mL flush
Cardioversion energy	AF 120 to 200 J; flutter and SVT 50 to 100 J; VT with pulse 100 J	Synchronized
Arrest drugs	Epinephrine 1 mg every 3 to 5 min; amiodarone 300 then 150 mg	Compressions 100 to 120/min, 2 to 2.4 in
AF rules	Over 48 h: 3 weeks anticoagulation or TEE; 4 weeks after	CHA2DS2-VASc 2 men, 3 women
Warfarin INR	2 to 3; mechanical mitral 2.5 to 3.5	Antidote vitamin K
ABI	Normal 1.00 to 1.40; PAD 0.90 or less; severe 0.40 or less	Over 1.40 unreliable
AAA repair	About 5.5 cm or growth over 0.5 cm in 6 months	Do not palpate deeply
Hypertensive emergency	Over 180/120 with organ damage	Lower MAP about 25% in first hour
Hemoglobin	M 14 to 18; F 12 to 16 g/dL	Transfuse under 7 (8 with heart disease)
MCV / retics	80 to 100 fL / 0.5 to 2%	Ferritin under 30 = iron deficiency
Platelets	150,000 to 400,000	Precautions 50,000; strict 20,000; ICH risk 10,000
PT / INR / aPTT	11 to 12.5 s / 0.8 to 1.1 / 30 to 40 s	Heparin aPTT 1.5 to 2.5 x control
Transfusion	Start within 30 min; 2 mL/min for 15 min; finish within 4 h	One unit raises Hgb about 1 g/dL

Item	Value	Note
ANC	Under 500 severe	Antibiotics within 60 min of fever
Tumor lysis	K over 5.0, Phos over 4.5, uric acid over 7.0, Ca low	12 to 72 h after therapy

Key terms and comparisons

Term	Meaning
Defibrillation vs cardioversion	Unsynchronized for no pulse; synchronized to the R wave for unstable rhythms with a pulse
Mobitz I vs Mobitz II	PR lengthens then drops (atropine works); PR fixed then drops (pace)
Stenosis vs regurgitation	Will not open, pressure load, hypertrophy; will not close, volume load, dilation
Arterial vs venous leg	Cool, pulseless, dependent; warm, edematous, elevated and compressed
Platelet vs factor bleeding	Skin and mucosa; joints and muscle
TACO vs TRALI	High BP, full veins, diuretic helps; low BP, flat veins, no diuretic
Allopurinol vs rasburicase	Prevents new uric acid; breaks down existing uric acid

Rules that are not equations

Topic	The rule
Rhythm emergency	Pulse first, then stability, then the rhythm.
Dissection	Beta blocker before vasodilator; opioids for pain.
Acute limb ischemia	Six P's; keep dependent, no heat or massage, NPO, call.
HIT	Stop all heparin including flushes; non-heparin anticoagulant; no platelets.
Transfusion reaction	Stop, saline through new tubing, notify, send bag and samples.
Extravasation	Stop, do not flush, aspirate; cold for anthracyclines, warm for vinca alkaloids.
Oncology priority	Airway first, then high K from tumor lysis, then neutropenic fever, then cord compression.
Delegation	UAP takes vitals during a stable transfusion and reports changes; RN initiates and evaluates.

Dr. Garg Learning · CC BY-SA 4.0