

# Board Review for Anatomy

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## Key Skeletal landmarks

- Head - mastoid process, angle of mandible, occipital protuberance
- Neck – thyroid cartilage, cricoid cartilage
- Thorax - jugular notch, sternal angle, xiphoid process, coracoid process, costal arch
- Back - vertebra prominence, scapular spine (acromion), iliac crest
- UE – epicondyles, styloid processes, carpal bones.
- Pelvis – ant. sup. iliac spine, pubic tubercle
- LE – head of fibula, malleoli, tarsal bones



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## Key vertebral levels

- C2 - angle of mandible
- C4 - thyroid notch
- C6 - cricoid cartilage - esophagus, trachea begin
- C7 - vertebra prominence
- T2 - jugular notch; scapular spine
- T4/5 - sternal angle - rib 2 articulates, trachea divides
- T9 - xiphisternum
- L1/L2 - pancreas; spinal cord ends.
- L4 - iliac crest; umbilicus; aorta divides
- S1 - sacral promontory



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## Upper limb nerve lesions

Recall that any muscle that crosses a joint, acts on that joint. Also recall that muscles innervated by individual nerves within compartments tend to have similar actions.

- Long thoracic n. - "winged" scapula.
- Upper trunk (C5,C6) - Erb Duchenne - shoulder rotators, musculocutaneous
- Lower trunk (C8, T1) - Klumpke's - ulnar nerve (interossei muscle)
- Radial nerve – (Saturday night palsy) - wrist drop
- Median nerve (recurrent median) – thenar compartment - thumb
- Ulnar nerve - interossei muscles.



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## Lower limb nerve lesions

Review actions of the various compartments.

- Lumbosacral lesions - usually L4-S1 due to disc herniation. Sciatica.
- Femoral nerve (L2-4) - botched cannulation. - Review femoral sheath and relationship of nerve, artery, vein, (canal).
- Peroneal nerve - injured at head of fibula - foot drop



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## Dermatomes – [LUMEN Learn 'Em](#)

- C2 - occiput
- C4/5 - shoulder
- C6 - thumb
- C8 - little finger
- T1 - anterior arm, forearm (angina)
- T4/5 - nipple
- T10 - umbilicus
- L1 – inguinal area
- L4 - anterior knee (saphenous n.)
- S1/2 - back of thigh (sciatica)
- S2,3,4 - pudendal



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## Cranial nerves - [LUMEN](#)

- Special senses - CN I, II, VIII
- Extrinsic eye muscles - CNIII, IV, VI (LR<sub>6</sub>SO<sub>4</sub>). – Netter 115
- Sensory nerve of face - CN V (+ muscles of mastication) – Netter 116
- Muscles of facial expression - CN VII – Netter 117
- Pharynx - CN IX (+ post. 1/3 of tongue) – Netter 119
- Larynx - CN X – Netter 120
- Tongue - CN XII – Netter 120
- Trapezius and sternomastoid - CN XI
- Parasympathetics - CN III, VII, IX - review ganglia – Netter 125



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## Arteries and anastomoses

- Branches off arch of aorta
- Neck - SALFORMS, Thyrocervical trunk – Netter 28, 29
- Upper limb - Axillary (3 parts, 3 branches), Brachial and profunda brachii, radial, ulnar.
  - Shoulder - subscapular, suprascapular, transverse cervical – Netter 398
  - Elbow - anastomoses from all branches – Netter 405
  - Hand - superficial arch from ulnar, deep arch from radial
- Abdominal aorta - abundant anastomoses
  - 3 unpaired branches (celiac, superior and inferior mesenterics)
  - Paired branches - renals, gonads, suprarenals, phrenics
- Pelvis - external, internal iliacs
- Lower limb - femoral and profunda, popliteal, post. tibial (peroneal), ant. Tibial – Netter 477
  - Hip (cruciate)- inf. Gluteal, lateral and medial femoral circumflex, first perforating.



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## Veins and anastomoses

- Named vein for each artery (except major veins/artries)
- In contrast to arteries, there is a superficial system (e.g., median cubital vein).
- Recall portal vs. caval drainage – Netter 293
  - Superior - inferior rectals
  - Esophageals
- Asymmetry of veins in abdomen (gonadals, suprarenals)



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## Autonomics – Netter 153

- Parasympathetics (cranial-sacral)
  - CN III – ciliary ganglion
  - CN VII – submandibular and pterygopalatine ganglia
  - CN IX – otic ganglion
  - CN X – multiple ganglia embedded in target organs above the umbilicus
  - Pelvic splanchnics (S2,3,4).
- Sympathetics (thoraco-lumbar)
  - Chain (with chain ganglia) ascend superiorly in neck and inferiorly into pelvis.
  - Postganglionics typically reach target by following blood vessels (except deep petrosal)
  - Greater, lesser, least splanchnics (T5-T12) exception to rule of short preganglionics –synapse in prevertebral ganglia.



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## Lymphatics

- Superficial vs. deep nodes – following veins.
- Axillary nodes – CLASP
- Superficial nodes at base of skull
- Inguinal nodes – Recall pectinate line of anus
- Popliteal nodes
- Thoracic duct begins at cisterna chyli – drains everything except right upper limb.



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## Thorax

- Heart anatomy – coronary and cardiac vessels
- Mediastinum divided into superior, anterior, middle, posterior. Review contents
- Pleural cavities – recall surfaces and reflections (ribs 2, 4, 6, 8, 10, 12). Recall the costodiaphragmatic recess. – Netter 184, 185
- Lungs – Left has 3 lobes, right has two. Inferior lobes auscultated posteriorly. Bronchi differ in size, length and verticality. – Netter 190
- Asymmetry in recurrent laryngeal nerves.



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## Abdomen

- Review relationships of organs with respect to quadrants
- Formation of peritoneal cavity, mesenteries, ligaments, greater and lesser omenta. – Netter 329
- Intraperitoneal vs. retroperitoneal.
- Gut is 3 parts (foregut, midgut, hindgut). Sections can be recalled by the three arteries (celiac, SMA, IMA). – Netter 284, 286, 287
- T8, T10, T12 – review the diaphragmatic openings.
- Liver segments, biliary tree. – Netter 272, 276



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## Pelvis and perineum

- Internal and external iliacs (abnormal obturator a.)
- Urinary bladder – relationship of ureter to ductus deferens.
- Prostate and urethra – Netter 338
- Uterus – broad ligament, anteflexed and anteverted, rectouterine pouch. – Netter 337, 339
- Pelvic diaphragm vs. urogenital diaphragm
- Formation of greater and lesser ischiadic foramina
- Anal canal – pectinate line



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## Cross-sectional anatomy

Refer to the [LUMEN Learn 'Em](#)

- Remember that right is on your left (ie., as if you are looking up through the soles of the feet.)
- Review these
  - C6 – neck
  - T3 – through superior mediastinum
  - T6/7 – through the heart
  - T8/9 – to recall that you will see thoracic and abdominal structures
  - T12/L1 – level of pancreas
  - L4 – recall umbilicus, iliac crests
  - Somewhere through the female pelvis to review relationships of uterus.



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## Hernias

- Inguinal
  - Direct – through Hasselbach's triangle
  - Indirect – through inguinal canal – Netter 243
- Femoral – through femoral canal – Netter 244
- Diaphragmatic
- Umbilical



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## Joints

- Supplied by nerves and arteries that cross the joint
- Shoulder - rotator cuff muscles – Netter 398
- Elbow - lateral, medial collaterals, annular ligament.
- Hip - iliofemoral, ischiofemoral, pubofemoral ligaments. Post. dislocation common when flexed. Fractured lig. teres femoris causes necrosis of head; why is it important to know abnormal obturator a. when repairing indirect inguinal ligament?
- Knee - key points - cruciates named by attachments to tibia; medial (tibial) collateral attached to medial meniscus, "unhappy triad" = ant. cruciate, medial collateral lig. and meniscus.



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## Fascia

- Retropharyngeal space – buccopharyngeal and prevertebral fascia
- Camper's and Scarpa's fascia on the ant. abdominal wall
- Transversalis fascia
- Colle's fascia
- Darto's fascia



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## Miscellaneous

- Don't confuse air sinuses with venous sinuses
- Openings of paranasal sinuses – Netter 32
- Recall the layers of the SCALP.
- Recall the salivary glands and ducts
- Fetal circulation – Netter 217



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