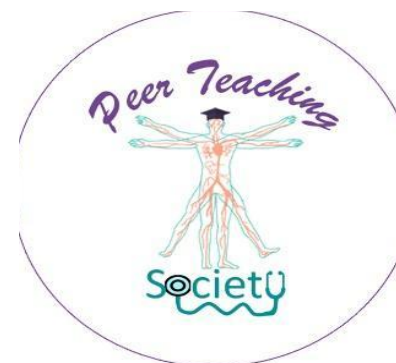


Phase 1 PTS Revision Guide



Dear Phase 1s,

Welcome to Sheffield Med School, Congrats, You Made It!!!

Below is a checklist of the key topics covered in Phase 1.

We have read through the med school's curriculum from the phase 1 handbook and used it to make a list of the concepts you are expected to know for your exams. Although this list will not encompass every topic that could come up in your exams, it is hopefully a useful resource for helping you with revision and note taking.

This is definitely not everything that could be on your exams but it hopefully covers the most important topics. I have also included a guide at the end covering some resources and my methods of studying in phase 1.

Note on colour banding

There is a green yellow red colour banding done in this list. First of all you should know every topic listed in this as any of them could come up and they are all important. if you have run out of time when taking notes/ revising that is when the banding is useful. We have banded the most important/ highest yield concepts in green and the more niche concepts in red. So if you have run out of time when revising, this banding system is the last line of defence. You should not start off using the banding system if you have time on your side or are aiming for the highest grades. It is only there for those that have ran out of time and are struggling to strategize their learning time close to the exam. Second of all some topics not on this list may come up but we have tried our best to include all topics taught in phase 1 and in the handbook.

We wish you the best of luck and hope you enjoy your time here.

1st authors Raneem Alhalabi (phase 1 rep), and Paige Wilson (Vice-President)

2nd authors Tom Grayson (President)

On behalf of Sheffield Peer Teaching Society 2022/2023

IMMS:

Cells:

- o Organelles
- o Cell membrane
- o Membrane and protein types
- o Movement across membranes

Homeostasis:

- o Autocrine, paracrine, and endocrine signalling
- o Simple feedback loop
- o Different hormone types (steroid and peptide)
- o Water, sodium, potassium, and calcium homeostasis
- o Water distribution
- o Water excess and dehydration consequences (oedema and serous effusion)

Molecular building blocks:

- o Bonds
- o Amino acids
- o Protein structure (primary, secondary ...)
- o Enzymes and their function

Energy:

- o Energy sources in diet
- o BMR calculation
- o Definition of metabolism
- o Aerobic and anaerobic glycolysis
- o Why acidosis inhibits glycolysis
- o Krebs' cycle and its regulations
- o Fatty acid oxidation
- o Ketones and their synthesis in the liver
- o How excess ketones can lead to disease in diabetes
- o ATP – ADP cycle

Genetics:

- o Structure and components of DNA
- o DNA mutations
- o DNA vs RNA
- o DNA transcription
- o Mitosis and meiosis
- o Mitosis under light microscopy
- o Egg production and sperm production
- o Downs Syndrome mutation
- o Chromosomal abnormalities (numerical and structural)

- Lab techniques in identification of chromosomal abnormalities
- Types of inheritance (autosomal, x-linked, dominant, recessive) with examples for each and chances of being a carrier or affected
 - How these look on an inheritance chart
- Multifactorial inheritance (environmental factors and characteristics)
- Mis-sense mutation vs benign polymorphism
- Genetic testing technologies
- Define:
 - Phenotype
 - Genotype
 - Gonadal mosaicism
 - Lyonization
 - Autosomes
 - Vertical transmission
 - Recurrence risk
 - Variable expression
 - Reduced penetrance
 - Anticipation
 - Sex limitation
 - Assortative mating
 - Allelic and locus heterogeneity
- Fluorescence and array technology

Cardiovascular:

Anatomy:

- Thoracic cage: ribs, vertebrae, sternum and clavicles
- Pectoral muscles and serratus anterior
- Surface landmarks on the chest
- Dermatomes of the chest and innervation of the skin
- Anatomy and neurovascular supply of the breast
- Anatomy of the heart (chambers and vessels)
- Heart valves, papillary muscles, chordae tendinae
- Heart surfaces and borders
- Location of valve auscultations
- Fossa ovale and ligamentum arteriosum
- Coronary arteries and their supply territories
- Referred heart pain
- Location of conduction system (SAN, AVN ..)
- Pericardium
- Vagus and phrenic nerves and their pathways through the thorax and their diaphragm piercings
- Aortic branches
- SVC (location and borders)
- Position of structures relative to the heart
- Aortic arches
- Venous drainage

Blood:

- Platelet biochemistry
- Clotting cascade
- Structures and functions of RBC, WBC and platelets
- Constituents of plasma proteins
- Blood groups and the Rhesus system
- Methods and alternatives to blood transfusions

Cardiac Cycle:

- Systole and diastole (what happens and duration)
- Starling's Law
- Pressure changes and valves opening and closing (important)
- Sympathetic and parasympathetic effects

Circulation:

- Pulmonary vs systemic circulation
- Local, neural and hormonal vasodilators and vasoconstrictors

- Baroreceptors and chemoreceptors (location and function)
- Circulation control and feedback loop
- Cushing's phenomenon
- Intrinsic vs extrinsic mechanism in cardiac output regulation

Electrical Conduction:

- Basics of ECG
- Conduction pathway
- Action potential stages
- Ionic changes of the pacemaker

Equations:

- Stroke volume
- Ohm's Law
- Pulse pressure
- TPR
- MAP
- Poiseuille's and blood flow

Embryology:

- Stages of heart formation
- Foetal circulation
 - Ligamentum arteriosum and ductus arteriosus and what they become
- Aortic arches
- Heart Fields
- Vasculogenesis

Histology:

- Muscle types
- Intercalated cells
- Structures of arteries, veins and capillaries and their function

Respiratory:

Anatomy:

- Muscles of the anterior chest
- Sternum and the different division and parts
- Intercostal muscles and their function
- Lung lobes and fissures
- Lung surfaces and borders
- Differences between the left and right lungs
- Bronchial tree
- Hilum of the lung
- Blood supply to the lung: descending aorta, azygous and hemiazygous veins
- Larynx and cartilages
- Pharynx and pharyngeal constrictors
- Thyroid (structure, innervation and blood supply)
- Diaphragm attachment and function
- Diaphragm innervation
- Diaphragm openings
- Anterior triangle of the neck (borders and contents)
- Neck cartilages and bones
- Carotid bodies
- Nerves of the neck/in the neck
- Structures of the vocal cords
- Tonsils
- Posterior triangle of the neck
- Laryngeal muscles
- Salivary glands

Respiratory pump:

- Muscles involved in inspiration and expiration
- Accessory muscles in active breathing

Control of Respiration:

- Pontine and medullary respiratory sensory
- Voluntary and involuntary control
- Mechanical and chemical receptors
- Central vs peripheral chemoreceptors
- Respiratory drive
- Alveolar recruitment

Gas exchange:

- Layers of gas exchange
- V/Q mismatch
- Oxygen dissociation curve and factors moving it left and right
- Pulmonary vascular resistance

Equations:

- o Dalton's Law
- o Boyle's Law
- o Henry's Law
- o Alveolar gas equation
- o Laplace's Law

Hypoxia and Hypercapnia:

- o Causes of hypoxia
- o Causes of hypercapnia
- o T1 vs T2 respiratory failures

Spirometry:

- o Measurements used in lung function
- o Flow/volume curve
- o Volume/time curve
- o Airway obstruction vs restrictions

Hypersensitivity:

- o Types and characteristics
- o Cells involved and their roles
- o Effect of histamine
- o Anaphylaxis

Airway tone:

- o Bronchoconstriction vs dilation
- o Nicotinic and muscarinic receptors
- o Sympathetic and parasympathetic stimulation (how it's different from cardio)

Extreme Conditions:

- o Effects of diving and altitude

Histology:

- o Respiratory epithelium
- o Nose and olfactory epithelium
- o Type 2 pneumocyte

Embryology:

- o Respiratory diverticulum and lung buds
- o Foetal circulation and first breath
- o Type 2 pneumocytes and premature babies

Gastrointestinal:

Anatomy:

- Surface markings and 9 regions of the abdomen
- Transpyloric plane
- McBurney's point
- Anterior abdominal wall muscles
- Rectus sheath
- Bowel nerve supply and their roots
- Stomach
 - Blood supply
 - Innervation
- Small intestine (duodenum, jejunum, ileum)
 - Blood supply
 - Innervation
- Large intestine
 - Blood supply
 - Embryonic rotation
 - Innervation
- Coeliac trunk and branches
- Pancreas
 - Blood supply
 - Innervation
 - Function
- Peritoneum
- Retroperitoneal organs (SAD PUCKER)
- Greater and Lesser omentum
- Greater and lesser sacs, and epiploic foramen
- Spleen
- Appendix
- Bones of the nasal cavity
- Paranasal sinuses
- Blood supply to nasal cavity
- Auditory tube (Eustachian tube)
- Oral cavity
 - Boundaries and anatomical features
 - Hard and soft palette
 - Tonsils
 - Teeth
- Intrinsic and extrinsic muscles of the tongue
 - Sensory and motor innervation

Diet and Fuels:

- BMR and factors that affects it
- Vitamins

- o Malnutrition

Swallowing and defecation:

- o Stages of swallowing
- o Muscles involved in swallowing
- o Stages of defaecation
- o Gag reflex

Saliva:

- o Salivary glands
- o Acinar and duct cells
- o Function of saliva

Stomach Physiology:

- o Cell types and where to find them
- o Gastric acid secretion and regulations
- o Gastric motility, peristalsis and emptying
- o Regulation of gastric emptying
- o Defence against acid secretion
- o Production of protease
- o Activation of proteases
- o Role of pepsin

Intestinal Physiology:

- o Water distribution in the body
- o Ion transport
- o Location of vitamin absorption
- o Bile absorption

Digestion and absorption:

- o Carbohydrate and starch digestion
- o Proteins – digestion and absorption
- o Lipids – cholesterol and bile salts

Embryology:

- o Oesophageal development
- o Division of foregut/midgut/hindgut and their innervation and blood supply
- o Innervation of the stomach
- o Midgut development stages: elongation, herniation, rotation and retraction

Histology:

- o Epithelia of the GI tract
- o Taste buds and their distribution
- o Types of salivary glands
- o Stomach-specific cells (parietal and chief cells)
- o Differences between parts of the small intestine (villi, crypts ...)

Liver and Friends:

Anatomy:

- o Liver lobes
- o Ligaments and embryological remnants
- o Impression of the liver
- o Calot's triangle
- o Portal system
- o Liver lobules, acini, sinusoids
- o Gallbladder + biliary tree

Liver Storage:

- o Fat soluble vitamins
- o Iron storage

Liver detoxification:

- o Xenobiotics
- o Phase 1 and phase 2 reactions
- o Oxidation, reduction, hydrolysis
- o Cytochrome P450 function

Protein production:

- o Albumin – function, production and deficit
- o Clotting factors
- o Complement factors

Fat Metabolism:

- o Energy reserves
- o White vs brown fat
- o Enzymes
- o Beta oxidation

Nitrogen balance:

- o Urea cycle
- o Glucose/alanine cycle

Gallbladder and Pancreas:

- o Production and contraction of bile
- o Bilirubin and secretion of bile salts
- o Phases of pancreatic secretion
- o Secretion of bicarbonate

Embryology:

- o Formation of liver buds, liver, gallbladder and pancreas

Histology:

- o Sinusoids and sinusoidal macrophages
- o Portal triad
- o Exocrine vs endocrine pancreas
- o Pancreatic ducts

Neuroanatomy:

Brain Anatomy:

- Planes and directions
- Lobes and their function
 - Insula and opercula
- Gyri and sulci
 - Major gyri function, direction e.g. sensory and motor homonculi
- Location of (motor cortex, visual cortex, Broca's area, Wernicke's area and somatosensory cortex)
- Corpus callosum
- Forebrain, midbrain and hindbrain
 - Diencephalon, telencephalon
- Basal ganglia
- Limbic system
- Thalamus
- Hypothalamus
- Pituitary gland
- Meninges
- Blood brain barrier
- Ventricles and CSF production and outflow
- Cerebellum structure and function
- Circle of Willis
 - Anterior and posterior circulation
- Venous drainage and sinuses
- Blood supply to the lobes
 - Know what would be affected if a certain artery is cut off
- Cavernous sinus and structures passing through it
- Berry aneurysm and stroke
- Bones of the skull
- Cranial foramen and structures passing through it (nerves, arteries and veins)
- Cranial nerves
 - Function
 - Origin
 - Motor/sensory
 - Pathway nuclei
 - Exit from the brain
 - Exit from the skull (foramen it leaves)
- Visual pathways/fields
- Ocular muscles (innervation and action)
- Anatomy of the eye
- Basal ganglia

Spine Anatomy:

- Cervical, thoracic and lumbar vertebrae
- Intervertebral disc structures

- Cross-sections of the spinal cord structure
 - Tectum
 - Tegmentum/Cerebral peduncle
 - Nuclei
- Ascending and descending tracts
- Muscles of the spine
- Spina equina

Axons and transmission:

- Axons sheath differences in CNS and PNS
- Synapses and their different types
- Axonal and synaptic impulse
- Stages of axonal transmission
- Action potential (ionic changes in depolarization and repolarization)

Pain:

- Types of pain
- C and A delta nerve fibres
- Descending pain pathway
- Action of opioids

Nitrogen balance:

- Urea cycle
- Glucose/alanine cycle

Neuromuscular junction:

- Motor unit
- Tendon Golgi apparatus
- Muscle spindle
- Stretch, withdrawal, clasp knife reflexes
- UMN vs LMN weakness symptoms

Vision and Auditory system:

- Visual fields
- Layers of the retinal
- Auditory conduction
- Vestibulocochlear system and its function
- Auditory pathway (I'M AUDITORY)

Basal ganglia:

- Function
- Limbic system
- Papez circuit
- Striatum and substantia nigra (Parkinson's)

Embryology:

- Neurulation
- Prosencephalon, mesencephalon, rhombencephalon
- Formation of the ventricles

SUGER:

Anatomy:

- Inguinal canal
- Ovaries, fallopian tubes
- Uterus
 - Ligaments
 - Blood supply
 - Innervation
- Cervix (including histological transformation zone)
- Vagina (anterior and posterior fornix)
- External reproductive organs: clitoris, urethra, labia minora, labia majora, perineum, anus
- Reproductive glands:
 - Bartholin's glands, skene's glands, prostate gland, Cowper's glands
- Testicles
 - Ligaments, sperm pathway, testicular descent
- Penis
 - Foreskin, Bulbospongiosus, ischiocavernosus, urethra
- Urethra: differences between sex
- Pelvic floor muscles
- Kidneys, ureters
 - Blood supply (Difference between left and right)
- Bladder
 - Innervation
 - Blood supply
- Adrenal glands
- Ureteric narrowing sites (important)
- Urogenital triangle
- Thyroid gland (innervation and blood supply)
- Parathyroid gland

Renal Physiology:

- GFR
- Filtration barrier
- Afferent vs efferent pressures at the glomerulus
- Osmolality and osmolarity
- Nephron microscopic structure
- Ion and water transport and absorption
- RAAS (angiotensin I, II, ADH, ACEi)
- Metabolic/respiratory acidosis/alkalosis
- Hormone production in the adrenal gland
- Cortisol and adrenaline
- EPO
- Hormone receptor locations

Skin:

- o Layers
- o Brick wall model
- o Junctions and adhesions
- o Effects of increased/decreased adhesion
- o Acne formation

Pituitary gland:

- o Negative and positive feedback loop
- o Anterior vs posterior pituitary glands
- o Oxytocin, ADH, ACTH, TSH, LH, GH, prolactin (axis)

Pancreas:

- o Islet of Langerhans (cell types)
- o Insulin function
- o Body response to high/low glucose
- o Insulin secretion

Thyroid:

- o Production of thyroid hormone
- o T3 vs T4
- o Function of thyroxine
- o Function of parathyroid gland

Reproduction:

- o SRY gene
- o Oogenesis, spermatogenesis, spermiogenesis
- o Hypothalamic pituitary gonadal axis
- o Menopausal changes
- o Puberty changes
- o Blood-testes barrier

Pregnancy and Menstrual cycle:

- o Hormones involved and lining changes during the cycle
- o (Menstrual cycle hormones graph)
- o Fertilization and implantation
- o Follicular development
- o Layer of the uterus
- o Cervical ripening
- o Maternal adaptations during pregnancy

- o Stages of labour
- o Placenta (hormones, function and structure)

Micturition:

- o Control of micturition (innervation to bladder muscles)
- o Mechanisms of voiding and storage

Histology:

- o Kidney
- o Nephron, urethra, prostate
- o Spermatic cord
- o Vaginal epithelia
- o Leydig cells
- o Corpus luteum
- o Ant. And Post. Pituitary glands
- o Pineal gland
- o Pancreatic islet
- o Layer of the skin
- o Breast tissue

Embryology:

- o Genital development
- o Mullerian and Wolffian ducts
- o Development of the kidneys
- o Primordial germ cell migration
- o Development of external male and female genitalia
- o Uterine development
- o Development of bladder and urethra

MSK:

Anatomy:

- o Lower Limb Regions:
 - o Gluteal region
 - o Posterior thigh
 - o Anterior thigh
 - o Medial thigh and pelvis
 - o Femoral triangle
 - o Nerves and branches (sciatic, femoral)
 - o Popliteal fossa
 - o Knee
 - o Anterior leg
 - o Posterior leg

- Lateral leg
- Dorsal foot
- Plantar foot
- Tarsal tunnel
- Upper Limb regions:
 - Back muscles
 - Shoulder
 - Rotator cuff
 - Axilla
 - Brachial plexus
 - Pectoral
 - Anterior arm
 - Posterior arm
 - Cubital fossa
 - Layers of the forearm
 - Dorsal hand
 - Palmar hand
 - Carpal tunnel
- Joints of upper limb
- Pathway of arteries and veins throughout the limbs
- Bones
- Nerve supply and pathway

**For all aspects of MSK you should know: origin, insertion, innervation, blood supply and action/function, and the bones and joints in the area.

Bones:

- Function of bones
- Types of bones
- Intramembranous and Endochondral ossification
- Vit D absorption and production
- Calcium haemostasis
- Stages of healing after fractures
- Purine metabolism
- Types of fractures

Ligaments and tendons:

- Hierarchy of ligament structure
- Ligaments vs tendons
- Types of joints (and how it relates to function)
- Hyaline cartilage composition
- Types of collagen and where they can be found
- Collagen synthesis

Cells:

- Osteoclasts, osteoblasts, osteocytes – function and maturation
- Bone remodelling and mineralisation
- Genes involved in bone development regulation
- Osteoclast-osteoblast communication

Histology:

- Smooth, skeletal and cardiac muscles
- Skeletal muscle terminology
- Fibres in skeletal muscle
- Muscle spindle
- Types of cartilage
- Primary vs secondary bone
- Haversian canals
- Osteoclasts vs osteoblasts
- Zone of hyperplasia
- Membrane bone development

Critical Numbers:

- Odds and probability
- Differences between incidence, prevalence, attack rate and case fatality rate
- Define risk ratio, odds ratio and risk difference
- Difference between absolute and relative risks
- Difference between prevalence and incidence proportions, incidence and hazard rates
- Descriptive vs analytic studies
- Observational vs experimental studies
- Prospective vs retrospective studies
- Strengths and weaknesses of cross-sectional, case-control and cohort studies
- RCT
- Different sampling techniques
- Define standard deviation, sampling variation, sampling distribution and standard error.
- Interpret confidence intervals
- Interpret null hypothesis, p-value and statistical significance
- Apply CASP checklist to research evidence
- Define morbidity, mortality, prevalence and incidence

Advice on how to survive phase 1:

Anatomy:

TeachMeAnatomy - This is the best anatomy resource. it does go into quite excessive detail so you don't need to learn it in this level of depth but you should know a good level of detail all of which is accessible on here !Use this as a free resource!

Cadaveric dissection videos - these are useful for your dissection labs and help visualise the gross anatomy, you will gain the most if you watch these prior to the lab sessions

Grey's anatomy flashcards

PTS and Anatomy Soc sessions - these are delivered by students who have been in your position and sat these exams so can give good advice on what is likely to come up and what level of knowledge you should have

Anatomy is the most important in phase 1 because you will not do it again and you will have to recall most of it in clinical phases

Focus on anatomy and learn it like you're visualising it

- Drawing out anatomy is a great way to visualise it, use things such as: drawing paper with tracing paper for arteries, veins and nerves; face paints; pipe cleaners

Complete anatomy is a great resource to use to visualise structures in a 3d way, rather than starting with the whole body, use your handbook to build up structures using the things that you know/need to know

Physiology:

Vander's Human Physiology Textbook

Phase 1 drive (KP notes - be aware of mistakes)

Crashcourse books - these are available in the online library and give a great overview

Youtube videos e.g. Armando Husundugan

PTS sessions - these are delivered by older years who have been in your position so can deliver sessions giving you an appropriate level of knowledge for upcoming exams

TeachMePhysiology - useful every now and then when something is unclear

Closer to the exams:

Ella Kullman Flashcards - already made and easy to use and can access them on the go

Mock papers - there will be lots closer to your exam from different societies so just keep an eye out. they are written by other students who have been in your position so whilst they may be some mistakes they are a good taste of what the exam might be like

Focused on anatomy (especially for the spotter as this is such a big factor on deciding your overall score; reminder - anatomy won't only come up in the spotter!)
PTS powerpoints and recordings as a quick revision and summary

Raneems top tip - making summary sheets:

At the end of every module, i would go over all the lectures one by one over a weekend and making sure to understand core concepts before making a summary sheet. an example of a cardiology revision summary:

Structure and embryology of circulation:

The arterial system:

- Heart arteries:** increase afferent supply (e.g. heart, brain, skeletal muscle)
- Arterioles:** small arteries, arterial blood
- Arteries:** transport oxygenated blood
- Capillaries:**
 - exchange of substances
 - endothelium: single layer of endothelial cells
 - blood flow regulated by precapillary sphincters
- Venous system:**
 - system of veins which carries deoxygenated blood
 - perforating venous system

Embryology of circulation:

- Formation of blood clots - Day 17
- Vasculogenesis - Day 17, 21
- Angiogenesis - Day 18
- Angiogenesis

Anatomy of the heart

Chambers, valves and great vessels:

Right atrium:

- receives blood from the superior and inferior vena cava
- contains the sinoatrial node
- valves: tricuspid valve

Left atrium:

- receives blood from the pulmonary veins
- valves: mitral valve

Chambers:

- Right ventricle:** pumps blood to the lungs
- Left ventricle:** pumps blood to the rest of the body

Valves:

- Tricuspid valve:** between RA and RV
- Mitral valve:** between LA and LV
- Aortic valve:** between LV and aorta
- Pulmonary valve:** between RV and pulmonary artery

Great vessels:

- Superior vena cava:** carries blood from the upper body to the RA
- Inferior vena cava:** carries blood from the lower body to the RA
- Pulmonary artery:** carries deoxygenated blood from the RV to the lungs
- Pulmonary veins:** carry oxygenated blood from the lungs to the LA
- Aorta:** carries oxygenated blood from the LV to the rest of the body

Embryology of aortic arches:

Left Dorsal Aorta

- Small part of ascending
- artery to thoracic
- artery to thoracic
- artery to thoracic
- artery to thoracic
- artery to thoracic
- artery to thoracic
- artery to thoracic

Arterio-venous shunt:

- allows blood to bypass the lungs
- found in the fetal heart
- allows oxygenated blood to bypass the lungs and go directly to the rest of the body

Control of Circulation:

③ Laws:

- Flow is directly proportional to pressure difference and inversely proportional to resistance
- Resistance is directly proportional to length and inversely proportional to the fourth power of radius
- Flow is directly proportional to the fourth power of radius

⑧ Circulating hormonal factors:

- Angiotensin II
- Epinephrine
- Norepinephrine
- Renin
- ANP
- BNP

Coronary Arteries:

Left CA:

- circumflex artery
- diagonal artery
- septal perforating arteries

Right CA:

- circumflex artery
- diagonal artery
- septal perforating arteries

Coronary venous system:

- coronary sinus
- great cardiac vein
- middle cardiac vein
- small cardiac vein

Control of Circulation:

③ Laws:

- Flow is directly proportional to pressure difference and inversely proportional to resistance
- Resistance is directly proportional to length and inversely proportional to the fourth power of radius
- Flow is directly proportional to the fourth power of radius

⑧ Circulating hormonal factors:

- Angiotensin II
- Epinephrine
- Norepinephrine
- Renin
- ANP
- BNP

Cardiac Looping

- The **left ventricle** pumps oxygenated blood to the **entire body**
- The **right ventricle** pumps deoxygenated blood to the **lungs**
- The **pulmonary circuit** and **systemic circuit** are **series** of blood flow.
- There is no mixing of oxygenated and deoxygenated blood.**

How does the output flow check itself?

- The **right ventricle** pumps deoxygenated blood to the **lungs**
- The **left ventricle** pumps oxygenated blood to the **entire body**
- The **pulmonary circuit** and **systemic circuit** are **series** of blood flow.
- There is no mixing of oxygenated and deoxygenated blood.**

Cardiac Septation: [Box]

- At this stage there is an **atrium** and one **ventricle**
- The **atrium** and **ventricle** are separated by the **atrioventricular septum**
- The **atrioventricular septum** is a **flap** part of the **heart**
- Both atria** allow gas to **enter** through the **atrioventricular septum**
- Heart valves**

Cardiac Septation - endocardial cushion formation:

- Many **genes** called the **endocardial cushions** grow from the **base** of the **AV canal**
- Endocardial cushions** are **protrusions** that **grow**
- As the **cushions** grow, the **AV canal** is **narrowed** to **two**
- The **cushions** form **flaps** that **prevent** **backflow** of **blood** from the **right** and **left** **ventricles**
- They will **form** the **right** and **left** **AV valves** of the **heart**

Control of Circulation: [Box]

CO - Heart rate in stroke volume

Stroke Volume = SV = EDV - EDV

EDV = Preload + Contractility

Preload = End Diastolic Volume

Contractility = Inotropic

Inotropic: [Box]

- 1. **Inotropic** - **Contractility**
- 2. **Preload** - **End Diastolic Volume**
- 3. **Afterload** - **Resistance**
- 4. **Heart rate** - **Chronotropic**

Importance: [Box]

- 1. **Contractility** - **Heart rate**
- 2. **Preload** - **End Diastolic Volume**
- 3. **Afterload** - **Resistance**
- 4. **Heart rate** - **Chronotropic**

Components: [Box]

- 1. **Contractility** - **Heart rate**
- 2. **Preload** - **End Diastolic Volume**
- 3. **Afterload** - **Resistance**
- 4. **Heart rate** - **Chronotropic**

Regulating hormonal factors: [Box]

- 1. **Epinephrine** - **Adrenaline**
- 2. **Norepinephrine** - **Adrenaline**
- 3. **Angiotensin II** - **Angiotensin**
- 4. **ANP** - **Angiotensin**

Baroreceptors: [Box]

- 1. **Baroreceptors** - **Pressure**
- 2. **Baroreceptors** - **Pressure**
- 3. **Baroreceptors** - **Pressure**
- 4. **Baroreceptors** - **Pressure**

Myogenic Autoregulation: [Box]

- 1. **Myogenic Autoregulation** - **Pressure**
- 2. **Myogenic Autoregulation** - **Pressure**
- 3. **Myogenic Autoregulation** - **Pressure**
- 4. **Myogenic Autoregulation** - **Pressure**

Control renal control loop: [Box]

- 1. **Control renal control loop** - **Pressure**
- 2. **Control renal control loop** - **Pressure**
- 3. **Control renal control loop** - **Pressure**
- 4. **Control renal control loop** - **Pressure**

The Cardiac Cycle: [Box]

Heart Sound: [Box]

Main three events: [Box]

- 1. **LV Contraction**
- 2. **LV Relaxation**
- 3. **LV Filling**

LV Contraction: [Box]

- 1. **LV Contraction** - **Pressure**
- 2. **LV Contraction** - **Pressure**
- 3. **LV Contraction** - **Pressure**
- 4. **LV Contraction** - **Pressure**

LV Relaxation: [Box]

- 1. **LV Relaxation** - **Pressure**
- 2. **LV Relaxation** - **Pressure**
- 3. **LV Relaxation** - **Pressure**
- 4. **LV Relaxation** - **Pressure**

LV Filling: [Box]

- 1. **LV Filling** - **Pressure**
- 2. **LV Filling** - **Pressure**
- 3. **LV Filling** - **Pressure**
- 4. **LV Filling** - **Pressure**

Maximal ejection: [Box]

- 1. **Maximal ejection** - **Pressure**
- 2. **Maximal ejection** - **Pressure**
- 3. **Maximal ejection** - **Pressure**
- 4. **Maximal ejection** - **Pressure**

Contraction: Systole: [Box]

- 1. **Contraction** - **Pressure**
- 2. **Contraction** - **Pressure**
- 3. **Contraction** - **Pressure**
- 4. **Contraction** - **Pressure**

Relaxation: Diastole: [Box]

- 1. **Relaxation** - **Pressure**
- 2. **Relaxation** - **Pressure**
- 3. **Relaxation** - **Pressure**
- 4. **Relaxation** - **Pressure**

Contractility: [Box]

- 1. **Contractility** - **Pressure**
- 2. **Contractility** - **Pressure**
- 3. **Contractility** - **Pressure**
- 4. **Contractility** - **Pressure**

Elasticity: [Box]

- 1. **Elasticity** - **Pressure**
- 2. **Elasticity** - **Pressure**
- 3. **Elasticity** - **Pressure**
- 4. **Elasticity** - **Pressure**

Diagram: [Box]

Diagram: [Box]

Diagram: [Box]

Finally:

Enjoy this year as much as you can :). Remember to take a break and have other interests/hobbies outside of medicine. We wish you the absolute best of luck. And remember if you need anything or have any questions feel free to message us on:

facebook - <https://www.facebook.com/peerteaching/>

email - peerteaching@sheffield.ac.uk