



American Podiatric Medical Licensing Exam Part I Preparatory Guide

Prepared by the
American Podiatric Medical Students' Association
Education Committee
March 2019

Introduction

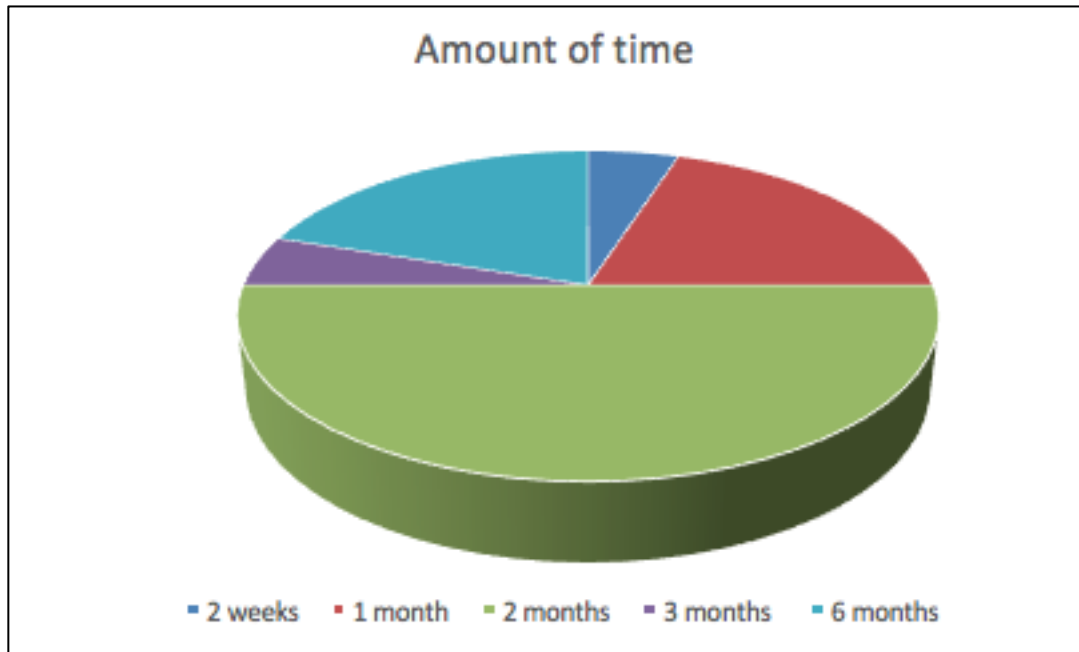
The following document was compiled from a survey administered to the American Podiatric Medical Students' Association's (APMSA) Advisory Council, which is comprised of 3rd and 4th year APMSA Delegates. This survey was designed to collect information from respondents about their preparation for the American Podiatric Medical Licensing Examination (APMLE) Part I. The survey used the National Board of Podiatric Medical Examiners (NBPME) Exam Bulletin as a guide and solicited feedback on each exam section. The information in this document is a compilation of strategies, mnemonics, and recommended study materials that will hopefully assist in your own preparation for this very important exam.

There are many different ways to prepare for the exam. The NBPME publishes an Exam Bulletin every year and it is available on their website (www.NBPME.org). As you select study materials, it is important that each section of this bulletin is covered. Additionally, the American Association of Colleges of Podiatric Medicine (AACPM) provides students with a handbook, entitled "Curricular Guide for Podiatric Medical Education" (available on www.AACPM.org), which describes the curriculum and weighted ranking of learning objectives. Each topic is scored from 0-4, with 4 being most important; these scores may be helpful when deciding what to emphasize in your studying.

Disclaimer: This document is by no means intended to be the only study guide/manual you use in preparation for the exam. This is another resource for students. Additionally, since this information has been gathered from student surveys, APMSA cannot guarantee the academic accuracy of each of the points. Nonetheless, this document has been created as an aid for your APMLE Part I preparation.

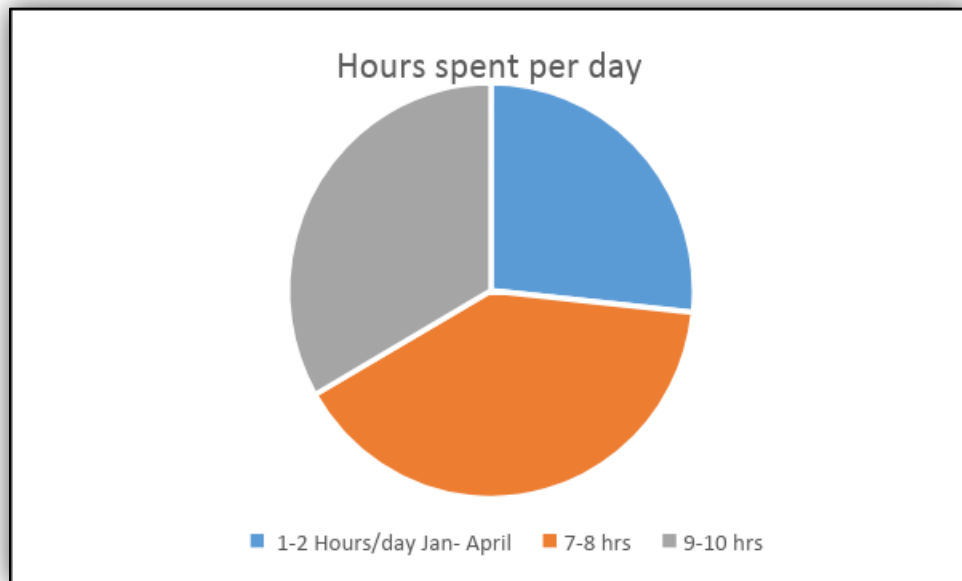
General Preparatory Recommendations

Q: At what point in the year did you begin preparing for the July administration of the examination?



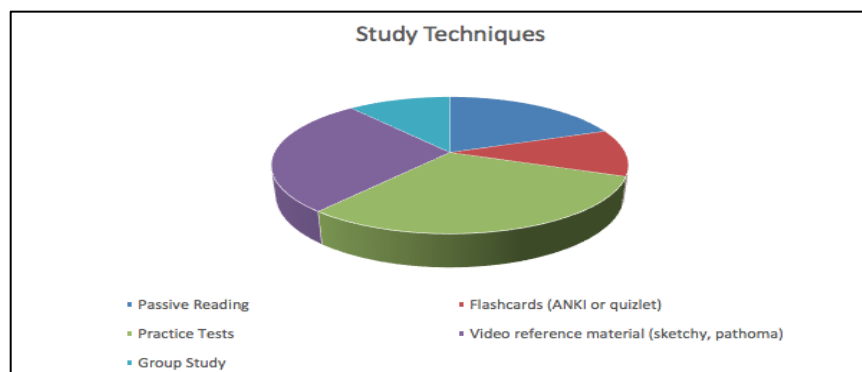
- Although there was significant variability in the responses, it is important to note that designing a detailed study plan is vital so that when your dedicated study time approaches, you are not spending this valuable time figuring out what to study.
 - This plan should be developed in **December** or **January** prior to your exam.
- It is also important to note that your APMLE Part I board preparation begins on your first day of classes.
 - It is far easier to prepare for the exam if you understood the material the first time going through.
 - If there is a concept that is difficult the first go around, **seek guidance**.
- As you'll see on the following page, students spent an average of 6-8 hours a day during the span of months noted in the present question.
 - Many students started doing **some sort** of board prep in January.
- In the following pages, you will see the different forms of preparation utilized, but it is important to note that **sooner is better** for your studying.

Q: What was the progression of hours spent per day leading up to the exam?



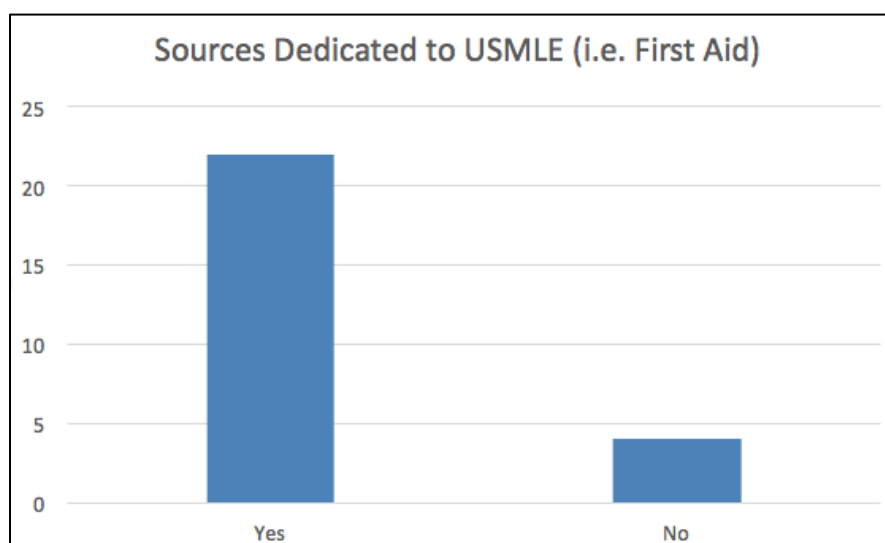
- From this data, we can see that over a quarter of the students started studying 1-2 hours a day in January and held that pace through April.
 - Study time increased to 7-8 hours a day in the last two months leading up to the exam.
- So, a simple way to view it: attempt 1-2 hours a day between January and April, then increase this to **6-8 hours a day** leading up to the exam, if possible.
 - With the busy second year schedule, consider spending Saturday mornings preparing for the exam.
 - January is when you consciously begin to do **something** in preparation for boards.
- When the time for dedicated study comes, it is important to push yourself but not strain yourself.
 - At this point of your education, you know which study methods grant you the most success.
 - **Do not change your studying approach** when it comes time for preparing for boards.
- Many students also noted the importance of dedicated breaks whether that be throughout the weeks or on the weekends
 - It makes study time more productive.

Q: What study techniques did you find most effective?



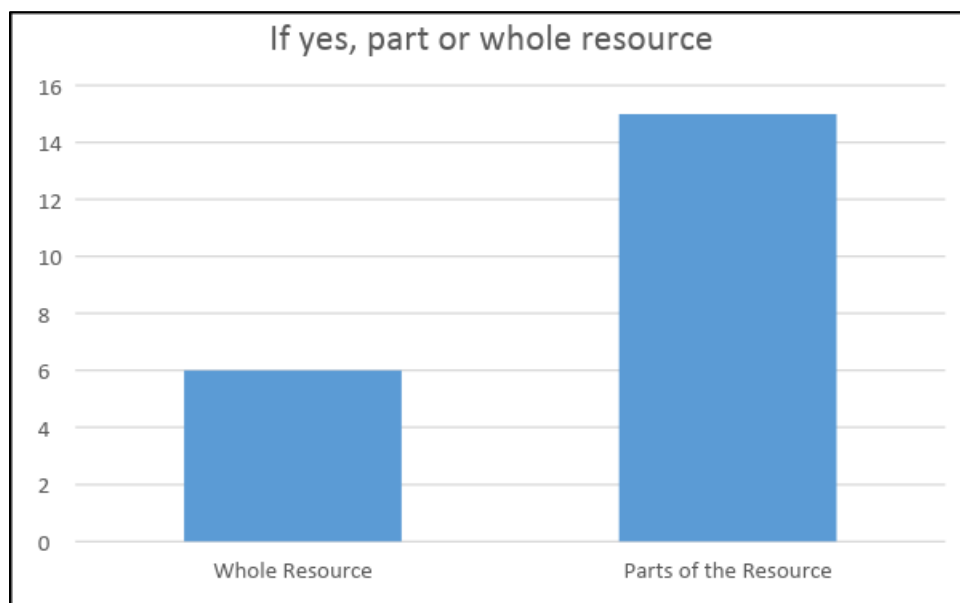
- More than a quarter of students recommended practice tests (USMLE Rx, or Board Vitals).
 - If you add flashcards to this, then close to half of the individuals who took the exam felt **self-assessment was very important in their preparations**.
 - Self-assessment can take the form of flashcards or practice tests (i.e. through question banks like Board Vitals or USMLE Rx).
 - **Note:** although the questions are not exactly what will be seen on the exam, it helps you to know your areas of strength and deficiency.
 - Notecards are also helpful in this way.
- It is also important to revisit your study topics (i.e. if you study a subject in March, make sure you review it again closer to the exam – build this into your schedule).
 - This is a reason why flashcards are helpful.
 - **Helpful tip:** the creation of flashcards can be time-consuming. It may be helpful to divide a given set of material between a group of friends.
 - BRS also has helpful flashcards:
 - BRS Pharmacology Flash Cards by Sandra J. Kim MD, PHD, Todd A. Swanson M.D. PhD
 - BRS Microbiology Flash Cards by Todd Swanson, Sandra Kim
 - BRS Pathology Flash Cards, by Todd Allen Swanson, Sandra I. Kim, Arthur S. Schneider
 - The Lower Extremity Anatomy Flashcards created by Team SamJam (available on Amazon) have also be described as being helpful.
- Focus on a set of resources and do not change them.
 - It is extremely tempting to look at multiple resources and become overwhelmed. Instead, choose your materials in December and stick with them.
- It is worth noting again: do not change your normal study techniques.
 - If you liked group studying, continue group studying.
 - If you learn best by reading, then continue reading.

Q: Did you use any resource dedicated to the USMLE Step 1?



- Here, we can note that a majority of the individuals used resources dedicated to the USMLE. These resources include:
 - Doctors In Training
 - USMLE First Aid
 - BRS Physiology
 - Sketchy Medical
 - Sketchy Microbiology, Sketchy Pathology, Sketchy Pharmacology
 - Pathoma
- Here, it is important to note that all of these resources may or may not work best for you.
 - Some individuals think Sketchy Medical is particularly helpful, others do not.
 - We recommend that you spend some time in December going to a library/bookstore or watching YouTube videos of each of these to determine whether these items work well for you.
- Check the exam bulletin and make sure that each of the subjects are accounted for with the resources you are using.
 - **Choose a set of resources and stick to them!**

Q: If you did use a resource dedicated to USMLE Step I, was it part or whole resource?



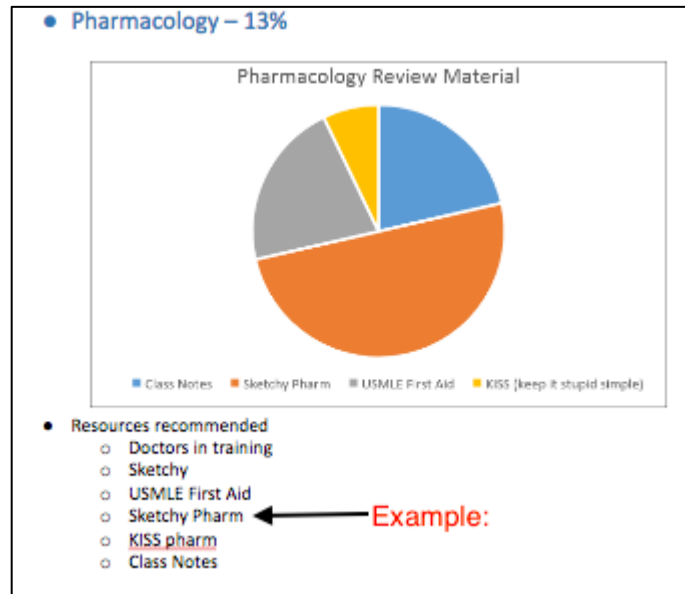
- USMLE First Aid: Part I by Tao Le, Vikas Bhushan, Matthew Sochat and Yash Chavda
 - Sections applicable to our test (use the Exam Bulletin as a guide).
 - Some individuals highly recommend selectively studying certain sections. These include:
 - Pharmacology
 - Immunology
 - Biochemistry
 - Pathology: there is also a rapid review section for pathology that students have found particularly helpful
- Sketchy Microbiology
 - Whole resource
- Pathoma Dr. Hussain A Sattar
 - Sections applicable to our test (use the Exam Bulletin as a guide).
 - Although Dr. Sattar goes into greater detail than may be necessary for our exam, he does an excellent job of explaining concepts.
- Board Review Series
 - BRS Physiology by Linda S. Costanzo Ph. D
 - General anatomy by Kyung Won Chung PhD, Harold M. Chung MD, Nancy L. Halliday PhD
 - Practice questions at the end of the resource are particularly helpful.

General Advice

- You begin learning for the exam the **first day of first-year** classes
 - Learn the material the first time so that board preparation will simply be review.
- Start early, do not take it lightly, give yourself ample time.
 - Cover as much material as time permits and repetition is key for recall.
 - Focus on those subjects that are tested on the most, but make sure each subject is accounted for (do not skip subjects).
 - Focus on the broad subjects before you move on to the narrow subjects.
 - Start with knowing all of your lower extremity anatomy, pharmacology, physiology. Then get into biochemistry and pathology.
- Don't stress, learn what you can and focus on lower extremity.
- Find out what your weaknesses are (topics) and concentrate on those first. They will take you the most time.
 - In the morning, tackle your hardest topic since it's when your mind is the clearest.
 - Use practice tests as much as possible. The hardest part about the test is learning how to take it.
 - They can literally ask you anything, so you just need to practice how to logically reason through the exam.
- Create a study calendar and **stick to it**.
 - Start early, study in small consistent chunks every day.
- If you decide to use BoardVitals, attempt to go through them 2-3 times.
 - Know why you missed certain questions, look at the responses (research those topics you don't completely understand).
 - This may feel like it takes a long time, but it is well worth it.
- Use mnemonics and other memory devices/shortcuts as much as possible.
- Assessment is key to preparation.
 - Make sure your studying is not passive - assess yourself every step of the way.
 - This can come in the form of notecards, practice questions or having study sessions with your friends where they are asking questions.
- If you have test anxiety, it would be best to find someone to talk to them about it.
- Lastly, again: **find a few resources and stick to them**.
 - Do not **get bogged down listening** to the advice of too many others.
 - This document is designed to provide you with information for you to **choose and study from**.

How to Use This Manual

1. Overview the different materials used in each section & identify one resource as your primary guide to master each section.
 - a. For example:



2. Research supports that **repetitive questions help stimulate memory**. Thus identify primary question banks or flashcards to help reinforce study materials. (i.e. Sometimes people use questions as a gauge of where to focus then they read in depth into the primary study source (**Questions→Read**) **OR** you can read and then test yourself afterwards!(**Read→Questions**))

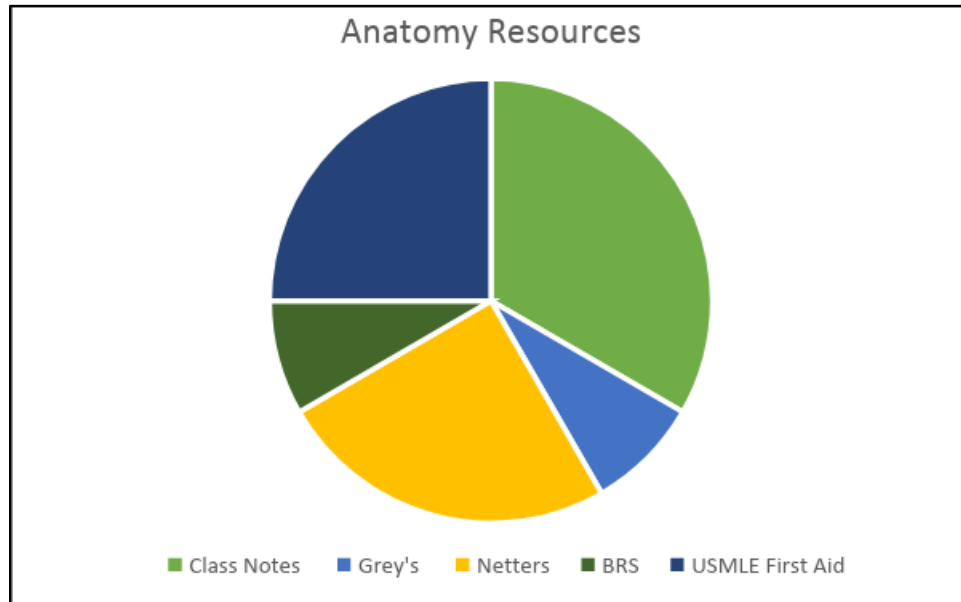
Example question banks/flashcard resources

- a. BoardVitals
 - b. Kaplan Q bank
 - c. Anki deck/quizlet/BRS notecards
3. Then, with the combination of materials and self-assessments, you can create a chart so that everything is clearly organized (p. 10).
 4. Discipline yourself to make sure you are on track.
Use a planner or Google calendars!
Don't forget to eat, sleep, and exercise properly!
i.e. 24 hours - (6-8 hours sleep + 1 hour exercise + 1 hour YOU time)=14 hours

- The following chart is an example of how you can organize your study materials.
 - In this chart, we include the given subject, the primary resource you will use for that subject ,then the way with which you will assess yourself.
 - As you are studying, you can periodically fill in the column of “how well do you know it?” on a scale 1-10.

Subject	Primary Resource	Question bank	1-10 how well do you know it?
<i>example: Pharm</i>	<i>Sketchypharm</i>	<i>Anki deck</i>	<i>2/10</i>

- **Anatomy – 13%**

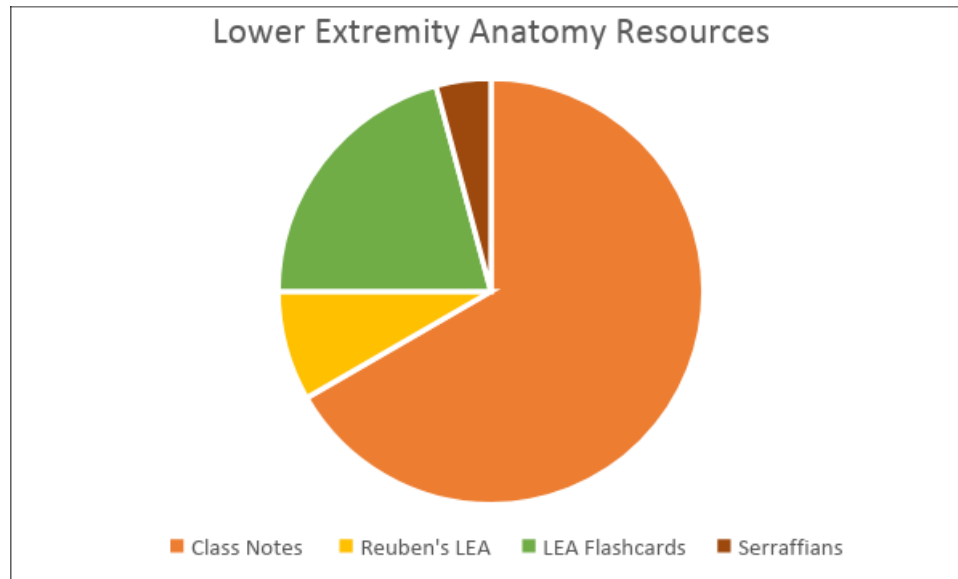


- Each of the following resources in and of themselves are very useful resources. Choose one, or possibly two, of the following, as having too many resources will be overwhelming.
 - Choose the one that fits best with your learning method.
- General possible suggested resources (same as above):
 - School Notes
 - USMLE First Aid (source listed above)
 - 'Grey's Anatomy for Students'
 - 'Atlas of Human Anatomy, Netter Basic Science'
 - BRS Anatomy (source listed above)
- Possible online resources to supplement the above resources:
 - TeachMeAnatomy
 - 100 most important general anatomy concepts
 - By: St Matthew's University
 - YouTube videos
- Below please find each individual section of the exam bulletin (in blue) and find supplemental mnemonics (since the baseline knowledge will come from the above resources)
 - **Head and Neck**
 - Musculoskeletal
 - Angiology
 - Cranial nerves

- Sensory vs motor vs both CNS
 - Some say money matters but my brother says big brains matter most.
 - CN-1 : Sensory
 - CN-2: Sensory
 - CN-3: Motor
 - CN-4: Motor
 - CN-5: Both (sensory and motor)
 - CN-6: Motor
 - CN-7: Both
 - CN-8: Sensory
 - CN-9: both
 - CN-10: both
 - CN-11: Motor
 - CN-12: motor
 - Thorax and Abdomen
 - Musculoskeletal
 - Cardiovascular
 - Pulmonary
 - Abdominal organs
- C3, C4, C5 keep the diaphragm alive (phrenic nerve)
- VAN: the order of vasculature in the intercostal space
 - Vein
 - Artery
 - Nerve
- RALS: pulmonary artery location with respect to pulmonary bronchi in the heart
 - Right – Anterior
 - Left – Superior
- Heart Valves
 - "All Physicians Take Money"
 - Aortic valve
 - Pulmonary valve
 - Tricuspid valve
 - Mitral valve
- Remembering the retroperitoneal structures can be remembered with the mnemonic:
 - SAD PUCKER
 - Suprarenal (adrenal) glands
 - Aorta and IVC
 - Duodenum (2nd through 4th parts)
 - Pancreas (except tail)
 - Ureters
 - Colon (descending and ascending)
 - Kidneys

- Esophagus (thoracic portion)
 - Rectum (partially)
- Portal Triad of liver:
 - BPH
 - Bile duct
 - Portal vein
 - Hepatic artery
- Function of kidneys:
 - A WET BED
 - Acid base balance
 - Water removal
 - Erythropoiesis
 - Toxin removal
 - Blood Pressure Control
 - Electrolyte Balance
 - Vitamin D activation
- How to remember parts of small intestine:
 - I am DJ
 - Illium
 - Duodenum
 - Jejunum
 - Back
 - Musculoskeletal
 - Vertebral column
- Lumbar plexus
 - Ventral rami of L1, 2, 3, and part of L4
 - There is a very helpful video on YouTube that goes into the details of this:
 - Type in “Drawing Lumbar Plexus - Easy, Tanuj1988”
- Regions of vertebral column and number of vertebrae per
 - Breakfast at 7:00 AM (7 cervical)
 - Lunch at 12 (12 thoracic vertebrae)
 - Dinner at 5 (5 lumbar)
 - Upper extremities
 - Musculoskeletal
 - Neurological
 - Vascular
- There are lots of brachial plexus mnemonics available: please find one that works for you.
 - YouTube offers lots of videos for this.

- Histology
 - Cytology and Cell biology
 - Structure of tissues
- Good resources include:
 - Class Review Notes from respective schools
 - USMLE First Aid: Histology Section
 - Neuroanatomy
 - Central and peripheral nervous system structure and organization
 - Somatosensory system
 - Motor system
- BRS physiology (p. 33-60 in 4th edition) has a helpful section that discusses this
- Many available cranial nerve mnemonics
- Lower Extremity Anatomy – 25%



- The importance of your knowledge in lower extremity anatomy cannot be understated
- Suggested resources include:
 - ****Class notes****
 - Serrafian has a great textbook on lower extremity anatomy
 - The Lower Extremity Flashcards available on amazon created by 'Team SamJam' are also a quality resource (if you do not have flashcards all ready)
- What follows for this section are merely recommendations for how to approach the various subjects and some mnemonics

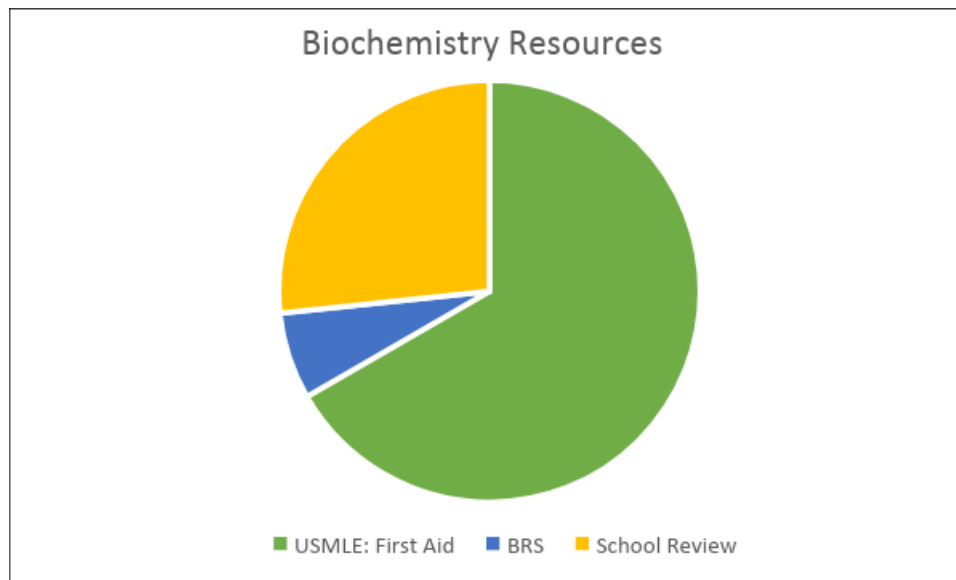
- **Osteology: bony landmarks and associated structures and ossification**
 - **Foot**
 - **Leg**
 - **Thigh**
 - **Pelvis**
- Osseous Structures in order: Tiger Cubs Need MILC (R foot, superior to inferior, medial to lateral)
 - Talus
 - Calcaneus
 - Navicular
 - Medial Cuneiform
 - Intermediate Cuneiform
 - Lateral Cuneiform
 - Cuboid
- Primary Ossification times for Tibia and fibula
 - call 9-1-1-4 me
 - Proximal tibial: 9 months
 - Distal tibia: 1 year
 - Distal fibula: 1 year
 - Proximal fibula: 4 years
- LEO for the shapes of the articulations of the three cuneiforms
 - L (lateral aspect of the medial cuneiform and medial aspect of the intermediate cuneiform)
 - E (lateral aspect of the intermediate cuneiform and medial aspect of the lateral cuneiform)
 - O (lateral aspect of the lateral cuneiform)
 - **Arthrology: joint classification, articulating facets and ligamentous support**
 - **Foot**
 - **Ankle**
 - **Knee**
 - **Hip**
 - **Pelvis**
- For the vascularization, drawing out the blood flow from proximal to distal is helpful.
 - You could also add the various muscles and nerves into one page, so that everything can sit together in a complete picture.
- Femoral artery branches
 - “Put My Leg Down Please”
 - 1. Profunda femoris
 - 2. Medial Circumferential Femoral Artery
 - 3. Lateral Circumferential Femoral artery

- 4. Descending Femoral
 - 5. Perforating artery
- Myology: muscle origins, insertions and actions, fasciae and retinacula
 - Foot
 - Leg
 - Thigh
 - Pelvis
- Foot muscles:
 - 1st layer: 2 abs and 1 flex (abductor digiti minimi, flexor digitorum brevis, and abductor hallucis)
 - 2nd layer: Lumbricals and quadrates plantae (flexor hallucis longus, flexor digitorum longus tendons run through here)
 - 3. 2 flexors and 1 add) Flexor digiti minimi brevis, adductor hallucis (transverse and oblique heads), flexor hallucis brevis with sesamoids
 - 4. Interossei (peroneus longus and tibialis posterior), Dorsal interossei and Plantar interossei
- DAB and PADs
 - Dorsal Interossei ABduct Plantar interossei ADduct
- Anterior compartment of leg:
 - Structures "TEA DEPt. (medial to lateral) "
 - Tibialis anterior
 - Extensor hallucis longus
 - Anterior tibial artery
 - Deep peroneal nerve
 - Extensor digitorum longus
 - Peroneus tertius
- Muscles of the POSTERIOR compartment of leg
 - "Go Pee Sam - Till Fanny Hurts Long, Fanny Drops Longs and POPS"
 - Superficial group:
 - Gastroc, Plantaris, Soleus
 - Deep group:
 - Tibialis posterior, Flexor Hallucis Longus, Flexor Digitorum Longus, POPliteus
- Muscles and nerve of the LATERAL compartment of LEG
 - "Fly Long Superficial Fly Boy
 - Fibularis longus
 - Superficial fibular nerve = innervation for both
 - Fibular brevis
- Muscles of MEDIAL compartment of the THIGH:
 - "GP ADDs a Bloody Lot of Margarine"
 - Gracilis
 - Pectineus

- **ADDUCTORS**
 - Brevis
 - Longus
 - Magnus
- Popliteal fossa: medial to lateral arrangement
 - “Serve And Volley Next Ball”
 - Semimembranosus/ Semitendinosus
 - Artery
 - Vein
 - Nerve
 - Biceps femoris
 - Lateral and medial heads of Gastrocnemius are inferior borders
- As for remembering the origins and insertions, we encourage you to make a chart of these, and review it very frequently
 - **Angiology – arteries, veins and lymphatics**
 - Foot
 - Leg
 - Thigh
 - Pelvis
- Practice drawing these out from proximal to distal, do this continually
 - Also mark various landmarks
 - **Neurology**
 - Lumbar and sacral plexi and their cutaneous, somatosensory and sympathetic branches to the lower extremity
- 2 videos for this that are available on YouTube
 - 1. Spinal levels of the sacral plexus branches mnemonic
 - In this video they share two different mnemonics to help remember the spinal levels found in the branches of the sacral plexus (By: Nina Behdin, Jovica (John) Veljanovski, Sean Mutchnick)
 - 2. Lumbar plexus made easy: tanuj1988
 - **Embryology**
 - Limb bud and limb rotation
 - Pre natal and post natal development
- Limb Development video on YouTube by Itzel Garcia offers an extremely good visual for understanding the limb bud and limb rotation concept.
 - As for the timeline of development, either make notecards or create a timeline of your use.
 - Additionally, the Lower Extremity Notecards are helpful for this as well.

In the sections below, the resources that are described are the most helpful part. We encourage you to choose 1 or 2 of these items and stick to them. We continued listing the parts described by the NBPME so that you can make in detail notes as you go through, making sure each of the areas are accounted for.

- **Biochemistry – 10%**

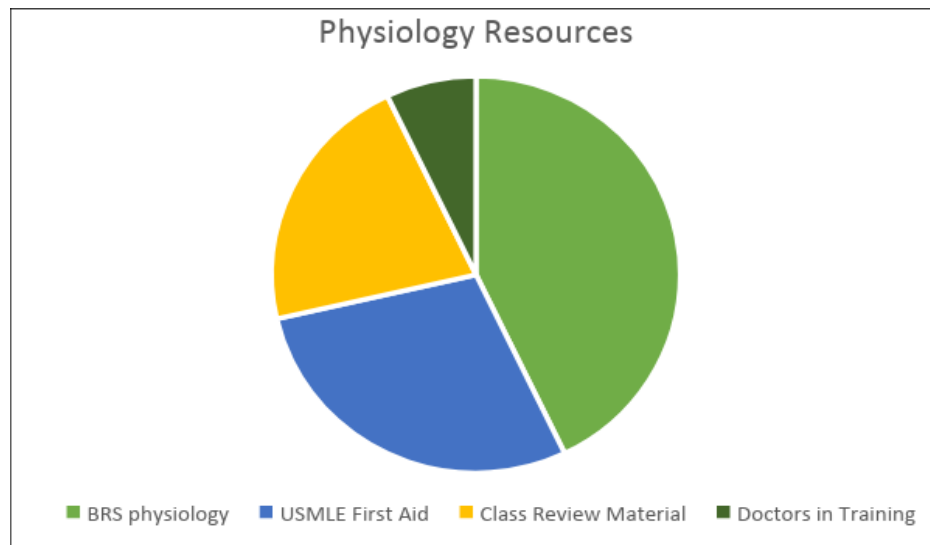


- Resources recommended (same recommendation as previous- only use 1 or two)
 - USMLE- Biochemistry section (2016 addition, pages 48-83)
 - BRS Biochemistry
 - Professor shortened course notes
 - Board vitals are helpful for this as well.
 - Doctors in Training: Biochemistry
 - **Biological acids, bases and buffers**
 - **Carbohydrate metabolism**
 - Glycolysis
 - Glycogenesis
 - Glycogenolysis
 - Gluconeogenesis
 - Glycosaminoglycans
- For carbohydrate metabolism
 - USMLE Step I First Aid remembering the Rate Determining enzymes of the metabolic processes and the regulators are very important (p. 108 First Aid, 4th edition).
 - There's a chart present there that assists with this.

- Bioenergetics
 - Electron transport and oxidative phosphorylation
 - ATP and other energy related compounds
- Amino acids and protein structure, function, synthesis and metabolism
 - Enzymes
 - Three dimensional structures of proteins
 - Protein- protein interactions
 - Purine and pyrimidine
- Lipids and biological membranes
 - Structures
 - Function and metabolism of triglycerides
 - Steroids, cholesterol and lipoproteins
- Molecular biology
 - Nucleotide metabolism
 - Structure and function of DNA and RNA
- Hormones, second messengers, signal transduction properties
 - Growth factors
 - Receptors
 - Steroids and thyroid hormones
 - Plasma transport receptors
 - Glucose-regulating hormones
- Blood chemistry
 - Heme metabolism
 - Hemostasis and blood coagulation
 - Plasma composition
 - Molecular aspects of erythrocytes and hemoglobin
- Bone chemistry
 - Molecular aspects of bone
 - Calcium and phosphorus metabolism
 - Parathyroid hormone
 - Vitamin D
 - Calcitonin
- Chapter 15 in Pathoma does a great job of explaining the basics of this as well as possible pathologies that arise. Highly recommended.
 - Free radicals and antioxidants
 - Nutrition
 - Glycemic index
 - Calories

- Vitamin deficiencies
- Fasting and starvation
- Absorptive state
- First AID USMLE, 2016, p. 76-83

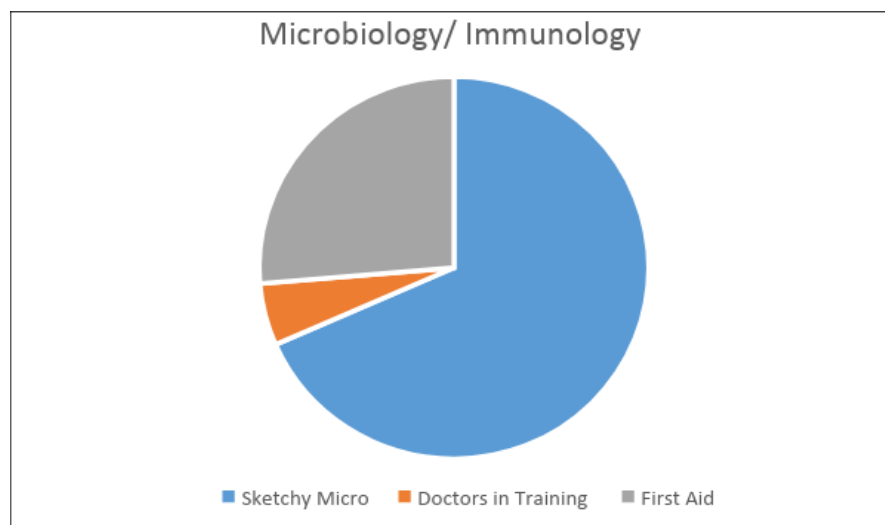
• Physiology



- Quality resources include:
 - BRS physiology
 - BRS notecards
 - First AID
 - Class notes
 - USMLE Physiology
 - Armando Hasudungan-> YouTube video physiology series
 - Doctors in training
 - Neurophysiology
 - Properties of neurons
 - Synaptic transmission
 - Autonomic
 - Motor system
 - Sensory systems
 - Myophysiology (electrophysiology regulation of skeletal and smooth muscle function)
 - Cardiovascular system
 - Cardiac muscle

- Electrophysiology
- Cardiac mechanics
- Cardiac and peripheral hemodynamics
- Regional circulation
- Microcirculation and lymphatics
- Neural and hormonal regulatory mechanisms
- Pulmonary
 - Mechanisms of ventilation
 - Volumes, capacities
 - Gas exchange
 - Acid base
- Renal and urinary physiology
 - Glomerular filtration
 - Tubular mechanisms
 - Volume regulation
 - Renin-angiotension system
 - Atrial-natriuretic factor
 - Acid-base balance
- Endocrinology
 - Hypothalamus
 - Pituitary
 - Thyroid and parathyroids
 - Adrenal
 - Pancreas
 - Reproductive
- Gastrointestinal physiology
 - Hepatic
 - Intestinal
 - Stomach
 - Gallbladder
- Bone metabolism
 - Osteoclast
 - Osteoblast
 - Stress/strain
- Exercise physiology
 - Thermoregulation
 - Exercise

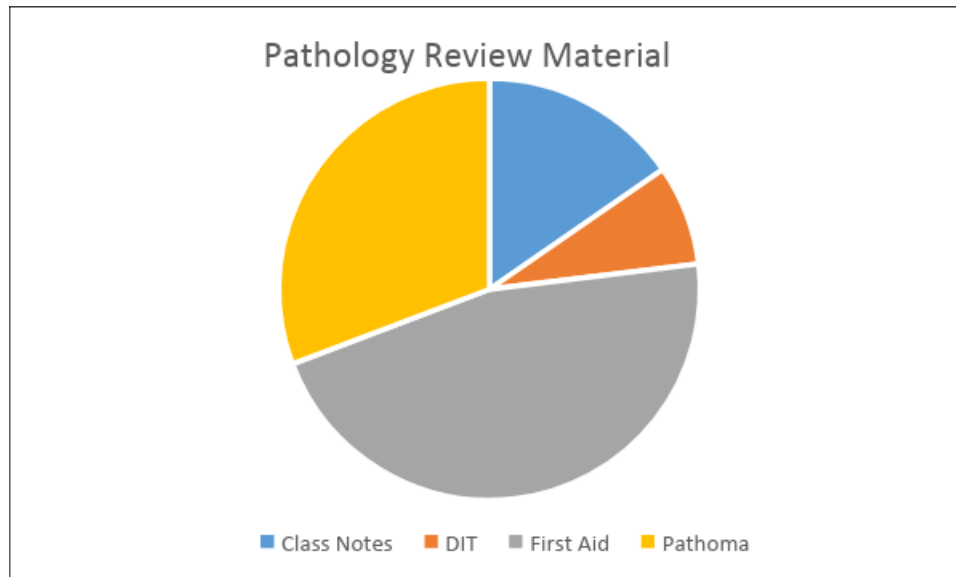
- Microbiology/Immunology



- Although there are some clear quality resources for this section, it is important to note that not all of this section is accounted for in those resources.
- Some commonly used resources
 - Sketchy Micro
 - Notecards
 - Course notes for those portions that are not covered within sketchy micro (listed below)
 - Bacteriology
 - Bacterial structure and function
 - Gram-positive infections
 - Gram- negative infections
 - Acid-fast bacilli infections
 - Spirochete infections
 - Mycoplasma infections
 - Transmission
 - Systemic manifestations
 - Mycology
 - Fungal growth
 - Structure and classification
 - Clinical techniques
 - Superficial and systemic infections
 - Transmission

- Virology
 - Structure
 - Replication
 - DNA and RNA infections
 - Transmission
 - Systemic manifestations
- Parasitology
 - Transmissions
 - Classification
 - Systemic manifestations
- Infection prevention and treatment
 - Sterilization techniques
 - Antimicrobial agents
- Course review notes commonly used for this portion
 - Emerging drug resistance
 - Mechanisms of drug resistance (mutation)
 - Susceptibility testing
- Pharmacology review notes
 - Immunology
 - Nonspecific and specific immunity
 - Cells of the immune system
 - Structure and function of antigens
 - Antibodies and complement
 - Humoral resistance
 - Cell mediated immune responses
 - Immediate and delayed hypersensitivity
 - Transplantation and tumor immunology
 - Immunodiagnostic methods
- Doctors in training have a nice review for this
- First Aid good resource
 - Zoonotic infections
 - Definition
 - Mode of transmission

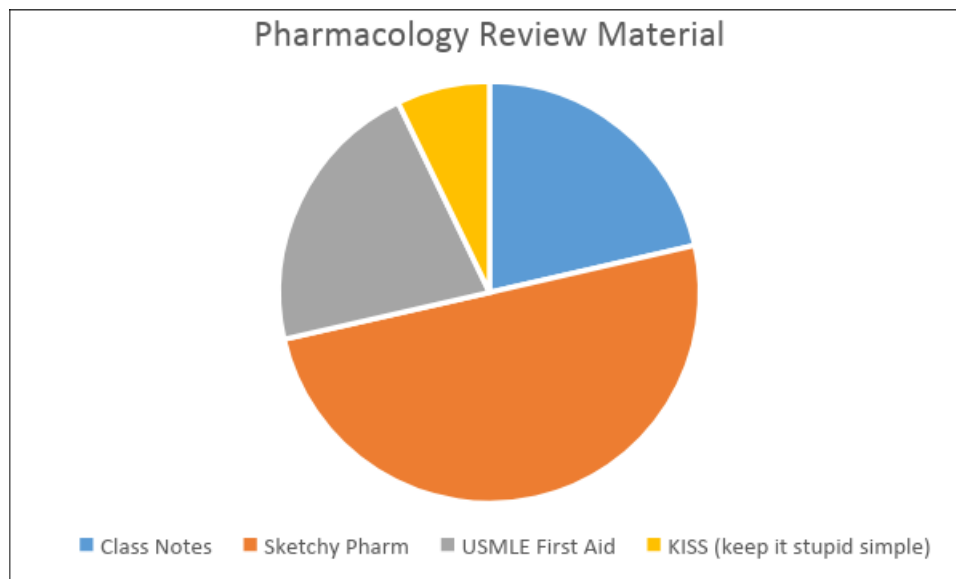
- Pathology



- Resources recommended
 - USMLE First Aid
 - First Aid Rapid Review
 - Sketchy Pathology
 - BRS Notecards
 - Pathoma
 - Class notes
 - General principles
 - Cell function
 - Growth and repair
 - Cell injury and death
 - Inflammation
 - Laboratory testing
 - Principles
 - Collection and handling of specimens
 - Culture and sensitivity
 - Synovial fluid analysis
 - Gross and microscopic analysis of specimens
 - Disorders
 - Musculoskeletal system
 - Nervous system
 - Integumentary system

- Peripheral vascular system
- Cardiovascular system
- Hematopoietic system
- Immune system
- Pulmonary system
- Urogenital and/or reproductive system
- Renal system
- Gastrointestinal system
- Endocrine system
- Hepatic and extrahepatic biliary systems
- Genetic disorders

- Pharmacology – 13%



- Resources recommended
 - Doctors in training
 - Sketchy
 - USMLE First Aid
 - Sketchy Pharm
 - Keep It Simple Stupid (KISS) Pharm
 - Class Notes
 - General principles
 - Routes of administration
 - Absorption
 - Distribution

- Biotransformation
- Metabolism
- Excretion
- Dose-effect relationships
- Factors altering pharmacological effects
- Drug resistance
- Pharmacogenomics
- Mechanisms of drug action
 - Drug receptor interaction
 - Structure- activity relationships
- Drug interactions:
 - Potentiation
 - Neutralization
 - Genetic factors
 - Supplements
 - Food
- Adverse effects:
 - Allergies
 - Toxicity
 - Specific side-effects
 - Teratogenic effects
- Anesthetics
 - General anesthetics
 - Neuromuscular blocking agents
 - Local anesthetics and their mechanisms of action
- Central nervous system and autonomic agents
 - Anticonvulsants
 - Psychotropic
 - Skeletal muscle relaxants
- Glycemic agents
 - Insulin
 - Oral hypoglycemic
- Anti-infectives
 - Antibiotics
 - Antifungals
 - Antivirals
 - Antiretrovirals

- Anti inflammatory
 - Steroids
 - NSAID
 - DMARDS
- Analgesics
 - Opiods
 - Narcotics vs non narcotics
- Chemotherapeutic agents
 - Anti-neoplastics
 - Anti-rheumatics
 - Immunosuppressants
 - Ablatives
- Cardiovascular agents
 - Cardiac glycosides
 - Anti-arrhythmics
 - Anti-anginal
 - Anticoagulants and fibrinolytics
 - Anti hypertensives
 - Vasodilators
 - Statins
 - Hemorrheologic agents
- Respiratory agents
 - Bronchodilators
 - Beta 2 agonists
 - Leukotriene inhibitors
- Gastrointestinal agents
 - Proton pump inhibitors
 - H-2 Blockers
 - Anti emetics
 - Motility
- Complementary and alternative agents
 - Cannabinoids
 - Vitamins
 - Supplements
 - Herbal agents
- Other pharmaceutical agents
 - Uricosuric

- Hormone therapy
- Bisphosphonates
- Antihistamines
- Toxicology