

# A Resource for USMLE Step 1 Preparation

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## USMLE – What's it for?

In order to become a licensed physician in the United States, individuals must pass a series of examinations conducted by the National Board of Medical Examiners. These examinations are the United States Medical Licensing Examinations, or USMLE. Currently there are four separate exams which must be passed in order to eligible for medical licensure:

- **Step 1**, usually taken after the completion of the second year of medical school;
- **Step 2 Clinical Knowledge (CK)**, usually taken during the fourth year;
- **Step 2 Clinical Skills (CS)**, usually taken during the fourth year; and
- **Step 3**, typically taken during the first year of post graduate training.

**Step 1** assesses whether you understand and can apply important concepts of the sciences basic to the practice of medicine, with special emphasis on principles and mechanisms underlying health, disease, and modes of therapy. Step 1 ensures mastery of not only the sciences that provide a foundation for the safe and competent practice of medicine in the present, but also the scientific principles required for maintenance of competence through lifelong learning.

**Step 2** assesses whether you can apply medical knowledge, skills, and understanding of clinical science essential for the provision of patient care under supervision and includes emphasis on health promotion and disease prevention. Step 2 ensures that due attention is devoted to principles of clinical sciences and basic patient-centered skills that provide the foundation for the safe and competent practice of medicine.

**Step 2 Clinical Skills (CS)** A clinical skills examination was part of the original design of USMLE. The NBME was charged with including a test of clinical skills using standardized patients when such an examination was shown to be valid, reliable, and practical. NBME research and the work of other organizations administering clinical skills examinations demonstrate that clinical skills examinations measure skill sets different from those measured by traditional multiple-choice questions. Mastery of clinical and communication skills, as well as cognitive skills, by individuals seeking medical licensure is important to the protection of the public.

Implementation of the clinical skills examination began in June 2004. The clinical skills examination is a separately administered component of Step 2 and is referred to as Step 2 Clinical Skills, or Step 2 CS. The computer-based, multiple-choice component of Step 2 is referred to as Step 2 Clinical Knowledge, or Step 2 CK.

USMLE Step 2 CS is administered at five regional test centers (CSEC Centers) in the United States.

**Step 3** assesses whether you can apply medical knowledge and understanding of biomedical and clinical science essential for the unsupervised practice of medicine, with emphasis on patient management in ambulatory settings. Step 3 provides a final assessment of physicians assuming independent responsibility for delivering general medical care.

Requirements for licensure in each state are set by the state's medical licensing boards. Each state board may determine the maximum number of times that a person may take each Step exam and still remain eligible for licensure. **In Texas, individuals are limited to three attempts at each Step exam.**

But what we're really here for is to talk about preparing for Step 1. Step 1 is your first BIG hurdle. And make no mistake about it, this is a VERY important test. A very good performance on Step 1 can definitely help you when it comes to securing a top-rate residency, and likewise a poor score can hurt you and limit your options. And a failure on Step 1 can eliminate the possibility of some residencies altogether. So it is definitely in your best interest to do all you can to maximize your chances of doing well, regardless of what type of residency you may choose to pursue.

### **How is Step 1 scored?**

When you take Step 1, the computer records your responses. After your test ends, your responses are transmitted to the NBME for scoring. The number of test items you answer correctly is converted to two equivalent scores, one on a three-digit score scale and one on a two-digit score scale. Both scales are used for score-reporting purposes.

On the three-digit scale, most Step 1 scores fall between 140 and 260. The mean score for first-time examinees from accredited medical school programs in the United States is in the range of 200 to 220, and the standard deviation is approximately 20. Your score report will include the mean and standard deviation for recent administrations of the examination. The two-digit score is derived from the three-digit score. It is used in score reporting because some medical licensing authorities have requirements that include language describing a "passing score of 75." The two-digit score is derived in such a way that a score of 75 always corresponds to the minimum passing score.

Blocks of items are constructed to meet specific content specifications. As a result, the combination of blocks of items creates a form of the examination that is comparable in content to all other forms. The percentage of correctly answered items required to pass varies from form to form. However, examinees typically must answer 60 to 70 percent of items correctly to achieve a passing score.

### **What is the minimum passing score?**

In December 2006, the Step 1 Committee decided to raise the three-digit score recommended to pass Step 1 from 182 to **185**. The new minimum passing score will be applied to Step 1 examinations for which the first day of testing is on or after January 1, 2007.

### **What is Texas Tech's policy on USMLE exams?**

#### **Step 1 Exam**

- All students will be required to take the United States Medical Licensing Examination (USMLE) Step 1 at the end of Year Two and **no later** than **June 30**. Excepted from this requirement are students who must remediate a Basic Science course immediately following Year Two. Such students will complete any remediation work /exam by June 15 following Year Two and take USMLE Step 1 by July 31 of Year Three.
- All students who take the USMLE Step 1 no later than June 30 following completion of Year Two will be eligible to start the Year Three clerkship rotations in July of that year.
- Passage of USMLE Step 1 is required for promotion to Year Four.
- For students who must repeat USMLE Step 1, leave from the third year curriculum to prepare for the exam is not required but **is strongly recommended and encouraged**. Any request for such leave must be approved by the Associate Dean for Educational Programs or the Assistant Dean for Student Affairs.
- Students who reach the end of the Year Three curriculum and have not yet passed Step 1 will be placed on administrative leave of absence for up to one year, consistent with Section 4.1 of this policy which allows no more than six (6) years to complete the curriculum for the Doctor of Medicine degree, inclusive of all leaves, repetition, or decompression of an academic year. Passage of the exam during this time frame will result in return to the curriculum.
- Inability to pass Step 1 within the one-year leave of absence will result in withdrawal from the curriculum as stated in the SOM Student Affairs Student Handbook under Student Leaves of Absence. Appeals regarding this issue will be handled as outlined in Sections 6, 7, and 8 of the Grading and Promotions policy.

#### **Step 2 Exam**

- For students who begin the curriculum in August of 2005 or later, **passage** of Step 2 Clinical Knowledge and Step 2 Clinical Skills will be required for graduation. Passing scores must be documented no later than **May 1** of the year graduating.

### **How do I apply for Step 1?**

The initial application for Step 1 is done on the Internet. Go to [www.nbme.org](http://www.nbme.org). Click on "NBME Licensing Exam Services", then "National Licensing Examination Services Website". In the yellow **LOG IN** box, please note you do not have a USMLE ID number yet. Instead, click on "**First time user**" and follow the instructions. As part of the application,

you will indicate a 90-day eligibility period during which you plan to take the exam. Payment is also required at this time (\$480).

- Print out the application form which will require your signature and a picture. Bring the form to the Student Affairs Office for signature – Dr. McMahon, Dr. Larsen, Tamara Lane, and Karen Nelson are authorized to sign the form.
- Then take the form to the Registrar’s Office (2C400 – across from the Synergistic Center) and have the school seal put on it.
- After that, you’re ready to mail it in.

## Where do I take the test?

Thomson Prometric, a part of The Thomson Corporation, provides scheduling and test centers for the computer-based components of USMLE. Step 1 and Step 2 CK are given around the world at Prometric Test Centers (PTCs).

Prometric test centers are located throughout the U.S. In Texas there are centers in:

- Abilene
- Amarillo
- Austin (2)
- Beaumont
- Bedford (2)
- Corpus Christi
- Dallas (2)
- El Paso
- Houston (3)
- Lubbock
- McAllen
- Midland
- San Antonio (2)
- Tyler
- Waco
- Wichita Falls

## How do I schedule my test?

Once your application has been processed, you will receive an email from NBME notifying you that your application is complete. About a week later, you will receive a second email from them notifying you that your scheduling permit is available; this message will include instructions for accessing the electronic scheduling permit using the registration entity's interactive website.

**PRINT OUT YOUR SCHEDULING PERMIT** and keep it in a safe place. You **MUST** bring it with you to the test center on the day of your test. You will not be allowed to take the exam without your scheduling permit.

Once you’ve gotten your permit, you may schedule your test online at [www.prometric.com](http://www.prometric.com) for any available test date that is within your approved 90-day eligibility period. Not all Prometric centers are open on weekends, and USMLE exams are not necessarily offered every day the centers are open. **Please note that May through July are one of the busiest periods for these testing centers because of the large USMLE demand during that time – PLAN AHEAD!**

You will be able to change your test date after you have scheduled it IF your new test date is still within the 90-day eligibility period. If you must reschedule outside the approved eligibility period, you will need to reapply and pay an additional fee.

## What is the format of the test?

The Step 1 test day is an 8-hour day. The 8 hours includes the test itself as well as break time. The exam consists of approximately 350 multiple choice questions arranged in blocks of 50 questions which means you will have about 1.2 minutes per question. During each block you can answer questions in any order, go back and review questions in the block, and change answers. Once you have exited a block or the time for that block has expired, you will no longer be able to review questions or change answers in that block.

- **Some blocks are harder than others.** Don't panic if your first block happens to be a more difficult one.
- **The questions are random**, so don't expect a block of pathology questions, a group of pharmacology questions, etc.
- **Some questions will include pictures** – histology, gross pathology, CT images, etc.
- **Approximately 75% of the questions are SINGLE BEST ANSWER.** There will be anywhere from 3 to 5 answer choices.
- **Other questions consist of extended matching** – a list of items from which you must choose the one best answer that corresponds with the numbered items or questions located below the list.

## Can I practice taking the test?

You should acquaint yourself with the test software well before your test date(s). Practice time is not available on the test day, and test center staff are not authorized to provide instruction on use of the software. A brief tutorial on the test day provides a review of the test software, including navigation tools and examination format, prior to beginning the test. It does not provide an opportunity to practice.

**1. You can practice by downloading software from the NBME website** (<http://www.usmle.org/Orientation/2007/readme.htm#software>). The NBME software you install has over 100 practice test items and a software tutorial. Some practice items may include multimedia files, such as video or audio clips.

**2. You can schedule a practice test at a Prometric Test Center.**

Once your Step 1 application has been processed and you have received your Scheduling Permit, you are eligible to register for a **Practice Session** for that examination. Practice Sessions are available at Thomson Prometric, a part of The Thomson Corporation, test centers. **The Practice Sessions use the same sample test materials that are available on the USMLE website; however, they do not include any multimedia items. NO NEW SAMPLE TEST MATERIALS ARE PRESENTED AT PRACTICE SESSIONS.** Those who are eligible to register for a Practice Session may take only one session per exam registration. Please note that Practice Sessions are not available on major local holidays **and during the first two weeks of January.**

**Note:** The NBME software, known as FRED™, will replace the Prometric software for the USMLE Practice Session beginning in December 2006. Installation of FRED for the USMLE Practice Sessions will be phased in over several weeks. If you schedule to take a CBT Practice Session from December 2006 through January 2007, you might test with

either the Prometric or FRED test delivery software.

Until this transition is complete, examinees who wish to practice with the actual FRED software should use the sample materials available at the USMLE website.

The Practice Session is a maximum of 3.5 hours and is divided into 3 1-hour blocks of 46-50 multiple choice test items each. When you complete the session, you will receive a printed percent correct score.

If you register for a practice session, a YELLOW Scheduling Permit will be mailed to you within two weeks which will allow you to schedule the Practice Session. **Do not schedule a Practice Session using your permit for the actual Step examination.** The \$42 fee for the Practice session must be paid directly to Prometric by credit card at the time you schedule your appointment.

## What's on the test?

As we have talked about already, the NBME's Comprehensive Basic Sciences Exam is the closest thing to the real thing that they will let anyone see. In fact, since ALL of the items written by NBME are copyrighted, you should be a little leery of anyone other than NBME who claims to have "actual USMLE questions". The NBME offers a breakdown of the content areas on the test:

### System\*\*

40%–50% General principles  
50%–60% Individual organ systems

- hematopoietic/lymphoreticular
- nervous/special senses
- skin/connective tissue
- musculoskeletal
- respiratory
- cardiovascular
- gastrointestinal
- renal/urinary
- reproductive
- endocrine

### Process

30%–50% Normal structure and function  
30%–50% Abnormal processes  
15%–25% Principles of therapeutics  
10%–20% Psychosocial, cultural, occupational and environmental considerations

\* Percentages are subject to change at any time. See the USMLE website for the most up-to-date information.

\*\* The general principles category includes test items concerning those normal and abnormal processes that are not limited to specific organ systems. Categories for individual organ systems include test items concerning those normal and abnormal processes that are system specific.

***NBME also publishes a more detailed outline of the topics covered on the Step 1 exam. Use this as an outline to make sure you are covering all of these topics in***

*your study plan. You'll find the complete outline of what's on the Step 1 exam at the end of this book in Appendix A.*

## How do I prepare for Step 1?

Several things have been proven to help students prepare to do their best of Step 1.

### 1. LEARN the material you are currently studying in your classes.

Approximately 70% of the questions on the exam are likely to use or combine information in ways that you have not seen before. It is the purpose of the testing agency to see how adept you are at taking partial information and, based on that, figuring out an answer you consider to be a high probability response. And you can't do that with MEMORIZED material, but you can do it using material that you have LEARNED.

2. **KNOW how to approach multiple choice questions and PRACTICE.** Some people seem to instinctively know how to answer multiple choice questions correctly, others of us not so much. There are skills that you can learn to help you answer these kinds of test questions. Here's how Kaplan recommends approaching vignette styled multiple choice questions:

1. assemble key clues into a mental "snapshot" of the patient.
2. understand precisely what is being asked
3. allow a few moments to think, recall, and to anticipate possible answers
4. compare the given choices to your anticipated answer
5. mark choices that match best
6. rule out choices that don't account for all findings
7. mark the best answer

**Kaplan's experts say that people who are bad at multiple choice questions focus on the choices rather than the stems of the questions.** This is a very inefficient approach and one that tends to result in more mistakes. **Those who are good at multiple choice questions focus on the stems, not the choices.**

If you always feel that your performance on multiple choice tests doesn't equate with your mastery of the material, you might think about having your test taking analyzed. The University of Missouri at Kansas City's Institute for Professional Preparation (IPP) offers an online Step 1 **diagnostic test**. When analyzed, these tests not only evaluate performance in each of the seven basic sciences areas, but also look at some 40 other intra-test variables which can help you gain insight into the types of errors you may be committing as you go through a test, especially when these errors may be depressing your overall performance. Variables such as: the amount of time spent on different types of questions; correlations between the length of a question and the likelihood of answering it successfully; performance on questions which rely on strict definitions or precise interpretation of technical vocabulary; and the extent to which you are able to narrow down your choices to two good answers and the extent to which your second choices are correct, are examples of the intra-test variables analyzed when you take a "Diagnostic" test. In addition to a summary data sheet showing your performance in these areas, they may also provide a computer generated six to eight page report which discusses these variables and gives some concrete suggestions for minimizing the impact of these "error patterns". This diagnostic test is available for a small fee. For details and how to order a test, please go to <http://www.umkc.edu/ipp/cbt.asp>. They also offer a **full-length Mock Board Exam**.

[Here is a sample Step 1 Diagnostic Test report.](#)

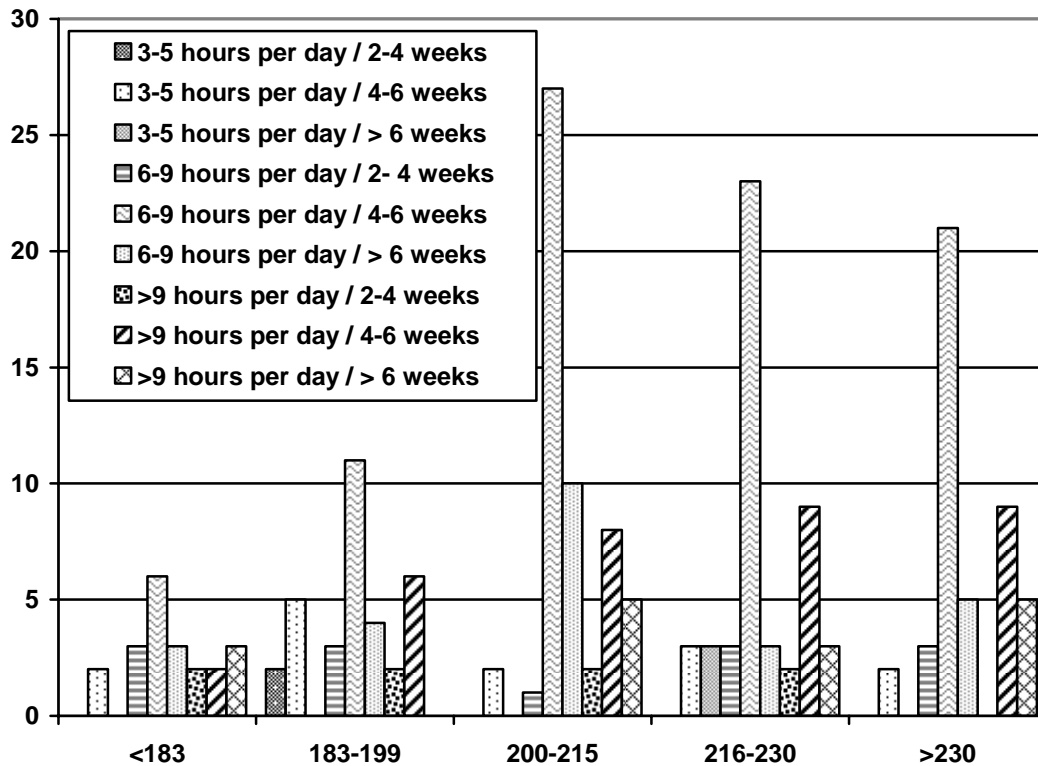
<b>STEP 1 REPORT</b>
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All Step 1 "Diagnostics", "Mock Boards", and "Tests" produce a summary similar to the one shown below. In addition, the "Diagnostic" also provides a computer generated six to eight page report which discusses these variables and gives some concrete suggestions for minimizing the impact of these "error patterns".

Student Name				
PercentCorrect Overall		54		
Percent Correct of 2nd Choices		37		
Mean Time per Question		62		
Category:	% Correct		Mean Time (sec)	
Questions Involving Statistics	61		60	
Diagnosis Questions	62		53	
Questions Involving Judgement	53		51	
Process Questions	49		51	
Questions Involving Definitions	51		51	
Cause Effect Reasoning Questions	51		51	
Questions with Graphics	40		61	
Questions Requiring Visualization	43		54	
Subject:	% Correct		Mean Time (sec)	
Anatomy	43		55	
Behavioral Sciences	63		54	
Biochemistry	37		45	
Microbiology	52		45	
Pathology	56		48	
Pharmacology	45		55	
Physiology	65		62	
Question Type:	% Correct		Mean Time (sec)	
Multiple Choice	49		52	
Extended Foils	55		51	
Confidence levels:	% Correct		Number	Mean Time (sec)
1 (low)	16		25	62
2	36		22	69
3	33		15	51
4	74		38	52
5 (high)	75		24	26
Cognitive Level:	% Correct		Mean Time (sec)	
Recall	52		45	
Comprehension	42		59	
Application	63		59	

**3. ALLOW enough time to prepare, but not too much.** Although you will have approximately 10 weeks from the time school ends to the deadline for taking Step 1 (June 30), four to six weeks should be plenty of time to prepare for Step 1. Many students in the past who have taken longer than 6 weeks to prepare later said they felt they took too much time, and actually lost ground with their studying. Analysis of our own students over the years shows that you get the most "bang for your buck" by studying for 6 to 9 hours per day for 4 to 6 weeks. Below you'll see a graph of hours/day and weeks of studying graphed against actual Step 1 scores.





**4. MAKE a study schedule and stick to it.** This is a critical step in successful Step 1 preparation. More detailed information about study schedules is in the following section.

**5. STUDY smart.** Spending 10 hours a day passively reading study guides or old notes is much less effective than spending half that amount of time in active study. Explain concepts out loud to a study partner, practice answering questions by explaining why the right answers are right and the wrong answers are wrong. If concept mapping works for you, do it. If there are other methods that work for you, use them.

### OTHER STEP 1 ADVICE

Judy Schwenker, Kaplan's Curriculum Director, talked about the ways in which USMLE exams are similar to medical practice:

1. you must find key information
2. the information you need may be buried
3. there are distractions
4. there is time pressure
5. you must use probabilities to make decisions
6. you'll never know it all
7. situations won't exactly fit what you've learned

She also talked about the mistakes most commonly made when preparing for Step 1:

1. passive studying
2. insufficient practice with questions
3. memorizing, not understanding the material
4. inappropriate test day strategies
5. misreading or misinterpreting questions

### So where do I start?

- 1. Self-assessment.** I think all of the experts agree that the first thing you need to do is take some sort of diagnostic test to see where your areas of strength and weakness are. Diagnostic tests are available from Kaplan, NBME, and a variety of other online sources that are listed later under "Other Resources."
- 2. Make a study schedule.** Lots of sample schedules are out there and links to them are included later in this notebook. BUT – please remember that these schedules were made by individual students and the schedules reflect those students' individual circumstances. When you prepare your own study schedule, you must first look at your own diagnostic test results and prepare your schedule with more time allotted to weaker subjects, and less time to stronger subjects. Individual study pace also needs to be factored in, as some accomplish more per study day than others.

Here's some advice from Kaplan's Judy Schwenker:

- (1) Take a comprehensive test to begin as a measure of where your recall is right now. Use the Kaplan diagnostic test if you have taken it.
- (2) Once you know your percent correct score for each subject, use this information to decide the relative amount of review time to put into each area. For example, if Physiology is 20% lower than Microbiology, you should be spending at least 20% MORE time reviewing Physiology than you put into Micro.
- (3) As you begin to review a subject, look over some questions on the material before you start to review. This will help keep you focused on what is important to know and show you how you will need to use the information on the test.
- (4) As you move through the material, create your own condensed summaries of the key material so you can review these right before test day. 20-30 pages per subject is a decent size to shoot for, because otherwise you will end up taking too detailed notes and they won't help at the end.
- (5) As you finish a subject, use QBank to create and take a test with maybe 50 items from each subject that you have completed up to that point. So if you have finished Anatomy and Physiology, you would do a 100-item test under timed, test mode assessing those 2 areas. By the end, you will be taking long practice tests under test conditions that cover all the completed subject areas. This helps keep the earlier material in memory, and gives you a more accurate picture of your preparedness. It also gives you good practice for the mental stamina and pacing needed on test day.
- (6) Plan time during the final 2-3 weeks to do nothing but review your own summaries and take increasing numbers of simulated test modules of 50 items each under timed conditions (one hour per module). This is the final "get it all fresh in mind, build mental stamina, and intensive test practice" phase, which should lead right up to 2 days before your actual test date. Our experience has shown that students who are doing 70% or better on our full-length simulated exams (or comparable practice tests created with Qbank or IV Qbank) by their test dates DO PASS, so this is a good level to aim for. You may also choose to take one of the NBME tests to get a predicted USMLE score. If you do decide to do this, be advised that based on feedback I have gotten on the board, Form 1 seems to be the most reliable.
- (7) Don't study anything the day before. Plan something fun and mindless, because study within 24 hours of the exam actually hurts your ability to recall from earlier reviewing.

***Additional Advice from Kaplan...***

### **Tips for the Week Before**

During the last few days before the exam you should be tapering off your studying, and getting into mental and physical shape.

- 1. This is not the time for cramming in new material...** but a time to organize and integrate what you already know. Work on making what you know more accessible.
- 2. Review keywords, phrases and concepts.** Look over your summary notes one more time. This is the time to drill yourself on essential information. The key is to practice recall, not simply read over the material again. What you need to know is probably already in your head. Your task now is to train yourself to access it when you need it. Doing practice questions is a good way to reinforce your recall skills. Use them to clarify your understanding of key details.
- 3. No one can know everything that is asked on this exam.** Be honest with yourself about what you do and do not know. Knowing that you do not know something gives you more of a sense of control on the exam and makes you less likely to panic when you encounter the material and/or waste time on questions you are not likely to get correct.
- 4. Get yourself onto the right time schedule.** Wake up every day at the same time you will need to on the day of the exam. This will get your circadian rhythm coordinated with the exam schedule. Do not nap between 8:00 am and 5:00 pm. Otherwise you will accustom your body to shutting down during the critical exam hours. If you get up at the right time each day, you will also find it easier to fall asleep at night. By getting into the proper sleep-wake cycle, you will find it easier to get to sleep the night of the exam as well.
- 5. You should be getting a sufficient amount of sleep.** For most people that means at least 6 to 7 hours a night. Sleep is an essential time for your brain to consolidate what you have learned. You need sleep; it makes you a more efficient learner when you are awake.
- 6. Take some time each day to relax.** Have a good meal. Take a walk in the fresh air. Find time for exercise. The change of pace will refresh you and the physical activity will help you relax and sleep at night.
- 7. If you haven't done so already, visit the Prometric Test Center** where you will be taking the exam. It will be indicated on your exam entry ticket. This will ensure you know how to get there and how much time you should allow for the commute. You can see where you should park, and see what the computer set-up is like.
- 8. Review the tutorial at <http://www.usmle.org/step1/default.htm>.** Become familiar with the interface, the location of key information on the screen and how to navigate between screens. If you walk into the exam familiar with the exam, you will not have to use any of your valuable break time to do this on the test day.

### ***Kaplan's Tips For The Day Before The Exam***

- 1. Take the day off from studying.** This is your day to relax and gather your strength before the main event. Get out of bed at the same time you will have to get up the next day. If you feel you must study, limit yourself to reviewing your own notes and flashcards.
- 2. Have some fun.** Go for a walk. Listen to your favorite music. Go see a good comedy or an action movie that will allow cathartic release. Go shopping. Spend time with a significant other. Do what ever you like. You have worked hard and deserve it.

### 3. Make sure that you have checked out the basics for the exam:

- Have you worked through the USMLE tutorial?
- Do you know where the Prometric center is, and how to get there?
- Do you have alternative transportation if, for example, your car does not start?
- Do you trust your alarm clock to wake you up in time? If not, make arrangements with friends as back up. You want to be sure to wake up rested, refreshed, and on time.
- Lay out what you'll need for the exam before you go to sleep. This includes photo identification, scheduling permit and confirmation number, as well as any personal items like eyeglasses. While you're at it, don't forget to pack a lunch!

4. **Call your friends and classmates and make some plans to celebrate.** You'll need to blow off some steam anyhow, and talking with colleagues will remind you that you are not in this by yourself.

5. **Be sure to do some physical activity.** Just taking a walk for an hour will help relax you.

6. **Get a good night's sleep.** To help you sleep, consider a hot bath or warm milk. Avoid taking sleeping medication as it may leave you groggy in the morning.

#### *Kaplan's Tips for test day...*

1. **Arrive at the Prometric Test Center 30 minutes early so you are not rushed and have time to get organized.** You will be given a locker to store your personal items and then assigned a computer station. Remember that you have a total of seven hours to complete 350 questions, and a total of one hour to be used throughout the day for breaks and lunch.

2. **To cope with fatigue, you will need to schedule breaks.** Our recommended schedule for the exam is:

<b>Question Block</b>	<b>Break time at end of Block</b>
Block 1	No break
Block 2	5 minute break
Block 3	5 minute break
Block 4	30 minute lunch break
Block 5	No break
Block 6	10 minute break
Block 7	Done!

This allows you 10 minutes extra to use as needed. Remember that you will need to sign in and out when you take breaks. You should also be aware that if you leave the exam room *during* a block, it will be marked as an irregularity in your testing session. Therefore, you need to consider after each block whether you want to take a bathroom break.

**3. Start with the beginning of the question block and work your way to the end.** The idea here is to get into a rhythm that will help create what one psychologist calls a "Flow" experience. The flow experience is a state of optimal concentration and maximal performance.

**4. Do not skip any questions.** If you don't know it when you come to it, you are not likely to know it later. Skipping around wastes time and can end up confusing you. Deal with each question as you come to it, answer it as best you can, and move on to the next question.

**5. Limit your use of the marking feature to no more than two or three questions per block.** Of course you should answer each question as you come to it, but you may want to double-check yourself on a few questions. The marking feature lets you return to review and reconsider questions if you have time left over. Used correctly, marking will help you revisit questions where you have a high probability of getting the answer correct. Misused, marking causes you to not give a question your full attention the first time around. You simply may not have time to go back and look at questions you have marked, especially if you mark a lot of them.

**6. Be cautious about changing answers.** In general, your odds of changing a correct answer to a wrong one are so much higher than the reverse that it is simply not worth the risk. If you change an answer, you are most likely making it wrong! Your first impulse is usually the correct one. Stay with it unless some clear insight occurs to you.

**7. If you finish a question block with time left over, go back and "check" only those answers that you have previously marked.** Checking almost always leads to changing and tends to reduce your score. If you have a spare moment, make sure that you have entered an answer for every question in the block and then, relax. Sit, take a break, and mentally prepare yourself for the next block of questions. Focus on the questions to come, not the ones that are past.

**8. Monitor your time.** Know how much you have left, so you do not find yourself rushed at the end. Work on your pacing from the beginning of the question block. Check your watch every 10 questions to make sure you are on the correct pace to finish. If you pace yourself throughout the block, you should not be squeezed for time at the end.

**9. Relax.** During the breaks between question blocks, try to relax and not think back over the exam. The desire to recall questions is strong, but not helpful. Those questions are in the past; you will never see them again. Focus on relaxing and making the most of your break. Remember, you will always tend to remember those questions you get wrong.

### **AND HERE'S SOME PREP ADVICE FROM SOME OF OUR STUDENTS...**

*"I'd recommend studying no more than about 5 weeks. Any more and you will start forgetting things you learned earlier. I caution you to take what your classmates say about their exam with a grain of salt, because every exam is different. Also, "buzzwords" are not typically used on Step 1. Rather than use the words "smudge cells", for example, they'll probably just show you a blood smear."*

*"Have a planned study schedule that you stick to. If you fall behind, you'll have a hard time getting through everything and still being able to review material."*

*"Do not use First Aid or the all-inclusive books as the sole study aid. If possible, use the High Yield books."*

*"Start early, stick to a schedule, try not to become overwhelmed with all available resources. Pick a couple for each subject because in my experience you cannot absorb it all. Use First Aid as a scaffold – it really is helpful for recall association."*

*"The last week/few days before Step are very distracting – don't give yourself too much time to study, 4-6 weeks worked for me. But be prepared mentally for the anxiety the week before the test – focus on easier subjects to review."*

## What about review courses?

Some students find the structure and discipline of a review course very helpful as part of their Step 1 preparation. Unfortunately some programs schedule their courses at times of the year that don't coincide with most first-time takers' preparation efforts. Nevertheless, here is the information on review courses that are available.

### Marshall University Joan C Edwards School of Medicine

Third Annual USMLE Step 1 Review Course

May 14 - June 6, 2007

Huntington, WV

#### Course Information:

- 17 day course
- Approximately 120 lecture hours
- 8am - 4pm, Monday - Friday (no class on Monday, May 28 -- Memorial Day)
- Over 20 award-winning faculty with expertise in USMLE Review
- Access to JCESOM USMLE website, including practice exams with feedback

**Cost:** \$1,500 per person (does not include hotel accommodations)

***Space is limited to 100 registrants & guaranteed only after payment is received***

### Kaplan

Visit [www.kaplan.com](http://www.kaplan.com) for more information.

Live Prep courses are 6-7 weeks in length. Price is \$3,399 – does not include food or accommodations.

Step 1 Live Retreat – price is \$5,599 – includes food and accommodations.

Other programs are available.

Location	Step 1
Atlanta Area	Jan. 8 - Feb. 17, 2007***
Chicago	Mar. 12 - Apr. 29, 2007 Jun. 11 - Sep. 30, 2007** Jun. 18 - Sep. 23, 2007*
Chicago Area	Apr. 30 - Jun. 10, 2007*** Aug. 27 - Oct. 6, 2007***
Dallas Area	Aug. 6 - Sep. 16, 2007***
D.C.	Jan. 22 - Mar. 11, 2007 Aug. 13 - Sep. 30, 2007
Houston	Apr. 23 - Jun. 10, 2007 Oct. 1 - Nov. 18, 2007
Miami	Apr. 16 - Jun. 17, 2007† Oct. 15 - Dec. 16, 2007†

<b>Newark (NJMI)</b>	Jan. 8 - Feb. 25, 2007 Mar. 5 - Jul. 8, 2007** Aug. 27 - Dec. 16, 2007** Sep. 3 - Dec. 9, 2007* Oct. 1 - Nov. 18, 2007
<b>New York</b>	Feb. 26 - Apr. 15, 2007 Jun. 18 - Aug. 5, 2007 Sep. 10 - Oct. 28, 2007
<b>Pasadena</b>	Jan. 8 - Feb. 25, 2007 May 21 - Jul. 1, 2007
<b>Philadelphia Area</b>	May 29 - Jul. 9, 2007***

\*ExtendedPrep \*\*KMI \*\*\*Step 1 Prep Retreat  
†Evenings and Weekends ††Weekends only †††Step 2 Prep Retreat  
Note: Any of the above LivePrep courses can be purchased as part of a DeluxePrep Package.

## University of Missouri at Kansas City – Institute for Professional Preparation

For more information visit <http://www.umkc.edu/ipp/programs.asp>

**January 8 to March 16, 2007**

**This 10 -week, highly interactive program is for students who have a history of difficulty with standardized tests; including multiple unsuccessful attempts at Step 1.** It focuses on clinical correlations in Biochemistry, Physiology, and Pathology, Microbiology and microbiology related biochemistry. These are the fields that typically cause examinees the greatest difficulty. Other areas included are Anatomy, Pharmacology, Embryology, Genetics, Biostatistics and Behavioral Science.

A typical schedule for Monday through Friday involves an eight hour day. Some weekend sessions are also scheduled. This schedule includes a variety of small group interactive instruction led by trained small group facilitators and formal lectures presented by experienced basic science lecturers. The instructional program strengthens the basic sciences background of all participants. Computerized examinations permit staff, meeting individually with students, to analyze and monitor students' progress as they approach their examination.

The program includes: (a) personalized diagnostics, (b) screening testing, (c) mock boards, (d) pathology case studies, (e) clinical and fundamental pharmacology, (f) computer based testing and (g) the hallmark of our programs, question group. **Tuition is \$6,400, housing costs are additional.**

**May 7 to June 1, 2007**

**First time test takers and repeaters with scores at 168 or above.** This program is most beneficial for a student wanting a focused review of the high impact topics in a structured, question based format.

The Summer Program offers an intensive four week review of the General Principles of Pathology, presented by a nationally respected pathologist; critical clinical correlations explained in Biochemistry, Pharmacology, and Physiology and a Behavioral Sciences/Ethics review. Students interact with one another and the instructors as they sort out concepts that they understand incompletely.

Question-based tutorials help participants to develop the kind and quality of thinking required

for success on Step 1. Daily small group lecture review sessions will aid in organization and retention. Emphasis is placed on understanding of the common diseases and related treatment regimens. In addition, the program will provide a diagnostic, selected subject exams, and a mock board. **Tuition is \$3000.**

**August 28 to October 20, 2006 (dates not yet announced for 2007)**

**This 8-week, live lecture program is designed both for first time test takers who desire a review of basic science concepts and for the student who has scored at 167 or above on Step 1 and who is planning on sitting for the USMLE Step 1 in early November.** Students with a history of difficulty on standardized exams are more likely to be successful with our longer preparation program beginning in January.

As with all of our courses, focus on understanding the material covered, practicing appropriate test taking strategies, and applying all skills acquired and content reviewed in a computer based testing environment. This live lecture program will include a review of Bacteriology, Pathology, Physiology, Immunology, Virology, and Biochemistry. **Tuition is \$4,600. Housing costs are additional.**

### **FALCON PHYSICIAN REVIEWS**

For more complete information visit <http://www.falconreviews.com/index.htm> .

#### **Complete review package includes:**

- Books
- Luxury Hotel Accommodations
- Daily Continental Breakfast and Lunch
- Over 325 contact hours (Step 1)
- Over 15,000 USMLE Type Exam Questions
- Ground transportation to and from the airport.
- Shuttle Service to shopping, movies, and other areas of interest

**Step 1 Programs** include information from: Anatomy, Histology, Biochemistry, Microbiology, Embryology, Physiology, Neurology, Pharmacology, and Behavioral Science, plus Clinical Vignettes, Case Histories, Glossy Slides, and Sample Tests.

#### **REVIEW COURSE DATES for 2007:**

January 8 to February 23 - **Course Full**

May 7 to June 22

May 14 to June 29 ([Miami](#))

May 14 to June 29 (Philadelphia, PA area)

July 16 to August 31

August 20 to October 5

October 1 to November 16

***Unless otherwise noted, all courses are held in Dallas.***

**Cost of course: double occupancy - \$4,550; single occupancy - \$5, 550.**

### **Northwestern Medical Review**

For more information visit <http://www.northwesternmedicalreview.com/index.php>

*(from the website):* Northwestern Medical Review offers live-lecture courses in preparation for the USMLE and COMLEX Step/Level 1, 2 and 3 examinations. These courses are designed to allow current medical students or graduating international physicians to pass their examinations in their first attempt or to raise their previous scores to a satisfactory level. Review plans ranging from a 3-day quick review course to a 15-day comprehensive



preparation are available.

Courses are taught by distinguished and experienced medical boards lecturers, many of whom have authored best-selling Northwestern Review books or have mastered multimedia TALLP methodology.

Programs are offered at various medical schools or convention sites within the USA, Caribbean Islands, and select sites in Asia and Europe. All courses include complete sets of study materials, review books, pretests, audio CDs and USMLE web-based question bank access.

**NBI 300 (STEP I) 10, 15, and 21-DAY USMLE REVIEW**

<u>LOCATION</u>	<u>DATE</u>
East Lansing, MI	January 12 - 21, 2007
East Lansing, MI	February 13 - 22, 2007
Philadelphia, PA Extended Weekend Plan	Feb 24 - 25, March 3 - 4, March 10 - 11, April 14 - 15, April 21 - 22, and May 5 - 6, 2007  Saturdays and Sunday mornings
East Lansing, MI	May 21- 30, 2007
East Lansing, MI	June 2 - 11, 2007

<b>standard TUITION RATES</b>	
<b>NBI 300 (21-day)</b>	<b>\$1780</b>
<b>NBI 300 (15-day)</b>	<b>\$1380</b>
<b>NBI 300 (10-day)</b>	<b>\$1080</b>

**FOR STUDENTS WITH DOCUMENTED LEARNING DISABILITIES OR ADHD**

**Marshall University Medical H.E.L.P Program**

For more information visit <http://www.marshall.edu/medicalhelp/>

*(from the website)* The Marshall University Medical H.E.L.P. Program began in 1986 with a vision of helping medical students and physicians with learning disabilities and/or ADHD succeed academically. Since that time, Marshall Medical H.E.L.P. has worked with approximately 600 students from across the United States and several foreign countries. A five week intensive course is held four times each year in January, March, June, and September, with individual one on one sessions available the rest of the year. Throughout the intensive program topics such as reading and comprehension, reading rate, learning strategies, memorization techniques, test-taking skills, error analysis, and self-esteem are targeted for improvement.

**This 5-week course is held four times a year: January, March, June, and September. The cost is \$4,500 and does not include accommodations.**

## **OTHER STUDY RESOURCES...**

There are probably as many more websites and books available than those that are listed here. If you find a book or website that you find helpful, please send it on to me so I can include it in our list of resources. Remember that you can easily get overwhelmed by using too many resources as you study, so pick out the few that seem to work best with your style of studying and learning and go with it. What works for one person may not work for another, so be careful about using a book just because someone else said it worked for them. Try it for yourself – if it doesn't fit you, move on to something that does. A number of books are available for check-out in the Student Affairs Office library.

**For online question banks, review books, etc.**

[www.usmlesteps123.com](http://www.usmlesteps123.com)

[www.usmlerx.com](http://www.usmlerx.com)

<http://www.exammaster2.com/wdsentry/ttuhsc-1.htm>

[www.score95.com](http://www.score95.com)

[www.boardprep.net/stepone.html](http://www.boardprep.net/stepone.html)

[www.apextesting.com](http://www.apextesting.com)

## **BOOKS**

- NMS Review for Step 1
- High-Yield Pathology
- Step Up: A High-Yield, Systems-Based Review for USMLE Step 1
- USMLE Step 1 Recall: Buzzwords for the Boards
- High-Yield Comprehensive USMLE Step 1 Review
- Kaplan QBook
- First Aid Cases for USMLE Step 1
- USMLE Step 1 Secrets
- First Aid Q&A for USMLE Step 1
- Goljan's Rapid Review of Pathology
- Robbins Review of Pathology
- Princeton Review USMLE Review
- Blueprints – Step 1 Q&A
- Appleton & Lange USMLE Step 1
- Platinum Vignettes (Elsevier)
- Rapid Review Series - USMLE Step 1

## **Study Schedules**

One of the biggest pieces of advice that students and experts alike give surrounds the idea of developing and sticking to a study schedule. Again, everybody has their own idea of what works for them and what doesn't, or what topics need to be studied more, but you also need to have a starting point. Remember you must create your own study schedule based on YOUR individual needs. But here is a website with PDF files of a dozen or so sample study

schedules so you can get an idea of where to start – most of them are about 4 weeks or so.  
<http://www.bumc.bu.edu/Dept/Content.aspx?DepartmentID=42&PageID=7554>

You'll find a sample 28-day study schedule at the back of this book in Appendix B.

## **APPENDIX A – USMLE Detailed Outline of Topics Covered on Step 1**

### **GENERAL PRINCIPLES**

#### **Biochemistry and molecular biology**

- gene expression: DNA structure, replication, and exchange
  - DNA structure: single- and double-stranded DNA, stabilizing forces, supercoiling
  - analysis of DNA: sequencing, restriction analysis, PCR amplification, hybridization
  - DNA replication, mutation, repair, degradation, and inactivation
  - gene structure and organization; chromosomes; centromere, telomere
  - recombination, insertion sequences, transposons
  - mechanisms of genetic exchange, including transformation, transduction, conjugation, crossover, recombination, linkage
  - plasmids and bacteriophages
- gene expression: transcription, including defects
  - transcription of DNA into RNA, enzymatic reactions, RNA, RNA degradation
  - regulation: cis-regulatory elements, transcription factors, enhancers, promoters, silencers, repressants, splicing
- gene expression: translation, including defects
  - the genetic code
  - structure and function of tRNA
  - structure and function of ribosomes
  - protein synthesis
  - regulation of translation

- post-translational modifications, including phosphorylation, addition of CHO units
  - protein degradation
- structure and function of proteins
  - principles of protein structure and folding
  - enzymes: kinetics, reaction mechanisms
  - structural and regulatory proteins: ligand binding, self-assembly
  - regulatory properties
- energy metabolism, including metabolic sequences and regulation
  - generation of energy from carbohydrates, fatty acids, and essential amino acids; glycolysis, pentose phosphate pathway, tricarboxylic acid cycle, ketogenesis, electron transport and oxidative phosphorylation, glycogenolysis
  - storage of energy: gluconeogenesis, glycogenesis, fatty acid and triglyceride synthesis
  - thermodynamics: free energy, chemical equilibria and group transfer potential, energetics of ATP and other high-energy compounds
- metabolic pathways of small molecules and associated diseases
  - biosynthesis and degradation of amino acids (eg, homocystinuria, maple syrup urine disease)
  - biosynthesis and degradation of purine and pyrimidine nucleotides
  - biosynthesis and degradation of lipids (eg, dyslipidemias, carnitine deficiency, adrenogenital syndromes)
  - biosynthesis and degradation of porphyrins
  - galactosemia and other small sugar disorders
- biosynthesis and degradation of other macromolecules and associated abnormalities, complex carbohydrates (eg, lysosomal storage disease), glycoproteins, and proteoglycans (eg, type II glycogen storage disease)

### **Biology of cells**

- structure and function of cell components (eg, nucleus, cytoskeleton, endoplasmic reticulum, plasma membrane)
- signal transduction (including basic principles, receptors and channels, second messengers, signal transduction pathways)
- cell-cell and cell-matrix adhesion
- cell motility
- intracellular sorting (eg, trafficking, endocytosis)
- cellular homeostasis (eg, turnover, pH maintenance, proteasome, ions, soluble proteins)
- cell cycle (eg, mitosis, meiosis, structure of spindle apparatus, cell cycle regulation)
- structure and function of basic tissue components (including epithelial cells, connective tissue cells, muscle cells, nerve cells, and extracellular matrix)
- adaptive cell response to injury
- intracellular accumulations (eg, pigments, fats, proteins, carbohydrates, minerals, inclusions, vacuoles)
- mechanisms of injury and necrosis
- apoptosis

### **Human development and genetics**

- embryogenesis: programmed gene expression, tissue differentiation and morphogenesis, homeotic genes, and developmental regulation of gene expression
- congenital abnormalities: principles, patterns of anomalies, dysmorphogenesis
- principles of pedigree analysis, including inheritance patterns, occurrence and recurrence risk determination
- population genetics: Hardy-Weinberg law, founder effects, mutation-selection equilibrium

- genetic mechanisms: chromosomal abnormalities, mendelian inheritance, multifactorial diseases
- clinical genetics, including genetic testing, prenatal diagnosis, newborn screening, genetic counseling/ethics, gene therapy

### **Biology of tissue response to disease**

- inflammation, including cells and mediators
  - acute inflammation and mediator systems
  - vascular response to injury, including mediators
  - inflammatory cell recruitment, including adherence and cell migration, and phagocytosis
  - bactericidal mechanisms and tissue injury
  - clinical manifestations (eg, pain, fever, leukocytosis, leukemoid reaction, and chills)
  - chronic inflammation
- reparative processes
  - wound healing, hemostasis, and repair: thrombosis, granulation tissue, angiogenesis, fibrosis, scar/keloid formation
  - regenerative processes
- neoplasia
  - classification, histologic diagnosis
  - grading and staging of neoplasms
  - cell biology, biochemistry, and molecular biology of neoplastic cells: transformation, oncogenes, altered cell differentiation, and proliferation
  - hereditary neoplastic disorders
  - invasion and metastasis
  - tumor immunology
  - paraneoplastic manifestations of cancer
  - cancer epidemiology and prevention

### **Gender, ethnic, and behavioral considerations affecting disease treatment and prevention, including psychosocial, cultural, occupational, and environmental**

- progression through the life cycle, including birth through senescence
  - cognitive, language, motor skills, and social and interpersonal development
  - sexual development (eg, puberty, menopause)
  - influence of developmental stage on physician-patient interview
- psychologic and social factors influencing patient behavior
  - personality traits or coping style, including coping mechanisms
  - psychodynamic and behavioral factors, related past experience
  - family and cultural factors, including socioeconomic status, ethnicity, and gender
  - adaptive and maladaptive behavioral responses to stress and illness (eg, drug-seeking behavior, sleep deprivation)
  - interactions between the patient and the physician or the health care system (eg, transference)
  - patient adherence, including general and adolescent
- patient interviewing, consultation, and interactions with the family
  - establishing and maintaining rapport
  - data gathering
  - approaches to patient education
  - enticing patients to make lifestyle changes
  - communicating bad news
  - "difficult" interviews (eg, anxious or angry patients)
  - multicultural ethnic characteristics
- medical ethics, jurisprudence, and professional behavior

- consent and informed consent to treatment
- physician-patient relationships (eg, ethical conduct, confidentiality)
- death and dying
- birth-related issues
- issues related to patient participation in research
- interactions with other health professionals (eg, referral)
- sexuality and the profession; other “boundary” issues
- ethics of managed care
- organization and cost of health care delivery

### **Multisystem processes**

- nutrition
  - generation, expenditure, and storage of energy at the whole-body level
  - assessment of nutritional status across the life span, including calories, protein, essential nutrients, hypoalimentation
  - functions of nutrients, including essential, trans-fatty acids, cholesterol
  - protein-calorie malnutrition
  - vitamin deficiencies and/or toxicities
  - mineral deficiencies and toxicities
  - eating disorders (eg, obesity, anorexia, bulimia)
- temperature regulation
- adaptation to environmental extremes, including occupational exposures
  - physical and associated disorders (eg, temperature, radiation, burns, decreased atmospheric pressure, high-altitude sickness, increased water pressure)
  - chemical (eg, gases, vapors, smoke inhalation, agricultural hazards, volatile organic solvents, heavy metals, principles of poisoning and therapy)
- fluid, electrolyte, and acid-base balance and disorders (eg, dehydration, acidosis, alkalosis)

### **Pharmacodynamic and pharmacokinetic processes**

- general principles
  - pharmacokinetics: absorption, distribution, metabolism, excretion, dosage intervals
  - mechanisms of drug action, structure-activity relationships
  - concentration- and dose-effect relationships (eg, efficacy, potency), types of agonists and antagonists and their actions
  - individual factors altering pharmacokinetics and pharmacodynamics (eg, age, gender, disease, tolerance, compliance, body weight, metabolic proficiency, pharmacogenetics)
  - drug side effects, overdose, toxicology
  - drug interactions
  - regulatory issues (eg, drug development, approval, scheduling)
- general properties of autacoids, including peptides and analogs, biogenic amines, prostanoids and their inhibitors, and smooth muscle/endothelial autacoids
- general principles of autonomic pharmacology
- general properties of antimicrobials, including mechanisms of action and resistance
- general properties of antineoplastic agents and immunosuppressants, including drug effects on rapidly dividing mammalian cells

### **Microbial biology and infection**

- microbial classification and its basis
- bacteria and bacterial diseases
  - structure and composition

- metabolism, physiology, and regulation
- genetics
- nature and mechanisms of action of virulence factors
- pathophysiology of infection
- epidemiology and ecology
- principles of cultivation, assay, and laboratory diagnosis
- viruses and viral diseases
  - physical and chemical properties
  - replication
  - genetics
  - principles of cultivation, assay, and laboratory diagnosis
  - molecular basis of pathogenesis
  - pathophysiology of infection
  - latent and persistent infections
  - epidemiology
  - oncogenic viruses
- fungi and fungal infections
  - structure, physiology, cultivation, and laboratory diagnosis
  - pathogenesis and epidemiology
- parasites and parasitic diseases
  - structure, physiology, and laboratory diagnosis
  - pathogenesis and epidemiology
- principles of sterilization and pure culture technique

### **Immune responses**

- production and function of granulocytes, natural killer cells, and macrophages
- production and function of T lymphocytes, T-lymphocyte receptors
- production and function of B lymphocytes and plasma cells; immunoglobulin and antibodies: structure and biologic properties
- antigenicity and immunogenicity; antigen presentation; cell activation and regulation; tolerance and clonal deletion
- immunologic mediators: chemistry, function, molecular biology, classic and alternative complement pathways, cytokines, chemokines
- immunogenetics; MHC structure and function, class I, II molecules; erythrocyte antigens
- immunizations: vaccines, protective immunity
- alterations in immunologic function
  - T- or B-lymphocyte deficiencies (eg, DiGeorge syndrome)
  - deficiencies of phagocytic cells
  - combined immunodeficiency disease
  - HIV infection/AIDS and other acquired disorders of immune responsiveness
  - drug-induced alterations in immune responses, immunopharmacology
- immunologically mediated disorders
  - hypersensitivity (types I–IV)
  - transplant and transplant rejection
  - autoimmune disorders
  - risks of transplantation, transfusion (eg, graft-versus-host disease)
  - isoimmunization, hemolytic disease of the newborn
  - immunopathogenesis
- immunologic principles underlying diagnostic laboratory tests (eg, ELISA, complement fixation, RIA, agglutination)
- innate immunity

### **Quantitative methods**

- fundamental concepts of measurement
  - scales of measurement
  - distribution, central tendency, variability, probability
  - disease prevalence and incidence
  - disease outcomes (eg, fatality rates)
  - associations (eg, correlation and covariance)
  - health impact (eg, risk differences and ratios)
  - sensitivity, specificity, predictive values
- fundamental concepts of study design
  - types of experimental studies (eg, clinical trials, community intervention trials)
  - types of observational studies (eg, cohort, case-control, cross-sectional, case series, community surveys)
  - sampling and sample size
  - subject selection and exposure allocation (eg, randomization, stratification, self-selection, systematic assignment)
  - outcome assessment
  - internal and external validity
- fundamental concepts of hypothesis testing and statistical inference
  - confidence intervals
  - statistical significance and Type I error
  - statistical power and Type II error

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## HEMATOPOIETIC AND LYMPHORETICULAR SYSTEMS

### Normal processes

- embryonic development, fetal maturation, and perinatal changes
- organ structure and function
- cell/tissue structure and function
  - production and function of erythrocytes, hemoglobin, O<sub>2</sub> and CO<sub>2</sub> transport, transport proteins
  - production and function of leukocytes and the lymphoreticular system
  - production and function of platelets
  - production and function of coagulation and fibrinolytic factors
- repair, regeneration, and changes associated with stage of life

### Abnormal processes

- infectious, inflammatory, and immunologic disorders
  - infections of the blood, reticuloendothelial system, and lymphatics
  - allergic and anaphylactic reactions and other immunopathologic mechanisms
  - acquired disorders of immune deficiency
  - autoimmunity and autoimmune diseases (eg, Coombs positive hemolytic anemia, cryoglobulinemias, ITP)
  - anemia of chronic disease
  - transfusion complications, transplant rejection
- traumatic and mechanical injury (eg, mechanical injury to erythrocytes, splenic rupture)
- neoplastic disorders (eg, lymphoma, leukemia, multiple myeloma)
- metabolic and regulatory disorders, including acquired and congenital
  - anemias and cytopenias (eg, iron deficiency anemia, hemoglobinopathies, hereditary spherocytosis)
  - cythemia
  - hemorrhagic and hemostatic disorders (eg, coagulopathies, DIC)



- bleeding secondary to platelet disorders (eg, von Willebrand)
- vascular and endothelial disorders (eg, effects and complications of splenectomy, hypersplenism, TTP, hemolytic-uremic syndrome)
- systemic disorders affecting the hematopoietic and lymphoreticular system (eg, nutritional deficiencies, systemic lupus erythematosus)
- idiopathic disorders

### **Principles of therapeutics**

- mechanisms of action, use, and adverse effects of drugs for treatment of disorders of the hematopoietic system
  - blood and blood products
  - treatment of anemia, drugs stimulating erythrocyte production (eg, erythropoietin)
  - drugs stimulating leukocyte production (eg, G-CSF, GM-CSF)
  - anticoagulants, thrombolytic drugs
  - antiplatelet drugs
  - antimicrobials (eg, antimalarials, anti-HIV)
  - antineoplastic and immunosuppressive drugs
  - drugs used to treat acquired disorders of immune responsiveness
- other therapeutic modalities (eg, splenectomy, chelating agents, radiation therapy for lymphomas, plasmapheresis)

### **Gender, ethnic, and behavioral considerations affecting disease treatment and prevention, including psychosocial, cultural, occupational, and environmental**

- emotional and behavioral factors (eg, diet, depression and immune responses, “blood doping” among athletes)
- influence on person, family, and society (eg, childhood leukemia)
- occupational and other environmental risk factors (eg, heavy metals, hydrocarbons, lead)
- gender and ethnic factors (eg, herbal treatments with bone marrow depression)

## **CENTRAL AND PERIPHERAL NERVOUS SYSTEMS**

### **Normal processes**

- embryonic development, fetal maturation, and perinatal changes, including neural tube derivatives, cerebral ventricles, neural crest derivatives
- organ structure and function
  - spinal cord, including gross anatomy, blood supply, and spinal reflexes
  - brain stem, including cranial nerves and nuclei, reticular formation, gross anatomy, and blood supply
  - brain, including gross anatomy and blood supply; cognition, language, memory; hypothalamic function; limbic system and emotional behavior; circadian rhythms and sleep; control of eye movement
  - sensory systems, including proprioception, pain, vision, hearing, balance, taste, and olfaction
  - motor systems, including brain and spinal cord, basal ganglia and cerebellum
  - autonomic nervous system
  - peripheral nerve
- cell/tissue structure and function

- axonal transport
- excitable properties of neurons, axons and dendrites, including channels
- synthesis, storage, release, reuptake, and degradation of neurotransmitters and neuromodulators
- pre- and postsynaptic receptor interactions, trophic and growth factors
- brain metabolism
- glia, myelin
- brain homeostasis: blood-brain barrier; cerebrospinal fluid formation and flow; choroid plexus
- repair, regeneration, and changes associated with stage of life

### **Abnormal processes**

- infectious, inflammatory, and immunologic disorders (eg, meningitis, multiple sclerosis, myasthenia gravis)
- traumatic and mechanical disorders (eg, subdural and epidural hematomas, cord compression, peripheral nerve injury)
- neoplastic disorders, including primary and metastatic
- acquired metabolic and regulatory disorders (eg, delirium, Reye syndrome)
- vascular disorders (eg, cerebrovascular occlusion, venous sinus thrombosis, arterial aneurysms, hemorrhage)
- systemic disorders affecting the nervous system (eg, lupus, diabetic neuropathy)
- idiopathic disorders affecting the nervous system
- congenital disorders, including metabolic (eg, neural tube defects, cerebral palsy, mental retardation, Down syndrome)
- degenerative disorders (eg, peripheral neuropathy, Alzheimer dementia, Parkinson disease, Huntington disease, amyotrophic lateral sclerosis)
- paroxysmal disorders (eg, epilepsy, headache, pain syndromes, and sleep disorders including narcolepsy, restless legs syndrome/periodic limb movement, circadian rhythm disorders, parasomnias)
- disorders of special senses (eg, blindness, deafness)
- psychopathologic disorders, processes and their evaluation
  - early-onset disorders (eg, learning disorders)
  - disorders related to substance use
  - schizophrenia and other psychotic disorders
  - mood disorders
  - anxiety disorders
  - somatoform disorders
  - personality disorders
  - physical and sexual abuse of children, adults, and elders
  - other disorders (eg, dissociative, impulse control, post-traumatic stress disorder)

### **Principles of therapeutics**

- mechanisms of action, use, and adverse effects of drugs for treatment of disorders of the nervous system
  - anesthetics
  - hypnotics
  - psychopharmacologic agents (eg, anxiolytics, antidepressants, antipsychotic agents, mood-stabilizing agents)
  - anticonvulsants
  - analgesics
  - stimulants, amphetamines
  - antiparkinsonian drugs
  - skeletal muscle relaxants, botulinum toxin

- neuromuscular junction blocking agents (postsynaptic)
- antiglaucoma drugs
- drugs used to decrease intracranial pressure (eg, mannitol, high-dose glucocorticoids)
- antimigraine agents
- drugs affecting autonomic nervous system (eg, anticholinesterases)
- other therapeutic modalities (eg, radiation, CFS shunting, surgery)

### **Gender, ethnic, and behavioral considerations affecting disease treatment and prevention, including psychosocial, cultural, occupational, and environmental**

- emotional and behavioral factors (eg, drug abuse, dementia, sleep deprivation, accident prevention, pets)
- influence on person, family, and society (eg, developmental disabilities, dementia, generation reversal, nutrition, seizures, sleep disorders)
- occupational and other environmental risk factors (eg, boxing, carbon monoxide exposure)
- gender and ethnic factors

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## **SKIN AND RELATED CONNECTIVE TISSUE**

### **Normal processes**

- embryonic development, fetal maturation, and perinatal changes
- organ structure and function
- cell/tissue structure and function, including barrier functions, thermal regulation, eccrine function
- repair, regeneration, and changes associated with stage of life or ethnicity (eg, senile purpura, male pattern baldness, postmenopausal hair changes)
- skin defense mechanisms and normal flora

### **Abnormal processes**

- infectious, inflammatory, and immunologic disorders
  - bacterial infections (eg, acne, cellulitis, carbuncle, abscess, necrotizing fasciitis, gangrene)
  - viral infections (eg, herpes infections, chickenpox, rubella, measles, roseola, verrucae)
  - fungal infections, including mycoses, dermatophytosis (eg, tinea)
  - parasitic infections (eg, scabies, lice)
  - immune and autoimmune disorders (eg, discoid lupus erythematosus, scleroderma, dermatomyositis, alopecia, psoriasis, urticaria, allergic dermatosis)
- traumatic and mechanical disorders (eg, thermal injury, decubitus ulcers, effects of ultraviolet light and radiation)
- neoplastic disorders
  - keratinocytes (eg, seborrheic keratosis, actinic keratosis, basal cell carcinoma, squamous cell carcinoma, and ichthyosis)
  - melanocytes (eg, nevi, melanoma)
  - vascular neoplasms (eg, hemangiomas, Kaposi sarcoma)
  - other (eg, T-cell lymphoma, skin appendage tumors)
- metabolic, regulatory, and structural disorders (eg, vitamin deficiencies, hypervitaminosis, hyperhidrosis)
- vascular disorders (eg, vasculitis, Raynaud disease)

- systemic disorders affecting the skin (eg, Ehlers-Danlos syndrome, Marfan syndrome)

### **Principles of therapeutics**

- mechanisms of action, use, and adverse effects of drugs for treatment of disorders of the skin and connective tissue, including anti-inflammatory agents (eg, corticosteroids, antihistamines), emollients, sunscreen, retinoids, antimicrobial agents, cytotoxic and immunologic therapy (eg, methotrexate, PUVA, keratinolytics)
- other therapeutic modalities (eg, laser, tattoo removal, cryotherapy)

### **Gender, ethnic, and behavioral considerations affecting disease treatment and prevention, including psychosocial, cultural, occupational, and environmental**

- emotional and behavioral factors (eg, sun exposure, acne)
- influence on person, family, and society (eg, psoriasis)
- occupational and other environmental risk factors
- gender and ethnic factors (eg, keloid)

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## **MUSCULOSKELETAL SYSTEM**

### **Normal processes**

- embryonic development, fetal maturation, and perinatal changes
- organ structure and function
- cell/tissue structure and function
  - biology of bones, joints, tendons, skeletal muscle
  - exercise and physical conditioning
- repair, regeneration, and changes associated with stage of life

### **Abnormal processes**

- infectious, inflammatory, and immunologic disorders
  - infectious disorders (eg, septic arthritis, Lyme disease, osteomyelitis)
  - inflammatory disorders (eg, fibrositis, synovitis, tenosynovitis)
  - immunologic disorders (eg, rheumatoid arthritis, ankylosing spondylitis, polymyositis, systemic lupus erythematosus, dermatomyositis, polymyalgia rheumatica)
- traumatic and mechanical disorders (eg, fractures, sprains, strains, dislocations, repetitive motion injuries)
- neoplastic disorders (eg, osteosarcoma, metastatic disease)
- metabolic, regulatory, and structural disorders (eg, dwarfism, osteogenesis imperfecta, osteomalacia, osteoporosis, osteodystrophy, gout, muscular dystrophy)
- vascular disorders (eg, polyarteritis nodosa, bone infarcts)
- systemic disorders affecting the musculoskeletal system (eg, diabetes mellitus)
- idiopathic disorders (eg, Dupuytren contracture, scoliosis, Paget disease)
- degenerative disorders (eg, disc disease, osteoarthritis)

### **Principles of therapeutics**

- mechanisms of action, use, and adverse effects of drugs for treatment of disorders of the musculoskeletal system
  - nonsteroidal anti-inflammatory drugs and analgesics

- muscle relaxants
- antigout therapy (eg, allopurinol, colchicine, uricosuric drugs)
- immunosuppressive drugs (eg, glucocorticoids, gold, cytotoxic agents)
- drugs affecting bone mineralization (eg, bisphosphonates, calcitonin, estrogen analogs)
- other therapeutic modalities (eg, radiation, surgery, casts, rehabilitation)

**Gender, ethnic, and behavioral considerations affecting disease treatment and prevention, including psychosocial, cultural, occupational, and environmental**

- emotional and behavioral factors (eg, diet, exercise, seat belts, bicycle helmets)
- influence on person, family, and society (eg, osteoporosis, fractures in elderly, alcohol abuse, and fractures)
- occupational and other environmental risk factors (eg, athletes, musicians)
- gender and ethnic factors (eg, bone mass)

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**RESPIRATORY SYSTEM**

**Normal processes**

- embryonic development, fetal maturation, and perinatal changes
- organ structure and function
  - airways, including mechanics and regulation of breathing
  - lung parenchyma, including ventilation, perfusion, gas exchange
  - pleura
  - nasopharynx and sinuses
- cell/tissue structure and function, including surfactant formation, alveolar structure
- repair, regeneration, and changes associated with stage of life
- pulmonary defense mechanisms and normal flora

**Abnormal processes**

- infectious, inflammatory, and immunologic disorders
  - infectious diseases
    - infectious diseases of the upper respiratory tract (eg, sinusitis, pharyngitis)
    - acute infectious diseases of the lower respiratory tract and pleura and their complications (eg, pneumonia, bronchiectasis, abscess, empyema)
    - chronic infectious diseases of the lower respiratory tract (eg, Mycobacterium, endemic fungal infections, Nocardia/Actinomyces)
  - immunologic disorders
    - allergic and hypersensitivity disorders (eg, asthma)
    - autoimmune disorders (eg, Wegener granulomatosis, Goodpasture syndrome)
  - inflammatory disorders
    - pneumoconioses
    - acute and chronic alveolar injury (eg, acute respiratory distress syndrome, chlorine gas/smoke inhalation)
    - obstructive pulmonary disease
    - restrictive pulmonary disease (eg, sarcoidosis, idiopathic fibrosis)
- traumatic and mechanical disorders (eg, foreign body aspiration, pneumothorax, atelectasis, sleep apnea)
- neoplastic disorders (eg, polyps, bronchogenic carcinoma, mesothelioma, metastatic tumors)

- metabolic, regulatory, and structural disorders (eg, hypoventilation, disorders of gas exchange, ventilation-perfusion imbalance, neonatal respiratory distress syndrome)
- vascular and circulatory disorders (eg, thromboembolic disease, pulmonary hypertension, pulmonary edema, pleural effusion)
- systemic disorders affecting the respiratory system

### **Principles of therapeutics**

- mechanisms of action, use, and adverse effects of drugs for treatment of disorders of the respiratory system (eg, decongestants, cough suppressants, expectorants, mucolytics; bronchodilator drugs; anti-inflammatory and cytotoxic drugs; antimicrobial agents; antineoplastic agents)
- other therapeutic modalities (eg, oxygen therapy, nasal CPAP, mechanical ventilation, physical therapy, surgical procedures, including transplantation)

### **Gender, ethnic, and behavioral considerations affecting disease treatment and prevention, including psychosocial, cultural, occupational, and environmental**

- emotional and behavioral factors (eg, smoking, substance abuse, pets, and allergies)
- influence on person, family, and society (eg, tuberculosis, asthma, chronic obstructive pulmonary disease, school issues, protective parents, family smoking)
- occupational and other environmental risk factors
- gender and ethnic factors (eg, sarcoidosis, lung cancer)

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## **CARDIOVASCULAR SYSTEM**

### **Normal processes**

- embryonic development, fetal maturation, and perinatal changes
- organ structure and function
  - chambers, valves
  - cardiac cycle, mechanics, heart sounds, cardiac conduction
  - hemodynamics, including systemic, pulmonary, coronary, and blood volume
  - circulation in specific vascular beds
- cell/tissue structure and function
  - heart muscle, metabolism, oxygen consumption, biochemistry, and secretory function (eg, atrial natriuretic peptide)
  - endothelium and secretory function, vascular smooth muscle, microcirculation, and lymph flow
  - mechanisms of atherosclerosis
  - neural and hormonal regulation of the heart, blood vessels, and blood volume, including responses to change in posture, exercise, and tissue metabolism
- repair, regeneration, and changes associated with stage of life

### **Abnormal processes**

- infectious, inflammatory, and immunologic disorders
  - infectious disorders (eg, endocarditis, myocarditis, pericarditis)
  - inflammatory and immunologic disorders (eg, acute rheumatic fever, systemic lupus erythematosus, vasculitis, temporal arteritis)
- traumatic and mechanical disorders (eg, tamponade, valvular disease, obstructive cardiomyopathy)
- neoplastic disorders

- metabolic and regulatory disorders (eg, dysrhythmias, systolic and diastolic dysfunction, low- and high-output heart failure, cor pulmonale, systemic hypertension, ischemic heart disease, myocardial infarction, systemic hypotension, and shock)
- vascular disorders (eg, aneurysms, occlusions, varicosities, atherosclerosis)
- systemic diseases affecting the cardiovascular system (eg, amyloidosis, aortic dissection with Marfan syndrome, scleroderma)
- congenital disorders of the heart and central vessels

### **Principles of therapeutics**

- mechanisms of action, use, and adverse effects of drugs for treatment of disorders of the cardiovascular system
  - coronary and peripheral vasodilators
  - antiarrhythmic drugs
  - antihypertensive drugs
  - measures used to combat hypotension and shock
  - drugs affecting cholesterol and lipid metabolism
  - drugs affecting blood coagulation, thrombolytic agents
  - inotropic agents and treatment of heart failure
  - immunosuppressive and antimicrobial drugs
  - drugs to treat peripheral arterial disease
- other therapeutic modalities (eg, pacemakers, angioplasty, valves, grafts, other surgical procedures)

### **Gender, ethnic, and behavioral considerations affecting disease treatment and prevention, including psychosocial, cultural, occupational, and environmental**

- emotional and behavioral factors (eg, smoking, alcohol, ischemic heart disease, obesity, exercise, diet)
- influence on person, family, and society (eg, altered lifestyle)
- occupational and other environmental risk factors (eg, stress)
- gender and ethnic factors (eg, hypertension)

## **GASTROINTESTINAL SYSTEM**

### **Normal processes**

- embryonic development, fetal maturation, and perinatal changes
- organ structure and function, including alimentary canal, liver and biliary system, salivary glands and exocrine pancreas, motility, and digestion and absorption
- cell/tissue structure and function
  - endocrine and neural regulatory functions, including GI hormones
  - salivary, gastrointestinal, pancreatic, hepatic secretory products, including enzymes, proteins, bile salts, and processes
  - synthetic and metabolic functions of hepatocytes
- repair, regeneration, and changes associated with stage of life
- gastrointestinal defense mechanisms and normal flora

### **Abnormal processes**

- infectious, inflammatory, and immunologic disorders

- infectious disorders (eg, peritonitis, hepatitis, gingivostomatitis, peptic ulcer, gastritis, esophagitis, traveler's diarrhea, food poisoning)
- inflammatory disorders (eg, cholecystitis, pancreatitis)
- immunologic disorders (eg, Crohn disease, ulcerative colitis)
- traumatic and mechanical disorders
  - malocclusion
  - hiatus hernia
  - obstruction (eg, volvulus, intussusception, esophageal atresia, annular pancreas, postsurgical obstruction)
  - perforation of hollow viscus and blunt trauma
  - inguinal, femoral, and abdominal wall hernias
  - esophageal and intestinal diverticula (eg, Meckel diverticulum)
- neoplastic disorders, including benign and malignant
- metabolic and regulatory disorders (eg, motility disorders, malabsorption, hepatic failure, cholelithiasis)
- vascular disorders (eg, portal hypertension, hemorrhoids, ischemia, angiodysplasia)
- systemic disorders affecting the gastrointestinal system

### **Principles of therapeutics**

- mechanisms of action, use, and adverse effects of drugs for treatment of disorders of the gastrointestinal system
  - treatment and prophylaxis of peptic ulcer disease and gastroesophageal reflux (eg, antacids, antisecretory drugs, motility drugs, mucosal protective agents, antibiotics)
  - drugs to alter gastrointestinal motility (eg, cathartics, antidiarrheal drugs, antiemetic drugs, prokinetic drugs)
  - fluid replacement (eg, oral rehydration)
  - pancreatic replacement therapy and treatment of pancreatitis
  - drugs for treatment of hepatic failure (eg, lactulose) and biliary disease (eg, drugs to dissolve gallstones)
  - anti-inflammatory, immunosuppressive, antineoplastic, and antimicrobial drugs
- other therapeutic modalities (eg, surgical procedures, stents, feeding tubes)

### **Gender, ethnic, and behavioral considerations affecting disease treatment and prevention, including psychosocial, cultural, occupational, and environmental**

- emotional and behavioral factors (eg, peptic ulcer, encopresis, Monday morning stomach)
- influence on person, family, and society (eg, inflammatory bowel disease, irritable bowel disease, pancreatitis and alcohol, chronic laxative abuse)
- occupational and other environmental risk factors
- gender and ethnic factors (eg, diets)

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## **RENAL/URINARY SYSTEM**

### **Normal processes**

- embryonic development, fetal maturation, and perinatal changes
- organ structure and function
  - kidneys, ureters, bladder, urethra
  - glomerular filtration and hemodynamics
  - tubular reabsorption and secretion, including transport processes and proteins
  - urinary concentration and dilution
  - renal mechanisms in acid-base balance



- renal mechanisms in body fluid homeostasis
  - micturition
- cell/tissue structure and function, including renal metabolism and oxygen consumption, hormones produced by or acting on the kidney
- repair, regeneration, and changes associated with stage of life

### **Abnormal processes**

- infectious, inflammatory, and immunologic disorders
  - infectious disorders
    - upper urinary tract (eg, pyelonephritis, papillary necrosis)
    - lower urinary tract (eg, cystitis, urethritis)
  - inflammatory and immunologic disorders
    - glomerular disorders (eg, glomerulonephritis, nephrotic syndrome, and IgA nephropathy)
    - tubular interstitial disease (eg, interstitial nephritis, transplant rejection)
- traumatic and mechanical disorders (eg, obstructive uropathy)
- neoplastic disorders, including primary (eg, renal, urinary bladder and collecting system) and metastases
- metabolic and regulatory disorders
  - renal failure, acute and chronic (eg, acute tubular necrosis)
  - tubular and collecting duct disorders (eg, Fanconi syndrome, renal tubular acidosis, nephrogenic diabetes insipidus, polycystic kidney disease)
  - renal calculi
- vascular disorders (eg, renal artery stenosis)
- systemic diseases affecting the renal system (eg, diabetes mellitus, hepatitis, amyloidosis, systemic lupus erythematosus, Wegener granulomatosis)

### **Principles of therapeutics**

- mechanisms of action, use, and adverse effects of drugs for treatment of disorders of the renal and urinary system
  - diuretics, antidiuretic drugs
  - drugs and fluids used to treat volume, electrolyte, and acid-base disorders
  - drugs used to enhance renal perfusion (eg, dopamine)
  - anti-inflammatory, antimicrobial, immunosuppressive, and antineoplastic drugs
  - drugs used to treat lower urinary tract system (eg, incontinence, bladder function, benign prostatic hyperplasia)
- other therapeutic modalities (eg, dialysis, renal transplantation)

### **Gender, ethnic, and behavioral considerations affecting disease treatment and prevention, including psychosocial, cultural, occupational, and environmental**

- emotional and behavioral factors (eg, drug-induced interstitial nephritis, diet)
- influence on person, family, and society (eg, hemodialysis, living related kidney donation, transplants)
- occupational and other environmental risk factors (eg, heavy metals)
- gender and ethnic factors (eg, disease progression, urinary tract infections)

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## **REPRODUCTIVE SYSTEM**

### **Normal processes**

- embryonic development, fetal maturation, and perinatal changes
- organ structure and function
  - female structure, including breast
  - female function (eg, menstrual cycle, puberty, menopause)
  - male structure
  - male function (eg, spermatogenesis, puberty)
  - intercourse, orgasm
  - pregnancy, including labor and delivery, the puerperium, lactation, gestational uterus, placenta
- cell/tissue structure and function, including hypothalamic-pituitary-gonadal axis, sex steroids, and gestational hormones
- reproductive system defense mechanisms and normal flora

### **Abnormal processes**

- infectious, inflammatory, and immunologic disorders (eg, toxic shock syndrome, breast abscess, orchitis, sexually transmitted diseases, autoimmune hypogonadism, cystic mastitis)
- traumatic and mechanical disorders (eg, female incontinence, torsion of testis, varicocele)
- neoplastic disorders (eg, female reproductive, male reproductive, breast [including fibrocystic changes], trophoblastic disease)
- metabolic and regulatory processes
  - female (eg, anovulation, infertility, polycystic ovaries, endometriosis, orgasmic dysfunction, delayed and premature puberty)
    - menopausal syndrome
  - male (eg, infertility, impotence, gynecomastia, delayed and premature puberty)
    - benign prostatic hyperplasia
- systemic disorders affecting reproductive function (eg, obesity, myotonic dystrophy, cirrhosis, renal failure)
- disorders relating to pregnancy, the puerperium, and the postpartum period
  - obstetric problems (eg, ectopic pregnancy, third-trimester bleeding)
  - complications affecting other organ systems (eg, eclampsia, gestational diabetes, thyroid disorders)
  - disorders associated with the puerperium (eg, postpartum hemorrhage, sepsis, depression)
  - antepartum, intrapartum, postpartum disorders of the fetus (eg, prematurity, postmaturity, cord compression, macrosomia)

### **Principles of therapeutics**

- mechanisms of action, use, and adverse effects of drugs for treatment of disorders of the reproductive system and management of normal reproductive function
  - female reproductive tract
    - fertility drugs
    - oral contraception, other methods of contraception (eg, condoms)
    - estrogen, progestogen replacement, treatment of menopause
    - stimulants and inhibitors of labor
    - estrogen and progesterone antagonists
    - stimulators and inhibitors of lactation
  - male reproductive tract
    - fertility drugs
    - androgen replacement and antagonists
  - gonadotropin-releasing hormone and gonadotropin replacement
  - abortifacients
  - antimicrobials

- antineoplastics
  - restoration of potency
- other therapeutic modalities affecting the reproductive system (eg, tampons)

### **Gender, ethnic, and behavioral considerations affecting disease treatment and prevention, including psychosocial, cultural, occupational, and environmental**

- emotional and behavioral factors (eg, sexually transmitted diseases)
- influence on person, family, and society (eg, infertility)
- occupational and other environmental risk factors (eg, radiation)
- family planning and pregnancy (eg, unwanted)
- gender identity, sexual orientation, sexuality, libido
- effects of traumatic stress syndrome, violence, rape, child abuse

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## **ENDOCRINE SYSTEM**

### **Normal processes**

- embryonic development, fetal maturation, and perinatal changes
- organ structure and function
  - hypothalamus, posterior and anterior pituitary gland
  - thyroid gland
  - parathyroid glands
  - adrenal cortex, adrenal medulla
  - pancreatic islets
  - ovary and testis
  - adipose tissue
- cell/tissue structure and function, including hormone synthesis, secretion, action, and metabolism
  - peptide hormones
  - steroid hormones, including vitamin D
  - thyroid hormones
  - catecholamine hormones
  - renin-angiotensin system
- repair, regeneration, and changes associated with stage of life

### **Abnormal processes**

- infectious, inflammatory, and immunologic disorders (eg, subacute thyroiditis, Graves disease, sarcoidosis)
- traumatic and mechanical disorders
- neoplastic disorders (eg, pituitary, thyroid, parathyroid, adrenal cortex, pancreatic islets, neural crest, pheochromocytoma)
- metabolic and regulatory processes (eg, diabetes mellitus, pituitary, hypothalamus, thyroid, parathyroid, pancreatic islet disorders, adrenal disorders)
- vascular disorders (eg, pituitary apoplexy)
- systemic disorders affecting the endocrine system
- idiopathic disorders (eg, hirsutism)

### **Principles of therapeutics**

- mechanisms of action, use, and adverse effects of drugs for treatment of disorders of the endocrine system

- hormones and hormone analogs
- stimulators of hormone production (eg, sulfonylureas)
- inhibitors of hormone production (eg, thiouracils)
- hormone antagonists
- potentiators of hormone action (eg, thiazolidinediones)
- antiobesity agents
- other therapeutic modalities (eg, surgery, radiation)

**Gender, ethnic, and behavioral considerations affecting disease treatment and prevention, including psychosocial, cultural, occupational, and environmental**

- emotional and behavioral factors (eg, compliance in diabetes mellitus, factitious use of insulin, psychogenic polydipsia)
- influence on person, family, and society
- occupational and other environmental risk factors (eg, radiation exposure, iodine deficiency)
- gender and ethnic factors

**APPENDIX B**

**28-day Step 1 Study Schedule from Georgetown School of Medicine**



<b>Day 1</b>		<b>General Overview &amp; Begin Biochemistry</b>		
<u>Objective</u>	<u>Assignments</u>	<u>Source</u>	<u>Details</u>	<u>Est. Time</u>
Self Assessment	Complete sample test materials from NBME	<u><i>NBME CD-ROM or download from <a href="http://www.nbme.org">www.nbme.org</a></i></u>	Complete 150 sample questions, and note trouble areas to focus on.	3 hrs
General overview of material to be covered	Read Through Section Introductory Material from <i>First Aid</i> , and Skim Section II	<u><i>First Aid</i></u>	Learn about the test, and how to best use <i>First Aid</i> as a resource.	4 hrs
Basic Metabolism	Chapters 5 & 6, and sample questions at end of each chapter. Bookmark figure 6.2 and refer to it before studying each biochemical pathway.	<u><i>Lippincott's Biochemistry</i></u>	Understand the role of ATP. Know where the electron transport chain, and oxidative phosphorylation occur and how they fit into the overall metabolic scheme. Review the main classes of cell receptors and signaling mechanisms.	2.5 hrs
<b>Day 2</b>		<b>Continue Biochemistry</b>		
<u>Objective</u>	<u>Assignments</u>	<u>Source</u>	<u>Details</u>	<u>Est. Time</u>
Structure & Metabolism of Carbohydrates	Chapters 11, 12, 13 & questions	<u><i>Lippincott's Biochemistry</i></u>	Review the digestion of sugars and disorders of fructose, galactose, and lactose metabolism. Spend more time on glycogen metabolism, its regulation, and related disorders. Use Figure 13.7 to memorize the glycogen storage diseases.	3 hrs
Glycolysis	Chapter 7 & questions	<u><i>Lippincott's Biochemistry</i></u>	Know the start and end points, hormonal regulation, energy yield, and various fates of pyruvate.	1.5 hrs
Gluconeogenesis	Chapter 8 & questions, Review Figure 6.2 again!	<u><i>Lippincott's Biochemistry</i></u>	Study it by comparison to glycolysis. Know the reactions & regulation unique to gluconeogenesis.	1 hr
Citric Acid Cycle	Chapter 9 & questions	<u><i>Lippincott's Biochemistry</i></u>	Focus on start and end points, place in overall metabolism, and regulation.	1 hr
Hexose Monophosphate Shunt	Chapter 10 & questions	<u><i>Lippincott's Biochemistry</i></u>	Skim reactions and focus on G6PD deficiency	1 hr

<b>Day 3</b>		<b>Continue Biochemistry</b>		
<u>Objective</u>	<u>Assignments</u>	<u>Source</u>	<u>Details</u>	<u>Est. Time</u>
Lipid Metabolism	Chapter 17 & questions	<i>Lippincott's Biochemistry</i>	Focus on roles of pancreatic lipase and bile salts. Fatty acid metabolism: know where synthesis occurs, relationship to glucose metabolism, and role of triacylglycerols for storage of fatty acids. Review mobilization of and oxidation of fatty acids. Finally, carefully review eicosanoids, focusing on figure 17.20	3 hrs
Phospholipids & Glycolipids	Skim Chapters 18, 19	<i>Lippincott's Biochemistry</i>	Gain a sense of what these are, but do not memorize structures or pathways. Focus on related disorders instead, using figures 18.10, 19.4.	1 hr
Cholesterol & Steroid Metabolism	Chapter 20, Sect. I-VII	<i>Lippincott's Biochemistry</i>	Review cholesterol synthesis (esp. the role of HMG CoA reductase) and its regulation. Understand synthesis and role of bile salts. Review biology of lipoproteins and their role in atherogenesis. Key figures are 20.12, 20.14, 20.16.	2 hrs
Steroid Hormones	Chapter 20, Sect. VII	<i>Lippincott's Biochemistry</i>	Know the major enzyme deficiencies in steroid synthesis and know where steroid receptors act in the cell. Study figures 20.19, 20.20.	1 hr
<b>Day 4</b>		<b>Continue Biochemistry</b>		
<u>Objective</u>	<u>Assignments</u>	<u>Source</u>	<u>Details</u>	<u>Est. Time</u>
Protein & Enzymes	Chapters 1-4 & questions	<i>Lippincott's Biochemistry</i>	Become familiar with basic properties of amino acids, levels of protein structure, hemoglobin, and collagen. For enzymes, focus on appreciating ( not memorizing) the Michaelis-Menten equation, types of enzyme inhibition, modes of enzyme regulation, and the use of enzymes in clinical diagnosis.	4 hrs
Digestion of Dietary Proteins and Nitrogen Metabolism	Chapter 21 & questions	<i>Lippincott's Biochemistry</i>	Learn the various pancreatic proteases and how they are regulated. Understand transamination and oxidative deamination, but don't memorize pathways. Spend more time on urea cycle and ammonia metabolism focusing on figures 21.4, 21.11, 21.17.	2 hrs

Metabolism of Amino Acid Carbon Skeletons	Chapter 22	<u>Lippincott's Biochemistry</u>	Emphasize relevant disorders. Focus on figures 22.2, 22.16.	1 hr
<b>Day 5</b>	<b>Continue Biochemistry</b>			
<u>Objective</u>	<u>Assignments</u>	<u>Source</u>	<u>Details</u>	<u>Est. Time</u>
Heme, Porphyrins, Serotonin, Histamine and Catecholamines	Chapter 23	<u>Lippincott's Biochemistry</u>	Focus on the porphyrias and bilirubin metabolism. Focus on figures 23.5 and 23.7.	1 hr
Glycosaminoglycans and Glycoproteins	Skim Chapters 14, 15	<u>Lippincott's Biochemistry</u>	Know what they are and know the related disorders. Don't get too bogged down in details - just study figures 14.12 and 15.4, then move on.	1 hr
Nutrition and Vitamins	Chapters 27, 28	<u>Lippincott's Biochemistry</u>	Know the daily energy requirements and vitamin deficiencies. Focus on absorption of vitamin B12 and pernicious anemia, as well as vitamin D. Focus on figures 28.12, and 28.18.	3 hrs
Nucleotide Metabolism	Chapter 29	<u>Lippincott's Biochemistry</u>	Understand differences between de novo and salvage purine synthesis. Study purine degradation and the pathophysiology of gout and ADA deficiency. Study figures 29.7, 29.9, 29.10.	2 hrs
<b>Day 6</b>	<b>Finish Biochemistry</b>			
<u>Objective</u>	<u>Assignments</u>	<u>Source</u>	<u>Details</u>	<u>Est. Time</u>
Integrative Metabolism	Chapters 24, 25, 26	<u>Lippincott's Biochemistry</u>	Synthesize the information you've reviewed this week by studying insulin, glucagon, the fed/starved states, and the metabolic aspects of diabetes mellitus. Time spent on these topics will be VERY WORTHWHILE.	5 hrs
<b>Day 7</b>	<b>General Pharmacology</b>			
<u>Objective</u>	<u>Assignments</u>	<u>Source</u>	<u>Details</u>	<u>Est. Time</u>
Pharmacokinetics & Pharmacodynamics	Chapters 1,2	<u>Lippincott's Pharmacology</u>	Study general principles of pharmacology. Specific agents will be covered with relevant organ systems.	2 hrs
Autonomic Drugs	Chapters 3-7	<u>Lippincott's Pharmacology</u>	Know different types of adrenergic and cholinergic receptors cold. Study figures 3.3, 3.6, 4.2, 5.2, 6.15, 7.10.	5 hrs



<b>Day 8</b>				
<b>Begin Microbiology</b>				
<u>Objective</u>	<u>Assignments</u>	<u>Source</u>	<u>Details</u>	<u>Est. Time</u>
Bacteria	Chapters 1-15	<u><i>Clinical Microbiology made Ridiculously Simple</i></u>	Rely heavily on charts. Start building buzzword associations with characteristics of each organism and how is identified (with a special stain, culture medium, etc.) Also, time spent with Qbank questions here will be golden.	10 hrs
<b>Day 9</b>				
<b>Continue Microbiology</b>				
<u>Objective</u>	<u>Assignments</u>	<u>Source</u>	<u>Details</u>	<u>Est. Time</u>
Antibiotics	Chapters 28-33	<u><i>Lippincott's Pharmacology</i></u>	This is high yield material, read, review and continue to do Qbank questions to keep building buzzword associations.	6 hrs
Fungi	Chapter 20	<u><i>Clinical Microbiology made Ridiculously Simple</i></u>	This is high yield material, read, review and continue to do Qbank questions to keep building buzzword associations.	1.5 hrs
Antifungals	Chapter 34	<u><i>Lippincott's Pharmacology</i></u>	This is high yield material, read, review and continue to do Qbank questions to keep building buzzword associations.	1 hr
<b>Day 10</b>				
<b>Finish Microbiology</b>				
<u>Objective</u>	<u>Assignments</u>	<u>Source</u>	<u>Details</u>	<u>Est. Time</u>
Viruses	Chapters 22-29	<u><i>Clinical Microbiology made Ridiculously Simple</i></u>	This is high yield material, read, review and continue to do Qbank questions to keep building buzzword associations.	6 hrs
Antivirals	Chapter 37	<u><i>Lippincott's Pharmacology</i></u>	Review antiviral agents, particularly mechanisms of action.	1 hr
Parasites	Chapters 30, 31	<u><i>Clinical Microbiology made Ridiculously Simple</i></u>	This is high yield material, read, review and continue to do Qbank questions to keep building buzzword associations.	2 hrs
Antiparasitics	Chapters 35, 36	<u><i>Lippincott's Pharmacology</i></u>	Review antiprotozoal and antihelminthic agents, particularly multi-drug regimens	1 hr
Clinical Vignettes		<u><i>Underground Clinical Vignettes - Microbiology</i></u>	Good for group study, and another way to keep sharpening buzzword recall.	3 hrs

<b>Day 11</b>		<b>Immunology &amp; General Pathology</b>		
<u>Objective</u>	<u>Assignments</u>	<u>Source</u>	<u>Details</u>	<u>Est. Time</u>
Review Immunology	Part VII	<u><i>Medical Microbiology &amp; Immunology: Examination and Board Review</i></u>	Excellent, concise summary of immunology.	4 hrs
Cellular Injury	Chapter 1	<u><i>BRS Pathology</i></u>	Focus on mechanisms of cellular injury and differences between necrosis & apoptosis	0.5 hr
Inflammation	Chapter 2	<u><i>BRS Pathology</i></u>	Distinguish mechanisms and histologic characteristics of acute vs. chronic inflammation.	1 hr
Hemostasis	Chapter 3	<u><i>BRS Pathology</i></u>	Know coagulation cascade, types of embolism, and types of shock.	1 hr
Genetic Disorders	Chapter 4	<u><i>BRS Pathology</i></u>		0.5 hr
Immune Dysfunction	Chapter 5	<u><i>BRS Pathology</i></u>	Focus on immune deficiency disorders, autoimmunity, and collagen vascular disease	0.5 hr
Neoplasia	Chapter 6	<u><i>BRS Pathology</i></u>	Distinguish between tumor suppressor genes & oncogenes, know mechanisms of carcinogenesis, and the properties of malignant cells.	1 hr
Environmental Pathology	Chapter 7	<u><i>BRS Pathology</i></u>	Quickly review	0.5 hr
Nutritional Disorders	Chapter 8	<u><i>BRS Pathology</i></u>	Review vitamin deficiencies to refresh biochem memory.	0.5 hr
<b>Day 12</b>		<b>Cellular Biology</b>		
<u>Objective</u>	<u>Assignments</u>	<u>Source</u>	<u>Details</u>	<u>Est. Time</u>
DNA, RNA, Proteins	Chapters 30 - 33	<u><i>Lippincott's Biochemistry</i></u>	Know mechanisms of DNA repair, different types/roles of RNA, mechanism of translation, and molecular biology techniques. Focus on figures 30.2, 30.16, 30.19, 30.22, 31.11, 32.9.	3.5 hrs
Cell Membranes	Chapter 1	<u><i>BRS Cell Biology &amp; Histology</i></u>	Know properties of membranes and membrane proteins.	1 hr
Nucleus	Chapter 2	<u><i>BRS Cell Biology &amp; Histology</i></u>	Know contents of nuclei, and RNA import/export mechanisms.	0.5 hr

Cytoplasm	Chapter 3	<i>BRS Cell Biology &amp; Histology</i>	Review organelles and function	0.5 hr
Extracellular Matrix	Chapter 4	<i>BRS Cell Biology &amp; Histology</i>	Know different types of collagen, basement membrane composition, and other ECM components.	1 hr
Epithelia & Connective Tissue	Chapters 5,6	<i>BRS Cell Biology &amp; Histology</i>	Review types of epithelia and locations of each. Review connective tissue focusing on bone histology.	1.5 hrs
<b>Day 13</b>	<b>Cellular Physiology &amp; General Embryology</b>			
<u>Objective</u>	<u>Assignments</u>	<u>Source</u>	<u>Details</u>	<u>Est. Time</u>
Cell Physiology	Chapter 1	<i>BRS Physiology</i>	Know mechanisms of ion transport, action potentials.	1 hr
Embryology	Chapters 1-4	<i>BRS Embryology</i>	Know stages from zygote through embryo. Review 3 Germ cell layers and their derivative tissues.	3 hrs
Birth Defects	Chapters 17, 18	<i>BRS Embryology</i>		1.5 hrs
Exam	Diagnostic Test	<i>Board Simulator Series - Body Systems Review</i>	Good opportunity to identify weaknesses in organ system areas.	2 hrs
<b>Day 14</b>	<b>Thorax</b>			
<u>Objective</u>	<u>Assignments</u>	<u>Source</u>	<u>Details</u>	<u>Est. Time</u>
Embryology of thorax	Chapters 5, 11	<i>BRS Embryology</i>	Know the congenital cardiac abnormalities, and fetal circulation. Also understand the stages of fetal lung maturation.	3.5 hrs
Thoracic Anatomy	Chapter 2 (Also use Netter's Atlas for reference)	<i>High Yield Gross Anatomy</i>		3 hrs
Histology of thoracic viscera	Chapters 11, 15	<i>BRS Cell Biology &amp; Histology</i>	Be able to distinguish arteries and veins in cross section. Understand architecture of the gas diffusion barrier in the lungs.	1 hr

<b>Day 15</b>				
<b>Cardiovascular System</b>				
<u>Objective</u>	<u>Assignments</u>	<u>Source</u>	<u>Details</u>	<u>Est. Time</u>
Cardiovascular Physiology	Chapter 3	<i>BRS Physiology</i>	Review hemodynamics, electrophysiology, cardiac cycle, blood pressure regulation, responses to exercise, volume loss, altitude. Understand pre-load, after-load, Frank-Starling curve, and conduction.	1.5 hrs
Cardiac Pathology	Chapter 10	<i>BRS Pathology</i>	Study this chapter thoroughly.	1.5 hrs
Vascular Pathology	Chapter 9	<i>BRS Pathology</i>	Study this chapter thoroughly.	1 hr
Cardiovascular Pharmacology	Chapters 16-19, 21	<i>Lippincott's Pharmacology</i>	Know drugs used to treat CHF, HTN, arrhythmias, angina, and hyperlipidemia.	5 hrs
<b>Day 16</b>				
<b>Respiratory System &amp; Begin Hematology</b>				
<u>Objective</u>	<u>Assignments</u>	<u>Source</u>	<u>Details</u>	<u>Est. Time</u>
Respiratory Physiology	Chapter 4	<i>BRS Physiology</i>	Know the various lung volume measurements, and understand acid - base disorders.	1.5 hrs
Respiratory Pathology	Chapter 14	<i>BRS Pathology</i>	Study this chapter thoroughly.	1.5 hrs
Respiratory Pharmacology	Chapter 22	<i>Lippincott's Pharmacology</i>		0.5 hrs
Clinical Vignettes	Volume 1: Cases 1-19, Volume 2: Cases 52-66	<i>Underground Clinical Vignettes - Patho-physiology</i>	Good opportunity for group review.	2 hrs
Histology of Bone Marrow, Spleen, & Lymph Nodes	Chapters 10, 12 (and a histologic atlas for further review)	<i>BRS Cell Biology &amp; Histology</i>	Familiarize yourself with lymph node architecture, and understand the spleen. Understand RBC, WBC, platelet lineages.	3 hrs
<b>Day 17</b>				
<b>Finish Hematology</b>				
<u>Objective</u>	<u>Assignments</u>	<u>Source</u>	<u>Details</u>	<u>Est. Time</u>
Anemia	Chapter 11	<i>BRS Pathology</i>	Know pathophysiology and lab differentiation of various etiologies of anemias.	2 hrs
Hematopoietic & Lymphoreticular Neoplasia	Chapter 12	<i>BRS Pathology</i>	Distinguish between leukemia & lymphoma. Understand different types of each.	2 hrs
Hemorrhagic Disorders	Chapter 13	<i>BRS Pathology</i>	Know how to diagnose and correct each disorder.	1 hr

Drugs affecting coagulation	Chapter 20	<i>Lippincott's Pharmacology</i>		1.5 hrs
Anticancer Drugs	Chapter 38	<i>Lippincott's Pharmacology</i>		1.5 hrs
Clinical Vignettes	Volume 1: Cases 74-102	<i>Underground Clinical Vignettes - Patho-physiology</i>		2 hrs
<b>Day 18</b>	<b>Gastrointestinal System</b>			
<u>Objective</u>	<u>Assignments</u>	<u>Source</u>	<u>Details</u>	<u>Est. Time</u>
Embryology of Gut and Body Cavities	Chapters 10, 16	<i>BRS Embryology</i>	Understand rotation of gut and related malformations. Know which structures are derived of foregut, midgut, hindgut, in addition to vascular supplies.	1.5 hrs
Abdominal Anatomy	Chapter 3 (Also refer to Netter's atlas)	<i>High Yield Gross Anatomy</i>		2 hrs
Histology of GI Tract	Chapter 6	<i>BRS Cell Biology &amp; Histology</i>	Know layers of gut wall. Understand liver structure, portal blood flow, and bile flow.	1.5 hrs
GI Physiology	Chapter 6	<i>BRS Physiology</i>	Understand innervation of gut and gut hormones	1 hr
<b>Day 19</b>	<b>Gastrointestinal System</b>			
<u>Objective</u>	<u>Assignments</u>	<u>Source</u>	<u>Details</u>	<u>Est. Time</u>
Gastrointestinal Pathology	Chapter 15	<i>BRS Pathology</i>	Study this chapter thoroughly.	2 hrs
Hepatobiliary and Exocrine Pancreatic Pathology	Chapter 16	<i>BRS Pathology</i>	Study this chapter thoroughly.	2 hrs
GI Pharmacology	Chapter 24	<i>Lippincott's Pharmacology</i>	Know GI drugs as well as antiemetics.	2 hrs
Clinical Vignettes	Volume 1: Cases 40-73	<i>Underground Clinical Vignettes - Patho-physiology</i>	Good opportunity for group review.	2 hrs
<b>Day 20</b>	<b>GenitoUrinary System</b>			
<u>Objective</u>	<u>Assignments</u>	<u>Source</u>	<u>Details</u>	<u>Est. Time</u>

Embryology of GU Organs	Chapters 6, 13, 14	<u><i>BRS Embryology</i></u>		3 hrs
Anatomy of Pelvis and Perineum	Chapters 4, 5	<u><i>High Yield Gross Anatomy</i></u>		3 hrs
Histology of GU Organs	Chapters 18, 19, 20	<u><i>BRS Cell Biology &amp; Histology</i></u>	Know the maturation sequence of spermatocytes and ovarian follicles. Know the anatomy of the nephron.	3 hrs
<b>Day 21</b>	<b>GenitoUrinary System</b>			
<u>Objective</u>	<u>Assignments</u>	<u>Source</u>	<u>Details</u>	<u>Est. Time</u>
Renal Physiology	Chapter 5	<u><i>BRS Physiology</i></u>		1.5 hrs
Diuretics	Chapter 23	<u><i>Lippincott's Pharmacology</i></u>		1.5 hrs
Renal & Urinary Tract Pathology	Chapter 17	<u><i>BRS Pathology</i></u>	Study this chapter thoroughly.	1.5 hrs
Male Reproductive Pathology	Chapter 18	<u><i>BRS Pathology</i></u>	Know the different types of testicular cancer, and the biology of BPH and prostate cancer	1 hr
Female Reproductive Pathology	Chapter 19	<u><i>BRS Pathology</i></u>	Understand cervical, uterine cancer.	1.5 hrs
Clinical Vignettes	Volume 2: Cases 30-51, and 83-103	<u><i>Underground Clinical Vignettes - Patho-physiology</i></u>	Good opportunity for group review.	2 hrs
<b>Day 22</b>	<b>Endocrine System</b>			
<u>Objective</u>	<u>Assignments</u>	<u>Source</u>	<u>Details</u>	<u>Est. Time</u>
Histology of Endocrine System	Chapter 13	<u><i>BRS Embryology</i></u>	Review structure of endocrine organs, and use an atlas for additional pictures.	1 hr
Physiology	Chapter 7	<u><i>BRS Physiology</i></u>	Know hormonal axes	2.5 hrs
Insulin and oral hypoglycemics	Chapter 26	<u><i>Lippincott's Pharmacology</i></u>	Know different types of insulin and their half lives. Know classes of oral hypoglycemics and side effects.	1.5 hrs
Steroid Hormones	Chapter 27	<u><i>Lippincott's Pharmacology</i></u>		1 hr

Clinical Vignettes	Volume 1: Cases 25-38	<u>Underground Clinical Vignettes - Patho-physiology</u>	Good opportunity for group review.	2 hrs
EXAM	Body Systems III - Test 1	<u>Board Simulator Series - Body Systems Review</u>	Tough questions, but great explanations. Well worth the time to push yourself a bit and solidify the material you've learned.	1.5 hrs
<b>Day 23</b>	<b>Nervous System</b>			
<u>Objective</u>	<u>Assignments</u>	<u>Source</u>	<u>Details</u>	<u>Est. Time</u>
Embryology of Head, Neck, & Nervous System	Chapters 7, 8, 9, 10	<u>BRS Embryology</u>	Know branchial arches/clefts and their derivatives. Understand the transition from neural plate to mature CNS. Know fate of neural crest cells.	3 hrs
Head & Neck Anatomy	Chapter 8 (also refer to Netter)	<u>High Yield Gross Anatomy</u>		2 hrs
Neuroanatomy	Chapters 1-23	<u>High Yield Neuroanatomy</u>		6hrs
<b>Day 24</b>	<b>Nervous System</b>			
<u>Objective</u>	<u>Assignments</u>	<u>Source</u>	<u>Details</u>	<u>Est. Time</u>
Neurophysiology	Chapter 2	<u>BRS Physiology</u>	Understand Synaptic transmission and axonal conduction	2 hrs
Neuropathology	Chapter 23	<u>BRS Pathology</u>	Know types of CNS infections, tumors, and vascular disorders.	2 hrs
Clinical Vignettes	Volume 2: Cases 45-61, Anatomy Cases 40-56.	<u>Underground Clinical Vignettes - Patho-physiology</u>	Good opportunity for group review.	2 hrs
Neuropharmacology	Chapters 8, 10, 11, 14, 15	<u>Lippincott's Pharmacology</u>	Review drugs used to treat epilepsy, Parkinson's. Also review anesthetics and analgesics.	3.5 hrs
<b>Day 25</b>	<b>Musculoskeletal System</b>			
<u>Objective</u>	<u>Assignments</u>	<u>Source</u>	<u>Details</u>	<u>Est. Time</u>
Embryology	Chapter 15	<u>BRS Embryology</u>		1 hr
Anatomy of Limbs and Back	Chapters 1, 6, 7 (also use Netter)	<u>High Yield Gross Anatomy</u>		3.5 hours
Histology	Chapters 7, 8, 10	<u>BRS Cell Biology &amp; Histology</u>	Review histology of skin, muscle, bone, and cartilage	2 hrs

Anti-Inflammatory Agents and Autocoids	Chapters 39, 40	<u>Lippincott's Pharmacology</u>		2 hrs
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<b>Day 26</b>		<b>Musculoskeletal System</b>		
<u>Objective</u>	<u>Assignments</u>	<u>Source</u>	<u>Details</u>	<u>Est. Time</u>
Dermatologic Pathology	Chapter 21	<i><u>BRS Pathology</u></i>	Focus on malignancies (melanoma, SCC, BCC) and refer to a dermatology atlas so that you can differentiate between them.	1.5 hrs
Musculoskeletal Pathology	Chapter 22	<i><u>BRS Pathology</u></i>		1.5 hrs
Clinical Vignettes	Volume 3: Cases 9-18, and 96-104. Also Anatomy: Cases 62-84	<i><u>Underground Clinical Vignettes - Patho-physiology</u></i>	Good opportunity for group review.	2 hrs
Exam	Body Systems II - Test 1	<i><u>Board Simulator Series - Body Systems Review</u></i>	Tough questions, but great explanations. Well worth the time to push yourself a bit and solidify the material you've learned.	2 hrs
<b>Day 27</b>		<b>Behavioral Sciences &amp; Biostatistics</b>		
<u>Objective</u>	<u>Assignments</u>	<u>Source</u>	<u>Details</u>	<u>Est. Time</u>
Clinical Vignettes	All cases	<i><u>Underground Clinical Vignettes - Behavioral Sci.</u></i>		3 hrs
Psychotropic Drugs	Chapters 9-12, 13	<i><u>Lippincott's Pharmacology</u></i>		3 hrs
Biostatistics	Read entire book	<i><u>High Yield Biostatistics</u></i>	Understand sensitivity, specificity, PPV, NPV. Be prepared to calculate risk, odds ratios, etc.	4 hrs
<b>Day 28</b>		<b>Final Review &amp; Exam Logistics</b>		
<u>Objective</u>	<u>Assignments</u>	<u>Source</u>	<u>Details</u>	<u>Est. Time</u>
Final Review			Review Any Remaining Topics and finish practice questions.	4 hrs
Exam Logistics			Prepare exam bag - with ID, ticket, directions to center, lunch.	
Rest & Relax				