



Doctoring 2 Course Guide

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GOALS AND LEARNING OBJECTIVES

MEDICAL EDUCATION PROGRAM OBJECTIVES

INSTITUTIONAL LEARNING OBJECTIVE	MEDICAL EDUCATION PROGRAM OBJECTIVE
B - Behaves in a caring, compassionate and sensitive manner toward patients and colleagues of all cultures and backgrounds. (Interpersonal and Professionalism)	B.1 - Apply principles of social-behavioral sciences to provision of patient care; including assessment of the impact of psychosocial and cultural influences on health, disease, care-seeking, care compliance, and barriers to and attitudes toward care. (2.5)
	B.2 - Demonstrate insight and understanding about emotions that allow one to develop and manage interpersonal interactions. (4.7)
	B.3 - Demonstrate compassion, integrity, and respect for others. (5.1)
	B.4 - Demonstrate sensitivity and responsiveness to a diverse patient population, including but not limited to diversity in gender, age, culture, race, religion, disabilities, and sexual orientation. (5.5)
U - Uses the science of normal and abnormal states of health to prevent disease, to recognize and diagnose illness and to provide and appropriate level of care. (Medical Knowledge and Patient Care)	U.1 - Perform all medical, diagnostic, and surgical procedures considered essential for the area of practice. (1.1)
	U.2 - Gather essential and accurate information about patients and their conditions through history-taking, physical examination, and the use of laboratory data, imaging and other tests. (1.2p)
	U.3 - Interpret laboratory data, imaging studies, and other tests required for the area of practice. (1.4)
	U.4 - Make informed decisions about diagnostic and therapeutic interventions based on patient information and preferences, up-to-date scientific evidence and clinical judgement. (1.5)
	U.5 - Develop and carry out patient management plans. (1.6)
	U.6 - Provide health care services to patients, families, and communities aimed at preventing health problems or maintaining health. (1.9)
	U.7 - Demonstrate an investigatory and analytic approach to clinical situations. (2.1)
	U.8 - Apply established and emerging bio-physical scientific principles fundamental to health care for patients and populations. (2.2)
	U.9 - Apply established and emerging principles of clinical sciences to health care for patients and populations. (2.3)
	U.10 Recognizes that ambiguity is a part of clinical health care and respond by utilizing appropriate resources in dealing with uncertainty. (8.8)
C - Communicates with colleagues and patients to ensure effective interdisciplinary medical care (Interpersonal and Communication Skills; Patient Care)	C.1 - Gather essential and accurate information about patients and their conditions through history-taking, physical examination, and the use of laboratory data, imaging and other tests. (1.2h)
	C.2 - Counsel and educate patients and their families to empower them to participate in their care and enable shared decision making. (1.7)
	C.3 - Participate in the education of patients, families, students, trainees, peers and other health professionals. (3.8)
	C.4 - Communicate effectively with patients, families, and the public, as appropriate, across a broad range of socioeconomic and cultural backgrounds. (4.1)
	C.5 - Communicate effectively with colleagues within one's profession or specialty, other health professionals, and health related agencies (4.2, see also 7.3)
	C.6 - Maintain comprehensive, timely, and legible medical records. (4.5)
	C.7 - Demonstrate sensitivity, honesty, and compassion in difficult conversations, including those about death, end of life, adverse events, bad news, disclosure of errors, and other sensitive topics. (4.6)
	C.8 - Communicate with other health professionals in a responsive and responsible manner that supports the maintenance of health and the treatment of disease in individual patients and populations. (7.3)

INSTITUTIONAL LEARNING OBJECTIVE	MEDICAL EDUCATION PROGRAM OBJECTIVE
A - Acts in accordance with highest ethical standards of medical practice (Professionalism)	A.1 - Demonstrate responsiveness to patient needs that supersedes self-interest. (5.2)
	A.2 - Demonstrate respect for patient privacy and autonomy. (5.3)
	A.3 - Demonstrate accountability to patients, society, and the profession. (5.4)
	A.4 - Demonstrate a commitment to ethical principles pertaining to provision or withholding of care, confidentiality, informed consent, and business practices, including compliance with relevant laws, policies, and regulations. (5.6)
	A.5 - Work with other health professionals to establish and maintain a climate of mutual respect, dignity, diversity, ethical integrity, and trust. (7.1)
	A.6 - Demonstrate trustworthiness that makes colleagues feel secure when one is responsible for the care of patients. (8.5)
R - Reviews and critically appraises biomedical literature and evidence for the purpose of ongoing improvement of the practice of medicine. (Practice-Based Learning and Improvement and Medical Knowledge)	R.1 - Apply principles of epidemiological sciences to the identification of health problems, risk factors, treatment strategies, resources, and disease prevention/health promotion efforts for patients and populations. (2.4)
	R.2 - Locate, appraise, and assimilate evidence from scientific studies related to patients' health problems. (3.6)
	R.3 - Continually identify, analyze, and implement new knowledge, guidelines, standards, technologies, products, or services that have been demonstrated to improve outcomes. (3.10)
E - Exhibits commitment and aptitude for life-long learning and continuing improvement (Practice-based Learning)	E.1 - Identify strengths, deficiencies, and limits in one's knowledge and expertise. (3.1)
	E.2 - Set learning and improvement goals. (3.2)
	E.3 - Identify and perform learning activities that address one's gaps in knowledge, skills, and/or attitudes. (3.3)
	E.4 - Incorporate feedback into daily practice. (3.5)
	E.5 - Obtain and utilize information about individual patients, populations of patients, or communities from which patients are drawn to improve care. (3.9)
	E.6 - Develop the ability to use self-awareness of knowledge, skills, and emotional limitations to engage in appropriate help-seeking behaviors. (8.1)
	E.7 - Manage conflict between personal and professional responsibilities. (8.3)
S - Supports optimal patient care through identifying and using resources of the health care system. (Systems-Based Practice and Patient Care)	S.1 - Provide appropriate referral of patients including ensuring continuity of care throughout transitions between providers or settings, and following up on patient progress and outcomes. (1.8)
	S.2 - Systematically analyze practice using quality-improvement methods and implement changes with the goal of practice improvement. (3.4)
	S.3 - Use information technology to optimize learning. (3.7)
	S.4 - Work effectively with others as a member or leader of a health care team or other professional group. (4.3, see also 7.4)
	S.5 - Work effectively in various health care delivery settings and systems relevant to one's clinical specialty. (6.1)
	S.6 - Coordinate patient care within the health care system relevant to one's clinical specialty. (6.2)
	S.7 - Incorporate considerations of cost awareness and risk-benefit analysis in patient and/or population-based care. (6.3)
	S.8 - Advocate for quality patient care and optimal patient care systems. (6.4)
	S.9 - Use the knowledge of one's own role and the roles of other health professionals to appropriately assess and address the health care needs of the patients and populations served. (7.2)
	S.10 - Participate in different team roles to establish, develop, and continuously enhance interprofessional teams to provide patient- and population-centered care that is safe, timely, efficient, effective, and equitable. (7.4)

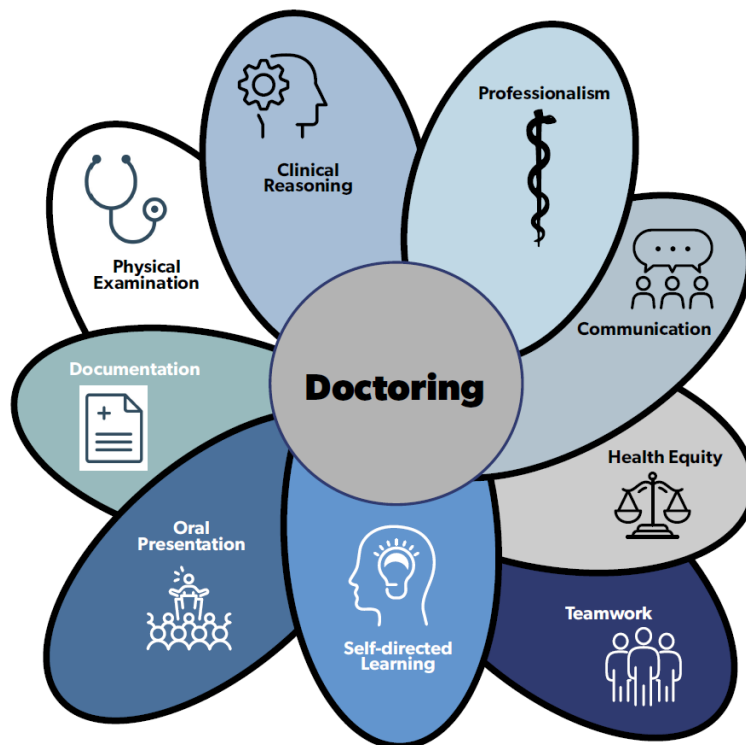
COURSE GOALS

A basic definition for doctoring is “caring for patients.” We believe the core “caring” activities of doctors are the following:

- Helping a person maximize their quality of life based on their goals
- Relieving biopsychosocial suffering
- Building relationships with your patients

Thus, the goal of this course is to help students develop knowledge, skills, and attitudes that will enable them to effectively and compassionately care for and build relationships with their patients. We would like you to think of doctoring as a “**relationship-centered**” practice. A relationship-centered approach has two benefits. First, doctors focus on the whole person, not just their diseases and second, strong relationships lead to trust, better adherence to care, and less provider burnout. Notice, these lead to better patient health outcomes and satisfaction so these aren’t just “soft skills.” They really matter. .

The schematic below highlights 9 knowledge, skill, and attitudinal domains that are necessary for students to achieve the previously described goals. .



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COURSE LEARNING OBJECTIVES

COMMUNICATION	
Interviewing	<ul style="list-style-type: none"> Effectively open clinical encounter with patient by setting the stage and establishing rapport (B.1,B.2,B.3,B.4,U.2, C.1,A.2)
	<ul style="list-style-type: none"> Demonstrate the use of effective communication skills to achieve therapeutic and diagnostic goals (B.1,B.2,B.3,B.4,U.2, C.1,A.2)
	<ul style="list-style-type: none"> Provide closure for clinical encounter (B.1,B.2,B.3,B.4,U.2, C.1,A.2)
	<ul style="list-style-type: none"> Share information effectively with patient and family (B.1,B.2,B.3,B.4,U.2, C.1,A.2)
Building relationship	<ul style="list-style-type: none"> Demonstrate ability to establish therapeutic alliance (B.1,B.2,B.3,B.4,U.2, C.1,A.2)
	<ul style="list-style-type: none"> Discuss the patient's perspective (B.1,B.2,B.3,B.4,U.2, C.1,A.2)
	<ul style="list-style-type: none"> Perform a patient-centered physical exam (B.3, B.4, U.2,C.1)
	<ul style="list-style-type: none"> Recognize how one's own beliefs, feelings, bias and preconceptions may influence the medical interview (A4,B1,B2, B3, B4, E1)
Data gathering	<ul style="list-style-type: none"> Gather a hypothesis-driven history (B.1,B.2,B.3,B.4,U.2, C.1,A.2)
PHYSICAL EXAMINATION	
	<ul style="list-style-type: none"> Perform a hypothesis- driven physical exam (B.3, B.4, U.2,C.1)
ORAL PRESENTATION	
	<ul style="list-style-type: none"> Present an organized, clear and hypothesis- driven oral presentation (U.2,C.1, C.5)
	<ul style="list-style-type: none"> Orally present research topics that further the groups understanding of a topic (U.2,C.1, C.5)
DOCUMENTATION	
	<ul style="list-style-type: none"> Write an organized, clear and logical medical record SOAP note, admission note, progress note, and pre-and post-operative note (U.2,C.1,C.5, C.6)
CLINICAL REASONING	
	<ul style="list-style-type: none"> Effectively use clinical reasoning skills during patient care and while working through patient cases (U.2, U.3, U.4,C.1)
HEALTH EQUITY AND DISPARITIES	
	<ul style="list-style-type: none"> Utilize knowledge of social determinants of health to mitigate barriers to achieving equitable health for all of your patients.(E5, R1)
PROFESSIONALISM	
	<ul style="list-style-type: none"> Recognize how one's own beliefs, feelings, prejudices and preconceptions may influence the medical interview(A4, A5, A6, E1, E3, E5, E6)
	<ul style="list-style-type: none"> Demonstrate professional behavior and demeanor in all settings (B.1, B.2, B.3, B.4, C.1, C.4, C.5, C.8,A.1, A.2, A.3, A.4, A.5, A.6)
	<ul style="list-style-type: none"> Engage in the process of professional identity formation as a physician in training (E1, E2, E3, E4, E5, E6)
TEAMWORK	
	<ul style="list-style-type: none"> Demonstrate ability to work successfully on a team
SELF-DIRECTED LEARNING	
	<ul style="list-style-type: none"> Demonstrate an ability to identify and successfully meet one's own learning needs (E1, E2)

COVID-RELATED INFORMATION

Given the need for social distancing, students will initially begin the course virtually from July to the end of August. At the beginning of September, students will attend classes in person with appropriate safety measures in place, including COVID testing, donning of the required PPE and physical distancing based on up-to-date BUSM policies.

COURSE DESCRIPTION

Doctoring 2 is a year-long course in the second-year where students build off their experience from Doctoring 1. The course runs from July through March.

As previously described, the course will help students build their knowledge, skills, and attitudes in 9 performance domains. Because these domains are so wide-ranging, we will use multiple educational experiences/strategies. The course is divided into “classroom” and clinical experiences.

The classroom portions of the course consist of Academy of Medical Educator (AME)-led small group “Doctoring” sessions and advanced skills sessions. The AME-led Doctoring sessions are structured in case-based small groups which allow students to perform clinical interviews with a faculty member or standardized patients so they can learn and practice advanced communication skills, hypothesis-driven data gathering, and physical examinations, including advanced physical examination maneuvers. There will be a significant emphasis on clinical reasoning and both identifying and mitigating cognitive biases. Students will refine and expand their case presentation and note writing skills and will learn to use the electronic medical record. Cases will promote integration of foundational and social science topics and provide opportunities for self-directed learning. At the end of some sessions, students will identify learning needs related to the case and each will take a topic to research. The following week, students will teach their classmates about the topic that they researched to further the group’s understanding of the case. Students will also have a variety of additional simulation sessions and standardized patient interviews to further their skills.

In terms of clinical experiences, they will continue their clinical placements with a longitudinal preceptor in the fall, and will return to the hospital during the winter/spring to further advance their clinical skills in preparation for their clinical clerkships. Students will further their teamwork skills, competence in building a therapeutic alliance with patients, and will reflect on topics surrounding professionalism, ethics and professional identity formation.

All students are required to take the formative communication assessment in the summer and pass a standardized patient physical examination exercise, pass the clinical reasoning and physical diagnosis examination, complete all required quizzes and assignments and present six complete patient work-ups in standard oral and written format. The course prepares students for the End of Second Year Assessment, a three-station clinical skills examination scheduled in the Clinical Skills and Simulation Center, and readies them for the third-year clerkships.

COURSE STRUCTURE

Students will be assigned two afternoons per week. These afternoons are comprised of small group sessions and 6 afternoons with a longitudinal preceptor. Additionally, students will have sessions using simulators, live models and standardized patients to identify heart sounds, perform breast, pelvic, male genital, and rectal examinations, and perform a brief negotiated interview regarding substance use problems. Further there will be specialized sessions in imaging, clinical reasoning, and pediatric topics. Occasionally evenings may be substituted depending on instructor or standardized patient availability.

During the year, the small group sessions will focus on advanced communication skills, clinical reasoning skills, documentation skills (both by hand in and in electronic medical record) and presentation skills. They will also participate in Ward Prep (previously known as HPE)- where they will complete interviews and physical exams on hospitalized patients, perform case presentations, and write notes.

There are block experiences that start with the fundamental skills of patient examination and progress through the performance of a complete history and physical examination; and a series of reinforcing experiences that broaden and enhance the required skills. There is more in-depth information available for Doctoring 2 in Blackboard. (<https://learn.bu.edu>)

Experiences:

Small group Sessions with Academic Medical Educators (AME): .Students will continue to learn to systematically dissect clinical cases in a small group scenario with other students and one faculty facilitator to advance their clinical reasoning skills. Students will integrate knowledge from other courses, independent research and information gained from group collaboration to achieve a comprehensive understanding of a clinical case. Students will develop research and presentation skills in an observed environment. In addition, students will progressively develop clinical reasoning skills of building hypothesis driven differential diagnoses and clinical plans for these case patients. Students will gain experience working with colleagues in a respectful manner that will prepare them for similar experiences in clinical practice.

In addition, students meet in their AME small groups in the fall to review the basic physical examination skills learned in Doctoring 1 with some addition of more advanced hypothesis driven physical exam maneuvers. There is required reading from Bickley/ Bates' as well as selected videos to prepare for each session, and a detailed Doctoring 2 checklist that outlines what techniques will be covered on each day. Upon completion of these sessions students should be acquainted with the key parts of the physical examination and should begin to be able to carry out an examination on their own. We realize that learning the physical exam while examining a co-student may be challenging for some students so we have asked students to identify a partner before the start of the course to work with in pairs for the physical examination skills. Students will be instructed on the appropriate attire for these sessions and privacy will be maintained in the CSSC or with privacy dividers. Any student who feels uncomfortable with this aspect of the course should contact Dr. Phillips before the day of the session. In addition, any student with medical accommodations should contact Dr. Phillips at the start of the course to arrange for an alternative instruction. Note, all GYN, breast and genitourinary examinations will be done with the assistance of task trainers and GYN and GU teaching associates. I

Additionally, students should become familiar with the Review of Systems questions and should be able to report the findings of the physical exam using standard medical vocabulary. To this end, a brief physical exam and review of systems write-up is completed as part of the Ward Prep (previously known as HPE) In the Middle of Second Year Assessment Prep session, students are observed performing a physical examination on a classmate and receive direct feedback from their instructor. For this session, they will use the same checklist used by the standardized patients on the pass-fail Middle of Second Year Assessment- Physical Examination

The AME small groups also allow a focus on teaching advanced communication skills and reinforcing advanced physical exam maneuvers. The design of the cases will teach students how to take a hypothesis driven history, and how to do a hypothesis driven physical exam. Students will generate prioritized differential diagnoses, will examine likelihood ratios, and will generate illness scripts for BUSM core topics and examine and attempt to mitigate bias in clinical reasoning. Students will practice case presentations, practice documenting in an electronic medical record and will submit case write-ups.

Longitudinal Preceptor: Students arrange to spend six half-days with a longitudinal preceptor. This may need to be done via telemedicine or in person with the appropriate PPE at the discretion of the preceptor. These sessions will permit further practice and refinement of history and physical examination skills, (yes, even done via televideo visits) .

Ward Prep(previously known as HPE): Students will spend six half days practicing the focused and complete history and physical exam in the inpatient setting. Students will also practice presenting the patients they have seen and will write a note. Students should have additional practice in using standard medical vocabulary, and should practice and receive feedback on their ability to outline and support a differential diagnosis. Six complete work-ups (including interview and physical exam, oral presentation, and write-up) are required of all students. After being corrected by the instructor the write-ups must be submitted to the Medical Education Office within one week of the last Ward Prep session.

Advanced Skills Sessions:

Radiology (Rad): These two sessions cover some of the basics of the radiologic exam. Students will work independently on on-line cases before and after class. In class they will participate in an interactive session with cases to learn basic use and interpretation of radiographic films.

Pediatrics (Pedi): Students will have some sessions of the AME small groups devoted to Pediatrics. These sessions focus on learning the special aspects of data collection that pertain to infants and children. There are sessions (including a possible live demonstration of the pediatric interview) and a series of online CLIPP cases (more of which are assigned in BUSM III). Upon completion of these sessions, students will have begun to appreciate the techniques for interviewing families and applying the bio-psycho-social approach to solving patients' problems. In addition, they will learn the aspects of the history and physical exam as it pertains to a newborn, toddler or teenager.

Students will spend one session in each of the following exercises:

Brief Negotiated Interview for Substance Use (BNI): In this afternoon small group AME seminar students will be introduced to the brief negotiated interview (BNI), a form of motivational interviewing used to counsel patients who have unhealthy substance use. The seminar will use ARS questions, short video clips, live interview, and skills practice simulation in small groups, to enhance student skills.

Communication Assessment: This formative session with actors and their AME providing feedback will allow students to use the learned techniques of BNI and PEARLSS to help with motivating a patient to change around substance use and helping to defuse an angry patient. All students must take this session to pass the course but are given formative feedback.

Middle of Second Year Assessment- Physical Examination : Scheduled in the afternoon or evening in the CSSC, students perform a complete physical examination on a standardized patient with selected hypothesis driven physical exam maneuvers. The Standardized Patient also provides immediate feedback. This is a graded exercise and students need to complete at least 70% of the maneuvers correctly in order to pass.

Eye Session: This hands-on session is taught by the Ophthalmology Department.

ENT Session: This hands-on session is taught by an otolaryngologist.

Heart Sounds Session: This 90-minute session will review normal and abnormal heart sounds, and will involve student use of SimMan and SAM simulators and other recordings. .

Breast and Pelvic Examination Practicum: Taught in the CSSC, students are taught how to perform the breast and pelvic examinations by a Gynecology Teaching Associate (GTAs)

Male GU/ Rectal Examination: Taught in the CSSC, students are taught how to perform the male genital and rectal examinations by a male GU instructor.

Self-Directed Learning:

Optional CSSC Sessions

There are many opportunities for students to practice their clinical skills in the Clinical Skills and Simulation Center:

Optional Skills Clinics- Dr. Phillips and colleagues run a series of optional clinical skills sessions in the CSSC called Skills Clinics. The topic ranges from interview skills (to prepare students for the communication interview), to targeted PE skills (such as a musculoskeletal session), to general PE skills. Students can practice with classmates, use skill trainers and receive assistance from faculty. This would have to be arranged in advance and may need further discussion given the need for social distancing and the use of PPE.

PREREQUISITE

Completion of Doctoring 1 fall and spring, enrollment in the BUSM II curriculum.

COURSE IMPROVEMENT AND FEEDBACK

STUDENT ADVISORY COMMITTEE (SAC)

In order to respond to medical students' concerns in a timely fashion and to allow for student-faculty dialogue about the course, a Student Advisory Committee will be convened. That committee will include second-year medical students and the Course Directors. The names, email addresses of the student volunteers will be posted on the Blackboard site to better facilitate communication. The SAC will meet at least 2 times per year and will meet in the A-3 conference room, at Noon or via zoom depending on the circumstances.

All students are encouraged to bring any concerns (whether about the course, lectures, online materials, or interview exercises) to one of their SAC representatives. Students are always welcome to talk directly to Dr. Phillips or Dr. Rencic, and this can be arranged by emailing to schedule an appointment.

CURRENT CHANGES:

This year, Doctoring 2 will be evolving to include more clinical reasoning sessions. In addition, due to the need to socially distance during the end of Doctoring 1, additional Doctoring 1 material needs to be incorporated. As such, some review of the physical exam content from Doctoring 1 will need to be done as well as a Head to Toe Physical Exam Assessment albeit with some additional hypothesis driven physical exam maneuvers. Students may now have up to 2 doctoring sessions each week (with the exception of exam weeks). Occasionally, there may be an additional skills session that need to be rescheduled leading to more than 2 sessions per week. This should be a rare occurrence. There will be a 1-hour kick-off lecture or flipped content each week to describe the topics to be covered in the week. Students will have a half-day session each week with their Academy Medical Educator (AME) where they will work through cases, often with SP's and actors, and the cases will develop their communication skills, physical

exam skills, clinical reasoning skills, oral presentation skills, written documentation skills and self-directed learning skills. They will also reinforce the foundational science concepts students are learning in the classroom. The other half day of doctoring will be a patient care experience to reinforce and further develop all of the above- mentioned skills. Students will spend 6 half days with their longitudinal preceptor either in person with PPE or done via telemedicine at the discretion of the preceptor. The inpatient Ward Prep (previously known as HPE) will occur starting in December.

Keep in mind that given the current COVID 19 pandemic, sessions may need to be changed and content delivery to students is subject to modification.

COURSE SCHEDULE

See Google calendar

See blackboard for weekly grid information

See individual schedule emailed to student

CONTACT INFORMATION & FACULTY

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ACADEMY MEDICAL EDUCATORS

Learning Community (by day of week)

TUESDAY		THURSDAY	
Name	Julie Bartolomeo MD	Name	Sonia Ananthakrishnan MD
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Title		Title	
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Title	
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LIBRARY RESOURCE/CONTACT

David Flynn, MS(LIS)

Head of Library and Information Management Education

Phone: (617) 638-4271

Office: Alumni

Medical Library, L-

12 Reference

Desk: Monday-

Friday 8:30-5:00

Telephone: 617-

638-4228

E-mail: refquest@bu.edu

SESSION SPECIFIC CONTACTS:

- ☐ BREAST AND PELVIC EXAM PRACTICUM- Contact MEO. Direct CSSC phone # (617)- 358-7664
- ☐ CLINICAL SKILLS AND SIMULATION CENTER (CSSC)- Contact MEO, or CSSC (617)- 358-7664
- ☐ ENT- Contact Sophia Boulas, Sophia.panagiotopoulos@bmc.org, (617) 638-7934
- ☐ EOSYA- Contact MEO/ CSSC, Amber Diaz at amberdl@bu.edu (617) 358-7664
- ☐ EOSYA Practice- Contact MEO, or CSSC (617)- 358-7664
- ☐ EYE- Contact OME
- ☐ Ward Prep at BMC: contact MEO at 617-358-7664
- ☐ West Roxbury VA Medical Center (617)-323-7700, 1400 VFW Parkway, West Roxbury
 - ☐ Laura Muckerheide (credentialing), laura.muckerheide@va.gov, (857) 203-6942
 - ☐ Mr. Mark Bialas (education coordinator) mark.bialas@va.gov, (857) 203- 6856,
 - ☐ Dr. Alex Nothern – (faculty educator) alex.northern@va.gov
- ☐ MALE GU/RECTAL EXAM Practicum- Contact MEO. Direct CSSC phone # (617)- 358-7664
- ☐ Longitudinal Preceptorship- contact MEO, Ms. Kelly Adams kadams2@bu.edu 617-358-7498
- ☐ STANDARDIZED PATIENT EXPERIENCES- Contact MEO, or CSSC (617)- 358-7664
- ☐ RADIOLOGY- Dr. Kitt Shaffer, Dept of Radiology, Kitt.Shaffer@bmc.org, 617-638-6598
- ☐ SKILLS CLINICS- Contact MEO, or CSSC (617)- 358-7664
 - When in doubt, contact the course administrators or Dr. Phillips and Dr. Rencic who will assist you

ROLES AND RESPONSIBILITIES

COURSE DIRECTORS

The Course Directors monitors the SAC and student feedback in real time during the course to improve the classroom, course content, and exams.

CASE FACILITATORS

Facilitators are responsible for the following:

- ☐ Supporting the student group and assisting with session format and flow
- ☐ Assessing student research, participation, and presentations
- ☐ Assessing and giving feedback on communication, interview skills, and physical exam skills
- ☐ Guiding and critiquing oral presentation skills
- ☐ Critiquing write-ups in a timely fashion and at a thorough level
- ☐ Creating an environment conducive to learning
- ☐ Providing formal written evaluation of students through eValue

CLINICAL SKILLS INSTRUCTORS/PRECEPTORS

Preceptors are responsible for the following:

- ☐ Covering the learning objectives during their sessions.
- ☐ Demonstrating some interview and a wide variety of physical examination techniques
- ☐ Assessing and giving feedback on communication, interview skills, and physical exam skills
- ☐ Guiding and critiquing oral presentation skills
- ☐ Critiquing write-ups in a timely fashion and at a thorough level
- ☐ Acting as a role model for patient interactions
- ☐ Providing formal written evaluation of students through eValue

STUDENTS

Students are responsible for the following:

- ☐ Reviewing the corresponding links/information on Blackboard well in advance of each session
- ☐ Completing any preparatory assignment before class
- ☐ Completing the pre or post-class quizzes as assigned
- ☐ Keeping track of standardized patient sessions and other sessions scheduled at off- times
- ☐ Planning transportation in advance for all distant sessions (Checking time and directions, arranging a carpool, etc.)
- ☐ Keeping their diagnostic kit charged at all times and bringing their diagnostic equipment to sessions as directed
- ☐ **ATTENDING ALL SESSIONS-** This is a clinical course in which instructors and patients are expecting you. As in the third-year clerkships, all sessions are mandatory. If illness or other circumstance prevents you from attending, please contact your

- instructor AND the Office of Medical Education
- ☐ Behaving professionally (BEING ON TIME, dressing appropriately for the setting, and showing respect for patients as well as staff and other students) as well as TURNING IN ALL ASSIGNMENTS
 - ☐ Not discussing personal information that you learn about a patient or a classmate outside of the context of the learning session
 - ☐ Asking questions
 - ☐ Eliciting feedback on your clinical skills from instructors
 - ☐ Identifying clinical skills in which you feel weak and addressing them (by reading, reviewing on-line materials, addressing with your instructor, coming to a skills clinic, or practicing with a friend)
 - ☐ Completing and submitting assignments ON TIME

Attendance & Time Off Policy

The attendance & time off policy is located at:

<http://www.bumc.bu.edu/busm/education/medical-education/policies/attendance-time-off-policy/>

Professional Comportment

1. Respect your fellow classmates and the lecturers
2. Arrive on time for the lectures and patient interviews
3. Keep side conversations to a minimum during lecture
4. Turn cell-phones and pagers off in class
5. Wear your white coats during patient interview sessions, unless told otherwise

Ethical Behavior for Examinations and Mandatory Sessions

1. During exams and as you are leaving, refrain from any conversation with your peers while in the L-11 testing space (including within the vending room and elevator waiting area) until you are on the elevator.
2. Don't seek or receive copies of the examinations
3. Signing in classmates for mandatory sessions is considered cheating and violations will be referred to Medical Student Disciplinary Committee
4. If you are aware of any violations of the ethical standards listed above, within the Student Disciplinary Code of Academic and Professional Conduct, or otherwise, report it to the Course Director

Patient Interview Sessions

Attendance at patient interview sessions is mandatory in this class. Students are expected to:

- ☐ wear their white coats, unless told otherwise
- ☐ refrain from using pagers, cell phones, and laptops during these sessions. This includes, but is not limited to, texting and emailing during the patient interview.

Student Disciplinary Code of Academic and Professional

Conduct

The Student Disciplinary Code is located at:

<http://www.bumc.bu.edu/busm/faculty/medical-student-disciplinary-code/>

Exam Policies

- ☐ Exam Policies for Medical Students:
<http://www.bumc.bu.edu/busm/education/medical-education/policies/exam-policies-for-medical-students/>
- ☐ L-11 Testing Center Policies:
<http://www.bumc.bu.edu/busm/education/medical-education/policies/l-11-testing-center/>

Student Evaluation Completion Policy

The school considers the completion of course and clerkship evaluation to be part of a student's professional responsibilities and essential feedback for the ongoing monitoring of the learning environment. To obtain adequate feedback, all students must complete at least 80%, per academic year, of their assigned evaluations of courses, modules, faculty, clerkships, and clinical sites. In order to obtain actionable feedback, evaluations must be submitted via eValue within 10 business days of the completion of the module/course.

Students are highly encouraged to complete evaluations after the completion of exams. When possible, faculty will provide time after the exam to complete evaluations. Evaluations not completed within 10 business days will be automatically removed and no longer available for completion by the student.

The Office of Medical Education monitors compliance rates multiple times a year and formally notifies students of their compliance rate twice a year. Students will be notified of delinquent evaluations 48 hours before they expire via an eValue notification. Students who have completed less than 80% of course evaluations at the half year will receive a notification email from the Director of the Office of Medical Education. If the compliance rate is less than 80% at the end of year, students will receive a professionalism warning letter. Any student who has received a warning letter at the end of year one and continues to have less than 80% of course evaluation at the end of the first year, will need to meet with the Assistant Dean of Medical Education or Associate Dean of Medical Education before the second year begins.

Any student who received a warning letter at the end of year one and continues to be non-compliant at the half year point of 2nd year will receive an official letter documenting the reason that this student did not meet the professionalism expectations of the preclerkship curriculum (e.g. did not meet evaluation completion requirements). This letter will also go to the Associate Dean for Student Affairs to be included in the 4th year Dean's letter.

This policy is also available on the BUSM webpage:

<http://www.bumc.bu.edu/busm/education/medical-education/policies/student-evaluation-of-courses-completion-policy/>

BUSM Policies

BUSM Policies are located at:

<http://www.bumc.bu.edu/busm/education/medical-education/policies/>

BU POLICIES AND STUDENT SUPPORT SERVICES

Boston University Sexual Misconduct/Title IX Policy

The BU Sexual Misconduct/Title IX Policy is located at:

<http://www.bu.edu/safety/sexual-misconduct/title-ix-bu-policies/sexual-misconducttitle-ix-policy/>

Appropriate Treatment in Medicine (ATM)

Boston University School of Medicine (BUSM) is committed to providing a work and educational environment that is conducive to teaching and learning, research, the practice of medicine and patient care. This includes a shared commitment among all members of the BUSM community to respect each person's worth and dignity, and to contribute to a positive learning environment where medical students are enabled and encouraged to excel.

BUSM has a ZERO tolerance policy for medical student mistreatment. If you have experienced or witnessed mistreatment, we encourage you to report it using one of the methods listed below.

- ☐ Contact the chair of the ATM Committee (Bob Vinci, MD) directly by email: Bob.Vinci@bmc.org
- ☐ Submit an online Incident Report Form through the online reporting system: <http://www.bumc.bu.edu/busm/student-affairs/atm/report-an-incident-to-atm/>. These reports are sent to the committee chair directly. Complaints will be kept confidential and addressed quickly.

Our Appropriate Treatment in Medicine (ATM) site is located at <http://www.bumc.bu.edu/busm/student-affairs/atm/>. This resource is available to any students who feel that they have been mistreated during courses or clerkships by faculty, residents, attendings, clerical staff, administrative staff, nurses, and other students.

Policy on the Appropriate Treatment in Medicine:
<http://www.bumc.bu.edu/busm/policy-on-the-appropriate-treatment-in-medicine-atm/>

Copyright Policy on the Use of Course Materials

The course's Blackboard site contains educational materials to be used only by students and faculty in conjunction with the course, or by non- course faculty and staff for other approved purposes. None of the posted materials are to be used or distributed without explicit permission from the author of the materials, e.g. lecture notes, PowerPoint presentations, practice exam questions, case-based exercises, problem sets, etc.

Course materials are protected by copyright and may not be uploaded or copied to other sites for any purpose, regardless of whether the materials are made accessible publicly or on a private account. When content is uploaded to a site, the user is representing and warranting that they have rights to distribute the content, which requires explicit permission from the author of the materials.

Students who distribute materials without permission may be in violation of copyright laws, as well as required to go before the Medial Student Disciplinary Committee.

If you have any questions, contact the Course Director for additional

information:

- ② Intellectual Property Protection: <http://www.bu.edu/otd/for-researchers/intellectual-property-protection/>
- ② Medical Student Disciplinary Code of Academic and Professional Conduct: <http://www.bumc.bu.edu/busm/faculty/medical-student-disciplinary-code/>

ASSESSMENT METHODS

Doctoring 2 is a Pass- Fail course but must complete all activities and receive a score > 70%. In order to pass, students must attend all sessions, act professionally, complete all on-line and written work in a satisfactory and timely fashion, take and receive feedback on the communication assessment, pass the standardized patient physical examination session, and pass the clinical reasoning-physical diagnosis exam. Students with unexcused absences, consistently poor write-ups, serious comportment issues, incomplete work without excuse, or those who are unable to improve their grade on the exam or on a standardized patient exercise, will receive a failing grade.

Several methods of student assessment will be used:

Attendance- As outlined above, ATTENDANCE AT ALL SESSIONS IS MANDATORY. Failure to attend sessions without excuse will lead to a failing grade in the course on grounds of lack of professionalism

Narrative evaluations* by facilitators for small groups session (AME), instructors in the small groups, Longitudinal Preceptorship, and Ward Prep Sessions. (see details in next section)

Professional Behavior*- as evidenced in narrative evaluations and by instructors and staff (see details in next section). **As in other courses, students can fail this course for professionalism related issues, regardless of exam scores.** This includes

engaging in unethical behaviors such as (but not limited to) cheating on exams, quizzes, or other assignments, signing peers in for mandatory sessions, requesting peers sign them in for mandatory sessions, or misrepresenting participation in required classes or assignments in other ways and NOT turning in assignments
Clinical Performance in small group AME/ Longitudinal Preceptorship and Ward Prep sessions* (see details in next section)

Completion of the following write-ups of reasonable quality and in a timely fashion (as outlined in the corresponding folders on Blackboard):

- o Ward Prep Write-ups (Complete History and Physical Examination + SOAP notes- 6): The instructor will correct them, but the student is responsible for handing all six of them in to the Office of Medical Education within one week of the Ward Prep session.

Completion of the two CLIPP cases (on line pediatric clinical reasoning cases) Communication Assessment of Substance Use Interview using BNI and the Angry Patient: Students must complete and receive formative feedback from their AME for with 2 case session. AMEs reserve the right to have students retake this session, if significant deficiencies are noted.

Middle of Second year Assessment: Physical Exam: In order to pass, students must receive a score > than 5th percentile. Those who score less than that must remediate and retake the exam.

Clinical Reasoning and PE knowledge Exam: The online quizzes and

small group sessions should help prepare students. Students must receive a passing grade of 70% or above in order to pass. Those who score below 70% will need to meet with the course director to make arrangements for remediation and retake the exam. Students who do not pass the retake with a 70% will receive a failing grade in the course.

End of Second Year Assessment (EOSYA): Must be taken and students must receive a score > 5th percentile to pass. Those who score less than that must remediate and retake the exam.

Also applicable in Doctoring-2 is the following PCS outline on Ethical Behavior for Examinations and Mandatory

1. During exams and as you are leaving, refrain from any conversation with your peers while in the L-11 testing space (including within the vending room and elevator waiting area) until you are on the elevator.
2. Don't seek or receive copies of the examinations
3. Signing in classmates for mandatory sessions is considered cheating and violations will be referred to Medical Student Disciplinary Committee
4. If you are aware of any violations of the ethical standards listed above, within the Student Disciplinary Code of Academic and Professional Conduct, or otherwise, report it to the Course Director

Instructors of the AME sessions, Longitudinal Preceptor, and Ward Prep sessions complete an on-line evaluation to include the following:

Narrative description of the student's performance
Assessment of whether there is concern about the students ability to proceed to clerkship(yes/ no)

In addition, students will be evaluated in each of the following domains (adjusted to reflect the learning objections of the session being evaluated):

Interview Technique/
Communication
Skills Relational
Competence
Data Gathering
Physical Examination Skills
Oral Presentation
Written Documentation
Clinical Reasoning
Health Equity and Disparities
Personal and Professional Development
Self-Directed Learning

COURSE PARTICIPATION

Attendance at all sessions are mandatory unless excused by course directors.. Students who miss a session without informing and making arrangements with the course director, must meet with the course director.

EXAMINATIONS

Exam Dates and Time as per your individual scheduled emailed to you.

Communication Assessment: (formative). Scheduled during Aug 10-14 and Aug 24-28th.

Middle of Second Year Assessment (Physical Exam): scheduled during the weeks of Nov 3rd- Nov 17th

Clinical Reasoning/Doctoring 2 Exam: March 1st

General Policies and Procedures Governing the Evaluation, Grading and Promotion of Students at BUSM:

<http://www.bumc.bu.edu/busm/faculty/faculty-handbook-and-school-bylaws/evaluation-grading-and-promotion-of-students/>

Exam Policies for Medical Students:

<http://www.bumc.bu.edu/busm/education/academic-affairs/policies/exam-policies-for-medical-students/>

Postponing or modifying exam schedule; Excused absences

- ☐ Exams or assessments are not to be postponed or taken early, unless for a compelling reason (personal illness or family emergency)
- ☐ Students need to provide supporting documentation for all early, late, delayed, or missed exams
- ☐ Students who arrive late will take the examination with remaining time
- ☐ Students who miss an examination, unexcused, will receive a failing grade for that exam

Family Emergencies and Student Illness

A student who is unable to take a scheduled examination or attend a mandatory session due to medical or family emergency must immediately notify the Course Directors and Course Coordinator. In an emergency where they cannot be reached, students must contact the Associate Dean of Student Affairs at 617-358-7466. Within ten days of the exam, all students must submit a written explanation for missing the exam to both the Course Director and the Associate Dean of Student Affairs. All explanations must be accompanied by supporting documentation. Students should arrange directly with the Course Director and Course Coordinator to take make-up examinations, if indicated.

Students Requiring Special Examination Accommodations

Such accommodations must be approved by Boston University well in advance of any examinations. Accommodations are arranged through the Office of Disability Services (<http://www.bu.edu/disability/>). A student who is approved to take any examination under special conditions must ensure that appropriate arrangements are approved by, and made with the Course Director and Course Coordinator well in advance (i.e., at least two weeks) of the date of the scheduled examination.

Post-Examination Challenges

In order to challenge questions on the exam students must come to the post-exam review following the exam. To challenge a grade on any Standardized Patient Assessments, the student must make an appointment with the course director within 1 week after the graded result to discuss. Any challenges to the written exam must be written down and given to either the Course Director or one of your SAC representatives at the review session.

REMEDIATION

Students who are at risk of receiving a failing grade are encouraged to meet with the course director to discuss corrective action, which may include additional meetings with the course director and/or the use of a tutor.

Students who fail the course will be required to take a cumulative

exam at the end of the academic year, on one of the three dates provided for BUSM II Remediation. The Doctoring Remediation is a closed exam, and will not be opened for review after the exam is administered. Students who fail the remediation examination will have to go to the Promotion Committee for the school. That Committee may recommend repeating the course in the following year or withdrawing from the school.

For additional information, please see the Medical Education Office's webpage on Exam Remediation at:

<http://www.bumc.bu.edu/busm/education/medical-education/academic-calendars/exam-remediation/>

MAKE-UP EXAMINATIONS

If you are unable to take an examination because of illness or personal matters, you will need to notify both the Course Director and Course Coordinator at least 24 hours before the examination and later provide a physician's note or other documentation that explains the reasons for your absence. Students with unannounced absences from the examinations will not qualify for taking the make-up examination.

GRADING POLICY

Students will receive a Pass (P) or Fail (F) for this course.

70-100 Pass
<70 Fail

FINAL GRADE

Your grade for this course will be composed of the following (see table below): Exams/quizzes, SP sessions, Clinical Experiences, cases and write ups, small groups, EOSYA and completion of all required assignments to include CLIPP Cases and write ups as well as attendance at all sessions and professionalism. You must obtain a 70% in each of the course categories to pass

Course Category	% of Final Grade		Assessment
Exams/Quizzes	20%	5%	Quizzes (drop the lowest 2)
		15%	Clinical Reasoning exam
SP sessions	10%		Communication Assessment (formative-but MUST do)
		10%	Middle of Year Assessment: Physical Exam
Clinical Experiences	10%	5%	Longitudinal Office Sessions Evaluation
		5%	Ward Prep (Inpatient Clinical Evaluation)
Cases and write-ups	5%	5%	Ward Prep (HPE) Write Ups (6 total-submit BEST for grade))
Oral Presentation	5%	5%	Oral Presentation (submit best)
Small Group	50%	25%-Fall 25%- Spring	AME Evaluation (10 domains w mid semester formative feedback a summative evaluation and comments in each domain)
EOSYA			EOSYA-End of Second Year Assessment (MUST do)
Professionalism score: Additional Requirements to pass the course	At risk for losing up to 3 % of final grade if reaches level of concern by course directors as will be at risk for referral to SPEC for professionalism issues		All Required Assignments and Write ups Attendance of all sessions (unless excused/remediated)

PROFESSIONALISM

Students can fail this course for professionalism related issues, regardless of assessment scores. This includes engaging in unethical behaviors such as (but not limited to) cheating on exams, quizzes, or

other assignments, signing peers in for mandatory sessions, requesting peers sign them in for mandatory sessions, or misrepresenting participation in required classes or assignments in other ways.

POLICY & PROCEDURES GOVERNING THE EVALUATION, GRADING, & PROMOTION OF STUDENTS

This is a school-wide policy and can be located at:

<http://www.bumc.bu.edu/busm/faculty/evaluation-grading-and-promotion-of-students/>

LEARNING STRATEGIES AND TOOLS

The goal of training physicians is to assist medical students to become life-long learners. Physicians need to stay up with ever-evolving best clinical practices and be able to read and retain pertinent facts from the medical literature.

- Prepare for class to learn the most from each session.
- Take the online quizzes when assigned. If you don't feel comfortable answering the questions then review the materials assigned. The quizzes assess comprehension of the written and practical material, but they also integrate the material with questions based on clinical vignettes. In addition to helping students prepare for the doctoring exam, the quizzes should help students prepare for the doctoring-type USMLE type questions.
- The library has purchased access to a complete set of PE videos. Bates' Guide to Physical Examination is an excellent resource and contains targeted interview/ anatomy/ PE/ and write-ups sections. It houses several head to toe physical examination tapes, as well, that will help students consider how to knit the pieces of the physical exam together. The tapes are accessible from campus at: <http://www.batesvisualguide.com/> and from off campus by Kerberos username/ password at: http://www.medlib.bu.edu/bates_vgtpe/
- Complete write-ups as soon as possible after you see a patient, no later than 24 hours. Otherwise the information gets stale and details will be forgotten. Write-ups are not term papers; they are official recordings of what was learned on patient interview and exam
- Read about the diseases that you are seeing in your patients. If you meet a patient with alcoholic liver disease, read about it.
- Real life cases stimulate your ability to learn about illness.
- Practice, practice, practice your PE skills on friends, classmates, and family members.
- Attend Skill Clinics to solidify your skills.

TEXTBOOKS

The required textbooks for this course are:

Bickley, Lynn S. (12th edition). Bates' Guide to Physical Examination and History Taking. Philadelphia: J.B. Lippincott Company

EQUIPMENT

The required equipment for this course are:

- ☐ Doctor's bag (backpack is fine)
- ☐ Diagnostic kit = Oto-ophthalmoscope (make sure to charge it prior to the required Doctoring 2 sessions)
- ☐ Sphygmomanometer
- ☐ Stethoscope
- ☐ Flexible ruler, clear plastic, pocket size
- ☐ Reflex hammer
- ☐ Tuning forks with dampeners--128 cps and 512 cps
- ☐ Several tongue depressors (available in OME and CSSC)
- ☐ Cotton-tipped applicators (for sensory testing, available in OME and CSSC)
- ☐ At least two of the following (to be used in testing sense of smell): clove, cinnamon, vanilla, peppermint, soap, or coffee.
- ☐ White coat, name tag, appropriate dress in clinical settings (e.g., shirt with slacks for men, dresses or slacks and shirts for women). You will be seeing patients in most sections of the course, so when in doubt, dress as if it is a clinical encounter. (Note that each Session Overview file will advise on what to wear.)

BLACKBOARD

All Boston University medical students have access to the Blackboard sites of their courses, which can be accessed at <http://learn.bu.edu/>. Students will obtain a Kerberos password during their general orientation that gains them access to these online sites. This Blackboard site will be among your course options and will be identified by both its name; Doctoring 2. Students who do not have or cannot gain access to any of the Blackboard sites should contact the Office of Students Affairs. Students who have questions about the course-specific site should contact either the Course Director or Course Coordinator; see contact information.

Policy Regarding the Use of Doctoring Educational Materials

The Doctoring Blackboard site contains educational materials to be used only by students and faculty in conjunction with the Doctoring course, or by non-Doctoring faculty and staff for other approved purposes. None of the posted materials are to be used or distributed without explicit permission from the author of the materials, e.g. lecture notes, PowerPoint presentations, practice exam questions, case-based exercises, problem sets, etc. If you have any questions, contact either the Course Directors or Course Coordinator.

NOTE TAKING AND STUDYING TOOLS

The Alumni Medical Library has compiled some recommended tools for students looking to take notes and study digitally, including resources to help reduce eye strain or fatigue. A list of their recommendations can be found on their website: <http://medlib.bu.edu/computing/pdfutilities.php>

TUTORS

The Tutor Program at BUSM offers tutoring free-of-charge to students during the first and second year of medical school. Students who require additional educational support should visit the BUSM Tutor Management system at: <http://wwwapp1.bumc.bu.edu/busm/medtutors/>

ECHO 360/TECHNOLOGY

Echo360 may only be used for streaming captured lecture videos; the videos may not be downloaded. Taking smartphone or digital pictures or videos of any part of the lecture in class, or at home, is similar to downloading and is not allowed. There are a number of reasons for this, including that students and/or the University may be liable for violations of federal copyright and privacy laws as a result of the use of copied material.

If you experience any technical problems, please report the issue in one of the following ways to generate an IT ticket:

- ❑ **Echo360 Related Issues:** Create a ticket on the Ed Media site (<http://www.bumc.bu.edu/bumc-emc/instructional-services/echo360/>): sign in and fill out pertinent information that will answer many of IT's first follow up questions and save that back and forth. You must have a link to the problematic video ready to copy/paste into this form.
- ❑ **Educational Technology Related Issues:** For assistance with technology supported by BUMC's Educational Media (e.g. ExamSoft), tickets can be created via their website at: <http://www.bumc.bu.edu/bumc-emc/instructional-services/report-an-educational-technology-issue/>
- ❑ **Other Technology Related Issues:** For assistance with BU-wide technology, such as Blackboard, email an example (e.g. picture or very brief phone video) to ithelp@bu.edu with a descriptive subject line and give as many details as possible on the what, where, how you are using the service and what type of computer, browser, etc. along with type of student (i.e. BUSM I, HBM). Always include link(s) to or screen shots of where the issue is occurring. If the issue is related to the HBM course, copy the Course Coordinator so that we are also aware of the issue.

OFFICE OF DISABILITY SERVICES

Boston University is committed to providing equal and integrated access for individuals with disabilities. The Office of Disability Services provides services and support to ensure that students are able to access and participate in the opportunities available at Boston University.

<http://www.bu.edu/disability/policies-procedures/academic-accommodations/>

Professionalism in a Group Setting

This course is similar to many activities that you will be a part of in your career as a clinician, including rounds, multidisciplinary meetings, committees and much more. The following are guidelines for professional behavior in your small groups.

1. Show up on time. People are depending on you.
2. Do not discuss any course information outside of class. This is considered part of the honor code.
3. Attendance is mandatory.
4. If you are absolutely unable to attend a meeting, handle this in a professional manner that will impact your group as little as possible. Find out how you can still contribute to your team.
5. Put time into your research and presentation. This will determine how much you and your team get from each session.
6. Contribute to the discussion and try to help those in your group contribute as well. Everyone has something to bring to the table.
7. If you don't like something that is happening in your group or with your group's process- change it. Present a solution for it and discuss.

What is the difference between subjective and objective?

Subjective information can't be objectively observed. It is imprecise and can't be measured. For example: When a patient tells you that they vomited "a lot!" and that it was "yellow", this is subjective. "A lot" and "yellow" mean different things to different people and can't be measured.

Objective information is measurable and consistent from one person to another. Temperature is objective. It can be confirmed and is consistent amongst different people measuring. Physical exam findings are objective.

Summarizing a Case in 1-2 Sentences

Format: Name is a(n) age year old gender with a past medical history of (insert only relevant past history) who presented to the location (clinic, emergency room etc) with [list chief complaint with semantic qualifiers (acute vs. chronic), relevant history, physical exam, labs, and radiology studies) suggestive of [most likely diagnosis].

- Keep it brief and synthesize clinical information where you can (e.g., dyspnea becomes hypoxia- don't need to state both).

Development of a Differential Diagnosis

Key points

1. Be systematic
2. Be thorough
3. Slowly prioritize differential based on new information
4. Slowly add and remove things from differential based on information
5. If it's not on your differential--you will never diagnosis someone with it!

Two systems for developing a differential diagnosis

The Systems Approach

Organizes hypothetical diagnoses by pathophysiologic system.

VITAMINS ABCDEK:

Vascular

Infectious / **I**nflammatory

Traumatic / **T**oxic

Autoimmune or allergy

Metabolic

Iatrogenic/**I**diopathic **N**eoplastic

Social

Alcohol

Behavioral

Congenital

Degenerative / **D**rug related

Endocrine or exocrine problems

Karyotype or genetic disorders

The Physical Exam Organ System Approach

Organizes hypothetical diagnoses by organ system.

For example:

Neurologic.

Pulmonary.

Cardiovascular

Gastrointestinal

Renal/Genitourinary

Gynecologic

Hematology

Infection

Endocrine

Developing a Research Question

We will be coming up with formal research questions at the end of some cases this semester

Successful research questions:

- aid in your team's understanding of the case
- are specific enough that you can both research and present them efficiently
- are something that you are interested in and excited to learn about.
- may be something that you have been struggling with in class that would be beneficial to spend more time learning about in depth. Remember that this is your time and the goal of this process is for you to learn!

A group should never run out of research questions. If you feel that this is happening, push yourself and your team to ask more. Ask what else could be done for this patient, what is the pathophysiologic process creating these symptoms, what resources or supports are necessary to support this patient and/or their family. What else haven't you thought about? What more can you learn about?

-The next page contains the Boston University Finding Information Framework. The link to this is <http://medlib.bu.edu/busm/fif/>. This resource will be vital to your research. It will help you categorize what type of question you have and will direct you to the appropriate resources to answer your question.

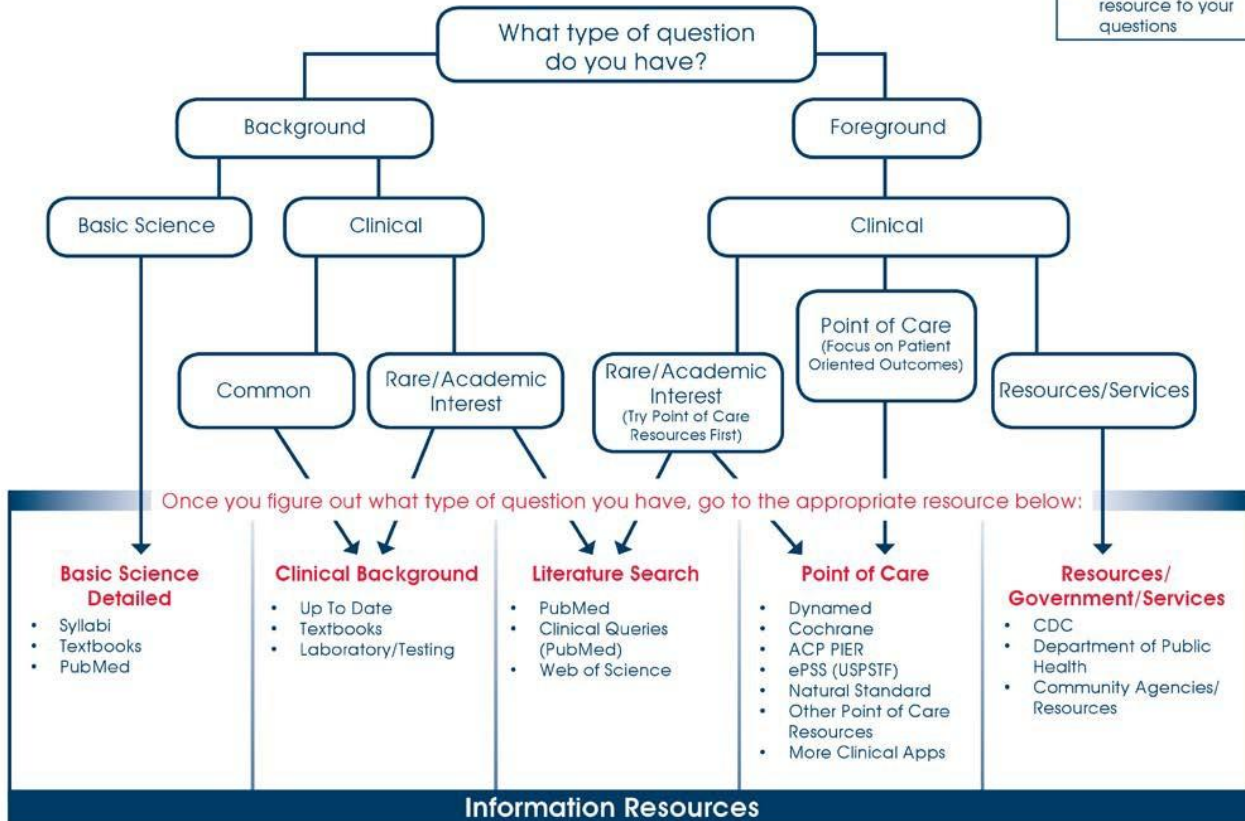
-You will be required to hand in an outline of your research with your resources cited. Make sure that at least one of your resources in your search is one cited on the Finding Information Framework.

BUSM Finding Information Framework

A project of the BUSM EBM Vertical Integration Group

This framework will guide you to:

1. Categorize your questions
2. Understand types of information resources
3. Match the right resource to your questions



Presentation Outline

Name: _____

Research Question:

Type of Question

(circle one)

Background-

Basic Science;

Background-

Clinical-

Common;

Background-

Clinical-

Rare/Academic;

Foreground-

Clinical-Point of

Care;

Foreground-

Clinical-

Rare/Academic

Foreground-Clinical-Resources/Services

List resources used in the order searched: (remember you need to use at least 1 suggested resource in the correct resource category on the FIF)

Answer to your research question in your own words:

How does this add to your understanding of the case and/or apply this information to the case:

Take home points from this search (no more than 3):

Feedback on Research Presentation and Question

Name of presenter: _____

Search Process	Done	Partially Done	Not done
Used the FIF			
Correctly categorized the research question on the FIF			
Used at least 1 suggested resource in the correct resource category on the FIF			
Clearly described the search strategy			
Information reported and applied	Done	Partially Done	Not done
Found an answer to the question			
Presented information that adds to group's understanding of the case			
Attempted to synthesize the information and/or apply it to the case			
Presentation Skills and organization	Done	Partially Done	Not done
Presentation was well organized			
Length of presentation ≤ 4 min			
Made good eye contact			
Spoke slowly, clearly, and at an appropriate volume			

COMMENTS:

Strengths:

Areas for improvement:

Normal Adult Lab Values

USMLE Step 1 Laboratory Values

* Included in the Biochemical Profile (SMA-12)

	<u>REFERENCE RANGE</u>	<u>SI REFERENCE INTERVALS</u>
BLOOD, PLASMA, SERUM		
* Alanine aminotransferase (ALT), serum	8-20 U/L	8-20 U/L
Amylase, serum	25-125 U/L	25-125 U/L
* Aspartate aminotransferase (AST), serum	8-20 U/L	8-20 U/L
Bilirubin, serum (adult) Total // Direct	0.1-1.0 mg/dL // 0.0-0.3 mg/dL	2-17 μ mol/L // 0-5 μ mol/L
* Calcium, serum (Ca^{2+})	8.4-10.2 mg/dL	2.1-2.8 mmol/L
* Cholesterol, serum	Rec: <200 mg/dL	<5.2 mmol/L
Cortisol, serum	0800 h: 5-23 μ g/dL // 1600 h: 3-15 μ g/dL 2000 h: < 50% of 0800 h	138-635 nmol/L // 82-413 nmol/L Fraction of 0800 h: \leq 0.50
Creatine kinase, serum	Male: 25-90 U/L Female: 10-70 U/L	25-90 U/L 10-70 U/L
* Creatinine, serum	0.6-1.2 mg/dL	53-106 μ mol/L
Electrolytes, serum		
Sodium (Na^+)	136-145 mEq/L	136-145 mmol/L
* Potassium (K^+)	3.5-5.0 mEq/L	3.5-5.0 mmol/L
Chloride (Cl^-)	95-105 mEq/L	95-105 mmol/L
Bicarbonate (HCO_3^-)	22-28 mEq/L	22-28 mmol/L
Magnesium (Mg^{2+})	1.5-2.0 mEq/L	0.75-1.0 mmol/L
Estradiol, total, serum (in pregnancy)		
24-28 wks // 32-36 wks	30-170 ng/mL // 60-280 ng/mL	104-590 nmol/L // 208-970 nmol/L
28-32 wks // 36-40 wks	40-220 ng/mL // 80-350 ng/mL	140-760 nmol/L // 280-1210 nmol/L
Ferritin, serum	Male: 15-200 ng/mL Female: 12-150 ng/mL	15-200 μ g/L 12-150 μ g/L
Follicle-stimulating hormone, serum/plasma		
	Male: 4-25 mIU/mL Female: premenopause 4-30 mIU/mL midcycle peak 10-90 mIU/mL postmenopause 40-250 mIU/mL	4-25 U/L 4-30 U/L 10-90 U/L 40-250 U/L
Gases, arterial blood (room air)		
pH	7.35-7.45	[H^+] 36-44 nmol/L
PCO_2	33-45 mm Hg	4.4-5.9 kPa
PO_2	75-105 mm Hg	10.0-14.0 kPa
* Glucose, serum	Fasting: 70-110 mg/dL 2-h postprandial: < 120 mg/dL	3.8-6.1 mmol/L < 6.6 mmol/L
Growth hormone - arginine stimulation		
	Fasting: < 5 ng/mL provocative stimuli: > 7 ng/mL	< 5 μ g/L > 7 μ g/L
Immunoglobulins, serum		
IgA	76-390 mg/dL	0.76-3.90 g/L
IgE	0-380 IU/mL	0-380 kIU/L
IgG	650-1500 mg/dL	6.5-15 g/L
IgM	40-345 mg/dL	0.4-3.45 g/L
Iron	50-170 μ g/dL	9-30 μ mol/L
Lactate dehydrogenase, serum	45-90 U/L	45-90 U/L
Luteinizing hormone, serum/plasma		
	Male: 6-23 mIU/mL Female: follicular phase 5-30 mIU/mL midcycle 75-150 mIU/mL postmenopause 30-200 mIU/mL	6-23 U/L 5-30 U/L 75-150 U/L 30-200 U/L
Osmolality, serum	275-295 mOsmol/kg H_2O	275-295 mOsmol/kg H_2O
Parathyroid hormone, serum, N-terminal	230-630 pg/mL	230-630 ng/L
* Phosphatase (alkaline), serum (p-NPP at 30°C)	20-70 U/L	20-70 U/L
* Phosphorus (inorganic), serum	3.0-4.5 mg/dL	1.0-1.5 mmol/L
Prolactin, serum (hPRL)	< 20 ng/mL	< 20 μ g/L
* Proteins, serum		
Total (recumbent)	6.0-7.8 g/dL	60-78 g/L
Albumin	3.5-5.5 g/dL	35-55 g/L
Globulin	2.3-3.5 g/dL	23-35 g/L
Thyroid-stimulating hormone, serum or plasma	0.5-5.0 μ U/mL	0.5-5.0 mU/L
Thyroidal iodine (^{125}I) uptake	8%-30% of administered dose/24 h	0.08-0.30/24 h
Thyroxine (T_4), serum	5-12 μ g/dL	64-155 nmol/L
Triglycerides, serum	35-160 mg/dL	0.4-1.81 mmol/L
Triiodothyronine (T_3), serum (RIA)	115-190 ng/dL	1.8-2.9 nmol/L
Triiodothyronine (T_3) resin uptake	25%-35%	0.25-0.35
* Urea nitrogen, serum	7-18 mg/dL	1.2-3.0 mmol/L
* Uric acid, serum	3.0-8.2 mg/dL	0.18-0.48 mmol/L

USMLE Step 1 Laboratory Values (continued)

	<u>REFERENCE RANGE</u>	<u>SI REFERENCE INTERVALS</u>
BODY MASS INDEX (BMI)		
Body mass index.....	Adult: 19-25 kg/m ²	
CEREBROSPINAL FLUID		
Cell count.....	0-5/mm ³	0-5 x 10 ⁶ /L
Chloride.....	118-132 mEq/L	118-132 mmol/L
Gamma globulin.....	3%-12% total proteins	0.03-0.12
Glucose.....	40-70 mg/dL	2.2-3.9 mmol/L
Pressure.....	70-180 mm H ₂ O	70-180 mm H ₂ O
Proteins, total.....	<40 mg/dL	<0.40 g/L
HEMATOLOGIC		
Bleeding time (template).....	2-7 minutes	2-7 minutes
Erythrocyte count.....	Male: 4.3-5.9 million/mm ³ Female: 3.5-5.5 million/mm ³	4.3-5.9 x 10 ¹² /L 3.5-5.5 x 10 ¹² /L
Erythrocyte sedimentation rate (Westergren).....	Male: 0-15 mm/h Female: 0-20 mm/h	0-15 mm/h 0-20 mm/h
Hematocrit.....	Male: 41%-53% Female: 36%-46%	0.41-0.53 0.36-0.46
Hemoglobin A _{1c}	≤ 6%	≤ 0.06
Hemoglobin, blood.....	Male: 13.5-17.5 g/dL Female: 12.0-16.0 g/dL	2.09-2.71 mmol/L 1.86-2.48 mmol/L
Hemoglobin, plasma.....	1-4 mg/dL	0.16-0.62 mmol/L
Leukocyte count and differential		
Leukocyte count.....	4500-11,000/mm ³	4.5-11.0 x 10 ⁹ /L
Segmented neutrophils.....	54%-62%	0.54-0.62
Bands.....	3%-5%	0.03-0.05
Eosinophils.....	1%-3%	0.01-0.03
Basophils.....	0%-0.75%	0-0.0075
Lymphocytes.....	25%-33%	0.25-0.33
Monocytes.....	3%-7%	0.03-0.07
Mean corpuscular hemoglobin.....	25.4-34.6 pg/cell	0.39-0.54 fmol/cell
Mean corpuscular hemoglobin concentration.....	31%-36% Hb/cell	4.81-5.58 mmol Hb/L
Mean corpuscular volume.....	80-100 μm ³	80-100 fL
Partial thromboplastin time (activated).....	25-40 seconds	25-40 seconds
Platelet count.....	150,000-400,000/mm ³	150-400 x 10 ⁹ /L
Prothrombin time.....	11-15 seconds	11-15 seconds
Reticulocyte count.....	0.5%-1.5%	0.005-0.015
Thrombin time.....	<2 seconds deviation from control	<2 seconds deviation from control
Volume		
Plasma.....	Male: 25-43 mL/kg Female: 28-45 mL/kg	0.025-0.043 L/kg 0.028-0.045 L/kg
Red cell.....	Male: 20-36 mL/kg Female: 19-31 mL/kg	0.020-0.036 L/kg 0.019-0.031 L/kg
SWEAT		
Chloride.....	0-35 mmol/L	0-35 mmol/L
URINE		
Calcium.....	100-300 mg/24 h	2.5-7.5 mmol/24 h
Chloride.....	Varies with intake	Varies with intake
Creatinine clearance.....	Male: 97-137 mL/min Female: 88-128 mL/min	
Estriol, total (in pregnancy)		
30 wks.....	6-18 mg/24 h	21-62 μmol/24 h
35 wks.....	9-28 mg/24 h	31-97 μmol/24 h
40 wks.....	13-42 mg/24 h	45-146 μmol/24 h
17-Hydroxycorticosteroids	Male: 3.0-10.0 mg/24 h Female: 2.0-8.0 mg/24 h	8.2-27.6 μmol/24 h 5.5-22.0 μmol/24 h
17-Ketosteroids, total	Male: 8-20 mg/24 h Female: 6-15 mg/24 h	28-70 μmol/24 h 21-52 μmol/24 h
Osmolality.....	50-1400 mOsmol/kg H ₂ O	
Oxalate.....	8-40 μg/mL	90-445 μmol/L
Potassium.....	Varies with diet	Varies with diet
Proteins, total.....	<150 mg/24 h	<0.15 g/24 h
Sodium.....	Varies with diet	Varies with diet
Uric acid.....	Varies with diet	Varies with diet

Normal Pediatric Lab Values

CHEMISTRY	NORMAL VALUES	
Albumin	0-1 y	2.0-4.0 g/dL
	1 y to adult	3.5-5.5 g/dL
Ammonia	Newborns	90-150 mcg/dL
	Children	40-120 mcg/dL
	Adults	18-54 mcg/dL
Amylase	Newborns	0-60 units/L
	Adults	30-110 units/L
Bilirubin, conjugated, direct	Newborns	<1.5 mg/dL
	1 mo to adult	0-0.5 mg/dL
Bilirubin, total	0-3 d	2.0-10.0 mg/dL
	1 mo to adult	0-1.5 mg/dL
Bilirubin, unconjugated, indirect		0.6-10.5 mg/dL
Calcium	Newborns	7.0-12.0 mg/dL
	0-2 y	8.8-11.2 mg/dL
	2 y to adult	9.0-11.0 mg/dL
Calcium, ionized, whole blood		4.4-5.4 mg/dL
Carbon dioxide, total		23-33 mEq/L
Chloride		95-105 mEq/L
Cholesterol	Newborns	45-170 mg/dL
<i>See following tables for age- and gender-specific values</i>	0-1 y	65-175 mg/dL
	1-20 y	120-230 mg/dL
Creatinine	0-1 y	≤0.6 mg/dL
	1 y to adult	0.5-1.5 mg/dL
Glucose	Newborns	30-90 mg/dL
	0-2 y	60-105 mg/dL
	Children to Adults	70-110 mg/dL
Iron	Newborns	110-270 mcg/dL
	Infants	30-70 mcg/dL
	Children	55-120 mcg/dL

	Adults	70-180 mcg/dL
Iron binding	Newborns	59-175 mcg/dL
	Infants	100-400 mcg/dL
	Adults	250-400 mcg/dL
Lactic acid, lactate		2-20 mg/dL
Lead, whole blood		<10 mcg/dL
Lipase	Children	20-140 units/L
	Adults	0-190 units/L
Magnesium		1.5-2.5 mEq/L
Osmolality, serum		275-296 mOsm/kg
Osmolality, urine		50-1400 mOsm/kg
Phosphorus	Newborns	4.2-9.0 mg/dL
	6 wk to 19 mo	3.8-6.7 mg/dL
	19 mo to 3 y	2.9-5.9 mg/dL
	3-15 y	3.6-5.6 mg/dL
	>15 y	2.5-5.0 mg/dL
Potassium, plasma	Newborns	4.5-7.2 mEq/L
	2 d to 3 mo	4.0-6.2 mEq/L
	3 mo to 1 y	3.7-5.6 mEq/L
	1-16 y	3.5-5.0 mEq/L
Protein, total	0-2 y	4.2-7.4 g/dL
	>2 y	6.0-8.0 g/dL
Sodium		136-145 mEq/L
Triglycerides	Infants	0-171 mg/dL
<i>See following tables for age- and gender-specific values</i>	Children	20-130 mg/dL
	Adults	30-200 mg/dL
Urea nitrogen, blood	0-2 y	4-15 mg/dL
	2 y to Adult	5-20 mg/dL
Uric acid	Male	3.0-7.0 mg/dL
	Female	2.0-6.0 mg/dL

ENZYMES	NORMAL VALUES	
Alanine aminotransferase (ALT) (SGPT)	0-2 mo	8-78 units/L
	>2 mo	8-36 units/L
Alkaline phosphatase (ALKP)	Newborns	60-130 units/L
	0-16 y	85-400 units/L
	>16 y	30-115 units/L
Aspartate aminotransferase (AST) (SGOT)	Infants	18-74 units/L
	Children	15-46 units/L
	Adults	5-35 units/L
Creatine kinase (CK)	Infants	20-200 units/L
	Children	10-90 units/L
	Adult male	0-206 units/L
	Adult female	0-175 units/L
Lactate dehydrogenase (LDH)	Newborns	290-501 units/L
	1 mo to 2 y	110-144 units/L
	>16 y	60-170 units/L

Blood Gases

	Arterial	Capillary	Venous
pH	7.35-7.45	7.35-7.45	7.32-7.42
pCO ₂ (mm Hg)	35-45	35-45	38-52
pO ₂ (mm Hg)	70-100	60-80	24-48
HCO ₃ (mEq/L)	19-25	19-25	19-25
TCO ₂ (mEq/L)	19-29	19-29	23-33
O ₂ saturation (%)	90-95	90-95	40-70
Base excess (mEq/L)	5 to +5	5 to +5	5 to +5

Classification Serum Lipid Concentrations¹

Classification	Total Cholesterol ² (mg/dL)	LDL-C ² (mg/dL)	HDL-C ² (mg/dL)	Apolipoprotein A-1	Triglycerides ³ (mg/dL)	Apolipoprotein B						
	Children & Adolescents	Young Adults	Children & Adolescents	Young Adults	Children & Adolescents	Young Adults	Children & Adolescents	Children 0-9 years	Children ≥10 years & Adolescents <19 years	Young Adults	Children & Adolescents	
Low					<40	<40	<115					
Borderline low						40-44						
Acceptable/optimal	<170	<190	<110	<120	>45	>45	>120	<75	<90	<115	<90	
Borderline high	170-199	190-224	120-159	130-159	40-45		115-120	75-99	90-129	115-149	90-109	
High	≥200	≥225	≥130	≥160				≥100	≥130	≥150	≥110	

¹Adapted from "Expert Panel on Integrated Guidelines for Cardiovascular Health and Risk Reduction in Children and Adolescents: Summary Report," *Pediatrics*, 2011,128(Supp 6):S1-44.

²To convert cholesterol results to SI units, divide value by 38.6.

³To convert triglyceride results to SI units, divide value by 88.6.

Serum Lipid Concentrations by Age and Gender

	Males (mg/dL)		Females (mg/dL)			
	5-9 y	10-14 y	15-19 y	5-9 y	10-14 y	15-19 y
Total Cholesterol						
50th percentile	153	161	152	164	159	157
75th percentile	168	173	168	177	171	176
90th percentile	183	191	183	189	191	198
95th percentile	186	201	191	197	205	208
Triglycerides						
50th percentile	48	58	68	57	68	64
75th percentile	58	74	88	74	85	85
90th percentile	70	94	125	103	104	112
95th percentile	85	111	143	120	120	126
LDL-C						
50th percentile	90	94	93	98	94	93
75th percentile	103	109	109	115	110	110
90th percentile	117	123	123	125	126	129
95th percentile	129	133	130	140	136	137
HDL						
5th percentile	38	37	30	36	37	35
10th percentile	43	40	34	38	40	38
25th percentile	49	46	39	48	45	43
50th percentile	55	55	46	52	52	51
Adapted from American Academy of Pediatrics Committee on Nutrition, "Lipid Screening and Cardiovascular Health in Childhood," <i>Pediatrics</i> , 2008, 122:(1)198-208.						

Thyroid Function Tests

T ₄ (thyroxine)	1-7 d	10.1-20.9 mcg/dL
	8-14 d	9.8-16.6 mcg/dL
	1 mo to 1 y	5.5-16.0 mcg/dL
	>1 y	4.0-12.0 mcg/dL
FTI	1-3 d	9.3-26.6
	1-4 wk	7.6-20.8
	1-4 mo	7.4-17.9
	4-12 mo	5.1-14.5
	1-6 y	5.7-13.3
	>6 y	4.8-14.0
T ₃	Newborns	100-470 ng/dL
	1-5 y	100-260 ng/dL
	5-10 y	90-240 ng/dL
	10 y to Adult	70-210 ng/dL
T ₃ uptake		35%-45%
TSH	Cord	3-22 micro international units/mL
	1-3 d	<40 micro international units/mL
	3-7 d	<25 micro international units/mL
	>7 d	0-10 micro international units/mL

Hematology Values

Age	Hgb (g/dL)	Hct (%)	RBC (mill/mm ³)	RDW	MCV (fL)	MCH (pg)	MCHC (%)	PLTS (x 10 ³ /mm ³)
0-3 d	15.0-20.0	45-61	4.0-5.9	<18	95-115	31-37	29-37	250-450
1-2 wk	12.5-18.5	39-57	3.6-5.5	<17	86-110	28-36	28-38	250-450
1-6 mo	10.0-13.0	29-42	3.1-4.3	<16.5	74-96	25-35	30-36	300-700
7 mo to 2 y	10.5-13.0	33-38	3.7-4.9	<16	70-84	23-30	31-37	250-600
2-5 y	11.5-13.0	34-39	3.9-5.0	<15	75-87	24-30	31-37	250-550
5-8 y	11.5-14.5	35-42	4.0-4.9	<15	77-95	25-33	31-37	250-550
13-18 y	12.0-15.2	36-47	4.5-5.1	<14.5	78-96	25-35	31-37	150-450
Adult male	13.5-16.5	41-50	4.5-5.5	<14.5	80-100	26-34	31-37	150-450
Adult female	12.0-15.0	36-44	4.0-4.9	<14.5	80-100	26-34	31-37	150-450

WBC and Diff

Age	WBC (x 10 ³ /mm ³)	Segs	Bands	Lymphs	Monos	Eosinophils	Basophils	Atypical Lymphs	No. of NRBCs
0-3 d	9.0-35.0	32-62	10-18	19-29	5-7	0-2	0-1	0-8	0-2
1-2 wk	5.0-20.0	14-34	6-14	36-45	6-10	0-2	0-1	0-8	0
1-6 mo	6.0-17.5	13-33	4-12	41-71	4-7	0-3	0-1	0-8	0
7 mo to 2 y	6.0-17.0	15-35	5-11	45-76	3-6	0-3	0-1	0-8	0
2-5 y	5.5-15.5	23-45	5-11	35-65	3-6	0-3	0-1	0-8	0
5-8 y	5.0-14.5	32-54	5-11	28-48	3-6	0-3	0-1	0-8	0
13-18 y	4.5-13.0	34-64	5-11	25-45	3-6	0-3	0-1	0-8	0
Adults	4.5-11.0	35-66	5-11	24-44	3-6	0-3	0-1	0-8	0

Segs = segmented neutrophils.

Bands = band neutrophils.

Lymphs = lymphocytes.

Monos = monocytes.

Erythrocyte Sedimentation Rates and Reticulocyte Counts

Sedimentation rate, Westergren	Children	0-20 mm/hour
	Adult male	0-15 mm/hour
	Adult female	0-20 mm/hour
Sedimentation rate, Wintrobe	Children	0-13 mm/hour
	Adult male	0-10 mm/hour
	Adult female	0-15 mm/hour
Reticulocyte count	Newborns	2%-6%
	1-6 mo	0%-2.8%
	Adults	0.5%-1.5%

Cerebrospinal Fluid Values, Normal

Cell count		% PMNs
Preterm mean	9 (0-25.4 WBC/mm ³)	57%

Term mean	8.2 (0-22.4 WBC/mm ³)	61%
>1 mo	0.7	0
Glucose		
Preterm	24-63 mg/dL	mean 50
Term	34-119 mg/dL	mean 52
Children	40-80 mg/dL	
CSF glucose/blood glucose		
Preterm	55-105%	
Term	44-128%	
Children	50%	
Lactic acid dehydrogenase		
	5-30 units/mL	mean 20 units/mL
Myelin basic protein		
	<4 ng/mL	
Pressure: Initial LP (mm H ₂ O)		
Newborns	80-110 (<110)	
Infants/children	<200 (lateral recumbent position)	
Respiratory movements	5-10	
Protein		
Preterm	65-150 mg/dL	mean 115
Term	20-170 mg/dL	mean 90
Children		
Ventricular	5-15 mg/dL	
Cisternal	5-25 mg/dL	
Lumbar	5-40 mg/dL	