TOURO COLLEGE
OF OSTEOPATHIC MEDICINE

Where Knowledge and Values Meet

CLINICAL ROTATIONS MANUAL

Effective July 1, 2017

Harlem Campus

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The information herein applies to the Academic Year 2017-2018 and is subject to change at the discretion of Touro College of Osteopathic Medicine.

OSTEOPATHIC MEDICINE FACTS AND STATISTICS

- There are over 100,000 osteopathic physicians (DOs) in the United States
- The almost 33 colleges of osteopathic medicine with 48 locations graduate over 25,000 osteopathic physicians each year. Touro College of Osteopathic Medicine (Touro College of Osteopathic Medicine), graduated its first class of physicians in 2011.
- Over 56% of the osteopathic medical school graduates enter a primary care residency (Family Practice, General Internal Medicine, Pediatrics, Emergency Medicine and OB/GYN) and many end up practicing in underserved or culturally diverse communities.
- One in five students attending American medical schools is a DO degree candidate.

[1] Source: American Osteopathic Association

MISSION STATEMENT

-- refer to the College Catalog or visit http://tourocom.touro.edu/about-us/our-mission--vision/

OVERVIEW OF THE CLINICAL CLERKSHIP PROGRAM

The Clinical Clerkship Program is designed to provide education and training in the general areas of family medicine, internal medicine, obstetrics & gynecology, pediatrics, psychiatry, emergency medicine and surgery; as well as exposure to additional specialty areas not limited to anesthesiology, pathology, and physiatry. Radiology and geriatrics are covered throughout most rotations.

The Clinical Clerkship Program is under the direct supervision of the Office of Clinical Education at Touro College of Osteopathic Medicine. The rotations provided at each site and the appropriate numbers of students assigned to each site by Touro College of Osteopathic Medicine are determined by mutual agreement of the Hospital Administrators, Directors of Medical Education (DME's), Clinical Faculty and the Touro College of Osteopathic Medicine Office of Clinical Education.

During the 3rd and 4th years of a medical student's education, flexibility is provided to allow students to have some months of elective time. This opportunity will give students ample opportunity to pursue and cultivate their individual interests, and strengthen areas of need.

GENERAL CLERKSHIP GUIDELINES

Students will participate in a well-structured, systematic training experience in each particular service. Students will be assigned to a patient care team with one or more attending physicians and, which may, in some circumstances, include residents, interns and/or other students. This structure will provide all participants with clearly delineated responsibilities for meeting education objectives.

1. The student will attend appropriate didactic sessions including, but not limited to, Morning Report, Grand Rounds, and other educational seminars.
2. The student will be evaluated by the responsible individual(s) on the teaching service through periodic assessments, as well as through direct and indirect observations of clinical performance.
3. Preceptors on the teaching service will complete the Clinical Clerkship Faculty Evaluation of Student Form (CCFES). The CCFES forms are to be submitted to the Office of Clinical Education within 4 weeks following the rotation. We encourage students to seek feedback midway through each rotation and to ask questions as they arise, and to have an exit interview during which time the student is to sign the CCFES. Faculty are to meet with any student at the midpoint of the clinical clerkship if there is a possibility that the student may fail the rotation.
4. The student will complete an evaluation regarding the physician, site, and rotation. These must be completed within one week following the rotation. Data from these will be summarized and provided in aggregate form to rotation sites to foster focused faculty development.

PATIENT CARE

Students will comply with all requirements related to patient care as established by the state, federal, and hospital accreditation agencies including HIPAA, HFAP, and Joint Commission.

ADMINISTRATIVE FUNCTIONS

The clinical site, in coordination with Touro College of Osteopathic Medicine, will define the degree of student involvement within the institution.

ADMINISTRATIVE MATTERS AND RISK MANAGEMENT

During your clinical rotations it is possible that situations may arise that require administrative notification. Whether it be a serious interpersonal issue with staff/peers, a claim of harassment or discrimination, or a patient care related issue with an untoward event, It is the students responsibility to contact your respective Director of Medical Education immediately and the Office of Clinical Education (Office of the Clinical Dean).

TITLE IX

All divisions of Touro seek to foster a collegial atmosphere where students are nurtured and educated through close faculty-student relationships, student camaraderie, and individualized attention. Discrimination or harassment of any kind is anathema to Touro's mission, history, and identity. Touro will resolve any identified discrimination in a timely and effective manner, and will ensure that it does not recur. Those believing that they have been harassed or discriminated against on the basis of their sex, including sexual harassment, should immediately contact the Title IX coordinator. When Touro has notice of the occurrence, Touro is compelled to take immediate and effective corrective action reasonably calculated to stop the harassment, prevent its recurrence, and as appropriate, remedy its effects.

The Title IX Coordinator or his designee ("Title IX Coordinator") is trained and knowledgeable about enforcement, compliance, communication, and implementation of Touro's anti-harassment and anti-discrimination policy.

The Title IX Coordinator's contact information is as follows:

Elan Baram, *Title IX Coordinator*
Touro College
500 7th Avenue, 4th Floor
New York, NY 10018
Phone: 646-565-6000 x55636
Email: elan.baram@touro.edu

For the complete version of this policy please visit: http://www.touro.edu/title-ix-policy/

ORIENTATION GUIDELINES

Students will be provided appropriate orientation to the clinical facilities. This may include sessions at the Touro College of Osteopathic Medicine campus, on-site orientation, and other methods which may include distribution of materials to be reviewed with the student by the clinical site/hospital, to ensure that students are adequately prepared to begin learning and assisting with patient care at the institution.

Orientation may include reference to:

Hospital Facilities: Patient rooms/specialty care units, safety procedures and announcements (e.g., fire, codes), nurses' stations, ancillary services facilities (e.g., x-ray, laboratory, medical records), rest rooms and locker areas conference areas, lounges, cafeteria or coffee shop, library/Internet access and OMM table locations.

Procedures:

1. Students should be informed as to whom they are responsible, and how that person or persons may be reached when needed.

2. Students will introduce themselves to the supervising physicians involved in the clinical clerk's specific program to review the learning objectives provided by Touro College of Osteopathic Medicine. Students are encouraged to arrange meetings with their preceptors to review progress, goals, evaluations and expectations at regular intervals.

3. Students will be provided with detailed information regarding expectations and duties. This may include time commitments (i.e., students may be provided with a schedule of each clinical clerk's on-duty hours and days and a list of each clinical clerk's duties and responsibilities). We understand that medicine is not always predictable and that patient needs come first. Schedules may fluctuate and it is not always possible to leave as scheduled.

4. At the start of each clinical clerkship, students will be instructed as to protocols, duties and responsibilities, including student chart documentation*. Students should understand what criteria will be utilized to evaluate their performance; a copy of the Clinical Clerkship Faculty Evaluation of the Student Form is in this manual.

   *Note: if the above mentioned information is not provided at the beginning of the rotation, students may contact the hospital DME or chief of service for clarification.

GENERAL STUDENT PROTOCOLS

Students are to notify the Registrar and the Office of Clinical Education of any change in contact information (e.g., mailing address, phone numbers) during the clinical years. Students can contact the Registrar at:

Harlem Campus	Middletown Campus
Mrs. Khemwattie Ramdhanny 2090 Adam Clayton Powell Jr. Blvd Suite 519H New York, NY 10027 Phone: 212.851.1199 Ext 42587 Fax: 212.851.1183 Email: Khemwattie.ramdhanny@touro.edu	Ms. Kelly Degnan 60 Prospect Avenue Middletown, NY 10940 Phone: 845.648.1000 Ext 60108 Fax: 845.648.1018 Email: Kelly.degnan@touro.edu

DRESS CODE

Clinical clerks will wear clean, white clinic jackets with name tags; tags worn may be provided by the college or as required by the training facility. The clerk shall dress in a manner appropriate for a physician in clinical care settings (business casual). Some affiliated hospitals will have a dress code that differs from Touro College of Osteopathic Medicine, in which case, the rotation facility rule will prevail. Students will be informed of these dress codes, and are expected to follow them. On services where scrub suits are indicated, these suits will be provided by the facility. Scrub suits are NOT to be worn off hospital sites.

*Students must wear "TouroCOM" white coat on rotations

Please keep in mind that dress code is considered a reflection of professionalism by many.

CONFIRMATION OF ROTATION ASSIGNMENTS

It is expected that students will confirm scheduled rotations four weeks in advance, particularly for electives. At such time, students should contact their DME's or preceptors in order to determine the location and time to start the first day. Failure to confirm rotations may cause a delay in the start of the student's rotation. Students are not to adjust or modify their core rotation schedule without permission. Such actions will subject the student to discipline, which may include failure of the clinical rotation or dismissal from the program.

Training Hours

Working hours for each of the services will be indicated and determined by the physician in charge of that service, in cooperation with the DME of the affiliated hospital. If night duty or weekend duties are required, this will also be indicated. The student must have a minimum of two (2) days out of each consecutive fourteen (14) days free of all clinical duties, although these days will not necessarily be on weekends.

Attendance Policy / Scheduling

1. **The Touro College of Osteopathic Medicine academic calendar does not apply to students on clinical rotations.** Each hospital sets its own schedule. Night call, weekend coverage, and holiday assignments are at their discretion. Limited situations present themselves for which permission to attend an event outside of the hospital may come up. These include: board and shelf examinations, TouroCOM site visits, residency interviews, and serious family issues. Such exceptions are to be discussed with the DME and the Office of Clinical Education at Touro College of Osteopathic Medicine before plans are made. Full attendance is expected. Under typical circumstances, students are expected to be present at their clinical rotation sites for the entirety of all scheduled shifts.
2. Students may be scheduled to work on weekends, but must be free of all clinical responsibilities for at least two (2) calendar days out of each consecutive fourteen (14) days. These days off may not necessarily be consecutive or on weekends.
3. Students are limited to eighty (80) clinical work hours per week. Didactic or independent study time is not included in this maximum.
4. Students are not to work more than twenty-four (24) consecutive hours. Extenuating circumstances (e.g. emergent patient care matters) may, on rare occasion, necessitate exceeding this maximum, but responsibilities must not exceed thirty (30) consecutive hours.
5. Students may be required to return to campus for testing and other activities during callbacks each year.

Personal Days and Other Time Off:

1. **Holidays: Students are expected to work as assigned by the institution (the hospital calendar prevails)**
2. Students are responsible for notifying their preceptors and the clinical education office at Touro College of Osteopathic Medicine about planned absences and for making arrangements for any make-up time at least five (5) working days prior to the anticipated absence, but in any event no later than the close of the second work day of the rotation. Absences and make up dates must be approved by the DME and the Office of Clinical Education prior to date of question.

Unanticipated Absences: Refer to Student Handbook.

1. Students needing to miss work time for anticipated (Board Examinations, residency interviews) and for unanticipated reasons (e.g. illness, family emergency) must notify both their preceptor and the Office of Clinical Education immediately. If the absence exceeds a single day, students should be in contact with both their preceptor and the Office of Clinical Education, at least daily, or as arranged with the Office of Clinical Education.
2. Students are expected to make-up missed work days.

Excessive Absences:

1. Each case will be considered individually when taking into account the amount of any time missed on a rotation, along with any make-up time worked, the reason for absences, the quality of clinical performance, and the knowledge and experience gained by a student on a given rotation. ***As a general rule, more than 3 missed days will prompt consideration for repeating the rotation.***
2. If it is determined by the DME/preceptor in consultation with the Office of Clinical Education, that a

student's absences have significantly impaired his/her ability to reasonably meet the educational objectives of the rotation, then remedial work (which may include a partial or complete repeat of the rotation) may be assigned.

3. Absences that may not rise to the level of necessitating a repeat of the rotation may still negatively affect their clinical evaluation, their grade and the Medical Student Performance Evaluation ("MSPE").

RESPONSIBILITIES AND DUTIES

All students will be expected to comply with the general rules established by the hospital, office, or clinic at which they are being trained. In addition to the rules established by the hospital or site, the Touro College of Osteopathic Medicine's rules and code of conduct still apply. Specifically, the terms and conditions contained in the College Catalog and the Student Handbook are incorporated into this Manual by reference.

Should any problem or difficulty arise that the DME cannot resolve first, the information should be communicated to the Office of Clinical Education as soon as possible. Any time spent away from the hospital during regular duty hours for lectures, conferences, and other programs conducted at outside hospitals or universities must be **pre-approved** by the DME of the rotation hospital. Although patient care assignments take precedence over lectures and conferences, the hospital and attending physicians are encouraged to allow the students to attend scheduled lectures.

Additional Guidelines:

In addition to the responsibilities listed above, additional requirements exist:

1. All evaluations are to be completed, signed and reviewed with the student by a licensed physician.
2. Students are not permitted to accept financial compensation or any form of gratuity for rendering patient care. Their training institution, when possible, may assign suitable housing accommodations and board.
3. Students should be assigned to specific patients. Histories and physical examinations should be completed on those patients whom students will be following on the service to which they are assigned, where applicable.
4. Students should perform "pre-rounds" on patients or chart review, and accompany the preceptor on rounds, conferences and consultations when appropriate.
5. Progress notes, may be written by the students only with permission, and under the supervision of a physician. Progress notes must be countersigned within the time required by the rules and regulations of the training institution.
6. Students shall not order any examinations, tests, medications or procedures without consulting and obtaining the prior approval of the supervising physician. Students shall not write prescriptions for medicine, devices or anything requiring the authority of a licensed physician. Students shall never represent themselves as licensed physicians.
7. Attendance by students is required at all conferences, discussions or study sessions, and any other programs of an educational nature designed specifically for students at the clinical site. Each conference should be documented with an attendance record.
8. Students shall learn and perform procedures under appropriate and proper supervision, in those areas where the training institution regulations permit such instruction.
9. The codes of Professionalism are to be adhered to at all times.

LETTER OF GOOD STANDING AND LIABILITY COVERAGE

A "Letter of Good Standing" is sent to each core rotation site by the Office of Clinical Education prior to the beginning of each rotation. In order to qualify for a "Letter of Good Standing," in addition to academic credentials, students require complete and current health records.

All students on approved clinical rotations in the United States are covered by the professional liability insurance of Touro College of Osteopathic Medicine during their OMS III and OMS IV years.

HEALTH RECORDS

Health records are maintained by Touro College of Osteopathic Medicine. This information includes a Physical, TB screening (2-step PPD or other TB testing, as defined by the State of New York), and compliance with OSHA/HIPPA. PPD must be updated annually, and some sites require this as often as every three months. Td must be updated every 10 years. MMR/Varicella/Hepatitis vaccines and/or titers will also be required. Students are responsible to keep their immunizations current.

Students on electives may be required to provide proof of personal health insurance and HIPAA, BLS, ACLS, recent criminal background check, and OSHA training completion by or at a specific training site. Copies of such documentation are available from the Office of Clinical Education and on the New Innovations software. It is the student's responsibility to keep one's certifications current.

EVALUATION AND GRADING

General Philosophy

While grades are an important part of the clinical education process, and can provide substantial information regarding performance, it is essential that students and preceptors alike recognize that the generation of a grade is not the primary purpose of clinical rotations. Focus should be maintained on gaining clinical experience, expanding fundamental knowledge, providing quality care, and developing clinical and cultural competence. It is important as well that students pay close attention not simply to the grade earned, but to the specific components of evaluations that are designed to provide feedback and guidance to improve future performance.

Guidelines for grading

Preceptor's evaluation- Letter grades are a component of the course grade attributable to a clinical rotation, and that final grades are determined by the Office of the Clinical Dean after taking into account shelf exam scores, participation in the OMM curriculum and the Seven Core Competencies of the AOA.

Post Rotation exam - Student grades reflect performance and may be raised by one letter grade if the student performs more than one standard deviation above the national average on their shelf examinations given at the end of each third year rotation. Should a student receive an "A" for their rotation and receive more than one standard deviation above the mean on the shelf exam, they will receive a notation of *Honors* on their Medical Student Performance Evaluation. A student that scores more than one standard deviations below the national average will have their grade lowered by one letter grade. Should a student receive a "C" and score one standard deviation below the national average, they will need to retake the exam and pass it.

Osteopathic Manipulative Medicine (OMM) **Lab & Lecture**: All students are required to participate in OMM Lab and Lecture during the months of core rotations; including Internal Medicine, Family Medicine, Surgery, Obstetrics and Gynecology, Pediatrics, Psychiatry, and Emergency Medicine. If a student misses Lab and Lecture for an unforeseen circumstance, the student is responsible to remediate for the missed time. Appropriate remediation is determined by the OMM faculty member. Failure to meet the requirements will be reflected in the student's final grade being lowered by one letter grade.

CLINICAL EVALUATIONS

1. Expectations

At the start of all clinical rotations, each student should meet with his or her preceptor to discuss expectations for clinical performance. The student is responsible for ensuring he or she understands the preceptor's expectations and should take this opportunity to clarify any issues regarding roles and responsibilities. It is strongly recommended that an additional conversation occur at the midpoint of the rotation to provide the student feedback on performance to date, and to offer suggestions for improvement in the latter half of the experience.

2. Clinical Performance

Near the completion of each clinical rotation**, students must remind their preceptors to complete their Clinical Clerkship Faculty Evaluation of Student Form**. A sample is included as part of this manual. It is important to recognize that the primary intent of the evaluation is to provide feedback to the student as to his or her specific areas of strength and weakness and to offer guidance for improvement in the future. Preceptors should take the opportunity to assess what the student has done.

Demonstrated competency in each of the seven AOA Core Competencies is to be reported in the CCFES. A general grade should be marked for each competency section, and an overall impression for the rotation should be indicated. Preceptors should add narrative comment to give the most specific guidance possible to the student. **Positive and constructive comments may be included in the Medical Student Performance Evaluation (MSPE; formerly the Dean's letter).**

It is important to note that students are evaluated against the standard of what should be reasonably expected from an osteopathic medical student at the same point in training. For example, under Competency 4: Interpersonal and Communication Skills, is an assessment for "Interviewing skills are well developed." It is expected that this will improve as students progress through clinical training; i.e., that as a general rule fourth year students will be further along than third year students. Preceptors and students should meet face-to-face to discuss the contents of the evaluation, and the evaluation form must be signed by the preceptor.

3. Evaluation of Clinical Assignment

Following each clinical rotation, students are expected to complete an evaluation of the preceptor, site, and rotation. It is only through honest, fair, and frank evaluations that problems can be identified and corrected, and appropriate praise can be offered to those deserving. This is a serious responsibility for students, and appropriate thought and time should be dedicated to this part of the clinical education program, as this information is used by Touro College of Osteopathic Medicine to assess the clinical sites.

WRITTEN EXAMINATIONS [COMAT Exams]

At the end of each core clerkship experience, students will take a written/online exam. These examinations will be scheduled at the end of the rotation, usually on the last Friday of the rotation. Students are responsible for

maintaining awareness of these dates and ensuring that they complete the examinations as required by the Office of Clinical Education. Make-up exams for these students will be scheduled on an individual basis.

Incomplete Grades

If, for any reason, a student is unable to complete all the requirements for a rotation as scheduled, individual arrangements must be made with the Office of Clinical Education to develop a plan to address the deficit. Please see the attendance policy section for additional information.

Failures

A student failing any clinical rotation will be referred to the Student Promotions Committee for assessment and recommendations. Unless contrary to these recommendations, any failed rotation must be remediated at the earliest opportunity. Vacation time, if available, may be used to accommodate scheduling of the repeat rotation. If vacation time is not available, completion of the curriculum, and consequently, the student's graduation, may be delayed. If a student successfully remediates a rotation, he or she will be awarded a grade of U/C.

A student, who fails any two clinical rotations, including remedial rotations, will be referred to the Student Promotions Committee as a candidate for dismissal from the college. Please refer to the Student Handbook for details on dismissal.

Disputes

If a student disagrees with the clinical evaluation offered by a DME or preceptor, he or she should first set up a meeting with the preceptor to discuss the matter. Following this discussion, a revised Clinical Performance Assessment may be submitted. In this circumstance, it should be clearly indicated in the comments section following the Overall Clinical Evaluation for Rotation that it represents a revision and supersedes the prior evaluation. The final grade for the rotation will then be recalculated based on the new clinical score.

Note: The Touro College Registrar requires all rotation grades to be submitted a minimum of 6 weeks after the end of the rotation. Students who do not submit grades by the deadline will receive an incomplete.

SUMMATIVE AND FORMATIVE TOOLS FOR ASSESSING AOA CORE COMPETENCIES

Evaluation Tools Competencies ↓	Periodic Written Exams	Direct Observation	Self-assessment	Objective Structured Clinical Exam	Clerkship Evaluation	Case Presentations/ Rounds	Exam Master	NBME & NBOME Comprehensive Shelf	Vignette and "Q" Bank Question Review
Medical Knowledge	X		X	X	X	X	X	X	X
Patient Care		X	X	X	X	X			
Professionalism		X	X	X	X	X			
Communication Skills		X	X	X	X	X			
Systems Based Practice	X		X	X	X	X	X	X	X

Practice Based Learning Improvements	X	X	X	X	X	X			
OPP/OMM	X	X	X	X	X	X		X	

Evaluation Tools Competencies ↓	COMLEX I	COMLEX II CE & PE	SHELF EXAM	CASE PRESENTATION IN CLINICAL SETTING	END OF ROTATION
Medical Knowledge	X	X	X	X	X
Patient Care	X	X	X	X	X
Professionalism				X	X
Communication Skills				X	X
Systems Based Practice	X	X	X	X	X
Practice Based Learning Improvements					X
OPP/OMM	X	X	X	X	X
OSCE	X	X	X	X	X

CURRICULAR MATERIALS

General Clerkship Objectives

The following general objectives are expectations of competencies for clinical rotations. They are designed to help students develop their core competencies.

Students are not expected to be experts in diagnosis and treatment. With progress through the clinical training program, more will be expected of students. When asked for diagnostic and treatment options, responses should flow from the history and physical findings. There should be a clear rationale behind diagnosis and treatment options. Please refer to the Expanded Curricular Objectives that follow this section for a list of topic areas included for each of the specific rotations.

- Osteopathic principles serve as a foundation for the entire curriculum. These principles address the capacity to look at presenting complaints and to see persons in their entirety.

- At the end of each clinical rotation, students should be better able to:

    - Obtain an accurate, logical, and sequential medical history. See below.
    - Perform and record a comprehensive physical examination.
    - Communicate the history and physical examination in a timely manner.
    - Apply basic medical knowledge in formulating a differential diagnosis and a management plan.
    - Function as an effective member of the healthcare team.
    - Demonstrate professional behaviors including:

- Reliability and dependability
- Self-awareness of strengths and limitations
- Cultural awareness and sensitivity
- Emotional stability and professional demeanor
- Enthusiasm
- Punctuality
- Initiative and self-education

- Demonstrate humanistic qualities
  - Integrity: the personal commitment to be honest and trustworthy.
  - Respect: the acknowledgement of patients' choices and rights regarding themselves their medical care.
  - Compassion: an appreciation that suffering and illness engender special needs for comfort and help without evoking excessive emotional involvement.

OSTEOPATHIC MANIPULATIVE MEDICINE (OMM) 3RD & 4TH YEAR CURRICULUM

The Department of Osteopathic Manipulative Medicine's OMM curriculum integrates Osteopathic Principles and Practice across all disciplines throughout the OMS III & OMS IV clinical rotation years. The OMM aims to integrate palpatory and structural diagnostic skills with basic science knowledge acquired during the first two years of medical school so as to educate students with a clinical and scientific understanding of osteopathic approaches to wellness, health and disease-states in the context of the neuromusculoskeletal system.

Students participate in a curriculum that is delivered using multiple modalities including live videoconferencing, in-person didactic presentations, internet-based video streaming, hands-on clinical training and skills assessment, reading and presentation assignments. It is delivered in multiple clinical settings which may include the medical school, core hospital-based rotation sites, out-patient clinics, and private practices.

Learning Objectives

1. Understand the place and role for osteopathic evaluation including palpatory and structural diagnostic skills in the work-up of hospitalized and ambulatory patients
2. Demonstrate both osteopathic diagnostic and treatment skills acquired during the first two years of OMM education as applied in the clinical environment.
3. Understand and demonstrate presentation skills as these pertain to the osteopathic evaluation of a patient.
   Write clear patient notes which demonstrate a good knowledge of osteopathic principles as these pertain to history taking, physical examination and treatment planning

Attendance

Each Touro College of Osteopathic Medicine student is expected to attend OMM sessions while on rotation.

Performance Assessment

Through lecture, demonstrations, assigned readings, hands-on experience and video streaming, the medical students will learn, perform and document the most common diagnoses seen in the hospital setting. OMS III & OMS IV medical students will develop the competency to effectively provide osteopathic manipulative medicine evaluations, diagnoses and treatment in an inpatient and outpatient setting. Students will log cases throughout their clerkships, noting relevant osteopathic diagnostic (including history and physical examinations) and treatment skills acquired.

Both adjunct clinical and OMM faculty will evaluate students on their attendance, participation, demonstration of OMM skills and presentations. Also, students may have the opportunity to demonstrate their skills and knowledge in the Objective Standardized Clinical Examinations (OSCE).

Summative evaluations by the adjunct clinical faculty are reflected in the Clinical Clerkship Student Evaluation Form (CCFES) whereas formative evaluations are reflected in either the CCFES or verbal feedback to students during their hands-on learning experiences.

Suggested Texts

Nelson K, Glonek T (eds), Somatic Dysfunction in Osteopathic Family Medicine, Lippincott, 2007 [ISBN-13: 978-1-4051-0475-3]

Chila A, Foundations for Osteopathic Medicine, 3rd Ed, Lippincott, 2010, [ISBN-13: 978-0781766715]

Seffinger M, Hruby R, Evidence-Based Manual Medicine: A Problem-Oriented Approach, Saunders, 2007,

[ISBN-13: 978-1416023845]

Suggested Topics

The following topics are recommended for lectures, conferences, topic talks, journal club and assigned readings:

1. Lumbar Spine
   - Describe the history taking for low back pain, especially the search for urgent etiologies
   - Describe the screening physical exam for low back pain, especially the search for urgent etiologies
   - Describe the general categories of etiologies for low back pain, including
     - Somatic dysfunction of lumbar spine
     - Somatic dysfunction of pelvis
     - Disc herniation
     - Vertebral instability
   - Describe the pathophysiology, physical exam, manipulation, and exercises/activities of daily living issues that pertain to:
     - Discogenic low back pain
     - Lateral curve etiologies of low back pain
     - Spondylolisthesis
     - Viscera-somatic etiologies
2. Thoracic Spine
   - Describe the musculoskeletal components of thoracic and rib pain
   - Describe the viscero-somatic etiologies of chest wall pain
   - Describe how to differentiate, making use of the structural exam, the following etiologies of chest wall pain
     - Cardiac
     - Esophageal
     - Gallbladder
     - Costal cartilage
     - Musculoskeletal
   - Describe and demonstrate how to diagnose and treat the above musculoskeletal components
3. Cervical Spine
   - Describe the general triage of neck pain
   - Describe the presentation of cervical radiculopathies, and the circumstances that cause and trigger them
   - Describe the diagnosis of neck pain related to upper thoracic issues
   - Describe the major etiologies that result in osteoarthritis of the cervical spine
   - Describe and demonstrate how to diagnose and treat the above structural issues
4. Sacrum and Pelvis
   - Describe the biomechanics of sacral and pelvic somatic dysfunction
   - Describe how muscular pain and weakness can cause pain in the posterior pelvis
   - Describe in general the types of visceral pain that can cause pelvic pain syndromes
   - Demonstrate the diagnosis and treatment of somatic dysfunction in the sacrum and innominates
5. Upper Extremity
   - Describe and demonstrate the landmarks necessary for a shoulder examination
   - Describe the muscles involved in shoulder dysfunction and how to map a given dysfunction to specific possible muscles
   - Describe the biomechanics of the rotator cuff muscles, and how to diagnose and treat these
   - Describe and demonstrate how to diagnose, locate, and treat the tendinous etiologies of shoulder dysfunction
   - Describe how to diagnose, locate, and treat lateral epicondylitis and medial epicondylitis

- Describe the biomechanics of carpal tunnel and how to diagnose and treat the somatic dysfunction involved

6. Lower Extremity
   - Describe the landmarks necessary to locate in order to do a physical examination of the:
     - Hip
     - Knee
     - Ankle and Foot
   - Describe how to diagnose osteoarthritis of hip, and describe the way that treatment of somatic dysfunction can benefit patients with this problem
   - Demonstrate an examination of the knee, checking for:
     - Cruciate and collateral ligament problems
     - Trigger Points
     - Describe how fibular head somatic dysfunction can cause drop foot and common personal nerve problems, and how to treat this
   - Ankle
     - Describe examination for the common somatic dysfunction of the foot
     - Describe the somatic dysfunction component of plantar fasciitis and calcaneal spurs
     - Demonstrate how to diagnose and treat the above ankle somatic dysfunction
7. Cardiac I: Arrhythmias
   - Describe the physiologic factors that influence the rate and strength of myocyte contraction
   - Describe the role of the autonomic nervous system in the control of the heart
     - In normal life
     - When a stress is placed on the heart
   - Describe and demonstrate how a patient would be examined to locate possible structural contributions to a cardiac arrhythmia
   - Describe and demonstrate how the above findings could be treated
8. Cardiac II: Ischemic Heart Disease/Myocardial Infarction
   - Describe the pathophysiology that could exacerbate or trigger a myocardial infarction
   - Describe the role of pre-load in the patient with ischemic heart disease
   - Describe the structural issues that can affect the pre-load presented to the heart, including both left and right ventricles
   - Describe the role of after-load in ischemic heart disease and myocardial infarction
   - Describe the structural issues that can affect after-load
   - Describe the structural issues that can affect the oxygen demand of the body
   - Demonstrate how to diagnose and treat the above structural issues
9. Respiratory
   - Describe the effect of sympathetic and parasympathetic innervations on the lungs
   - Describe the significance of lymphatic drainage in:
     - Pneumonia
     - Asthma
     - Emphysema
   - Describe the anatomy of the lymphatics in the lung parenchyma
   - Demonstrate screening of the thoracic spine
   - Demonstrate evaluation and treatment for:
     - Respiratory excursion
     - Rib compliance
     - Structural ribs
     - Autonomic contribution to pulmonary disease
10. Otitis Media
    - Describe the various factors that can result in ear pain

- Describe the role of the structural exam in the differential diagnosis of ear pain
- Describe and demonstrate how non-otic structures that cause ear pain can be diagnosed and treated
- Describe the anatomy and physiology of middle ear drainage
- Describe the structural issues that can impede middle ear drainage
- Demonstrate how dysfunction of the above structures can be diagnosed and treated

11. Hospital Exam/Structural Exam Form
    - Describe the uses of the medical record as it pertains to the structural exam and manipulative treatment
    - Demonstrate charting of structural exam findings
    - Demonstrate charting of osteopathic manipulative treatment
    - Demonstrate a basic hospital screening exam
    - Describe and demonstrate how specific and useful structural findings would be elicited in the hospital patient
    - Describe and demonstrate the variations that are available in diagnosing and treating the hospital patient, including:
        - The Intensive care unit
        - Post-op
        - Prolonged bed rest
12. GI: Abdominal Pain
    - Describe the effects of sympathetic and parasympathetic stimulation of abdominal and pelvic organs
    - Map the sympathetic and parasympathetic innervations of the abdominal and pelvic organs, including:
        - Vertebral levels of sympathetic innervations
        - Which nerves carry parasympathetic innervations to which organs
        - Mapping of pre-vertebral ganglia
    - Describe the common GI and GU syndromes that could have autonomic dysregulation as a significant contributing factor
    - Describe the significance of venous and lymphatic drainage from the abdomen
    - Describe the structural exam findings that one might expect in a patient with GI and GU syndromes
    - Demonstrate the techniques that would address these findings
13. Obstetrics
    - Describe the structural changes that occur during pregnancy
    - Describe and demonstrate how to diagnose and treat the structural changes that occur during pregnancy
    - Describe and demonstrate how to diagnose and treat various physiologic changes that occur during pregnancy that are related to somatic dysfunction
    - Describe the structural changes that occur during delivery
14. Dysmenorrhea
    - Describe the physiologic changes that occur during the menstrual cycle and their effects on the structure of the body
    - Describe how the altered physiology during the menstrual cycle can cause pain
    - Describe how the physical environment of the pelvic organs can predispose to menstrual pain
    - Describe and demonstrate how to diagnose and treat the relevant:
        - Pelvic organs
        - Anchoring bones of the pelvis
        - Fascia of the pelvis
        - Muscular diaphragms of the abdomen and pelvis
15. Headache

- Describe the basic history for headache, including
  - Prominent red flags
  - Variant headache types (that have specific treatment implications)
  - Non-cranial etiologies
- Demonstrate the physical exam evaluation for headache, including
  - Cranial nerve testing
  - Evaluation for trigger points
  - Evaluation for C-spine contributions
  - Simple cranial osteopathy considerations

16. Surgical Patient
    - Describe the structural issues that could compromise a patient about to undergo abdominal surgery
    - Describe the structural issues that could compromise a patient during surgery and in the recovery room stage
    - Describe the physiology of persistent incisional pain
    - Describe the physiology of persistent organ pain even after successful surgical remediation
    - Describe the physiology of post-op ilius
    - Describe the physiology of adhesion formation
    - Describe and demonstrate how the structural components of the above issues can be diagnosed and treated

THIRD YEAR ROTATION CURRICULUM

Students will begin their Third Year Clinical Curriculum in July after having successfully completed the second year didactic curriculum and having passed COMLEX Level 1 by October 1st unless granted an exception by the Clinical Dean. Should a student not be able to pass their COMLEX Level 1 exam by that date, they will be removed from rotations. Each student will be required to complete the required set of Third Year Clinical Rotations which are listed below:

Family Medicine	2 months
Internal Medicine	2 months
Obstetrics/Gynecology	1 month
Pediatrics	1 month
Psychiatry	1 month
Surgery	2 months
Emergency Medicine	1 Month
Electives	1 Month
Vacation	1 Month

Core Clerkship Learning Objectives: Family Medicine

HISTORY TAKING: obtain accurate, efficient, appropriate, and thorough history. One of the unique aspects of our course is the focused History and Physical Exam (PE), pending the purpose for the visit. Students see patients with one and/or two issues, either health maintenance (yearly checks with comorbid illnesses) and/or acute illness. History and PE need to focus on these. The student will need to understand a patient's concern, the pathophysiology about this complaint, the role of medication and a differential diagnosis relating to the CC. History should guide the physical exam. We expect students to have learned basic history taking in the first two years of medical school. During the clinical rotation the students will see patients with acute and chronic illnesses as well as health maintenance issues.

PHYSICAL EXAM: perform and interpret findings of a complete and organ-specific exam. Healthy patient examination (infant to elderly), height and weight; for children: plot on growth curve, head circumference in

children under the age of 2, specific screening exam: head and neck exam, thyroid exam, breast exam, skin exam, pulmonary, cardiac and abdominal exams, musculoskeletal exam, neurologic exam, pelvic examination, rectal/prostate exam under supervision, organ-specific examination of the adult or pediatric patient presenting with acute and chronic medical conditions; understanding how the physical exam changed over time in a patient with an acute or chronic medical illness.

PROCEDURES: perform routine technical procedures. We expect students to become competent to perform pelvic and rectal exams. If appropriate we will expect students to be able to perform the following procedures: Foley Catheter Insertion, Pap smear, STD cultures, immunizations, suture removal, joint injection/aspiration, PPD placement, and throat culture, all to be performed under supervision.

DIAGNOSIS: to articulate a cogent, prioritized differential diagnosis based on initial history and exam. The clerkship is to focus on skills in the initial evaluation of symptoms and chronic illnesses that commonly present in the primary care setting. Students are to learn how to use the initial history and physical exam to articulate a cogent, prioritized differential that provides the framework for appropriate and selective diagnostic testing. Student to be expected to design a rational diagnostic strategy, based on knowledge of pathophysiology as well as evidence from the literature, to narrow an initial differential diagnosis. The nature of the rotation is to afford students the opportunity to follow through on the stepwise evaluation and management of a presenting symptom or chronic illness in the patient. Diagnostic evaluation of the following common primary care problems is to be emphasized when patients present with: Adult patients Cardiovascular/ Respiratory signs and symptoms, chest pain, shortness of breath, cough, pharyngitis/sinusitis GI signs and symptoms, abdominal pain, rectal bleeding, diarrhea neurologic signs and symptoms, headache, vertigo, confusion/dementia musculoskeletal signs and symptoms, back pain, shoulder pain, knee pain, hip pain, foot/ankle pain gynecologic signs and symptoms, irregular menses/amenorrhea, abnormal vaginal bleeding, vaginitis, breast mass or pain, genital ulcers/sexually transmitted infections GU signs and symptoms, dysuria, prostatitis, erectile dysfunction, scrotal mass, incontinence, urethritis/sexually transmitted infections dermatologic signs and symptoms, Acne/rosacea Ophthalmologic signs and symptoms, Red Eye Psychiatric signs and symptoms, Depression/anxiety general systemic signs and symptoms, Lymphadenopathy, unintentional weight loss, peripheral edema, fatigue chronic illness, diabetes, hypertension, osteoporosis, asthma.

Professionalism to be selfless, reliable, honest and respectful to patients, colleagues and staff.

Recommended Topics:

The following topics are recommended for lectures, conferences, topic talks, journal club and assigned readings:

1. Ear Nose and Throat Disorders
    a. Hearing loss
    b. Diseases of the ear canal, middle ear and inner ear
    c. Infections of the nose and paranasal sinuses
    d. Diseases of the oral cavity and larynx
2. Pulmonary Disease
    a. Asthma
    b. Chronic obstructive pulmonary disease
    c. Pulmonary infections
    d. Pulmonary neoplasms
3. Heart Disease
    a. Coronary heart disease
    b. Disturbances of rate and rhythm
    c. Congestive heart failure
4. Hypertension

a. Etiology and classification
b. Goals of treatment
c. Complications

5. Blood Disorders/ Rheumatology
    a. Anemias
    b. Leukemias
    c. Disorders of hemostasis and antithrombotic therapy
    d. Arthritic disorders
    e. Connective tissue disorders
6. Gastrointestinal Disorders
    a. Abdominal pain
    b. Upper and lower GI bleeding
    c. Common abdominal conditions, evaluation and treatment
7. Endocrine Disorders
    a. Diseases of the thyroid gland
    b. Diseases of the parathyroids
    c. Diabetes mellitus
        i. Classification and pathogenesis
        ii. Diagnosis
        iii. Treatment
        iv. Complications
8. Lipid Disorders
    a. Lipid fractions and the risk of coronary heart disease
    b. Treatment
    c. Secondary conditions that affect lipid metabolism
9. Sexually transmitted diseases
10. Pneumonias
11. Antimicrobial therapy
    a. empiric regimen
    b. drug susceptibility testing
    c. drug pharmokinetics
    d. drug reactions and precautions
12. Immunizations
13. HIV/AIDS
14. Nutrition
15. Neurologic Disorders
16. Dermatologic Diseases
17. Occupational Medicine
18. Psychiatric Disorders

Core Clerkship Learning Objectives: OB/GYN

HISTORY TAKING: obtain accurate, efficient, appropriate, and through history. Specifically: chief complaint, present illness, menstrual history, obstetric history, gynecologic history, contraceptive history, sexual history, family history, social history.

PHYSICAL EXAM: perform and interpret findings of a complete and organ-specific exam. Specifically: perform a painless ob/gyn examination as part of a general medical examination, including: breast exam; abdominal exam; pelvic exam; recto-vaginal exam.

PROCEDURES: perform routine technical procedures. Specifically: collect a cervical cytological (pap) smear, obtain specimens to detect sexually transmitted diseases, bladder catheterization.

DIAGNOSIS 1: articulate a cogent, prioritized differential diagnosis based on initial history and exam. Specifically: normal obstetrics, abnormal obstetrics, control of reproduction, gynecologic disorders, gynecologic endocrine and infertility issues, gynecologic oncology.

DIAGNOSIS 2: design a diagnostic strategy to narrow an initial differential diagnosis demonstrating knowledge of path physiology and evidence from the literature.

MANAGEMENT: design a management strategy for life-threatening, acute, and chronic conditions demonstrating knowledge of path physiology and evidence from the literature. Specifically: obstetrical hemorrhage, shoulder dystocia, menorrhagia, pelvic pain, ectopic pregnancy

PREVENTION: plan a strategy for reducing incidence, prevalence, and impact of disease demonstrating knowledge of path physiology, clinical epidemiology, and evidence from the literature. Specifically: preconception planning, contraception, nutritional counseling in pregnancy, premature delivery; understand the health and well-being of populations, specifically the social and health policy aspect of women's health
(Example: ethical issues surrounding sterilization and abortion, domestic violence, adolescent pregnancy).

DATA ANALYSIS: interpret data from laboratories and radiology demonstrating knowledge of path physiology and evidence from the literature.

COMMUNICATION
1. present patient information concisely, accurately, and in timely fashion to members of a health care team in a variety of settings and formats including verbally and in writing.

2. keep patient and family involved and informed.

PROFESSIONALISM: be selfless, reliable, honest, and respectful of patients, colleagues and staff.

Recommended Topics:

The following topics are recommended for lectures, conferences, topic talks, journal club and assigned readings:

1. Pregnancy
    a. Antepartum Care
    b. Gestational age - fetal growth
    c. Labor - stages and mechanism, normal labor, management of delivery, stages of labor
    d. Abnormal labor
        1. Indications of induction
        2. Breech presentation
        3. Indicators for operative delivery
    e. Fetal monitoring
    f. Isoimmunization
    g. Post partum hemorrhage
    h. Abortion
    i. Preeclampsia – Eclampsea
    j. Ectopic pregnancy

k. Placenta prevea
l. Placenta abruptia
m. Medical conditions affecting pregnancy

2. Sexually transmitted diseases
   a. Herpes genitalis
   b. Pelvic Inflammatory Disease-gonorrhea
   c. Human Papillomavirus
   d. AIDS
   e. Chlamydia
   f. Trichomonas
   g. Syphilis
   h. GonorrheaHepatitis
3. Contraception and Menopause
4. Gynecological Disorders
   a. Vaginal Bleedings
   b. Fibroids
   c. Endometriosis; adenomyosis
   d. Cervical dysplasia/Carcinoma
   e. Endometrial hyperplasia/Carcinoma
   f. Ovarian tumors/cysts
   g. Polycystic ovary syndrome
   h. Infertility
   i. Cystitis
   j. Vaginitis

Core Clerkship Learning Objectives: Pediatrics

Recommended Topics:

1. newborn jaundice
2. sepsis in a newborn
3. congenital heart disease in a newborn
4. Respiratory Distress Syndrome
5. hypoglycemia
6. growth abnormalities/failure to thrive
7. pediatric nutrition
8. fluid and electrolyte management
9. immunization schedules
10. Developmental milestones
11. usual childhood diseases
12. congenital abnormalities
13. inborn errors of metabolism
14. cerebral palsy and muscular dystrophy
15. asthma
16. obesity
17. diabetes
18. child abuse
19. gastroenteritis
20. diarrhea and dehydration.
21. Otitis media
22. common viral and bacterial exanthems including roseola, measles, varicella, mumps, fifth disease, and streptococcal rash

Core Clerkship Learning Objectives: Psychiatry

HISTORY TAKING: Be able to take an adequate psychiatric history, perform a satisfactory mental status exam, demonstrate an understanding of the terms and concepts and how to apply them.

Outline for the Psychiatric History:

- When did the current episode begin? What were the presenting symptoms? How have symptoms progressed?
- Is the patient receiving treatment? Is so, what? Effectiveness? Side effects? Compliance?
- Pertinent negatives
- Past psychiatric history
  - When was the first-ever onset of symptoms (whether treated or not)? Have there been recurrences? If so, what frequency and length of episodes? Changes in symptom pattern?
  - All prior treatments in detail
    - For medications: Dose, length of treatment, side effects, therapeutic response, patient's compliance
    - For psychotherapy: Modality, length of treatment, perceived benefits, patient's involvement or noninvolvement
- Medical history (especially current medical problems, current prescription medications, drug allergies
- Family history (Who is in the family? Who else has had psychiatric symptoms or treatment?)
- Personal history: Relate the significant events of a patient's life, and create a picture of functioning over time. Some important elements: early friendships, academic record, job experiences, romantic relationships, sexual experiences, military experience, incarceration experience, drug and alcohol use, recreational pastimes
- Mental status examination
- Physical examination
- Laboratory findings
- Differential diagnosis

MENTAL STATUS EXAMINATION:

- Appearance: Oddities of dress or demeanor, signs of physical illness, behavior with the examiner
- Speech: The physical production of speech (not the ideas): e.g., slurred, monotone, soft, pressured
- Emotional expression: Consider the range of emotions, the intensity, lability, and appropriateness of the topics being discussed
- Subjective: How the patient feels
- Objective: How the patient looks
- Thinking and perception
  - Content: Delusions, obsessions, preoccupations, suicidal and homicidal thoughts
  - Perceptions: Hallucinations, illusions
- Sensorium (cognitive functions)
- Alertness
- Orientation
- Concentration
- Memory
- Immediate recall
- Short term (or recent) recall
- Long term memory

- Fund of Knowledge
- Abstract reasoning
- Insight and judgment

LABORATORY TEST:

- Complete blood count
- Electrolytes (Na, K, Cl, CO2)
- Glucose
- Calcium
- Renal function tests (blood urea nitrogen, creatinine)
- Liver function tests (alanine aminotransferase, aspartate aminotransferase, gammaglutamyl Tran peptidase)
- Rapid plasma reagin
- Thyroid function tests (free thyroxin, thyroid-stimulating hormone)
- Vitamin B12 level
- Urine drug screen

Recommended Topics:

- Symptoms, signs, epidemiology and diagnostic criteria for depression syndromes
- Somatic presentations of depression
- Treatment alternatives for depression, including therapy, antidepressant medications (including major classes and their indications and contraindications), electroconvulsive therapy and alternative and complimentary therapy
- Bipolar affective syndromes including signs, symptoms, epidemiology and diagnostic criteria
- Medical and social impacts of bipolar syndromes
- Therapies for bipolar affective syndromes
- Presentation, symptoms and course of the anxiety disorders, panic disorder and agoraphobia
- Somatic symptoms of panic and hyperventilation
- Therapeutic options for anxiety and panic disorders including drug and non-drug therapies
- Signs, symptoms, epidemiology and diagnostic criteria for the schizophrenias, including prominent theories of etiology
- Different forms of schizophrenia
- Treatment options for schizophrenia

Core Clerkship Learning Objectives: Surgery

During the core clerkship in surgery the student will learn about "surgical" illnesses, so that no matter what area of medicine you choose for your career, you will be able to diagnose and plan for the care of patients who need surgery.

By the end of the core clerkship, the student should:

- Gain an overall knowledge of surgical illnesses and the important steps in the decision process for treating these conditions
- Understand the physiology of an acutely injured patient, whether this injury is from trauma, burns, infection, or surgery itself

- Learn the basic principles governing wound care, suturing, and management of tissue infections – an example: the decision making involved in determining when an infection needs drainage vs. when antibiotics alone are sufficient. This can only be learned through direct patient care experience.
- Learn how to render proper post operative care.
- Learn how to assess shock
- Learn about nutritional support and its role in treating severely ill patients
- Learn about the different surgical subspecialties, about anesthesia, and about the day-to-day practices of the staff surgeons in both academic and private practice settings
- Become familiar with some procedures that are important to critical care:
  - Central lines: Watch a carotid endarterectomy and a groin dissection for vascular bypass surgery you will hit the veins more easily if you have seen where they are
  - Intubations: Be on hand in the OR at the beginning of each case
  - Chest tubes: Observe cardiac and thoracic surgery cases – notice the relationship between internal structures and external landmarks
  - Foley Catheter Insertion

GUIDELINES:

The teams for patient care on the wards are led by the Chief Resident. The responsibilities of each member of the surgical team are determined by the Chief Resident. You are a crucial part of the surgery team; the better able you are to integrate yourself into the team's daily responsibilities, the more you will get out of your surgery rotation.

Recommended Topics:

- Fluid and Electrolyte
- Body water volumes and distribution
- Electrolyte distribution cell water and extra cellular fluid
- Electrolyte content of body fluids
- Water and electrolyte changes in response to various stress situation
- Hormones in fluid and electrolyte homeostatis
- Various electrolyte imbalances
- Acid Base Homeostasis
- Hydrogen ion biochemistry and physiology
- Buffering systems
- Metabolic acidosis "anion gap"
- Respiratory acidosis
- Respiratory alkalosis
- Metabolic alkalosis
- Nutrition
- Risk factors and indicators for nutritional assessment
- Calculations of energy requirements
- Indications contraindications, complications and benefits of:
- internal feeding
- parental feeding
- special formulations
- Surgical Infections
- Inflammatory response
- Mechanisms of infections, surgical hazards and epidemiology
- Antibiotics in Surgery

- Wound Healing
- Factors on wound healing
- Steps of normal wound healing
- Postoperative wound complications
- Wound closures
- Trauma Patient
- initial evaluation
- secondary survey
- shock and resuscitation
- types
- treatment
- Burns
- Evaluations
- treatment plans
- complications
- Breast
    - Masses
- Evaluation and screening, hereditary breast cancer
- Treatment
- Endocrine
    - Pathophysiology, clinical presentation, work up and treatment of the following:
- Solitary thyroid nodule
- Multinodular thyroid gland
- Thyrotoxicosis
- Primary, secondary and tertiary hyperparathyroidism
- insulinoma/gluconoma/vipoma
- Zollinger-Ellison syndrome
- GI carcinoid
- Endogenous hypercortisolism
- Pheochromocytoma
    - Management of the following
- Hypercalcemic cases
- Thyroid storm
- Grave's disease/ Hashimoto's disease
- Pheochromocytoma
- Hyperaldosteronism
- endogenous hypercortisolism
- insulinnoma
- carcinoid
- Abdominal Surgery
- Presentation and complications of the management of the following hernias:
- Direct and indirect inguinal, femoral and obturator
- Sliding hiatal hernia
- Paraesophogeal
- Incisional
- Umbilical
- Spigelian
- Richter's

- Parastromal
- Internal
- Essential characteristics of presentation of GI tract diseases
- History
- Physical exam
- Radiologic examinations
- Endoscopy
- Tests
- Medical management and surgical indicators
- GERD
- Hiatal hernia
- Peptic Ulcer Disease
- Biliary tract disease
- Pancreatitus
- Portal hypertension
- Inflammatory bowel disease
- Diverticulitses
- Upper and lower GI bleed
- GI malignancies
- Intestinal obstruction
- Vascular/ Pulmonary
  - Clinical manifestations and tests for
- Obstructive vascular disease
- anuerysmal arterial disease
- thromboembolic disease aterial venous
- aortic aneurysm
  - therapeutic options
  - clinical manifestations, diagnostic and therapeutic
- pneumothorax
- hydrothorax and hemothorax
- chylothorax
- pulmonary infiltrates or masses
- congenital anomalies
- plural effusions
- medistinal masses
- infectious processes
- neoplatic process

Clerkship Learning Objectives: Emergency Medicine

During the clerkship in Emergency Medicine the student will learn about medical and surgical conditions in an emergency setting.

By the end of the clerkship the student should:

- Be able to evaluate an acutely ill patient in the emergency room
- Gain an overall knowledge of how and when to apply the A.B.C.s in emergency conditions
- Understand how to evaluate and effectively manage all acute or life threatening conditions in an emergency setting

- Gain an understanding of the pathophysiology of shock, it's categorizations and treatment
- Understand the mechanisms, pathophysiology and treatment of cardiopulmonary arrest
- Understand the pathophysiologic effect and management of blunt and penetrating trauma, and of a patient with complex multi system injuries
- Learn the basic principles governing wound care, suturing, and the management of tissue infections, where drainage is required or when antibiotics alone are sufficient
- Learn what procedures and tests have to be performed
- Become proficient in
    - starting IV's
    - drawing blood
    - arterial lines
    - central lines
    - foley catheter insertion
    - gastric tube insertion
    - airway intubation
    - chest tube
    - suturing

Decision Making in Emergency Medicine - Diagnostic Approach: History, physical exam and diagnostic testing using this information plus the experience gained in taking care of patients in an emergency room setting.

- Sit at patient's bedside to collect a thorough history.
- Perform an uninterrupted physical examination.
- Generate life-threatening and most likely diagnostic hypotheses.
- Use information databases and expert systems to broaden diagnostic diagnoses.
- Order only those tests that will affect disposition or that will confirm or exclude diagnostic hypotheses.
- Include decision rules on diagnostic testing order forms.
- Use guidelines and protocols for specific therapeutic decisions to conserve mental energies while on duty.
- Allow 2 to 3 minutes of uninterrupted time to mentally process each patient.
- Mentally process one patient at a time to disposition.
- Avoid decision making when overly stressed or angry. Take 1 to 2 minutes out, regroup, then make the decision.
- Carry a maximum of 4 to 5 "undecided" category patients.
- Stop – make some dispositions.
- Use evidence-based medicine techniques to substantiate decisions with evidence, understand the limitations of the evidence, and to answer specific questions, such as usefulness of diagnostic testing, management plans, and disease prognosis.

Recommended Topics:

- Multiple Trauma Patient-Priorities in management and resuscitation of the patient
    - Initial survey ABC
    - Secondary survey
    - Shock, classification
    - Monitoring the patient
    - Injuries by area

- Cardiovascular System
    - Acute M.I.
    - Congestive heart failure
    - Dysrhythmias
    - Percarditis
    - Valvular disease
    - Aortic dissection
    - Aneurysm

- Dyspnea
    - Obstructive pulmonary diseases
    - Asthma
    - Emphysema
    - Chronic bronchitis
    - Alpha 1 antitrypsine deficiency
    - Corpulmonale
    - Pneumothorax
    - Pulmonary embolus i. Psychogenic dyspnea

    - Syncope
        - Hypoperfusion
    - Outflow obstruction
    - Reduced cardiac output
        - tachycardias
        - brachycardia c. Vasomotor

    - CNS dysfunction
    - Hypoglycemia
    - Seizure
    - Toxic
    - Psychogenic
    - Coma
        - Assessment and Emergency measures

    - Stroke
        - Hemorrhage
        - Infarction
    - Trauma
    - Metabolic disturbances

- Infections — Inflammatory
- Hypoxia
- CO2 Narcosis
- Exogenous CNS toxins
- Electrolyte inbalance
- Hypertension
- Tumors
- Upper and Lower GI Bleeding-Clinical presentation, diagnosis and management

Core Clerkship Learning Objectives: Medicine

HISTORY TAKING: obtain accurate, efficient, appropriate, and through history. This clerkship will emphasize development of history taking skills. It will emphasize strategies and skills for the efficient elicitation of histories appropriate to the care of adult patients presenting with medical problems in the inpatient and office settings. Particular attention will be given to identification and elicitation of key historical data pertinent to immediate clinical decision-making.

PHYSICAL EXAM: perform and interpret findings of a complete and organ-specific exam. This clerkship will focus on development of physical examination skills (especially in the areas of cardiovascular, pulmonary, musculoskeletal, and gastrointestinal disease) pertinent to the clinical evaluation of adults presenting with medical problems in the inpatient and outpatient settings. It will emphasize elicitation of physical findings pertinent to differential diagnosis and immediate clinical decision-making.

PROCEDURES: perform routine technical procedures. Students will be taught the basic procedures used in inpatient and outpatient care of adult medical patients, including procedure indications, contraindications, techniques, complications, and interpretation of any findings that result. Examples include: venipuncture, peripheral venous catheter insertion, arterial blood gas measurement, lumbar puncture, paracentesis, thoracentesis, nasogastric intubation, Papanicolaou smears, and immunization administration.

DIAGNOSIS 1: articulate a cogent, prioritized differential diagnosis based on initial history and exam. A prime learning objective of the clerkship will be the formulation of a prioritized initial differential diagnosis based on the history and physical examination for common medical problems of adult patients presenting in inpatient and outpatient settings. Differential diagnosis of common systemic, cardiac, pulmonary, gastrointestinal, renal, endocrine, metabolic, rheumatologic, neoplastic, and infectious disease problems will receive particular emphasis.

DIAGNOSIS 2: design a diagnostic strategy to narrow an initial differential diagnosis demonstrating knowledge of pathophysiology and evidence from the literature. Another priority learning objective of this clerkship will be formulation of a diagnostic strategy, emphasizing use of the principles of clinical epidemiology (test sensitivity, specificity, pretest probability, predictive value) and cost effectiveness data to guide test selection and interpretation.

MANAGEMENT: design a management strategy for life-threatening, acute, and chronic conditions demonstrating knowledge of pathophysiology and evidence from the literature. The rotation will concentrate on basic management of the common medical problems of adults presenting to inpatient and ambulatory settings, with particular reference to the relevant pathophysiology and best scientific evidence.

THE MEDICAL WORK UP is a term used to refer to the sequence of history taking, physical exams, laboratory tests and diagnostic inquiries that are implemented during the evaluation of a patient's medical

problems.

PREVENTION: plan a strategy for reducing incidence, prevalence, and impact of disease demonstrating knowledge of pathophysiology, clinical epidemiology, and evidence from the literature.

Recommended Topics:

- Pulmonary Diseases
  - Clinical manifestations, differential diagnosis, pathophysiology, diagnostic tests and treatment.
  - Asthma
  - Chronic Obstructive Pulmonary Disease
    - Chronic bronchitis
    - Emphysema
    - Pneumonia
  - Bacterial mycoplasmic
- Pulmonary Embolism
- Tuberculosis
  Tumors of the Lung
  - nodule
  - non small cell carcinoma
  - adenocarcinoma
  - large cell
  - squamous cell
    - carcinoids
    - Pleural Effusions
- Cardiovascular Diseases
- Clinical manifestations, history differential diagnoses, pathophysiology, diagnostic tests and treatment
- Ischemic Heart Disease
  - angina pectoris
  - myocardial infarction
  - Congestive Heart Failure
- Cardiomyopathies
- Vascular disease
- Systemic hypertension
- Pulmonary artery hypertension
- Pericardial disease
- high output states
- Gastrointestinal Diseases
- Clinical manifestations, history differential diagnoses, pathophysiology, diagnostic tests and treatment
  - Acute Hepatitis
    - viral
    - medication
  - Alcoholic Liver Disease
    - alcoholic hepatitis
    - alcoholic cirrhosis
    - cirrhosis
  - alcoholic infectious
    - cardiac
    - primary

    - sclerosing cholangitis
    - hemochromotoses
    - Wilson's disease
    - Alpha, antitrypsine deficiency
    - crytogenic cirrhoses
- Gastrointestinal Disorders a
    - Cholecystitis
        - Cholelithiasis
        - Cholangitis
        - G.E.R.D.
        - Gastritis
        - Peptic ulcer disease
        - Inflammatory bowel disease
        - Colic
    - Tropical sprue
        - Diverticular disease, diverticulitis
        - Ischemic bowel disease
        - Irritable bowel
        - GI malignancies
        - Upper and lower GI bleeding
        - Acute and chronic diarrhea

- Hematologic Disease
    - Definition, clinical manifestations, history, differential diagnosis, pathophysiology, diagnostic tests and treatments
        - Bleeding Disorders
        - thrombocytopenia
        - inherited coagulation defects
        - acquired coagulation defects
        - Vitamin K deficiency
        - hepatic failure
        - Anemia
    - decreased RBC production
    - peripheral destruction or loss
    - Hemorrhage
- Specific anemias
    - Iron deficiency
        - megaloblastic anemia
        - thalassemias
- Marrow aplasia
    - hereditary spherocytoses
    - G-6-P-D deficiency
        - Sickle cell
        - Autoimmune hemolytic anemia
        - Leukemias

- Neurologic Disease
    - Definition, clinical manifestations, history differential diagnoses, pathophysiology, diagnostic tests and treatments
        - Seizure Disorders

        - focal
        - generalized
        - Coma
    - Cerebrovascular Disorders
        - strokes
        - T.I.A. d.
        - Meningitis
        - Migraine
        - Headache
        - Movement disorders
- Multiple sclerosis
- Alzheimer's Disease
- Genitourinary Disease
- Definition, clinical manifestations, history differential diagnosis, pathophysiology, diagnostic tests and treatments.
    - Fluid and Electrolytes
    - Acute renal failure
    - Glomerulonephritis
    - Nephrotic syndrome
- Urinary Tract Infection
- Musculoskeletal
- Definition, clinical manifestations, history, differential diagnosis, pathophysiology, diagnostic tests and treatments
    - Gout
    - Pseudogout
    - Septic arthritis
    - Rheumatoid arthritis
    - Osteoarthritis
    - Systemic lupus
    - Scleroderma
- Temporal arthritis
- IInfectious Disease and Antimicrobial Therapy
- Definition, clinical manifestations, general considerations, differential diagnosis, pathophysiology, diagnostic tests and treatment
    - Fever of unknown origin
    - The immunocomprimised patient
    - Hospital associated infection
    - Sexually transmitted diseases
    - Pneumonias
    - Antimicrobial therapy
    - emperic regimen
    - drug susceptibility tests
    - duration
    - response
    - adverse reactions
- Immunization against infectious disease
- hepatitis virus
- HIV/AIDS

FOURTH YEAR ROTATION CURRICULUM

Students will begin their Fourth Year Clinical Curriculum after having successfully completed the third year clinical curriculum and passing COMLEX-USA Level 2 CE by September 1st unless approved by the Clinical Dean. Each student will be required to complete the rotations which are listed below:

Internal Medicine Sub-internship Rotation

Description:

1 Month Medical Sub-internship These are specialties requiring an IM residency, followed by a fellowship in the subspecialty, such as Pulmonary, ID, Cardiology, GI, Endocrine, Nephrology. Note that pediatric subspecialties also "count" (e.g., pediatric cardiology, allergy & asthma), and that general pediatrics rotations (including inpatient), will not satisfy this requirement. These will usually involve significant inpatient experience.

This clerkship provides the student with the opportunity to serve as a sub-intern on a general medical service at an approved teaching hospital. Students are directly involved in the management of diverse medical patients from admission to discharge, learning to work within the context of a patient care team. The major purpose of the rotation is to facilitate the transition from Student Clerk to Intern.

Objectives of the Clerkship:

The primary objective of this clerkship is to provide students with additional experience in general medicine and the opportunity to provide a more advanced level of patient care similar to that of an intern, with a level of supervision intermediate between that of an intern and a third year medical student. As a sub intern you will strengthen the core knowledge and skills learned in your third-year Medicine clerkship to become more proficient in history taking and physical examinations, developing a diagnosis, and devising a treatment plan.

Students will earn to work across disciplines and professions on a health care team, effectively document and relay patient care information between other care providers, and learning how to gather information to create a well-formulated assessment and plan within a patient care team. The student should be able to demonstrate the ability to:

- Perform a thorough history and physical appropriate to the medical patient
- Develop an appropriate diagnostic plan for the work-up of the medical patient
- Display appropriate preparation of the medical patient for surgery or medical procedures
- Display appropriate considerations of medical management including but not limited to the prevention and treatment of common complications fluid and electrolyte imbalances and vascular and respiratory complications
- Demonstrate appropriate management and interpretation of relevant laboratory, radiological and pathological data in the care of the medical patient
- Deliver a case presentation in a concise but thorough manner
- Show evidence of appropriate use of the medical literature to support decision-making
- Demonstrate skills deemed appropriate for the fourth year medical sub-intern
- Demonstrate the ability to consistently interact respectfully, empathetically, and professionally with patients, families, health care providers, staff and colleagues, to optimize patient outcomes.

Performance evaluation:

Students should be assessed by their preceptor based on direct observation, input from other physicians and residents, student procedure, medical and patient work-up logs, attendance and participation in rounds and medical conferences, medical case and topic presentations, and their patient write-ups. Final performance assessment in the form of a grade is based on the Clinical Clerkship Student Evaluation Form (CCSEF).

Clerkship Evaluation Tools:

Evaluations of students are to be completed by the DME/Attending Medical Preceptor using the Clinical Clerkship Faculty Evaluation of the Student Form. Chief Residents, other medical residents, and attending physicians may contribute to the input but are not to complete the form on behalf of a preceptor. Evaluation of faculty and site experiences is required of every student. These must be carried out by means of the CCFES.

Surgical Sub-internship Rotation

Description:

These include general and specialty surgical specialties, such as orthopedics, ophthalmology, anesthesia, urology, plastic surgery, gynecological surgery. If in doubt, please check with the clinical education office before scheduling. This clerkship provides the student with the opportunity to serve as a sub-intern on a general surgical service at an approved teaching hospital. Students participate in the management of diverse surgical patients from admission to discharge. The major purpose of the rotation is to facilitate the transition from Student Clerk to Intern.

Objectives of the Clerkship:

The primary objective of this elective is to provide students with additional experience in general surgery, building on the core knowledge and skills acquired during the third year surgery clerkship. This is accomplished by having the student function as an integral member of the surgical team, functioning as an intern albeit with a level of supervision intermediate between that of an intern and a third year medical student. The student should be able to demonstrate the ability to:

- Perform a thorough history and physical appropriate to the surgical patient
- Develop an appropriate diagnostic plan for the work-up of the surgical patient
- Display appropriate preparation of the surgical patient for surgery
- Display appropriate considerations of post-surgery management including but not limited to the prevention and treatment of common post-surgical complications such as wound infections, ileus, fluid and electrolyte imbalances and vascular and respiratory complications
- Demonstrate appropriate management and interpretation of relevant laboratory, radiological and pathological data in the care of the surgical patient
- Deliver a case presentation in a concise but thorough manner
- Show evidence of appropriate use of the medical literature to support decision-making
- Demonstrate surgical skills deemed appropriate for the fourth year surgical sub-intern

Performance evaluation:

Students should be assessed by their preceptor based on direct observation, input from other surgeons and residents, student procedure, surgery and patient work-up logs, attendance and participation in rounds and surgical conferences, surgical case and topic presentations, and their patient write-ups. Final performance assessment in the form of a grade is based on the Clinical Clerkship Student Evaluation Form (CCSEF).

Clerkship Evaluation Tools:

Evaluations of students are to be completed by the Attending Surgical Preceptor using the Clinical Clerkship Student Evaluation Form. Chief Residents, other surgical residents, and attending surgeons contribute to the input but are not to complete the form on behalf of a preceptor. Evaluation of faculty and site experiences is required of every student. These must be carried out by means of the Evaluation of Clinical Assignment Form.

Ambulatory/Primary Care

Students will have the opportunity to gain further exposure in an ambulatory care setting; primary medical care provided on an outpatient basis, including diagnosis, observation, treatment, and rehabilitation services. These are settings in which there are both initial presentations of patient problems and the opportunity for follow-up. Though a single rotation is short; students should observe development of longitudinal relationships between doctors and patients with an emphasis on patient centered care. Students have the opportunity to be exposed to a broad patient demographic throughout multiple primary care clinics, and will focus on the diagnosis and management of common conditions likely to be seen by a general internist

Objectives of the Clerkship:

Students will become better adept in providing chronic disease management, evaluation and treatment of acute illness, and screening and prevention in the outpatient primary care setting. Students will have clinical experience with ambulatory care personnel including physician assistants, nurse practitioners, nurses, medical assistants, information technology personnel, students, administrative support staff and other healthcare personnel. Additionally, students will learn the appropriate timing and indications for referral to and interaction with subspecialty practitioners

The student should be able to demonstrate the ability to:

- Successfully apply relevant information acquired during previous undergraduate courses to clinical care
- Student will be given the opportunity to focus on developing knowledge and skills necessary to practice evidence-based, high quality, timely, compassionate, cost conscious, and professionally satisfying care in the ambulatory care setting.
- The student will be exposed to a broad patient demographic throughout in an outpatient primary care setting, and will focus on the diagnosis and management of common conditions likely to be seen by a general internist
- Make appropriate clinical decisions based upon the results of common diagnostic tests.
- Recognize situations requiring urgent or emergent medical care, initiate management to stabilize patient and seek appropriate support.
- Provide screening and appropriate preventive care based on national guidelines and adapted to individual needs, and teach patients about self-care.

Performance evaluation:

Students should be assessed by their preceptor based on direct observation, input from other physicians and residents, student procedure, attendance, case and topic presentations, and their patient write-ups. Final performance assessment in the form of a grade is based on the Clinical Clerkship Student Evaluation Form (CCSEF).

Clerkship Evaluation Tools:

Evaluations of students are to be completed by the Preceptor using the Clinical Clerkship Student Evaluation Form. Other physicians may contribute to the input but are not to complete the form on behalf of a preceptor. Evaluation of faculty and site experiences is required of every student. These must be carried out by means of the Evaluation of Clinical Assignment Form.

Critical Care/Anesthesia

CURRICULAR OBJECTIVES—CRITICAL CARE

Description:

Can be any inpatient critical care: Adult, Surgical, Neonatal

Students will explore ethical issues presented in the intensive care setting, the interplay between members of the health care team and patients and families. Explore the students' own feelings and views and how they relate to the provision of patient-centered care.

Objectives of the Clerkship:

This is a very broad area; we expect students will begin to appreciate the complexity of ethical issues related to care of patients in the critical care setting.

For example:

- Discuss use of monitoring devices; their uses and limits. Understand that use of monitors is an adjunct to and does not replace evaluation of the entire patient.
- Discuss infection in the critical care setting, and sources of infection, including iatrogenic infection. Review antibiotic choices and use of broad vs narrow spectrum antibiotics. Workup of the febrile patient.
- Discuss the clinical presentation and differential diagnosis of shock syndromes including blood loss, hypovolemia due to redistribution and third spacing of volume, neurogenic, cardiogenic and septic shock as well as heat shock and neuroleptic malignant syndrome. Discuss assessment, treatment and hemodynamic monitoring for victims of shock syndromes.
- Discuss the clinical presentation, signs, symptoms and risk factors for renal failure, including anticipatory management of progressive renal failure syndromes, indications for renal biopsy, use of microalbuminuria screening and ACE inhibitors in diabetes, vascular access, complications of renal failure including hyperkalemia, acidosis, and modification of diet and pharmacologic therapy in renal failure patients.

Performance evaluation:

Students should be assessed by their preceptor based on direct observation, input from other physicians and residents, student procedure, attendance, case and topic presentations, and their patient write-ups. Final performance assessment in the form of a grade is based on the Clinical Clerkship Student Evaluation Form (CCSEF).

Clerkship Evaluation Tools:

Evaluations of students are to be completed by the Preceptor using the Clinical Clerkship Student Evaluation Form. Other physicians may contribute to the input but are not to complete the form on behalf of a preceptor. Evaluation of faculty and site experiences is required of every student. These must be carried out by means of the Evaluation of Clinical Assignment Form.

Fourth Year Rotations

Internal Medicine	4 weeks
General Surgery	4 weeks
Ambulatory Care	4 weeks
Critical care/ Anesthesia	4 weeks
Elective	6 Electives (4 weeks each)

Fourth Year Electives:

Students are encouraged to schedule their fourth year electives at teaching institutions with residency programs during the fall semester.

Research elective:

1. Documentation on letterhead from institution of dates of rotation, expectations, abstract and hypothesis, signed by preceptor responsible for evaluations.
2. Research electives cannot exceed two months.
3. A work product must accompany end of rotation evaluation. This can be a poster presentation, powerpoint presentation or research paper.

International Rotations:

1. Documentation on letterhead from institution of dates of rotation, expectations, preceptors responsible for evaluations.
2. Evaluation by U.S. Department of State website for warnings or alerts.
3. International rotations will only be approved in the spring semester, after audition rotations are complete to help insure match into residency.

WRITING FOR THE MATCH AND RESIDENCY

Match and Residency Examples: Curriculum Vitae, Personal Statement, Dean's Letter. University of North Carolina, Chapel Hill Medical School., Office of Student Affairs. http://www.med.unc.edu/md/residency-match

Strolling Through the Match. American Academy of Family Physicians. Includes strategy, and how to write a curriculum vitae and a personal statement.
http://www.aafp.org/online/en/home/publications/otherpubs/strolling.html

FACULTY DEVELOPMENT TOOLS

Patient Chart Review Discussion:
Student documentation on patient charts is used to assess student knowledge, organization and problem solving. The student's written presentation of the patient's history and physical and/or progress helps to document the student's clinical competency. Patient charts can serve as a catalyst for teaching discussions.

EDUCATIONAL ACTIVITIES AT CLINICAL SITES MAY INCLUDE ANY OR ALL OF THE FOLLOWING:

- Academic Programs
  - Department meetings
  - Journal clubs
  - Morbidity and mortality conferences

- Conducting case study analyses
  - Conducting case study critiques of a presentation
  - Demonstrating diagnostic techniques and procedures
  - Delegating discharge summary responsibilities to house staff
  - Doing medical audits with house staff members

- Lecturing and interpreting content material
  - Summarizing seminars
  - Talking to the medical student staff immediately after a problem has
  - Taking time to plan the logistics and/or medical strategy for the week.

LIBRARY RESOURCES FOR CLINICAL ROTATIONS

The facilities and resources of the Touro Medical Library are for research, learning and teaching activities associated with Touro College of Osteopathic Medicine; commercial use of these facilities/resources is prohibited.

As a member of the TouroCOM community, you will have the privilege of accessing our electronic resources Off-Campus. All users are required to create a remote access login via the main Touro Libraries website: http://www.tourolib.org

Sites with Clinical Rotation Book Recommendations

•Bookmarc.com http://www.bookmarc.com/3rdyears.htm

•UCSD Bookstore http://bookstore.ucsd.edu/books/medical/clinical/index.htm

•http://www.usmle.net/NOT connected with the National Board of Medical Examiners; nonetheless, this is a wonderful site with thoughtful annotations. Includes books on medical fiction.

Free Medical Book Sites

•Free Books 4 Doctors at freebooks4doctors.com. This site provides access to 630 free full-text online medical books in 11 languages. Although many of the books are well known, the primary requirement for inclusion on this list is that the book is **free.**

Brief Glossary of Library Terms You Should Know

•ILL or interlibrary loan. What you need to ask for when an article or book is not available onsite. Can be called document delivery. DOCLINE is the National Library of Medicine's automated ILL request system.

•Index Medicus - the print version of Medline/PubMed.

•MeSH - medical subject headings. Controlled subject vocabulary used for indexing and cataloging at NLM.

•NLM - National Library of Medicine located in Bethesda, Maryland.