

IM 655
Nephrology Clerkship
Elective Clerkship Rotation Syllabus

Osteopathic Medical Specialties

Mary Hughes DO
Chairperson, Instructor of Record, and Course Director
hughesm@msu.edu

Revised July 2020

For all questions regarding content or administrative aspects of this course, contact

Course Assistants
Stephen Stone
stonest@msu.edu
and
Katie Gibson-Stofflet
katiegs@msu.edu

At MSUCOM, we are constantly working to improve our curriculum and to meet new AOA accreditation guidelines. While major changes will generally be instituted at the beginning of the school year, most minor changes may be implemented semester to semester.

Please be mindful of the need to read your syllabus BEFORE beginning your rotations.

This syllabus is active for any rotation August 1, 2020 to July 30, 2021

Table of Contents

Pre-Approval and Pre-Requisites.....	3
Educational / Instructional Goals & Objectives.....	3
Educational Goals:.....	3
Nephrology Competencies/Objectives	4
Competencies/Objectives.....	7
Teaching Methods.....	7
Participation in Clinical Conferences and/or Structured Educational Programs	7
Evaluation	7
Reference Materials.....	7
Student Responsibilities	7
Rotation Clinical Requirements	8
IM 655 Nephrology Corrective Action Policy	9
Unsatisfactory Clinical Performance	9
MSU College of Osteopathic Medicine Standard Policies	9
Clerkship Attendance Policy	9
Policy for Medical Student Supervision	11
Statement of Professionalism.....	12
Students Rights and Responsibilities	12
MSU Email	12
Use of Electronic Devices.....	12
Faculty Responsibilities	13
Course Grades.....	13
N-GRADE POLICY	13
Student Visas	13
MSUCOM Standard Policies.....	14
Rotation Evaluations.....	14
Exposure Incidents Protocol	14
Patient Types and Procedure Log.....	15
References for IM 655 Nephrology Clerkship Elective Clerkship Rotation Syllabus:	16

Pre-Approval and Pre-Requisites

- Approvals from the facility where the rotation will occur and Clerkship Team (COM.Clerkship@msu.edu) is required for every selective/elective rotation.

General Description

This course is designed to provide the student with an opportunity to actively engage in patient-based, learning experiences under the guidance of a faculty member (preceptor) in collaboration, as appropriate, with residents and/or fellows.

Rotations are typically two weeks, 3 credit hours or four weeks, 6 credit hours in duration. Timeframes for each rotation are decided at least 30 days prior to the beginning of the rotation.

Rotation schedules **are not** to be submitted until the last Friday-Sunday of the rotation. You must document your actual schedule worked. You are required to document any time off for illness, boards, etc. that caused a deviation from the schedule you were provided. **All rotation days must be accounted for.**

The overall performance of course participants will be evaluated through customary assessment instruments normally employed by the department for core rotations, at the discretion of the instructor of record

Educational / Instructional Goals & Objectives

Course participants will:

- A. Develop an appreciation of the practice of nephrology as related to the specialty of the preceptor.
- B. Assimilate what they learn and demonstrate their understanding of patient-care through ongoing interaction and dialogue with, as well as formative feedback from, the preceptor.
- C. Demonstrate an understanding of the (seven) osteopathic core competencies (as applicable).

Educational Goals:

The nephrology rotation is intended to provide the student with hands on experience in the evaluation and treatment of various conditions related to nephrology.

1. The clinical experience will emphasize the diagnosis and management of acute and chronic renal diseases.
2. The clinical experience will emphasize evaluation of risk factors, and management of risk factors to prevent disease advancement if possible.
3. The clinical experience will include learning to perform a complete and accurate patient history and physical exam.
4. The clinical experience will include identification and indications for appropriate diagnostic studies.
5. The clinical experience will help the student identify the first line therapy for common renal disorders.

Nephrology Competencies/Objectives

CLINICAL EVALUATION OF KIDNEY FUNCTION

- 1) Define and describe the importance of the glomerular filtration rate (GFR) in the setting of normal kidney function and compromised kidney function
- 2) Be familiar with how to calculate the GFR using various mathematical equations
- 3) Describe the role of serum creatinine, creatinine clearance and blood urea nitrogen (BUN), in regards to proper kidney function
- 4) Explain how to interpret a dipstick urinalysis and urine microscopy
 - a) Recognize the pathophysiology and conditions associated with various urine casts
- 5) Define hematuria and review the proper work-up of hematuria
- 6) Be familiar with how to quantify proteinuria and the proper work up of proteinuria
- 7) Explain the various imaging studies used to assess kidney function
- 8) Review the indications, risks and benefits of a kidney biopsy

FLUIDS AND ELECTROLYTES

- 1) Define osmolality and be familiar with how to calculate the plasma osmolality
- 2) Be familiar with how to calculate the osmolal gap and explain its significance
- 3) Define **hyponatremia** and the various risk factors for hyponatremia
- 4) Review the approach to the patient with hyponatremia using plasma osmolality, urine osmolality, and volume status
- 5) Review the treatment of acute and chronic hyponatremia
- 6) Define **hypernatremia** and its associated risk factors
- 7) Review the approach to the patient with hypernatremia
- 8) Differentiate between **central and nephrogenic diabetes insipidus** with regard to pathophysiology, diagnosis and treatment
- 9) Define **hypokalemia** and review the mechanism, causes and proper evaluation of hypokalemia
- 10) Describe the clinical manifestations and treatment of hypokalemia
- 11) Define hyperkalemia and review the mechanism, causes and proper evaluation of hyperkalemia
- 12) Describe the clinical manifestations and treatment of hyperkalemia
- 13) Review **hypophosphatemia and hyperphosphatemia** with regard to its pathophysiology, causes, evaluation and proper treatment

ACID BASE DISORDER

- 1) Review how to interpret arterial blood gases and be able to classify each condition as acidosis or alkalosis, respiratory or metabolic and acute or chronic
 - a) Be familiar with the expected compensation of each of these conditions
- 2) Review the causes, clinical manifestations and proper evaluation of **metabolic acidosis**
 - a) Be familiar with the role of the anion gap, how to calculate it and the conditions associated with a high and low anion gap
 - b) Be familiar with how to calculate the urine anion gap and be able to interpret its value
 - c) Review the causes of **normal anion gap metabolic acidosis** and **anion gap metabolic acidosis**
- 3) Review the causes, clinical manifestations and proper evaluation of **metabolic alkalosis**
 - a) Differentiate between saline-responsive and saline resistant metabolic alkalosis using the effective arterial blood volume and urine chloride
- 4) Review the causes, clinical manifestations and proper evaluation of **respiratory alkalosis**
 - a) Review the acute and chronic compensations
 - b) Briefly discuss the treatment of respiratory alkalosis
- 5) Review the causes, clinical manifestations and proper evaluation of **respiratory acidosis**
 - a) Review the criteria for acute and chronic respiratory acidosis

- b) Briefly discuss the treatment of respiratory acidosis

HYPERTENSION (HTN)

- 1) Review the epidemiology and risk factors associated with HTN
- 2) Be familiar with the current JNC7 and JNC8 guidelines for normal blood pressure, prehypertension, stage 1 HTN and stage 2 HTN
- 3) Review the pathogenesis and management of essential HTN
- 4) Review the incidence, pathophysiology, risk factors and management of secondary HTN including
 - a) Kidney disease
 - b) Primary Aldosteronism
 - c) Renovascular HTN
 - d) Pheochromocytoma
- 5) Understand the characteristics of white coat HTN and be familiar with its management

TUBULOINTERSTITIAL DISORDERS

- 1) Review the pathophysiology, clinical manifestations, diagnosis and evaluation of the various tubulointerstitial diseases including: those caused by:
 - a) Immunologic
 - b) Infectious
 - c) Malignancy
 - d) Medications
 - e) Metabolic factors
 - f) Obstruction
- 2) Discuss the proper management of tubulointerstitial diseases

GLOMERULAR DISEASE

- 1) Review the pathophysiology and clinical manifestations of glomerular diseases
- 2) Differentiate between the **nephrotic and nephritic syndrome**
- 3) Review the conditions that cause the **nephrotic** syndrome with regard to the pathophysiology, diagnosis, clinical manifestations and management
 - a) Minimal Change disease
 - b) Focal Segmental Glomerulosclerosis
 - c) Membranous Nephropathy
 - d) Secondary causes including diabetic nephropathy, amyloidosis, multiple myeloma and HIV
- 4) Review the conditions that cause the **nephritic syndrome** with regard to the pathophysiology, diagnosis, clinical manifestations and management
 - a) IgA Nephropathy
 - b) Membranoproliferative Glomerulonephritis
 - c) Hepatitis C and B Virus associated kidney disease
 - d) Poststreptococcal Glomerulonephritis
 - e) Lupus nephritis
 - f) Anti-Glomerular Basement Membrane Antibody Disease
 - g) Small and Medium Vessel Vasculitis
 - h) Thrombotic Microangiopathy

ACUTE KIDNEY INJURY

- 1) Describe the characteristics/criteria of acute kidney injury (AKI)
- 2) Discuss the clinical manifestations and proper evaluation of AKI
 - a) Be familiar with how to calculate the **fractional excretion of sodium (FEna)** and its implication

- 3) Be familiar with the following classifications of AKI with respect to pathophysiology, risk factors, prevention and treatment
 - a) **Prerenal Azotemia**
 - i. Volume depletion
 - ii. Hypotension
 - b) **Intrarenal Disease**
 - i. Acute Tubular Necrosis
 - ii. Contrast Induced nephropathy
 - iii. Rhabdomyolysis and pigment nephropathy
 - iv. Acute interstitial nephritis
 - c) **Postrenal Disease**
 - i. Obstruction
- 4) Briefly review the pathophysiology, criteria and treatment of
 - a) Cardiorenal syndrome
 - b) Hepatorenal syndrome

KIDNEY STONES

- 1) Discuss the pathophysiology and epidemiology of kidney stones
- 2) Discuss the clinical manifestation and proper diagnosis of kidney stones
- 3) Review the risk factors and prevention of the following types of stones
 - a) Calcium Oxalate stones
 - b) Struvite stones
 - c) Cystine stones
 - d) Uric Acid stones
- 4) Discuss the proper management of kidney stones both in the acute and chronic setting

CHRONIC KIDNEY DISEASE

- 1) Define chronic kidney disease (CKD) and be familiar with its various stages
- 2) Review the pathophysiology and epidemiology of CKD
- 3) Review the screening protocols for patients at high risk of CKD
- 4) Explain the clinical manifestations and proper evaluation of CKD
- 5) Discuss the pathophysiology, risks and management of the complications of CKD including:
 - a. Cardiovascular
 - b. Anemia
 - c. Chronic kidney disease and mineral and bone disorders
 - i. Renal osteodystrophy
- 6) Explain the role, indications, and various types of **dialysis**
 - a. Discuss the common complications associated with dialysis
- 7) Be familiar with the role of **kidney transplantation** in the patient with CKD

Competencies/Objectives

Teaching Methods: The student is expected to function as a viable member of the supervising physician health care team. Assigned student responsibilities can include: supervised first patient contact in the office or clinic, the completion of admission history and physicals, the completion of pre-rounding progress notes on assigned patients, participation in conducting and the interpretation of diagnostic testing and clinical management.

Participation in Clinical Conferences and/or Structured Educational Programs: The student is expected to participate in clinical conferences and educational programs appropriate for the clerkship course including those generally associated with residency educational programs.

Evaluation: The student is encouraged to solicit feedback related to his/her clinical performance on a daily basis. The student should receive formative performance evaluations at the mid-point and end of the rotation that outlines faculty perceived strengths and weaknesses related to the student's performance that includes recommendations for strengthening his/her performance as warranted.

Reference Materials

Review of the Nephrology Modules from the Genitourinary course pack will be of value to the student. There is no assigned textbook. Reading assignments are under the purview of the preceptor. **See reference sheet attached.**

Student Responsibilities

Course participants will meet the preceptor on the first day of the rotation at a predetermined location to be oriented to rotation hours, location(s), and expected duties and responsibilities while on-service.

- *The student **will** meet the following **clinical responsibilities** during this rotation:*
 - Students are expected to function collaboratively on health care teams that include health professionals from other disciplines in the provision of quality, patient-centered care.

- *The student **will** meet the following **academic responsibilities** during this rotation:*
 - Students are expected to identify, access, interpret and apply medical evidence contained in the scientific literature related to patients health problems.
 - Students are expected to: assess their personal learning needs specific to this clinical rotation, engage in deliberate, independent learning activities to address their gaps in knowledge, skills or attitudes; and solicit feedback and use it on a daily basis to continuously improve their clinical practice.

Rotation Clinical Requirements

Requirements	Submission Method	Due Date
Attending Evaluation of your Performance on Rotation	Submit completed form to your hospitals per the instruction on the evaluation form	Final Day of Rotation
Student Evaluation of the Rotation	Submit electronically by 11:59 pm the last Sunday of the rotation online through your clerkship schedule.	By 11:59 pm last Sunday of course. Must submit to receive a passing grade, student will have an "ET" grade until the evaluation is completed.
Patient Types and Procedure Log	See page at the end of syllabus and upload into D2L Drop Box for the course	11:59 pm Last Sunday of Rotation
Clinical Shift Schedule	Online D2L Drop Box	Not to be submitted until the last Friday-Sunday of the rotation, and must be the schedule you worked, not what you were scheduled to work.

The student who fails to turn in required paperwork, who has a verifiable reason why they failed to do so, will be allowed a 2-week grace period or more depending on the circumstances, Failure to meet this two week deadline will result in an N grade.

IM 655 Nephrology Corrective Action Policy

There is no Corrective Action Policy or Plan as there are no graded components to the IM 655 rotation. All items with the exception of the attending evaluation are under the direct control of the student and there is no reason that they cannot be completed in a timely fashion. If the student has an extension in the rotation due to some verifiable reason, then they will receive this same extension for submitting the required end of rotation paperwork.

The student who fails to turn in required paperwork, who has a verifiable reason why they failed to do so, will be allowed a 2-week grace period or more depending on the circumstances, Failure to meet this two week deadline will result in an N grade.

Unsatisfactory Clinical Performance

A student's clinical performance will be assessed through the Attending Clinical Clerkship Rotation Evaluation. Unsatisfactory Attending Evaluations are governed by the Policy for Retention, Promotion and Graduation (4.e).

- A designation given to any student who:
- Receives on (1) and/or two (2) N grades in any Clerkship course; and/or
- Receives two (2) or more overall "Below Expectations" ratings on any Clerkship rotation evaluation: and/or
- Displays indicators of marginal performance on any clerkship rotation.
- The student will be required to appear before the COSE Clerkship Performance Subcommittee.
- Any student failing to appear, when directed, without due cause, or fails to meet any Subcommittee requirement, will be suspended from the College.

MSU College of Osteopathic Medicine Standard Policies

Clerkship Attendance Policy

Policy:

In order to gain the knowledge and skills to successfully complete the MSUCOM clerkship program, consistent participation/attendance in program activities is essential. Any time off must not interfere with the quality of the rotation.

1. In the event a student needs to be absent from any rotation for the reasons listed below and permissible by the rotation syllabus, students may request time off.
2. Any absence (unless emergent) must be approved in advance (at least 30 days) of absence by the medical education department (student coordinator/director or DME), utilizing the Clerkship Program Excused Absence Request Form. Students must notify rotation team and medical education of emergent/illness absences on day of absence.

3. A student may not be absent more than 2 days on any one 4 week rotation (no time off allowed for rotations of 2 weeks or less) for the reasons below (exception Interview absences or Conference absences as below).
4. Any additional time off any one rotation must be approved by the MSUCOM Instructor of Record for the course the absence will occur.

Absence due to interviews:

For the purpose of interviewing only, a student may be absent 4 days on a 4 week rotation (2 days on a 2 week rotation) during the months of September to January in the OMS year 4. Interview invitations must accompany the Clerkship Program Excused Absence Request Form.

Absence due to examinations:

Examination	Maximum Time Off (includes travel time)
COMLEX USA Level 2 CE/USMLE Step 2 CK/Canadian MCCEE	1 day
MSUCOM COMLEX PE Simulation at MSU	1 day for each scheduled simulation
COMLEX USA Level 2 PE/USMLE Step 2 CS(Canadian Students Only)	2 days
COMAT/SHELF examinations	Travel time and time for exam

Personal Day Absence:

Students are allowed 5 personal days per academic year in OMS 3 and OMS 4. These days are not carried over from third year to fourth year. These are to be used for illness, physician appointments, and special events (weddings, graduations, special anniversary events) and must not exceed 2 days on any 4 week rotation (#3 above). Prolonged illness and bereavement will be handled on a case by case basis between MSUCOM Director of Clerkship and the base hospital/medical education department. Students must notify rotation team and medical education of emergent/illness absences on day of absence.

Hospital organized community events that might lead to periodic absence from rotations – student participation is encouraged and if base hospital approved, would be considered part of the rotation and not a personal day absence.

Jury duty – when obligated, student participation is not considered a personal day. Court excuses must accompany any absence. If absence is prolonged, this will be handled on a case-by-case basis between the base hospital/medical education and MSUCOM.

Conference Absence:

While on required/core rotations, no excused absences for any professional meeting will be allowed unless the student is presenting research in which they have participated.

- a. Appropriate paperwork with proof of presentation and copy of conference agenda must accompany the form.
- b. Time off in this situation will be for travel and presentation only.

While on elective rotations: A student may submit a request for an excused absence to attend one (1) professional meeting, time not to exceed 3 days off rotation. The meeting agenda must

Personal vacations/family reunions, etc are not part of this policy. Vacations can be scheduled periodically, provided all curriculum requirements will be met, with the assistance of your Student Support Advocate. Vacations will not be permitted on any core rotation or elective rotation.

accompany the Clerkship Program Excused Absence Request Form.

Policy for Medical Student Supervision

Supervisors of the Medical Students in the Clinical Setting

The MSUCOM curriculum includes required clinical experiences in a variety of clinical learning environments. The role of the student is to participate in patient care in ways that are appropriate for the student's level of training and experience and to the clinical situation. The student's clinical activities will be under the supervision of licensed physicians. This supervising physician may delegate the supervision of the medical student to a resident, fellow, or other qualified healthcare provider, however, the supervising physician retains full responsibility for the supervision of the medical students assigned to the clinical rotation and must ensure his/her designee(s) are prepared for their roles for supervision of medical students.

The physician supervisor and his/her designee(s) must be members in good standing in their facilities and must have a license appropriate to his/her specialty of practice and be supervising the medical student within that scope of practice as delineated by the credentialing body of the facility.

Level of Supervision/Responsibilities

Clinical supervision is designed to foster progressive responsibility as a student progresses through the curriculum, with the supervising physicians providing the medical student the opportunity to demonstrate progressive involvement in patient care. MSUCOM students will be expected to follow clinical policies of the facility regarding medical records and clinical care. Medical student participation in patient history/physical exam, critical data analysis, management, and procedures will include factors, but not limited to:

- The students demonstrated ability
- The students level of education and experience
- The learning objectives of the clinical experience

First and second year medical students will be directly supervised at all times (supervising physician or designee present or immediately available).

Third and fourth year medical students will be supervised at a level appropriate to the clinical situation and student's level of experience. For some tasks, indirect supervision may be appropriate for some students. Direct supervision would be appropriate for advanced procedures.

Supervising physicians will provide medical students with timely and specific feedback on performance. The supervising physician will complete a mid-rotation evaluative discussion with the medical student. Supervising physicians will complete a summative evaluation and are encouraged to contact the course/clerkship director with any gaps in student performance.

Medical students with any concern regarding clinical, administrative, and educational or safety issues during his/her rotation will be encouraged to contact the supervising physician or clerkship/course director.

Statement of Professionalism

Principles of professionalism are not rules that specify behaviors, but guidelines that provide direction in identifying appropriate conduct. These principles include the safety and welfare of patients, competence in knowledge and skills, responsibility for consequences of actions, professional communication, confidentiality, and lifelong learning for maintenance of professional skills and judgments. Professionalism and professional ethics are terms that signify certain scholastic, interpersonal and behavioral expectations. Among the characteristics included in this context are the knowledge, competence, demeanor, attitude, appearance, mannerisms, integrity and morals displayed by the student to faculty, peers, patients and colleagues in other health care professions. Students are expected to conduct themselves at all times in a professional manner and to exhibit characteristics of a professional student.

Students Rights and Responsibilities

Each individual student is responsible for their behavior and is expected to maintain standards of academic honesty. Students share the responsibility with faculty for creating an environment that supports academic honesty and principles of professionalism. Proper relationship between faculty and student are fundamental to the college's function and this should be built on mutual respect and understanding together with shared dedication to the education process. It is a fundamental belief that each student is worthy of trust and that each student has the right to live in an academic environment that is free of injustice caused by dishonesty. While students have an obligation to assist their fellow students in meeting the common goals of their education, students have an equal obligation to maintain the highest standards of personal integrity.

MSU Email

To facilitate communication from faculty and staff to students, students are required to have a functioning MSU email address. Students are responsible for checking their MSU email accounts daily and maintaining their MSU mailboxes so that messages can be received.

Forwarding MSU email to another email account or failure to check email are not valid excuses for missing a deadline or other requirements of the clinical education program.

Further, students must use secure email when working in a hospital, clinic or other health care setting if discussion of patient information is involved. MSUNet (msu.edu) email is secure; many web-based email systems including Hotmail, Gmail and Yahoo are not.

Use of Electronic Devices

Students are expected to be fully engaged in the clinical education experience. Using electronic devices while on clerkships or during other required activities can be distracting and disrespectful to patients, preceptors, lecturers, and fellow students. Electronic devices are not to be used during rounds, meetings, small groups or lectures, or when in the room with patients: the only exception would be if instructed to do so by an attending or resident faculty member. Students wishing to retrieve information that may be relevant to the patient or small group discussion should get permission to do so from the faculty member. It is never appropriate for students to use electronic devices for reading e-mail, texting, surfing the web or other personal activities while on any clerkship required activity. Students may receive unprofessional behavior notation(s) for failure to use electronic devices appropriately.

Faculty Responsibilities

It is the responsibility of the college faculty to specify the limits of authorized aid (including but not limited to exams, study aids, internet resources and materials from senior students) in their syllabi, and it is the responsibility of students to honor and adhere to those limits. Course instructors shall inform students at the beginning of the semester of any special criteria of academic honesty pertinent to the class or course. It is the responsibility of the clinical faculty to provide students with ongoing feedback during rotation upon request. Clinical faculty are generally recommended (though not required) to limit student assigned duty hours from 40 to 60 hours weekly (and not exceeding 60 hours). Both faculty and students are to be treated fairly and professionally in order to maintain a proper working relationship between trainer and trainee.

Course Grades

- **P-Pass** – means that credit is granted and that the student achieved a level of performance judged to be satisfactory according to didactic and clinical performance by the department.
- **N-No Grade** – means that no credit is granted and that the student did not achieve a level of performance judged to be satisfactory according to didactic and clinical performance by the department.
- **ET-Extended Grade** – means that a final grade (“Pass” or “No Grade”) cannot be determined due to one or more missing course requirements. Once all course requirements have been completed, received, and processed, the ET grade will be changed to a final grade. An “ET” will NOT remain on a student’s transcript.

N-GRADE POLICY

- Remediation is not offered for Clerkship courses. Any student who receives an N grade in the Clerkship Program will be required to appear before the COSE Clerkship Performance Subcommittee (COSE).

Student Visas

Michigan State University is committed to providing equal opportunity for participation in all programs, services, and activities. Requests for accommodations by persons with disabilities may be made by contacting the Resource Center for Persons with Disabilities (RCPD) at 517-884-RCPD, or on the web at www.rcpd.msu.edu. Once a student’s eligibility for (clinical and/or testing) accommodation has been determined, the student may be issued a Verified Individualized Services and Accommodation (VISA) form. Students must present this VISA form to the Clerkship Team (COM.Clerkship@msu.edu), A-332 East Fee Hall, at the start of the semester in which they intend to use their accommodations (for tests, projects, labs, etc.). Accommodation requests received after this date will be honored whenever possible.

If updates or modifications to an existing VISA form are made after the semester begins, it is the responsibility of the student to submit an updated version to the Clerkship Team (COM.Clerkship@msu.edu) if he or she intends to use the new accommodation going forward.

MSUCOM Standard Policies

Rotation Evaluations

***Attending/Faculty/
Resident Evaluation
of Student***

Students are responsible for assuring that his/her clinical supervisor receives the appropriate evaluation form. Forms can be accessed via the "Attending Evaluation" link in the student's Kobiljak online Clerkship schedule.

Students should assertively seek feedback on his/her performance throughout the course of the clinical rotation. Students should also sit down and discuss the formal evaluation with the clinical supervisor.

Students should keep a copy of the evaluation and turn the original in to the "Clerkship Office" upon their return from the rotation. Any evidence of tampering or modification while in the possession of the student will be considered "unprofessional behavior" resulting in an "N" grade and review by the Committee on Student Evaluation (COSE) and/or the College Hearing Committee.

Grades are held until all rotation requirements, including evaluation forms, are received. Be sure you are using the correct form.

***Student Evaluation
of the Rotation***

Students will submit their rotation evaluations electronically at the conclusion of every rotation through the clerkship schedule.

Exposure Incidents Protocol

You must also notify your attending and the DME Office of your base institution of the incident. A form has been developed by the University to report exposure incidents. These forms should be on file in your DME's office. While on rotations that occur outside of the base hospital system notify your attending immediately of any exposure, and follow the MSU procedure for evaluation and treatment. The form can be accessed at (<https://com.msu.edu/current-students/clerkship-medical-education/injury-and-property-damage-reports>). Please make yourself familiar with the procedure and the form.

Student Name _____ Student ID# _____

Patient Types and Procedure Log

Procedure	#Required	Date	Supervisor Initials
Evaluate 2 patients with acute kidney injury	1. 2.		
Evaluate 2 patients with electrolyte disturbances	1. 2.		
Interpret 10 BUN/Cr and electrolyte sets to assess for acute or chronic kidney disease	1. 2. 3. 4. 5. 6. 7. 8. 9. 10.		
Participate in five Nephrology consults in the hospital or office.	1. 2. 3. 4. 5.		

References for IM 655 Nephrology Clerkship Elective Clerkship Rotation Syllabus:

Harrisons Principles of Internal Medicine 19th edition (available online from MSU Libraries)

<http://accessmedicine.mhmedical.com.proxy2.cl.msu.edu/book.aspx?bookID=1130>

Chapter 61 Azotemia and urinary abnormalities

<http://accessmedicine.mhmedical.com.proxy2.cl.msu.edu/content.aspx?bookid=1130§ionid=79726507>

Chapter 62e Atlas of urinary sediments and renal biopsies

<http://accessmedicine.mhmedical.com.proxy2.cl.msu.edu/content.aspx?bookid=1130§ionid=66487681>

Chapter 63 Fluid and Electrolyte disturbances

<http://accessmedicine.mhmedical.com.proxy2.cl.msu.edu/content.aspx?bookid=1130§ionid=79726591>

Chapter 64e Fluid and electrolyte imbalances and acid-base disturbances: case examples

<http://accessmedicine.mhmedical.com.proxy2.cl.msu.edu/content.aspx?bookid=1130§ionid=79726736>

Chapter 66 Acidosis and alkalosis

<http://accessmedicine.mhmedical.com.proxy2.cl.msu.edu/content.aspx?bookid=1130§ionid=79726883>

Chapter 298 Hypertensive vascular disease

<http://accessmedicine.mhmedical.com.proxy2.cl.msu.edu/content.aspx?bookid=1130§ionid=79743947>

Chapter 332e Cellular and molecular biology of the kidney

<http://accessmedicine.mhmedical.com.proxy2.cl.msu.edu/content.aspx?bookid=1130§ionid=79746295>

Chapter 334 Acute kidney injury

<http://accessmedicine.mhmedical.com.proxy2.cl.msu.edu/content.aspx?bookid=1130§ionid=79746409>

Chapter 335 Chronic kidney disease

<http://accessmedicine.mhmedical.com.proxy2.cl.msu.edu/content.aspx?bookid=1130§ionid=79746512>

Chapter 336 Dialysis in the treatment of renal failure

<http://accessmedicine.mhmedical.com.proxy2.cl.msu.edu/content.aspx?bookid=1130§ionid=79746623>

Chapter 338 Glomerular diseases

<http://accessmedicine.mhmedical.com.proxy2.cl.msu.edu/content.aspx?bookid=1130§ionid=79746753>

Chapter 340 Tubulointerstitial diseases of the kidney

<http://accessmedicine.mhmedical.com.proxy2.cl.msu.edu/content.aspx?bookid=1130§ionid=79746992>

Chapter 341 Vascular injury to the kidney

<http://accessmedicine.mhmedical.com.proxy2.cl.msu.edu/content.aspx?bookid=1130§ionid=79747076>

Chapter 342 Nephrolithiasis

<http://accessmedicine.mhmedical.com.proxy2.cl.msu.edu/content.aspx?bookid=1130§ionid=79747115>

Rennke HG and Denker BM. Renal Pathophysiology: The Essentials. 2014. Wolters Kluwer/ Lippincott Williams & Wilkins; Philadelphia. ISBN 978-1-4511-7338-3.

<http://catalog.lib.msu.edu/record=b10450223~S39a>

Hypertension references (JNC 7 and JNC 8):

Chobanian AV, Bakris GL, Black HR, Cushman WC, Green LA, Izzo JL Jr., Jones DW, Materson BJ, Oparil S, Wright JT Jr., Roccella EJ, National High Blood Pressure Education Program Coordinating Committee. The seventh report of the Joint National Committee on Prevention, Detection, Evaluation, and Treatment of High Blood Pressure: the JNC 7 report. *Hypertension*. 2003; 42: 1206–1252.

<http://www.ncbi.nlm.nih.gov/pubmed/14656957>

Chobanian AV, Bakris GL, Black HR, Cushman WC, Green LA, Izzo JL Jr., Jones DW, Materson BJ, Oparil S, Wright JT Jr., Roccella EJ, National High Blood Pressure Education Program Coordinating Committee. The seventh report of the Joint National Committee on Prevention, Detection, Evaluation, and Treatment of High Blood Pressure: the JNC 7 report. *JAMA*. 2003; 289: 2560–2572.

<http://jama.jamanetwork.com.proxy1.cl.msu.edu/article.aspx?articleid=196589>

James PA, Oparil S, Carter BL, et al. 2014 evidence-based guideline for the management of high blood pressure in adults: report from the panel members appointed to the Eighth Joint National Committee (JNC 8). *JAMA*. 2014; 311(5): 479-489. doi:10.1001/jama.2013.284427.

<http://jama.jamanetwork.com.proxy1.cl.msu.edu/article.aspx?articleid=1791497>

Harold C. Sox, MD, Trustworthiness of high blood pressure guidelines. Editorial. *JAMA* 2014; 311(5): 472-474. <http://jama.jamanetwork.com.proxy1.cl.msu.edu/article.aspx?articleid=1791421>

Eric D. Peterson, MD, MPH; J. Michael Gaziano, MD; Philip Greenland, MD. The right goals and purposes for treatment hypertension. Editorial. *JAMA* 2014; 311(5): 474-476.

<http://jama.jamanetwork.com.proxy1.cl.msu.edu/article.aspx?articleid=1791422>

Howard Bauchner, MD; Phil B. Fontanarosa, MD, MBA; Robert M. Golub, M. Updated guidelines: recommendations, review, and responsibility. Editorial. *JAMA* 2014; 311(5): 477-478.

<http://jama.jamanetwork.com.proxy1.cl.msu.edu/article.aspx?articleid=1791423>