



# Clinical Fellows Guide

THE WILLIAM B. SCHWARTZ  
DIVISION OF NEPHROLOGY  
FELLOWSHIP TRAINING PROGRAM



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## Introduction

Fellows participate in all clinical activities of the Division of Nephrology at Tufts Medical Center (Tufts). First- and second-year clinical fellows share responsibilities on four rotations: 1) the Consult/Transplant Service, 2) the Dialysis Service, 3) the Caritas-St. Elizabeth's Medical Center (C-SEMC) Rotation, and 4) the Independent Study Block. A fifth elective rotation may be offered if fellow staffing permits. In addition, fellows participate in longitudinal continuity clinics, care for a cohort of outpatient dialysis patients, and attend a wide range of conferences designed to supplement clinical experiences and advance their understanding of the medical literature, ethical issues, and research methodology. This manual has been designed to guide fellows in the objectives, expectations, and goals of the Fellowship Training Program in Nephrology at Tufts.

## Curriculum

A competency-based educational curriculum has been developed which highlights material to be covered on each rotation and in each conference (Appendix A). The curriculum includes subjects of fluid and electrolytes, acid/base, acute kidney injury, chronic kidney disease, glomerular disease, hypertension, transplantation, and dialysis.

## Consultations

Requests for consults are received by a fellow assigned to the Consult/Transplant Service, or the on-call fellow after hours. Requests are then distributed to the appropriate fellow. Acute consultations are answered immediately. If the appropriate fellow is in clinic, the other fellows provide coverage and see the patient. All requests for consultation should receive initial evaluation and at least a preliminary note the same day. An assessment and plan should be conveyed to the primary team as soon as possible. The attending physician should be informed of the consult request as soon as it is received.

1. *Elements of a Consultation:* The nephrologist performing a consultation does a directed history and physical examination, examines the urinalysis and urine sediment, and reviews relevant laboratory and radiographic studies. From the consultant's perspective, the chief complaint is the question asked by the referring physician. The present illness is the history of the patient's kidneys, blood pressure, and vasculature. The details of the patient's current presentation may or may not be relevant. The history should include prior kidney function, markers of kidney damage, and imaging studies. Risk factors for kidney disease should be assessed, including systemic diseases that can affect the kidneys, exposure to toxic medication, and family history of kidney disease. Physical examination always includes careful measurement of blood pressure and direct ophthalmoscopy (carry your ophthalmoscope!). If the presence or etiology of hypertension is an issue, blood pressure is measured in all extremities. If intravascular volume is in question, orthostatic measurements are taken. If the nature of the patient's kidney disease remains uncertain, the urine is examined repeatedly. Particularly in acute kidney injury and in cases of fluid or electrolyte imbalance, scrupulous chart and medication review may yield or exclude a diagnosis. Charts of weights, blood pressure, fluid balance, and the schedule of relevant drug administration are often helpful in elucidating contributing factors. For chronic kidney disease, attention to the stage of kidney disease and assessment of complications are important.
2. *The Consult Note:* The note recites those elements of the history, examination, and laboratory data needed to evaluate the questions at hand. Specific items that must be addressed include past medical history, markers of kidney damage, medications, and level of prior kidney function (including prior nephrology evaluations). Legibility, brevity, and directness are essential. Initial notes should not require more than two pages, and include no more than five explicit and detailed suggestions. In addition, a consulting fellow must speak directly to the referring team. A photocopy of the initial note can be put in the clinic chart if there will be outpatient nephrology follow-up.

The Division uses templated consult notes to standardize the structure of our notes, ensure completeness, and improve efficiency of documentation. Five templates are available (Kidney Disease Consult, Dialysis Consult, Kidney Transplant, Renal Artery Stenosis, and Transplant Readmission – Appendix F). These templates are available on the G: drive and the Intranet. The appropriate template should be selected once the nature of the consult is determined. The form should be completed in its entirety. Additional pages can be used for further discussion.

3. *Consult Rounds:* Rounds take place once or twice daily depending on the urgency of the consultation and the clinic schedules of both the attending and fellow. The two fellows on the Consult/Transplant Service should round together with the attending whenever possible.

## Rotations

Of the four rotations, three are based at Tufts and one is based at C-SEMC. A fellow rotation schedule is attached (Appendix C). At Tufts, two fellows rotate on the Consult/Transplant Service while one is assigned to the dialysis service. These rotations are one-month in duration. Despite delineation of responsibilities among the services, these three fellows function as a unit, allowing for 1) timely consultations, 2) early performance of necessary procedures, 3) and avoidance of work overload of any individual fellow. Each fellow also spends four consecutive months at C-SEMC performing inpatient care, dialysis, and consultation on a busy Nephrology service, as well as outpatient clinic and outpatient hemodialysis. Finally, fellows enrolled in the two-year *Clinical Track* have a six-month designated independent study block during which time they participate in research, quality improvement projects, write papers, and explore additional interests in pediatrics, ICU Nephrology, transplantation, or pathology under the guidance of a mentor. Fellows participating in only one clinical year as part of a three-year research fellowship do not have an independent study block.

### Consult/Transplant Service

The Consult/Transplant Service is based at Tufts and designed to provide educational exposure to kidney disease and transplantation in an active tertiary-care medical center. Fellows spend five to seven months on this rotation during their fellowship, with increasing responsibilities throughout their training. The consult team includes a staff physician, two fellows, occasional Internal Medicine residents, and one or more fourth-year medical students. In general, three to five requests for consultation are received daily regarding acute kidney injury, acid-base and electrolyte disturbances, hypertension, and medical care for patients with chronic kidney disease.

Fellows also learn the special medical needs of patients undergoing kidney transplantation or kidney donation, or requiring immunosuppressive therapy. Between fifty and sixty living-donor and deceased-donor kidney transplants are performed annually at Tufts. Fellows participate in all phases of patient care, including pre-transplant evaluation and selection of recipients and living-donors, peri- and post-operative care, and treatment of rejection and other complications. Following discharge, transplant recipients receive primary medical care in the Kidney and Blood Pressure Center. The fellows interact daily with members of the Transplant Surgery team, which includes three staff surgeons. Multi-disciplinary work rounds are held weekly with the Transplant Surgery service, at which time prospective recipients and donors are discussed, the progress of both inpatients and outpatients are reviewed, and treatment plans are formulated.

Consult requests are received by one of the Consult/Transplant fellows and then distributed to fellows, residents, and students accordingly. Typically, one fellow assigned to the Consult/Transplant rotation will take consult requests for the first week while the other fellow takes transplant requests. The following week, each fellow continues to see the patients they are already following, but the first fellow will take transplant requests while the second takes consults. The switching occurs on a weekly basis throughout the rotation to even the patient load among the fellows. Consults are discussed daily in rounds. Fellows are trained to place internal jugular and femoral venous access catheters, and supervise acute hemodialysis and continuous veno-venous hemofiltration. In addition, fellows perform between 10 and 20 percutaneous native and transplant kidney biopsies each year.

**Core Competencies**

**Patient Care**

Evaluate patients with a variety of hypertensive or nephrologic issues and document a history, exam, and recommendations as a consultant.

Provide nephrologic consultation for patients with solid organ or bone marrow transplants.

**Medical Knowledge**

Understand the diseases and disorders associated with consultative nephrology, including acute kidney injury, chronic kidney disease, hypertension, fluid and electrolyte disorders, and acid-base disturbances.

Understand transplant nephrology including peri- and post-operative care, complications of immunosuppression, and medical issues affecting transplant recipients.

**Practice-Based Learning and Improvement**

Be able to understand and critique recent literature in regards to improving subspecialty care. Be able to critically assess a study to determine whether the results should be applied to an individual patient.

**Interpersonal and Communication Skills**

Be able to effectively communicate assessments and recommendations to a primary team. Be able to create a consult note.

**Professionalism**

Respect the referring service and understand the limitations of the primary team. Be respectful of patients, their families, and other care providers at all times.

**Systems-Based Practice**

Understand the role of the consultant. Be able to assist the primary team in providing health care services for all of the patient’s needs.

**Evaluation and Promotion**

The following metrics are used to evaluate fellow performance on the Consult/Transplant Service:

		COMPETENCY					
		Patient Care	Medical Knowledge	Practice-Based Learning and Improvement	Interpersonal and Communication Skills	Professionalism	Systems-Based Practice
Metric	Rotation Eval	1-5	1-5	1-5	1-5	1-5	1-5
	360 Eval	1-5	1-5	1-5	1-5	1-5	1-5
	In-Service	1-5	1-5	1-5		1-5	1-5
	Mini-CEX	1-5	1-5	1-5	1-5	1-5	1-5
	Case Recall	1-5	1-5	1-5	1-5	1-5	1-5

Within the first 6 months of their clinical training, fellows are expected to score on their evaluations between 1 and 2, reflecting a Novice to Early Beginner level of competency. In their second 6 months of clinical training, the expected score should be 3-4, reflecting a Competent to Proficient performance. Fellows participating in 18 months of clinical training are expected to score 4-5 by the end of their fellowship, reflecting Proficient to Master status.

**Consult Learning Objectives**

- 1) Recognize and initiate a diagnostic work-up of acute kidney injury.
- 2) Recognize and initiate a diagnostic work-up of chronic kidney disease.
- 3) Recognize and initiate appropriate action plan for each stage of chronic kidney disease.
- 4) Appropriately select and implement acute therapy with hemodialysis, peritoneal dialysis, or continuous hemofiltration.
- 5) Properly perform and evaluate the urinalysis and urinary sediment in the care of patients with kidney disorders.
- 6) Properly review and interpret imaging studies of the kidney and urinary track.
- 7) Recognize, perform diagnostic evaluations, and initiate appropriate therapy for acid-base disorders.

- 8) Recognize, perform diagnostic evaluations, and initiate appropriate therapy for electrolyte disorders.
- 9) Recognize, perform diagnostic evaluations, and initiate appropriate therapy for hypertensive disorders.
- 10) Provide care for patients with chronic kidney disease who are hospitalized with a variety of medical problems.
- 11) Develop procedural skills in the placement of internal jugular and femoral vein vascular dialysis access.
- 12) Understand the role of native kidney biopsies in the evaluation of kidney dysfunction, develop procedural competency in performing these biopsies, and understand their pathologic interpretation.
- 13) Recognize nephrologic emergencies requiring urgent treatment and/or dialysis.

### **Transplant Learning Objectives**

- 1) Assess the pre-operative evaluation of kidney donors and recipients.
- 2) Recognize the intra-operative and immediate post-operative complications of kidney transplantation.
- 3) Identify, initiate, and titrate immunosuppressive therapy for kidney transplantation.
- 4) Identify and initiate prophylactic antimicrobial therapy for immunosuppressed patients.
- 5) Recognize and treat the complications of immunosuppressive therapy, including medication side effect, infection, and malignancy.
- 6) Recognize and treat chronic kidney disease in transplant recipients.
- 7) Evaluate markers of kidney damage and level of kidney function in kidney, liver, heart, and bone marrow transplant recipients.
- 8) Understand the evaluation of medical problems in immunocompromised patients, including kidney, liver, heart, and bone marrow transplant recipients.
- 9) Understand the role of transplant biopsies in the evaluation of allograft dysfunction, develop procedural competency in performing these biopsies, and understand the pathologic interpretation of allograft biopsies.

### **Consult Expectations**

- 1) Fellows are expected to promptly evaluate all kidney disease consultations that do not involve chronic dialysis patients or transplant patients. This evaluation must include:
  - a) a detailed history,
  - b) a review of the electronic and written medical chart,
  - c) a review of the medication history,
  - d) a detailed physical examination,
  - e) a review of laboratory data, radiological studies, and pathology reports,
  - f) performance of a urine dipstick and sediment evaluation,
  - g) an assessment with extensive differential diagnosis of the kidney disorder, and
  - h) a thoughtful diagnostic and therapeutic approach to the patient.
- 2) Fellows will evaluate all patients with chronic kidney disease who are hospitalized with medical, surgical, psychiatric, or obstetric and gynecologic issues. This evaluation will include the elements listed above, with attention to an action plan for the specific stage of chronic kidney disease.
- 3) Fellows will evaluate all patients daily. This evaluation must include:
  - a) an interim history and physical examination,
  - b) a review of the medication list for appropriate dosing and recognition of inappropriate medications,
  - c) a review of laboratory data for deterioration in kidney function and electrolyte abnormalities,
  - d) an assessment of need for acute hemodialysis or continuous veno-venous hemofiltration,
  - e) re-examination of the urinalysis and urinary sediment when appropriate, and
  - f) new considerations to the differential diagnosis and therapeutic plan.
- 4) Fellows will place all temporary vascular access in the internal jugular or femoral vein under the supervision of the attending physician.
- 5) Fellows will order and supervise all acute dialysis.
- 6) Fellows will understand the role of the kidney biopsy in the evaluation of patients with kidney disorders, perform these biopsies as indicated under the supervision of an attending, and review the findings with the pathologist.

## **Transplant Expectations**

- 1) Fellows will evaluate kidney transplant recipients and living kidney donors pre-operatively to assess medical clearance for surgery. This includes reviewing:
  - a) date of last dialysis,
  - b) safety of electrolyte values,
  - c) completion of transplant work-up,
  - d) verification of CMV status and other serologic tests,
  - e) review deceased-donor prognostic features including donor CMV status, cold-ischemia time, ABO match, and terminal kidney function, and
  - f) exclusion of acute medical issue that will jeopardize candidacy.
- 2) Fellows will provide daily evaluation of kidney transplant donors and recipients post-operatively. This includes reviewing:
  - a) medications for appropriate immunosuppressive and prophylactic therapy,
  - b) labs for evidence of kidney damage, level of kidney function, electrolyte abnormalities, and medication toxicity, and
  - c) complications due to operative or medical care.
- 3) Fellows will provide consultative nephrology care for all patients with liver, heart, or bone marrow transplants.
- 4) Fellows will assess need for dialysis promptly each day in patients with poorly functioning grafts.
- 5) Fellows will evaluate all patients with a functioning kidney allograft who are hospitalized with medical, surgical, psychiatric, or obstetric and gynecologic issues.

## **General Expectations**

- 1) Fellows will round with the consult attending daily to discuss each and every patient.
- 2) Fellows will supervise all medical students and residents on the rotation.
- 3) Fellows will communicate all diagnostic and treatment recommendations directly to the team caring for the patient.
- 4) Fellows are expected to attend Transplant Conference each Monday at 4:00PM in the 4 South Conference Room to participate in discussions of active transplant patients and patients requiring surgical access care.
- 5) Fellows are expected to attend Fellows Conference on Tuesday mornings.
- 7) Fellows are expected to attend Access Rounds at 12PM each Thursday in the Interventional Radiology Suite to present patients on the service requiring evaluation, placement, or revision of vascular or peritoneal accesses to the interventional radiologists and the transplant surgeons.
- 8) Fellows are expected to attend on Tuesday mornings.
- 9) Fellows are encouraged to attend and participate in all other educational activities within the Division of Nephrology including Journal Club, Research Conference, Dialysis Rounds, and Harrington Rounds.

## **Dialysis Service**

The Dialysis Service is based at Tufts and designed to provide educational exposure to patients with end-stage kidney disease on hemodialysis or peritoneal dialysis who are admitted to the hospital. The fellow on this service will act as a liaison between the outpatient dialysis unit and the outpatient nephrologist, and the inpatient dialysis unit and the inpatient care team. Fellows spend two to five months on this rotation during their fellowship, with increasing responsibilities throughout their training.

### **Core Competencies**

<b>Patient Care</b>	Evaluate patients on chronic hemodialysis or peritoneal dialysis, and provide recommendations related to prescription modification in acute illness and diagnostic or therapeutic considerations unique to this patient population.
<b>Medical Knowledge</b>	Understand medical issues related to hemodialysis and peritoneal dialysis, including complications of dialysis as well as conditions to which dialysis patients are predisposed.
<b>Practice-Based Learning and Improvement</b>	Be able to understand and critique recent literature in regards to improving subspecialty care. Be able to critically assess a study to determine whether the results should be applied to an individual patient.

<b>Interpersonal and Communication Skills</b>	Be able to effectively communicate assessments and recommendations to a primary team. Be able to create a consult note.
<b>Professionalism</b>	Respect the referring service and understand the limitations of the primary team. Be respectful of patients, their families, and other care providers at all times.
<b>Systems-Based Practice</b>	Understand the role of the consultant. Be able to assist the primary team in providing health care services for all of the patient’s needs.

**Evaluation and Promotion**

The following metrics are used to evaluate fellow performance on the Dialysis Service:

		COMPETENCY					
		Patient Care	Medical Knowledge	Practice-Based Learning and Improvement	Interpersonal and Communication Skills	Professionalism	Systems-Based Practice
Metric	Rotation Eval	1-5	1-5	1-5	1-5	1-5	1-5
	360 Eval	1-5	1-5	1-5	1-5	1-5	1-5
	In-Service	1-5	1-5	1-5		1-5	1-5
	Mini-CEX	1-5	1-5	1-5	1-5	1-5	1-5
	Case Recall	1-5	1-5	1-5	1-5	1-5	1-5

Within the first 6 months of their clinical training, fellows are expected to score on their evaluations between 1 and 2, reflecting a Novice to Early Beginner level of competency. In their second 6 months of clinical training, the expected score should be 3-4, reflecting a Competent to Proficient performance. Fellows participating in 18 months of clinical training are expected to score 4-5 by the end of their fellowship, reflecting Proficient to Master status.

**Learning Objectives**

- 1) Understand how to modify the dialysis prescription in the setting of acute illness.
- 2) Recognize the complications of hemodialysis and peritoneal dialysis therapy.
- 3) Understand medical problems to which hemodialysis and peritoneal dialysis patients are prone.
- 4) Learn how to initiate a patient on hemodialysis or peritoneal dialysis.
- 5) Understand the variety of vascular accesses in hemodialysis patients, and the appropriate use of radiological studies and surgical procedures to optimize an access.
- 6) Understand proper care of hemodialysis and peritoneal dialysis accesses.
- 7) Become skilled in the recognition, diagnosis, and treatment of peritoneal dialysis peritonitis.
- 8) Develop skills in communicating dialysis issue between inpatient and outpatient dialysis facilities.

**Expectations**

- 1) Fellows will evaluate all hemodialysis and peritoneal dialysis patients promptly after admission. This evaluation will include:
  - a) date of last dialysis,
  - b) a clinical assessment of volume status and clearance adequacy,
  - c) review laboratory data for the safety of electrolyte values,
  - d) review medication sheets for appropriateness of ordered dosages and schedule, with special attention to erythropoietin, phosphate binders, Nephrocaps, vitamin D analogs, and iron therapy, and
  - e) assess the integrity of the vascular access.
- 2) Fellows will examine the DCI on-line medical information system (Darwin) for all hemodialysis and peritoneal dialysis patients admitted to the hospital. A “Transfer Summary” should be printed and placed in the patient’s chart to reconcile medications, dialysis prescription, lab data, and access history. This report can be accessed by:
  - a) Selecting “Darwin Portal” from the “Medical” tab of the Intranet homepage
  - b) Log-in, and select “Regional 2 Launcher”
  - c) Choose the button “Medical Reports,” and then the middle tab “Medical Reports”

- d) Open the folder “Documentation,” and then the subfolder “Transfer Summary
  - i.) For a hemodialysis patient, click on “Hemodialysis Transfer Form”
  - ii.) For a peritoneal dialysis patient, click on “Peritoneal Dialysis Transfer Summary”
- 3) Fellows will reevaluate dialysis patients daily. This evaluation must include:
  - a) assessment for urgent dialysis treatment from a volume, electrolyte, or uremic standpoint,
  - b) review of medication sheets for appropriateness of regimen, and
  - c) diagnostic and therapeutic considerations of the patient’s active medical issues.
- 4) Patients admitted for issues pertaining to vascular access require:
  - a) notification on admission of the transplant surgery resident by page, and
  - b) an admission note focusing extensively on the patient’s vascular access placement and revision history as obtained by:
    - i) paper hospital chart,
    - ii) DARWIN report,
    - iii) electronic medical record including Radiology Reports, Operative Notes, Discharge Summaries, and Outpatient Notes,
    - iv) dialysis nursing staff, and
    - v) outpatient dialysis fellow and attending.
- 5) Fellows will order and supervise all hemodialysis and peritoneal dialysis treatments.
- 6) Fellows will communicate all hemodialysis treatment plans to the dialysis unit the day prior to treatment when possible.
- 7) Fellows will place temporary vascular access in the internal jugular or femoral vein as necessary under the supervision of the attending.
- 8) Fellows will communicate all diagnostic and treatment recommendations directly to the team caring for the patient.
- 9) Fellows will round with the Renal Ward attending daily to discuss each and every dialysis patient.
- 10) Fellows are expected to attend Teaching Rounds at 10:30AM in the inpatient dialysis unit on Mondays through Friday to discuss the care of dialysis patients with the Renal Ward team.
- 11) Fellows are expected to compile a list of all cases that need to be discussed at Access Rounds at 12PM each Thursday in the Interventional Radiology Suite (Proger 4). They should be prepared to present patients from the outpatient dialysis unit or the inpatient service requiring evaluation, placement, or revision of vascular or peritoneal accesses to the interventional radiologists and the transplant surgeons.
- 12) Fellows are expected to attend Dialysis Rounds each Friday at 10:00AM in the 6<sup>th</sup> floor conference room at 35 Kneeland St.
- 13) Fellows are expected to attend Fellows Conference on Tuesday mornings.
- 14) Fellows are encouraged to attend and participate in all other educational activities within the Division of Nephrology including Journal Club, Research Conference, Dialysis Rounds, and Harrington Rounds.

## **Caritas-St. Elizabeth’s Medical Center**

Fellows spend four consecutive months during their training at C-SEMC. C-SEMC is a 350-bed teaching hospital located a few miles from Tufts. It is one of the major teaching resources of Tufts University School of Medicine, providing training each year to 100 housestaff, a third of the Tufts medical students, and fellows in many clinical areas. The hospital serves as both a tertiary referral center and a community resource, and offers a full range of clinical services including cardiac surgery and the largest hospital-based dialysis program in Boston. This experience is designed to provide a broad exposure to Nephrology in an academic/community hospital setting. Fellows are expected to manage an inpatient Nephrology service, a Nephrology consult service, an outpatient hemodialysis population, and see outpatients in a weekly clinic. Fellows also play a role in teaching medical students and housestaff. Fellows are responsible for preparing one to two case presentations during their four-month rotation at C-SEMC for the bi-monthly 8AM Thursday morning combined research/clinical Nephrology conference. Fellows are responsible for organizing, ordering, and coordinating all dialysis procedures including CVVH, acute hemodialysis, and peritoneal dialysis. Fellows do not place central lines, but are responsible for arranging this with the surgical service in a timely manner. Fellows may participate in kidney biopsies if desired.

### **Daily schedule**

In general, fellows have found it effective to begin their rounds between 7 and 8AM. On most days, fellows cover the second outpatient dialysis shift, which runs from 11AM to about 3PM (see below). They are also responsible for any inpatients on all the dialysis shifts. Prior to seeing such inpatients, the fellow will want to check on the hospitalized patients who may require acute dialysis in order to arrange their schedule and provide their dialysis orders. These arrangements can often be made the prior evening. After seeing the inpatient morning dialysis shift, the fellow meets with the resident and students on

the renal rotation to set up plans to see the patients on the consult and inpatient services. Rounds on these patients continue until attending rounds begin in the afternoon at approximately 3PM. Attending rounds continue until 5 to 7PM.

### **Hemodialysis**

Each day, the fellow will be assigned to cover the second dialysis shift which runs from 11AM to 3PM. The fellow should attempt to see all dialysis patients during the early part of their run so problems can be addressed. Notes are not expected on outpatients who are not having acute issues during the dialysis run. However, dry weight adjustments, medication changes, evaluations of patient complaints, etc. should all be recorded in the progress notes. Fellows need to consistently write brief notes on all interactions on patients seen and regarding new orders written.

Each patient has a specific attending who will be closely involved with the patient's follow-up. Drs. Strom, Narayan, Dash, Liangos, and Jaber cover most of the patients, but other attendings have patients as well. All of the attendings will be reviewing patient's monthly labs and involved with prescription changes, and need to be contacted about specific medical problems. When patients require admission from the dialysis unit, a phone call to the specific attending is indicated. Coverage of the patients during the dialysis shift for specific medical problems and emergency care will be the same regardless of whether it is a patient of Drs. Strom, Narayan, Dash, Liangos, Jaber, or an outside attending.

After seeing the dialysis shift on rounds, the fellow remains responsible for any issues that develop on those patients. The fellow is generally not responsible for issues arising on the other dialysis shifts during the day, except in emergency situations when the staff physician covering the shift is not immediately available. At this time, the fellow may need to return to the dialysis unit at a nonscheduled time during the day. The fellow is not responsible for line placement on either inpatients or outpatients, but coordinates this with the surgical team. A surgical resident assigned each month to work with the dialysis unit on lines.

The fellow will be expected to see all inpatients on dialysis during the first three dialysis shifts. The fellow will be rounding on the first shift anyway, and may be able to see the third shift patients during attending rounds since the patients are on between 4 and 8PM. While seeing these inpatients, the fellow will be expected to write a dialysis procedure note that can be reviewed and signed by the attending during the treatment.

One critical element of inpatient care of dialysis patients is the necessity for the fellows to write a brief note in the blue outpatient dialysis chart on the day a patient is discharged from the hospital to return for outpatient dialysis. Because the inpatient and outpatient charts are separate, none of the information from the inpatient stay makes it to the outpatient chart until a discharge summary is completed, which may take weeks. Consequently, a short note by the fellow indicating the reason for and findings during the admission, the medication changes, and the pending studies is invaluable. In addition, on Mondays the fellow needs to write a short note on any hemodialysis patients who are discharged over a weekend. (Note that a complex 10 day hospitalization may be summarized in a two line note; "Ms X was hospitalized 6/1/08-6/11/08 for fever and confusion; LP dx was meningitis from strep mitis; neurologic deficit is left hemiparesis; treatment is four weeks of ceftriaxone one gram at each dialysis.")

### **Consult and Inpatient Service**

Unlike the experience at Tufts, the consult and inpatient renal experience are handled together at C-SEMC. The fellow distributes consultations and inpatient cases to the students and residents, and the patients are seen together on both work rounds and attending rounds. Follow-up notes are written daily on all consultations and inpatients. All of the patients have floor housestaff coverage so that primary patient care is generally not provided by the fellow. Frequently, however, face-to-face conversation or a phone call is required on both consultations and inpatients to communicate important recommendations from the renal team to the housestaff. The fellow must take it as his/her responsibility that optimal care is provided to all of these patients, and ensure that the renal team's suggestions are carried out. On the renal inpatients, all aspects of care will be addressed by the fellow and discussed at attending rounds.

The consult cases at C-SEMC encompass all aspects of nephrology from acute kidney injury and chronic kidney disease to fluid-electrolyte and acid-base disorders. The fellow is expected to review the cases of the resident and students prior to attending rounds, and to provide teaching input. All urinalyses performed by the resident and students need to be reviewed by the fellow at the teaching microscope prior to attending rounds. The microscope in the fellow's room is different than the one at Tufts, so fellows should get an initial orientation from staff on its use.

### **Outpatient Clinic**

The C-SEMC fellow sees patients in an outpatient clinic on Wednesday mornings with Drs. Nicolaos Madias. Fellows are responsible for doing complete patient evaluations, presenting each case to the attending physician, and producing a clinic note from the visit. Coverage of inpatient responsibilities may need to be delegated to residents and students during the clinic. Note that the housestaff now have a mandatory outpatient clinic requirement and will be seeing outpatients with nephrology staff 3-4 mornings per week, so housestaff may be unavailable to see inpatient consults at these specific times.

### **Teaching conference**

The fellow is responsible for preparing one to two Harrington Rounds-style case presentations for our bi-monthly Thursday morning Nephrology research/clinical conference during their four-month rotation at C-SEMC. The dates should be chosen with input from Drs. Liangos or Dash, who coordinate this conference. The case plus discussion should be 45 minutes only, and should be based on C-SEMC patients. Grand Rounds are held weekly on Wednesdays from 8AM to 9 AM, and the fellow should try to attend. Every two to three months there will be a nephrology speaker at Grand Rounds, and attendance at these is compulsory for the fellow. There are multiple other conferences at C-SEMC that the fellow may wish to attend.

The fellow and the C-SEMC attending are encouraged to attend Harrington Rounds at Tufts as time and work load permit.

### **Call and beeper responsibilities**

The fellow is on-call two nights each week and one complete weekend out of four. The weeknight may vary from week to week, and the weekend schedule requires coordination with several attendings. It will not necessarily be every fourth weekend, but rather will average once every four weeks. During the weeknight call, the fellow will be responsible for carrying the beeper all night for dialysis related issues, issues on hospitalized consults and inpatients, or new admissions. It is rare that the fellow would need to come back to the hospital, but it does happen from time to time. There is always an attending on-call with the fellow to discuss any difficult issues.

During the weekend on-call, the fellow will generally cover all of the dialysis shifts beginning with the third shift on Friday through the last shift on Saturday. Friday night constitutes the weeknight call for that week, while the Saturday dialysis shifts are part of the weekend coverage responsibilities. On both Saturday and Sunday, the fellow will also see all follow-up and new patients in the hospital with attending backup. Phone calls from patients at home are generally referred to the attending on-call for the weekend rather than the fellow. Calls from within the hospital generally go to the fellow first. There is no scheduled dialysis on Sundays, but there is a nurse on-call for any acute treatments. It is appreciated if the fellow notifies this nurse as soon as possible of anticipated Sunday dialysis.

During the week, the fellow should turn his/her beeper on each morning upon waking as questions may arise regarding inpatients on the first dialysis shift as early as 6AM. The fellow's official responsibility for the beeper on nights that he or she is not on-call ends at approximately 6PM. Many of the fellows however keep their beeper on until about 8PM in order to answer any questions that might arise from notes written on rounds that day. Any new consults or admissions after 6PM should be referred to the attending on-call.

### **Procedures**

*Kidney Biopsies* - Currently kidney biopsies at C-SEMC are performed in general by interventional radiology. Such patients are typically admitted overnight post-biopsy and the fellows responsibilities include rounding on these patients, writing notes and monitoring them closely for post-biopsy complications. As well, the fellows will need to check on pre-biopsy labs in many cases.

*Continuous Renal Replacement Therapies* – CVVH is performed at C-SEMC. The fellow will write CRRT orders and discuss placement of lines with the surgeon.

Note: Fellows need to consistently obtain written consents for all acute RRT including CVVH and acute hemodialysis. This consent for the dialysis procedure is separate from consent for access placement. Consent forms are available in the fellows office, and should be placed in the inpatient chart once signed by the patient or proxy.

### **Resources**

Resources available include (a) a teaching microscope with polarizing lens, (b) library resources in the fellow's room, Dr. Strom's office, Dr. Narayan's office, and the Stohlman Library, (c) computer tools with word processing and e-mail, (e) Medline capability in Stohlman Library with a modem to Tufts, and (f) Up-to-Date.

**Core Competencies**

**Patient Care**

Evaluate patients with a variety of hypertensive or nephrologic issues and document a history, exam, and recommendations as a consultant.

**Medical Knowledge**

Understand the diseases and disorders associated with consultative nephrology, including acute kidney injury, chronic kidney disease, hypertension, fluid and electrolyte disorders, and acid-base disturbances.

**Practice-Based Learning and Improvement**

Be able to understand and critique recent literature in regards to improving subspecialty care. Be able to critically assess a study to determine whether the results should be applied to an individual patient.

**Interpersonal and Communication Skills**

Be able to effectively communicate assessments and recommendations to a primary team. Be able to create a consult note.

**Professionalism**

Respect the referring service and understand the limitations of the primary team. Be respectful of patients, their families, and other care providers at all times.

**Systems-Based Practice**

Understand the role of the consultant. Be able to assist the primary team in providing health care services for all of the patient’s needs.

**Evaluation and Promotion**

The following metrics are used to evaluate fellow performance on the C-SEMC Rotation:

		COMPETENCY					
		Patient Care	Medical Knowledge	Practice-Based Learning and Improvement	Interpersonal and Communication Skills	Professionalism	Systems-Based Practice
Metric	Rotation Eval	1-5	1-5	1-5	1-5	1-5	1-5
	In-Service	1-5	1-5	1-5		1-5	1-5
	Case Recall	1-5	1-5	1-5	1-5	1-5	1-5

Within the first 6 months of their clinical training, fellows are expected to score on their evaluations between 1 and 2, reflecting a Novice to Early Beginner level of competency. In their second 6 months of clinical training, the expected score should be 3-4, reflecting a Competent to Proficient performance. Fellows participating in 18 months of clinical training are expected to score 4-5 by the end of their fellowship, reflecting Proficient to Master status.

**Learning Objectives**

- 1) Understand the variety of responsibilities encountered in a busy community-based Nephrology practice.
- 2) Learn to prioritize acute issues in a busy community-based Nephrology practice.
- 3) Coordinate the transition of inpatient Nephrology care to outpatient follow-up.
- 4) Understand the issues involved with managing a cohort of chronic hemodialysis patients.
- 5) Identify the limits of providing care in an outpatient hemodialysis unit, which require hospital admission.
- 6) Identify the limits of outpatient Nephrology care in a clinic setting, which require hospital admission.

**Expectations**

- 1) Fellows will evaluate chronic hemodialysis patients in an outpatient dialysis setting for changes in clinical status, abnormalities in laboratory data, or changes in treatment requirements including:
  - a) dialysis adequacy,
  - b) vascular access,
  - c) volume and weight management,
  - d) erythropoietin dosing,
  - e) iron therapy needs, and
  - f) osteodystrophy.

- 2) Fellows will evaluate on a daily basis all patients requiring either admission to the Nephrology service or Nephrology consultations for acute kidney injury, acid/base or electrolyte disturbances, kidney transplantation, or chronic kidney disease.
- 3) Fellows will round with the attending physician daily to discuss each and every patient.
- 4) Fellows will communicate all diagnostic and treatment recommendations on inpatients directly to the team caring for the patient.
- 5) Fellows are encouraged to attend and participate in all other educational activities within the Division of Nephrology including combined research/clinical bi-monthly Thursday morning conference, Harrington Rounds, Grand Rounds, and other conferences.
- 6) Fellows are expected to list all diagnoses in their initial consult or admission note for coding purposes (e.g. CKD4, ESRD, AKI, metabolic acidosis).

## Independent Study

For fellows participating in the two-year *Clinical Track*, the independent study block is four to six consecutive months that are designated for self-directed learning. Fellows must identify a mentor three to four months prior to starting their block so appropriate preparation and organization can take place. During this time, fellows can work on mentored research projects or quality improvement projects, prepare review articles, case reports, or book chapters for publication, or self-arrange electives. These electives can be in pediatric nephrology, ICU nephrology, kidney pathology, transplantation, tissue-typing, or anything else. The fellow is expected to report regularly to their mentor to update progress.

### Core Competencies

<b>Patient Care</b>	Not applicable.
<b>Medical Knowledge</b>	Develop a knowledge base appropriate for addressing a hypothesis.
<b>Practice-Based Learning and Improvement</b>	Be able to understand and critique recent literature in regards to research hypotheses. Be able to critically assess a study to determine the applicability of the results.
<b>Interpersonal and Communication Skills</b>	Be able to create a research report, abstract, or manuscript.
<b>Professionalism</b>	Appreciate the ethical issues associated with research.
<b>Systems-Based Practice</b>	Appreciate the role of research in the creation of practice guidelines and the provision of medical care.

### Evaluation and Promotion

		COMPETENCY					
		Patient Care	Medical Knowledge	Practice-Based Learning and Improvement	Interpersonal and Communication Skills	Professionalism	Systems-Based Practice
Metric	Rotation Eval		1-5	1-5	1-5	1-5	1-5
	Presentations		1-5	1-5	1-5	1-5	1-5

Within the first 6 months of their clinical training, fellows are expected to score on their evaluations between 1 and 2, reflecting a Novice to Early Beginner level of competency. In their second 6 months of clinical training, the expected score should be 3-4, reflecting a Competent to Proficient performance. Fellows participating in 18 months of clinical training are expected to score 4-5 by the end of their fellowship, reflecting Proficient to Master status.

## Learning Objectives

- 1) Develop a research hypothesis.
- 2) Become facile in literature review and assessment.
- 3) Participate in the creation of a research protocol, and ensure appropriate study design.
- 4) Monitor data accumulation.
- 5) Interpret study results.
- 6) Synthesize data and develop a conclusion.

## Expectations

- 1) Fellow will identify a mentor at least 3 months prior to the start of the Independent Study block.
- 2) Fellow and mentor will seek approval from Program Director for all projects to be undertaken.
- 3) Fellows will meet with mentor on at least a weekly basis to ensure project is progressing appropriately.
- 4) Fellow will meet with the Program Director at the conclusion of the Independent Study to ensure objectives have been met.
- 5) Fellow will submit a written report of their work to the Program Director.
- 6) Fellows are expected to attend and participate in all other educational activities within the Division of Nephrology including Fellows Conference, Journal Club, Research Conference, Transplant Conference, Access Rounds, Dialysis Rounds, and Harrington Rounds.
- 7) Fellows will cover the clinical service when other clinical fellows are away on vacation or for excused absences.

## Kidney and Blood Pressure Center

The Kidney and Blood Pressure Center at Tufts has provided consultations since 1950, and now has one of the busiest outpatient nephrology practices in the area. Patients are seen in one of seven weekly nephrology clinics located on the 4<sup>th</sup> floor of 35 Kneeland St.. There are approximately 4000 active patients in the clinic, with 300 new referrals and 5000 return visits each year. The outpatient practice includes consultation on patients referred for a wide variety of kidney and hypertensive disorders, as well as the longitudinal care of patients with chronic kidney disease, metabolic disturbances, or end-stage renal disease on home-hemodialysis or peritoneal dialysis. Additionally, evaluation of living kidney donors, pre-transplant candidacy assessment, and follow-up care of patients after transplantation takes place in the clinic. A specialty Kidney Stone Clinic emphasizes the metabolic evaluation, preventive therapy, dietary management, and early detection of recurrent stones. Other specialty clinics focus on hereditary kidney disease, chronic kidney disease education, and an interdisciplinary approach to kidney transplantation.

Fellows are assigned to two or three weekly clinic sessions where they are supervised by Division members. Except in unusual circumstances, they will always see the same patients with the same attending during the same time slot. There is no interchange of patients between the two to three different clinic sessions that a single fellow attends. Fellows provide continuity of care for the duration of their training. To allow fellows to concentrate on the issues at hand, coverage of inpatient emergencies is provided during clinic sessions. Dr. Scott Gilbert is the Medical Director of the clinic. A full-time nurse (Deb Mitchell-Dozier) coordinates clinic activities, and a Physician Assistant (Jennifer Trignano) provides patient care. Robyn Bluestein is the administrative coordinator of the clinic, and three patient care coordinators (Helen Freedman, Tasha Flemming, Finna Tam) oversee scheduling, flow, and phone calls. A full-time medical assistant/phlebotomist is available to dip and spin urine, draw blood, and perform EKGs when necessary.

## Core Competencies

<b>Patient Care</b>	Evaluate patients with a variety of hypertensive or nephrologic issues and document a history, exam, assessment and evaluation as a consultant.
<b>Medical Knowledge</b>	Understand outpatient consultative nephrology including chronic kidney disease, hypertension, kidney transplantation, kidney stones, fluid and electrolyte disorders, and acid-base disturbances.
<b>Practice-Based Learning and Improvement</b>	Be able to understand and critique recent literature in regards to improving subspecialty care. Be able to critically assess a study to determine whether the results should be applied to an individual patient.

**Interpersonal and Communication Skills**

Be able to effectively communicate assessments and recommendations to a primary team. Be able to create a consult letter.

**Professionalism**

Respect the referring service and understand the limitations of the primary team. Be respectful of patients, their families, and other care providers at all times.

**Systems-Based Practice**

Understand the role of the consultant. Be able to assist the primary team in providing health care services for all of the patient’s needs.

**Evaluation and Promotion**

The following metrics are used to evaluate fellow performance in the Kidney and Blood Pressure Center:

		COMPETENCY					
		Patient Care	Medical Knowledge	Practice-Based Learning and Improvement	Interpersonal and Communication Skills	Professionalism	Systems-Based Practice
Metric	Rotation Eval	1-5	1-5	1-5	1-5	1-5	1-5
	360 Eval	1-5	1-5	1-5	1-5	1-5	1-5
	In-Service	1-5	1-5	1-5		1-5	1-5
	Mini-CEX	1-5	1-5	1-5	1-5	1-5	1-5
	Case Recall	1-5	1-5	1-5	1-5	1-5	1-5

Within the first 6 months of their clinical training, fellows are expected to score on their evaluations between 1 and 2, reflecting a Novice to Early Beginner level of competency. In their second 6 months of clinical training, the expected score should be 3-4, reflecting a Competent to Proficient performance. Fellows participating in 18 months of clinical training are expected to score 4-5 by the end of their fellowship, reflecting Proficient to Master status.

**Learning Objectives**

- 1) Recognize, perform diagnostic evaluations, and initiate appropriate therapy for patients with chronic kidney disease.
- 2) Understand the complications of each stage of chronic kidney disease, including anemia, osteodystrophy, hypertension and cardiovascular disease, and malnutrition.
- 3) Recognize the issues involved with appropriate and timely counseling of patients with progressive kidney disease on renal replacement therapy options.
- 4) Recognize, perform diagnostic evaluations, and initiate appropriate therapy for patients with evidence of kidney damage, including proteinuria, hematuria, structural kidney disease, familial kidney disease, and nephrolithiasis.
- 5) Recognize, perform diagnostic evaluations, and initiate appropriate therapy for patients with electrolyte and acid-base disorders.
- 6) Recognize, perform diagnostic evaluations, and initiate appropriate therapy for patients with hypertensive disorders.
- 7) Properly perform and evaluate the urinalysis and urinary sediment.
- 8) Understand the role of the kidney biopsy in the evaluation of kidney disorders.
- 9) Understand the assessment of potential kidney donors and kidney transplant recipients.
- 10) Recognize the complications of immunosuppressive therapy including medication side effects, infections, and malignancy.
- 11) Appropriately evaluate kidney dysfunction in kidney transplant recipients.
- 12) Understand the evaluation of medical problems in immunocompromised patients.

**Expectations**

- 1) Fellows will participate in two or three weekly clinics, based on whether or not they are also caring for a hemodialysis shift.
- 2) Fellows are expected to review their schedules in advance to ensure arrival at clinic in time for their first patient, as well as to set an agenda for each patient encounter. Printed schedules are available the Friday beforehand.
- 3) Fellows will evaluate patients (including obtaining vital signs in multiple extremities and in orthostatic positions when indicated) after they have been weighed and placed in an examination room by the medical assistant. At particularly busy times, fellows should bring patients to the room to maintain flow.

- 4) New referrals should have a complete history and physical exam performed, including past medical history, current and recently discontinued medications, allergies, social history, family history, and ROS. This should be documented on a “New Patient” template.
- 5) Return and acute visits require an inter-current history from the last clinic visit, as well as a review of all current medications.
- 6) All patients are presented to the attending physician, who will then accompany the fellow back to see the patient. The urinalysis and urine sediment will be reviewed.
- 7) Fellows are expected to take a leadership role in formulating a diagnostic strategy and a treatment plan. The need for blood tests, urine tests, and radiographic studies will be discussed.
- 8) Fellows will complete clinic paperwork for each patient including a check-out form. The check-out form records blood and urine tests to be sent, the timing of a return visit to clinic, requested referrals to other physicians, and imaging studies that need to be arranged. This paperwork is placed in the “Check-Out Box” at the end of the visit.
- 9) When patients seen in the clinic require hospitalization, it is the responsibility of the fellow to:
  - a) call the admitting office at 6-6000 to reserve a bed,
  - b) page the chief residents at beeper #3000 to obtain the name of the admitting resident,
  - c) discuss the case with admitting resident,
  - d) and notify the attending on the renal service.
- 10) Fellows will review all laboratory data on the day of the clinic visit. The attending physician is available to discuss any abnormal results that may change diagnostic considerations or treatment options.
- 11) The clinic flowsheet (Appendix G) must be completed after every patient visit, with intercurrent events, labs, and changes in therapy noted.
- 12) Fellows will dictate a letter to the referring doctor within 24-48 hours after the session outlining the history, physical examination, laboratory results, a thorough assessment and differential diagnosis, and a thoughtful diagnostic and therapeutic plan. If labs are pending at the time of dictation, they should be entered manually during the editing process. The dictation service can be accessed by calling #500 (617-629-8925 from outside hospital), entering your individual six-digit physician number, the work type (02), and the patient’s medical record number (7 digits). The transcribed letter appears in *SoftMed* within several days, where fellows are expected to edit it promptly. The reviewed note is forwarded in *SoftMed* to the attending physician for finalizing and signature.
- 13) All outpatient clinic notes are to be dictated and reviewed for an attendings signature within seven days.
- 14) If a patient needs to come to clinic for additional labs, the fellow should notify the patient care coordinators and the medical assistant beforehand via the e-mail group NE NEPH CLINIC SUPPORT STAFF.
- 15) Fellows are responsible for reviewing all outside lab results and completing all paperwork required in the care of their patients.
- 16) During vacations, national meetings, or other absences, arrangements will be made for another fellow to cover acute issues that may arise in the clinic panel. The Program Director will assign clinic coverage equally among the research fellows over the course of the year.

## **Dialysis Clinics, Inc.**

The Division’s outpatient dialysis facility is operated by Dialysis Clinic, Inc., a national nonprofit corporation. Dr. Klemens Meyer is the Medical Directors of the dialysis unit, and Dr. Dan Weiner is the Associate Medical Director. The facility currently serves about 100 hemodialysis patients. These include high-functioning dialysis patients who live in the neighboring community, patients undergoing evaluation for home-hemodialysis and transplantation, and others with complex medical and social needs requiring access to a tertiary care setting.

Tufts’ peritoneal dialysis program was the first in Boston. Currently, over twenty patients perform home peritoneal dialysis. A peritoneal dialysis nurse (Jane Maxim) trains patients in collaboration with fellows and the attending staff. After training is complete, patients are seen monthly for follow-up visits in the Kidney and Blood Pressure Center as well as monthly in Somerville for visits with the peritoneal dialysis nurse.

Fellows are assigned a cohort of hemodialysis outpatients on a common shift. For a year, they serve as each patient’s primary nephrologist, with supervision by Drs. Balakrishnan, Gilbert, Khan, Meyer, Sarnak, and Weiner. Vascular and peritoneal access surgery is performed by Transplant Surgery, and vascular access maintenance is provided by both Transplant Surgery and Interventional Radiology.

**Core Competencies**

**Patient Care**

Evaluate patients on chronic hemodialysis, and coordinate their dialysis care. Facilitate the integration of dialysis with the other medical, personal, and psychosocial needs of the patient.

**Medical Knowledge**

Understand the principles of hemodialysis, and the medical complications to which dialysis patients are prone.

**Practice-Based Learning and Improvement**

Be able to understand and critique recent literature in regards to improving subspecialty care. Be able to critically assess a study to determine whether the results should be applied to an individual patient.

**Interpersonal and Communication Skills**

Be able to effectively communicate assessments and recommendations to other caregivers involved in patient care. Be able to create a monthly dialysis note.

**Professionalism**

Be respectful of patients, their families, and other care providers at all times.

**Systems-Based Practice**

Recognize the importance of an interdisciplinary approach to the care of hemodialysis patients. Be able to coordinate the input of a care team into a treatment plan.

**Evaluation and Promotion**

The following metrics are used to evaluate fellow performance at Dialysis Clinics, Inc.:

		COMPETENCY					
		Patient Care	Medical Knowledge	Practice-Based Learning and Improvement	Interpersonal and Communication Skills	Professionalism	Systems-Based Practice
Metric	Rotation Eval	1-5	1-5	1-5	1-5	1-5	1-5
	360 Eval	1-5	1-5	1-5	1-5	1-5	1-5
	In-Service	1-5	1-5	1-5		1-5	1-5
	Mini-CEX	1-5	1-5	1-5	1-5	1-5	1-5
	Case Recall	1-5	1-5	1-5	1-5	1-5	1-5

Within the first 6 months of their clinical training, fellows are expected to score on their evaluations between 1 and 2, reflecting a Novice to Early Beginner level of competency. In their second 6 months of clinical training, the expected score should be 3-4, reflecting a Competent to Proficient performance. Fellows participating in 18 months of clinical training are expected to score 4-5 by the end of their fellowship, reflecting Proficient to Master status.

**Learning Objectives**

- 1) Recognize the contributors to dialysis clearance and adequacy.
- 2) Optimize dialysis therapy through management of vascular access and dialysis prescription.
- 3) Identify and treat co-morbid conditions in patients with chronic kidney disease including anemia, osteodystrophy, and malnutrition.
- 4) Recognize and treat the complications to which patients on hemodialysis are prone, including bacteremia and line infection, steal syndrome, volume overload, and electrolyte disturbances.
- 5) Recognize and treat the acute complications of the hemodialysis treatment including hypotension, cramps, nausea, and vomiting.
- 6) Identify the limits of care that can be given in the dialysis unit and necessitate hospitalization.
- 7) Understand the dietary restrictions of hemodialysis patients, and the nutritional implications of this diet.
- 8) Appreciate the psychosocial impact of hemodialysis on the lives of patients.

## **Expectations**

- 1) Fellows will round with the attending weekly to review the patients on the dialysis shift. Fellows should be prepared to present new patients and review the progress of established patients. Pertinent data should be gathered prior to attending rounds.
- 2) Fellows should see the entire dialysis shift during one other treatment each week.
- 3) Every patient requires a structured *Monthly Progress Note* entered into the Darwin medical information system. This note should address: 1) dialysis adequacy, 2) dialysis access, 3) hematopoiesis and iron status, 4) bone metabolism, 5) volume management and blood pressure control, 6) nutritional status, 7) cardiovascular management (lipid status, diabetic control), 8) transplant status and evaluation, 9) psychosocial adjustment and sense of well-being, 10) additional medical issues, and 11) routine health maintenance.
- 4) All acute patient issues addressed while on dialysis require a brief *Event Note* entered in Darwin.
- 5) Comprehensive annual physical examinations should be performed on all patients and entered in Darwin as an *Annual Note*.
- 6) Fellows must keep all patients' problem lists, medication lists, and vascular access lists current in Darwin.
- 7) Notes should be entered in Darwin indicating any patient's hospitalization. A follow-up note upon discharge should outline tests performed, diagnoses made, and treatments initiated.
- 8) Fellows should be prepared to address with the dialysis unit nursing staff any problems that arise when the fellow is not in the unit. Fellows may be contacted by pager, telephone or e-mail, and should respond promptly. When the responsible shift fellow is unavailable, acute medical problems and emergencies requiring an urgent evaluation will be directed to the fellow rotating on the Dialysis service.
- 9) During vacations, national meetings, or other absences, arrangements must be made for another fellow to cover acute issues that may arise in the dialysis panel.
- 10) Fellows are expected to attend Access Rounds at 12PM each Thursday in the Interventional Radiology Suite (Proger 4) to present patients on their shift requiring evaluation, placement, or revision of vascular or peritoneal accesses to the Interventional Radiologists and the Transplant Surgeons.
- 11) Fellows are expected to attend Multidisciplinary Dialysis Rounds each Friday at 10:00AM in the 6<sup>th</sup> floor conference room at 35 Kneeland St..

## **Additional Educational Activities**

### **PKD Clinic**

Each fellow attends the PKD clinic once or twice each year. The PKD Clinic is a multi-disciplinary effort held on Friday mornings with Drs. Ron Perrone, Dana Miskulin, Transplant Surgery, Neurosurgery, and Interventional Radiology. Patients with the diagnosis of PKD undergo comprehensive evaluation at our recognized Center of Excellence.

### **Quality Assessment and Improvement Initiative**

Each clinical fellow is expected to identify an area of quality improvement, implement a plan to gather data, develop an initiative to improve outcomes, and reassess the response to the change. Fellows will work with Dr. Lesley Stevens to coordinate their projects. Topics for review may be identified by patient complications, changes in standards of care, or innovative approaches to care. The results of this project will be presented at Morbidity and Mortality Conference, and are strongly encouraged to be published as a manuscript or abstract.

### **Death Reviews and Autopsies**

All deaths that occur on the Inpatient Nephrology Ward or the Inpatient Consult Service will be reviewed by the Nephrology Fellow and the Attending Physician. Similarly, deaths in the Kidney and Blood Pressure Center and at DCI-Boston will be critically evaluated. Fellows and staff are encouraged to attend autopsies on Ziskind 5, and autopsy reports will be disseminated to all individuals involved with the case. Cases of particular interest will be presented to the entire Division at Harrington Rounds (Clinical Conference). Patterns of injury will be explored at Morbidity and Mortality Conference, and may serve as a quality improvement initiative.

## Conferences

In addition to the patient-directed teaching that occurs on the medical ward, consult service, outpatient clinic, and the dialysis units, an extensive complement of conferences are designed to address other issues in professional development. These conferences are created to provide training in literature review, laboratory and research theory, didactic review of pathologic and pathophysiologic principles, and decision-making in complicated and difficult cases. Ethical, medico-legal, cost containment, and quality assurance issues are discussed both during clinical rounds and at clinical conferences. Presenters are evaluated by all Division members in a competency-based format using an audience survey.

The weekly conference schedule is arranged as follows:

	Monday	Tuesday	Wednesday	Thursday	Friday
<b>8:00</b>					
		Fellows Conference		Journal Club	ABIM Review
<b>9:00</b>					
<b>10:00</b>					DCI Rounds
<b>11:00</b>					
<b>12:00</b>				Access Rounds	Medical Grand Rounds
<b>1:00</b>					
<b>2:00</b>					Harrington Rounds*^
<b>3:00</b>					
<b>4:00</b>	Transplant Conference		Research Conference		
<b>5:00</b>					

\* Pathology Conference is held every other month

^ Morbidity and Mortality Conference is held 5 times per year

The conferences include:

### Fellows Conference

Held Tuesday mornings at 8:30AM, the staff prepares reviews on a variety of disease states, management issues, and background science in Nephrology.

### Research Conference

Research Conference is held every Wednesday at 4PM to discuss research methodology, scientific approach, and study design.

### Journal Club

Held every Thursday at 8:30AM to discuss the recent literature in a critical manner, each fellow presents twice each academic year.

### Harrington Rounds

Harrington Rounds are the Division's clinical conference held Friday at 2:00PM to discuss the pathophysiologic, pathologic, ethical, and medical decision-making issues involved with challenging and complicated cases. Cases are selected, presented, and reviewed by clinical fellows on a rotating basis, every fifth week.

## **Pathology Conference**

Pathology Conference is held every other month on Friday at 2:00PM to review all kidney biopsies. Fellows provide a clinical overview of each case, followed by Dr. Monika Pilichowska, our renal pathologist, explaining the histologic findings.

## **Morbidity and Mortality Conference**

Five times each year, clinical fellows will explore a quality improvement issue within our practice during a Morbidity and Mortality Conference. Held on Friday at 2:00PM, fellows will either choose or be assigned a topic of patient care to review. A discussion about quality improvement follows.

## **Transplant Rounds**

Held every Monday at 4:00PM, Transplant Rounds is an opportunity to review transplant recipient and donor candidacy, discuss challenging transplant issues, and revise transplant protocols and policy.

## **Access Rounds**

Access Rounds is held every Thursday at 12:00PM to review hemodialysis access issues in a multidisciplinary setting with Transplant Surgery and Interventional Radiology.

## **DCI Rounds**

Every Friday at 10:00AM, DCI Rounds reviews hospitalized and recently discharged dialysis patients with a goal of coordinating inpatient and outpatient medical and nursing care.

## **ABIM Board Review**

Beginning in February, a weekly review of board-type questions are held every Friday at 8:30AM.

# **Procedures**

## **Procedure Log**

Fellows are expected to maintain a procedure log of all kidney biopsies performed and dialysis catheters placed. This should be done electronically at New Innovations ([www.New-Innov.com](http://www.New-Innov.com)). Only procedure entered into this log will be available to certify competency for credentialing. After logging in to New Innovations, select "Procedure Logger" from the "Main" tab at the top of the screen. Click "Add Procedure Logs," then complete the information regarding the procedure (from drop-down menu), supervisor (another drop-down menu), and patient. The indication for the procedure, and any complications from it should be entered.

## **Kidney Biopsy**

The purpose of a kidney biopsy is to obtain tissue for a definitive pathologic diagnosis and identify an appropriate treatment strategy. The decision to perform a kidney biopsy is made by the fellow in conjunction with the attending nephrologist. There should be no evidence of an uncorrectable bleeding tendency, urinary tract infection, or uncontrolled hypertension. Percutaneous biopsies are rarely performed on patients with solitary native kidneys or solitary functioning native kidneys. Once the decision to perform a kidney biopsy has been made, the biopsy is scheduled at a time convenient for the fellow who cares for the patient and the attending nephrologist. If the fellow is unable to perform the biopsy because of a scheduling conflict, coverage must be arranged. Similarly, attending physicians must arrange coverage for their patient's biopsy if they are unable to be present to supervise the fellow. Kidney biopsies are performed as either day procedures or overnight observation procedures based on patient comorbidities that may affect the likelihood of a complication. The clinic coordinators schedule day procedures for 10AM with Ultrasound (6-6340), and the PACU (6-9976) is notified of the date of the procedure. A completed pre-printed biopsy order sheet (Appendix H) is brought to the 5 South Registration Desk at least 24 hours in advance. The patient is instructed to discontinue aspirin and NSAIDs one week prior to the biopsy and arrive at 8AM of the day of the biopsy to 5 South with their red card.

On the day of the biopsy, a Nursing Assessment is completed, an 18-gauge Hep Lock is placed, and blood is drawn for a STAT CBC, coags, Chem-7, and type and screen. The fellow is paged to 5 South to explain the procedure to the patient in detail, answer any questions, and obtain informed consent. It is the responsibility of the fellow to check all STAT bloodwork prior to the procedure. The patient is then brought by Transport to Ultrasound at 10AM. An ultrasound is performed to document the presence of two native kidneys and identify an approach for obtaining cortical tissue. Before proceeding, a time-out is taken to verify the patient, the indication, the procedure, and any complicating features. Pre-printed stickers

documenting the time-out should be completed and placed in the patient's chart. A mark on the skin is made. The skin is cleaned thoroughly with betadine in a circular fashion and draped with sterile towels. 1% lidocaine is injected subcutaneously at the marked site, and then along the intended biopsy track to the hub of the needle. A skin puncture is made with a scalpel. 15-gauge biopsy needles are preferable, although 18-gauge can be used when concern for post-biopsy bleeding is high. The biopsy gun should be tested prior to use to ensure proper function. The biopsy needle is fed through a sheath on the ultrasound probe and inserted under ultrasound guidance to the level of the kidney capsule. During a breath hold, the needle is inserted another 0.5 cm through the capsule and the gun is fired. Care must be used to avoid recoil as the needle bounces off the capsule. The needle is withdrawn, and the specimen is placed on moist sterile gauze in a specimen container. Additional passes are made to ensure adequate tissue for the necessary pathological studies (light microscopy, immunofluorescence, and electron microscopy). The tissue is brought to the Pathology Cutting Room (Ziskind 4) for microscopic inspection with the pathology resident and division of the tissue for different studies.

At the conclusion of the biopsy, a follow-up ultrasound is performed to verify the absence of a peri-nephric hematoma. The fellow is responsible for writing a procedure note that documents 1) indication for the procedure, 2) informed consent was obtained, 3) time out was observed, 4) site of the biopsy, the size of the needle, and the number of passes, 5) any complications, and 6) the supervision by an attending. The PACU (6-9976) is notified of an impending patient arrival, and the fellow transports the patient to 5 South. Patients are observed for 4 to 6 hours with frequent vital sign monitoring, serial urine collections, and repeat HCT. The fellow is expected to check on the patient several times during the observation period, and note changes in vital signs, gross hematuria, or a drop in hematocrit. Without any of these, the patient can be discharged home.

Arrangements should be made to review the biopsy as soon as possible (usually 4PM the following day) with Dr. Monika Pilichowska (pager 4244, office number 6-5474). In addition, the fellow should call the patient at home following day to make sure there are no unexpected complications. Fellows are responsible for completing the Kidney Biopsy Review Form (Appendix H) and returning it to Lorna Davies within two days of the biopsy.

## **Central Line**

Fellows are expected to place temporary hemodialysis accesses for hospitalized patients in need of urgent treatment. A decision to place a temporary catheter is made with the attending physician on the basis of urgency of treatment, contraindications to permanent access placement (i.e. active infection), and expected duration of catheter need. Catheters and introducer kits are kept in the inpatient dialysis unit (Floating 7). These catheters are 12 French in caliber, and come in lengths of 13cm, 16cm, and 20cm. 13cm catheters are designed for right internal jugular vein placement, 16cm are designed for left internal jugular vein placement, and 20cm are designed for femoral vein placement. IJ catheters are suited to active patients and patients who are likely to require the catheter for greater than 5 days. Femoral catheters are suited to bed-bound patients, patients at higher risk of bleeding complications, and patients who require temporary access for only a few treatments. Subclavian veins are avoided as they have a higher risk of subclavian vein stenosis and bleeding with line removal.

Once a decision to place a temporary catheter is made, informed consent should be obtained from the patient (or an immediate family member if necessary). Lines are placed under direct supervision of an attending physician, unless the fellow has been certified to place lines on their own and has the prior permission by the attending is granted. An US machine is available from either the MICU or the Department of Anesthesia (page 1757 to request the machine, and then sign it out from the Floating 5 anesthesia work room in the operative suite) to assist with identifying the anatomy. A time-out is observed to verify the patient, the indication, the procedure, and any complicating features. Pre-printed stickers documenting the time-out should be completed and placed in the patient's chart. The dialysis catheter is flushed with saline to ensure proper function, and the blue port is locked. The area is shaved and thoroughly prepped with betadine and then chlorhexidine in a circular fashion. The site is sterilely draped, and anesthetized with subcutaneous 1% lidocaine. Ultrasound gel is applied to the ultrasound probe, and then the probe is covered in a sterile sheath. Sterile ultrasound gel is applied to the site. The vein is identified on ultrasound as being compressible. Under ultrasound guidance, a 14-gauge introducer needle is directed towards the vein. If venous return is not accomplished on three needle sticks, the senior nephrology fellow should be called to assist with line placement. If the senior nephrology fellow is unable to puncture the vein after three needle sticks, the surgical resident on call should be paged at 2689. Once venous return is verified, a wire is fed into the vessel and the introducer is removed. The entry site is enlarged with a scalpel, making sure the blade is facing away from the wire to avoid cutting it. The tunnel and vessel are enlarged by feeding a plastic dilator over the wire, and then the wire is fed through the tip of the catheter and out the red port. Once the wire has extended out the red port, the wire is held as the catheter is fed through the tunnel and into the vein. Once the catheter has been inserted to within 1cm of the hub, the wire is removed and the red port locked. Both ports are aspirated until blood is returned, then flushed thoroughly with

saline. An amount of heparin 5,000 units/cc to fill each port is introduced, and the port is locked and capped. Two sutures are placed to keep the catheter in place, leaving 1cm of catheter exposed through the skin for placement of a Biopatch. A chest X-ray is ordered after any attempt at an IJ, and the fellow must personally inspect the film to document proper line position and no pneumothorax. No attempt at a contralateral IJ can be made until a chest X-ray has ruled-out an ipsilateral pneumothorax. A procedure note must be written in the patient's chart that documents 1) indication for the catheter, 2) informed consent was obtained, 3) a time out was performed, 4) location and length of the catheter, 5) any complications, 6) X-ray results and 7) the supervision by an attending.

### **Inpatient Hemodialysis**

Hemodialysis at Tufts is performed in the Floating 7 Hemodialysis Unit, the ICUs, and in select patient rooms. Dialysis orders are expected the evening before the treatment or early on the day of the treatment. An inpatient hemodialysis order form is attached (Appendix I). Patients should be seen early in their dialysis treatment to assess the appropriateness of the ultrafiltration goal and the dialysis bath. Fellows must directly supervise the first 30 minutes of any patient's very first dialysis treatment.

The need to emergently dialyze a patient during the evening or on Sunday should be made with the attending physician after the fellow has reviewed the case and examined the patient. The dialysis nurse on-call can be paged through the Tufts page operator (6-5111).

### **Inpatient Peritoneal Dialysis**

Peritoneal dialysis is performed at Tufts in the ICUs and on North 7. Pre-printed order forms (Appendix J) must be completed each morning, and include 1) frequency of exchanges, 2) volume of dwell, 3) dialysis solution to be used (1.5%, 2.5%, or 4.25% dextrose), and 4) medications to be added (i.e. heparin, antibiotics). Flow sheets indicating infusion and drain volumes, daily fluid balances, and daily weights are kept by each patient's room. Patients must be evaluated daily for Tenckhoff exit-site condition, ultrafiltration needs, electrolyte repletion, and med dosing adequacy.

### **Continuous Veno-Venous Hemofiltration**

Continuous Veno-Venous Hemofiltration (CVVH) is performed in the ICUs on patients with poor hemodynamics who are unable to tolerate conventional hemodialysis, patients with large ultrafiltration requirements, or patients with other unique circumstances. CVVH requires a dialysis catheter, and cannot be done through an AVF or AVG. Citrate regional anti-coagulation is recommended for patients who do not have underlying liver disease that would limit their ability to metabolize citrate into bicarbonate. Systemic heparin anti-coagulation with bicarbonate alkali can be used in patients with liver disease or patients who develop a widening anion gap on citrate anti-coagulation. Pre-printed CVVH orders (Appendix K) must be completed daily. Patients (or more likely their families) must be consented before CVVH can be initiated. Ultrafiltration goals, electrolyte supplementation, and med dosing adequacy require meticulous attention during CVVH.

## **Supervision**

At Tufts, each and every fellow is supervised in the care of patients by an attending physician. In the inpatient setting, fellows on the Consult and Transplant Services report directly to the Consult Attending. The fellow on the Dialysis Service is supervised by the Ward Attending. Attendings on service are expected to be reachable by hospital pager at all times. Weekend supervision is achieved by a covering attending, with a schedule posted at the start of the year (Appendix E).

In the clinic and outpatient dialysis unit, supervision occurs in a one-to-one fashion. Fellows are expected to run every case by the attending with whom they see patients in clinic. In the dialysis unit, fellows are supervised by the attending that co-manages that dialysis shift. In the event that the usual clinic or dialysis shift attending is unreachable, the Ward Attending is always available for supervision.

Procedures, including dialysis catheter placement and kidney biopsies, are performed under direct supervision or with advanced knowledge and prior approval of an attending physician.

At C-SEMC, the primary teaching faculty directly supervises all inpatient care, inpatient consultations, procedures, outpatient hemodialysis care, and conferences in which the fellows are involved. Fellows are supervised in a one-to-one fashion by the on-site program director, program director, or key faculty members in all activities. A schedule identifying the supervising physician is distributed at the start of each rotation.

## Fellow Evaluation

The professional development of fellows is evaluated in terms of the six core competencies: Patient Care, Medical Knowledge, Practice-Based Learning and Improvement, Interpersonal and Communication Skills, Professionalism, and Systems-Based Practice. Each competency is assessed by at least 2 metrics. The metrics utilized at Tufts Medical Center include:

- Rotation Evaluation: At the completion of each clinical rotation, attending physicians complete an evaluation of the fellows performance.
- 360 Degree Evaluations: Twice a year, surveys are submitted to attending physicians (Module A), nurses, physician-extenders, and support staff (Module B), and patients (Module C).
- In-Service Exam: Each spring, a 1-day, 8-hour standardized exam developed by the Nephrology Training Program Directors and the American Society of Nephrology is administered to all fellows.
- Evaluation of Presentations: A written evaluation of is submitted for each fellow’s presentation at Journal Club, Research Conference, Harrington Rounds, and Morbidity and Mortality Conference.
- Mini-CEX: Fellows are directly observed in a variety of standard patient encounters. These encounters include a) examination of a vascular access, b) education on modality options, c) evaluation of acute kidney injury, and d) assessment of hypertension.
- Case Recall: Fellows are requested to verbally present cases to an attending physician.
- Procedure Logs: all procedures performed by each fellow are tracked and reviewed.

The following competencies are assessed using the following tools:

		<b>COMPETENCY</b>					
		Patient Care	Medical Knowledge	Practice-Based Learning and Improvement	Interpersonal and Communication Skills	Professionalism	Systems-Based Practice
Metric	Rotation Eval	*	*	*	*	*	*
	360 Eval	*	*	*	*	*	*
	In-Service	*	*	*		*	*
	Presentations	*	*	*	*	*	*
	Mini-CEX	*	*	*	*	*	*
	Case Recall	*	*	*	*	*	*
	Procedure Logs	*	*	*			*

Fellows are evaluated on a five-point scale as follows:

- 1) Novice
- 2) Early Beginner
- 3) Competent
- 4) Proficient
- 5) Master

Fellows are expected to demonstrate growth and development over the course of their training experience. Within the first 6 months of their clinical training, fellows are expected to score on their evaluations between 1 and 2, reflecting a Novice to Early Beginner level of competency. In their second 6 months of clinical training, the expected score should be 3-4, reflecting a Competent to Proficient performance. Fellows participating in 18 months of clinical training are expected to score 4-5 by the end of their fellowship, reflecting Proficient to Master status.

Overall fellow performance is reviewed every four months. Fellows are discussed at a designated staff meeting. The Fellowship Director meets with each fellow individually to review performance, provide feedback, and explore fellow concerns. The content of these meetings are recorded and kept in each fellow’s folder along with their written evaluations.

## **Advancement**

Fellow's promotion from one year of training to the next is based on satisfactory performance evaluations and achieving pre-specified milestones in core competencies. Fellows are expected to demonstrate progression in each of the core competencies from Novice through Early Beginner to Competent. At the conclusion of their training, it is the goal of the program to assist all fellows in becoming Proficient or Master. To achieve this, fellow performance in each competency is evaluated by at least 2 separate metrics. These evaluations are reviewed with the fellows every four months.

Within the first 6 months of their clinical training, fellows are expected to score on their evaluations between 1 and 2, reflecting a Novice to Early Beginner level of competency. In their second 6 months of clinical training, the expected score should be 3-4, reflecting a Competent to Proficient performance. Fellows participating in 18 months of clinical training are expected to score 4-5 by the end of their fellowship, reflecting Proficient to Master status.

Fellows who are not meeting their expected performance are provided immediate feedback with expectations that performance improves. Remediation is available through intensive one-on-one work with the Program Director and key clinical faculty. If sub-satisfactory performance continues, fellows are disciplined according to Graduate Medical Education Procedure for Discipline and Dismissal of House Officers and Appeal Process (GME 01-C). The American Board of Internal Medicine (ABIM) requires fellows satisfactory complete of 12 months of clinical training and 24 months of continuity clinic before being eligible to sit for Certification Boards in Nephrology.

## **Program Evaluation**

On an annual basis, all fellows are asked to complete a written, confidential evaluation of the Fellowship Training Program and its participating staff members. In addition, fellows are encouraged to bring all concerns to the immediate attention of the Fellowship Director. This occurs in monthly Town Hall meetings where the clinical fellows meet with the Program Director, at the individual Feedback Sessions every four months, or at any other time when questions or concerns arise.

## **Learning Portfolio**

Fellows will be expected to participate in maintaining their Learning Portfolios. The learning portfolio is a catalog of educational and developmental achievements that have occurred during the fellowship training experience. The Learning Portfolio will include:

- 1) Clinical Experience
  - a. Biopsies
  - b. Central Lines
  - c. Peritoneal Dialysis Visits
  - d. Transplant Patient Visits
- 2) Evaluations
  - a. Attending Reviews
  - b. 360-Degree Evaluations
  - c. Mini-CEX
- 3) Presentations
  - a. Journal Club
  - b. Harrington Rounds
  - c. Research Conference
  - d. Morbidity and Mortality Conference
- 4) Scholarly Work
  - a. Manuscripts
  - b. Posters
  - c. Abstracts
  - d. Chapters

Biopsies and central lines should be recorded at [www.New-Innov.com](http://www.New-Innov.com). PD and transplant patient visits should be recorded in an Excel spreadsheet. All presentations and scholarly work should be provided to the Program Director for inclusion in the portfolio.

## **Mentoring**

Mentoring allows fellows an opportunity to review their interests, professional development, and personal challenges with a staff member to ensure their progress in the training program and academic direction is consistent with their career goals. The supervising attending in fellows' continuity clinic will serve as their default mentor. After consulting with the Program Director, fellows may change their mentor. It will be the expectation of each fellow and mentor to meet every 1-2 months to review personal, professional, and

## **Order Writing**

Tufts is a teaching hospital with residency training programs in Internal Medicine, Surgery, Pediatrics, Obstetrics and Gynecology, Neurology, Radiology, Psychiatry, and several other specialties. Fellows in the Division of Nephrology serve as consultants, and are not primary care givers. As such, fellows are not permitted to write orders in the medical chart without the prior consent of the primary team. An exception is hemodialysis orders, peritoneal dialysis orders, continuous veno-venous hemofiltration orders, and urgent medications and therapies that are necessary during the dialysis treatment.

At C-SEMC, fellows serve as either consultants or supervise internal medicine residents caring for patients of the key program faculty on the Renal Ward Service. Fellows are expected to convey all recommendations and care plans to the house officers responsible for the patients. In rare circumstances when housestaff are indisposed, fellows may be permitted to write orders on patients on the Renal Ward Service. Fellows are also expected to write orders for dialysis, and urgent medications and therapies necessary during the dialysis treatment.

## **Teaching**

Clinical fellows play a prominent role in the education of Tufts medical students and Tufts residents. They work closely with fourth-year students during their Renal Consult elective. They supervise care and teach at the bedside, on rounds, and during presentations. Fellows review with students the relevant pathophysiology, differential diagnoses, diagnostic work-ups, and appropriate therapeutic interventions.

In addition, senior fellows act as group leaders during the three-week second-year medical school Renal Pathophysiology Course every January. This course uses a seminar format in which approximately 15 students meet to discuss renal pathophysiology in a case-based format that fortifies what the students have learned in lecture. Fellows are prepared for this role by tutorials before each session that review the pathophysiology, explore learning objectives, and emphasize educational models. These seminars have proven to be a rewarding and popular educational experience for the fellows. In addition, fellows also participate in the "Physical Diagnosis" course taught to second-year students.

Finally, fellows are responsible for leading various Division educational activities including Fellows Conference, Research Conference, Journal Club and Harrington Rounds.

## **Work Space**

All clinical fellows are assigned office space on 35 Kneeland, 6<sup>th</sup> Floor, Room 619. They are designated an individual computer with e-mail and Internet access, a communal laser printer, and a telephone. A library with a variety of Nephrology and Medicine journals is available, in addition to the Tufts University Medical School Library on Sackler 4.

## **Duty Hours**

Fellows are expected to be available from 7AM to 5PM on Monday through Friday to cover their service, acute issues with their clinic panels, and questions regarding their hemodialysis shift. The four fellows at Tufts are responsible for covering every fourth weekend. Evening coverage is done by pager one night per week. There are no expectations that fellows remain in the hospital overnight when on-call, but must be available to come into the hospital to evaluate and treat patients directly. When a fellow returns off-hours to the hospital for patient care, the Division will reimburse taxi fare or parking in the central garage. Fellows make their own evening and weekend schedule, which must be approved by the Fellowship Director.

The fellowship training program is in strict compliance with work hour restrictions set forth by the ACGME. Fellows must not work more than 80 hours per week averaged over a 4-week period, must have a day free of educational and clinical responsibilities per week averaged over a 4-week period, and must have 10 hours off between work shifts. Duty hours will be monitored periodically by New Innovations ([www.New-Innov.com](http://www.New-Innov.com)).

## **Vacation**

Fellows are entitled to three weeks of vacation during each academic year, and unused time is not transferable from one year to the next. No more than one fellow may take vacation from a Tufts rotation at any time. Fellows may not take more than one week of vacation in the final two months of the year (May and June). Requests for vacation and individual days off must be approved SIX WEEKS in advance, although shorter notice may be accepted under unusual circumstances. Fellows must complete and submit a "Request for Vacation" form (Appendix L) to Anna Suffoletta, with approval responses given within one week. Approval of vacation requests is at the discretion of the Fellowship Director, and may be denied if staffing issues require.

When away on vacation, the clinical fellow assigned to research will cover the inpatient rotation. The Program Director will assign coverage of clinics and hemodialysis shifts equally among the research fellows over the course of the year.

## **National Meetings**

The Division supports senior clinical fellows to attend one national conference. Senior clinical fellows are those in their final year of ACGME accreditation. Permission to attend national meetings is granted only if adequate coverage is available for the inpatient services. Fellows receive reimbursement up to \$500 towards expenses incurred from registration, transportation, lodging, and meals.

## **Family and Medical Leave**

Fellows who have been employed at Tufts for greater than one year qualify under the Family and Medical Leave Act (FMLA) for 12 weeks time off with job protection. Accrued sick time (at a rate of one day per month of employment up to 36 days) and unused vacation time may be applied to continue wages through part of this leave. According to ACGME requirements, training time may need to be extended if a fellow is away from the program for more than four weeks in a calendar year. Additional details may be found in Graduate Medical Education Sick Days and Leave Policy (GME 01-G).

## **Coverage**

During vacation, research fellows will cover outpatient clinics and outpatient HD shifts. This coverage will be assigned by the Program Director at least 4 weeks in advance. In addition, the clinical fellow on the Independent Study Block will be asked to cover the clinical service for the absent fellow.

Fellows are expected to cover one overnight during the course of their training. This coverage is for the Internal Medicine Housestaff Training Program Holiday Party in January and the End-of-the-Year Party in May. After working the overnight, fellows will be given the following day off.

## **Moonlighting**

Fellows in the Division of Nephrology are permitted to moonlight according to the Graduate Medical Education Moonlighting Policy (GME 01-E). Malpractice insurance must be obtained independently, except in special circumstances deemed “strategically beneficial” to the institution by the Division Chief and the Chief Medical Officer. Clinical fellows may not moonlight between Monday and Friday, nor during weekends when they have call responsibilities. As moonlighting hours are counted towards the 80-hour workweek restriction, fellows must keep strict track of their total weekly work hours. Moonlighting is not permitted if it threatens the 80-hour workweek restriction. The Fellowship Director must be made aware of all moonlighting shifts in advance. Failure to do so may lead to suspension of medical privileges, and jeopardize fellowship training.

## **Fellow Selection**

Division of Nephrology will select and appoint Fellows in a fair and non-discriminatory manner, consistent with the Tufts Medical Center Graduate Medical Education Policy on Selection and Appointment of House Officers (GME 01-A). Applications are submitted through ERAS, and include a CV, personal statement, USMLE scores, three letters of recommendation, and a copy of a US visa. Applicants must successfully complete an ACGME accredited Residency in Internal Medicine, and pass Steps 1 and 2 of the United States Medical Licensing Examination (USMLE) prior to appointment. Applicants from foreign medical schools must also pass the ECFMG. The Program will sponsor applicants who require a J or H visa.

A selection committee reviews completed applications, and qualified applicants are invited for a visit and series of interviews with the Program Director and at least two other faculty members. They will also meet several current Fellows.

Interviewed applicants are discussed amongst the entire Division. Training positions are offered through the National Residency Matching Program (NRMP).

Tufts Medical Center does not discriminate on the basis of sex, race, age, religion, color, national origin, disability, or veteran’s status.

## **Compensation**

Fellows in the Division of Nephrology will be compensated according to the Tufts Compensation Policy and the NIH Stipend Schedule.

Fellows in the Clinical Track who enter the program after completing a 3-year residency in Internal Medicine will be compensated at the Tufts PGY-4 level for their first year of training and the Tufts PGY-5 level for their second year of training. Fellows are not awarded PGY credit for chief residency years, additional residency training, research years, or years in practice.

Clinical Fellows in the Clinical-Research Track are compensated at the Tufts PGY-4 for their year of clinical training if that year is done at the start of the fellowship. Their clinical year is compensated at the Tufts PGY-5 level if it is done after completing 2 years of research training.

Research years for both fellows licensed to practice medicine and those who are not are compensated according to the NIH Stipend schedule. The NIH awards PGY credit for full years of relevant experience *completed*; this schedule is one year less than the Tufts schedule. Relevant experience may include clinical training (internship, residency, chief residency, renal fellowship, other fellowship training), research experience (in training or in industry), or clinical practice (academic or private practice).

## Benefits

Fellows participate in the hospital’s benefits program. The program allows fellows to tailor their benefits to individual needs, and choose options from a range of benefit plans including health care, dental care, life insurance, and disability protection.

Fellows are automatically enrolled in the Professional Liability Plan and with \$100,000 in HIV Occupational Exposure Insurance at no cost; they are also provided with flexible benefits credits to purchase a LTD plan and Life Insurance.

Health insurance, vision coverage, dental coverage, and disability coverage begin on the date of employment, if employment begins on the first of the month.

Type of Benefit	Summary
Professional Liability Insurance	Automatic Enrollment at no cost NEMCIC, includes tail coverage
Health Insurance	Choice between 2 POS Plans
Vision Coverage	Spectera vision coverage
Dental Insurance	Delta Dental Plan
Life Insurance	One times salary at no cost; other employee paid options available
Disability Insurance	Short term disability – choice of employee paid plans Long term disability – basic paid by NEMC; may add coverage
Flexible Spending Accounts	Choice of Health Care, Dependent Care
Retirement Savings Plan (403b)	Employee invests with Fidelity on pretax basis
Home and Auto Insurance	May elect coverage through Liberty Mutual
Long Term Care Insurance	May elect coverage through CNA
Employee Assistance Program	Automatic, No Cost
Holidays, Personal Days	Paid Per GME Policy
On-Call Meals	Provided per GME Policy
Parking	Reduced Rate
Employee Activities Committee	Movie Passes, Reduced Rate Leisure Activities
Area Fitness Centers	Reduced Rate Choice of Options
T Pass	Reduced Rate
Uniforms	Provided

This policy highlights the breadth of benefits available, and is not intended to provide all-inclusive information. See plan documents for detailed descriptions and information.

## Health Concerns and Counseling

The Division of Nephrology recognizes the importance of emotional support in the work of our fellows. The staff has been trained to recognize signs of fatigue and stress, including mental or emotional conditions. Fellows are also routinely monitored for evidence of drug- or alcohol-related dysfunction. Any signs are brought to the attention of the Program Director to be handled with discretion.

Confidential counseling services are available through the Tufts Employee Assistance Program, extension 617-636-6272. Furthermore, Physician Health Services of the Massachusetts Medical Society is a confidential professional organization that focuses on physician wellness and in assessing medical, psychiatric, and behavioral problems that may potentially affect ability to practice and work safely. Information about their services can be found at <[www.massmed.org/phs](http://www.massmed.org/phs)>, and a referral can be initiated by contacting Dr. Luis Sanchez at 781-434-7404.

**Appendix A**  
**Curriculum**

**Appendix B**  
**Division Telephone List**

**Appendix C**  
**Fellows Rotation Schedule**

## **Appendix D**

### **Fellows Clinic/Dialysis Shift Assignments**

- 1. July through October**
- 2. November through February**
- 3. March through June**

**Appendix E**  
**Attending Schedule**

## **Appendix F**

### **Consult Templates**

- 1. Kidney Disease Consult**
- 2. Dialysis Consult**
- 3. Transplant Consult**
- 4. New Transplant Consult**
- 5. Renal Artery Stenosis Consult**

## **Appendix G**

### **Kidney and Blood Pressure Center Flowsheet and Templates**

- 1. Clinic New Patient Letter**
- 2. Clinic Follow-up Patient Letter**
- 3. Clinic Transplant Follow-up Patient Letter**
- 4. Clinic Flowsheet**
- 5. Transplant Flowsheet**

## **Appendix H**

### **Kidney Biopsy Forms**

- 1. Outpatient Kidney Biopsy Protocol**
- 2. Kidney Biopsy Consent**
- 3. Kidney Biopsy Order Form**
- 4. Kidney Biopsy Review Form**
- 5. Kidney Biopsy Patient Instructions**
- 6. Kidney Biopsy Discharge Instructions**

**Appendix I**  
**Inpatient Hemodialysis Order Form and Run Sheet**

**Appendix J**

**Peritoneal Dialysis Forms**

- 1. PD Order Form**
- 2. PD Flow Sheet**

## **Appendix K**

### **Continuous Venovenous Hemofiltration Forms**

- 1. Citrate CVVH Order Form**
- 2. Bicarbonate CVVH Order Form**
- 3. CVVH Flow Sheet**

**Appendix L**  
**Request for Vacation**

**Appendix M**  
**Fellow Call Schedule**

## **Appendix N**

### **Evaluations Modules**

- 1. Mini-CEX**
  - a. Vascular Access**
  - b. Modality Education**
  - c. Acute Kidney Injury**
  - d. Hypertension**
- 2. Presentations**
  - a. Research Conference**
  - b. Journal Club**
- 3. Rotation Evaluation**
- 4. 360 Degree Evaluation**