



SUNY  
**D**OWNSTATE  
Medical Center

DEPARTMENT OF MEDICINE  
RENAL DISEASES DIVISION

AND AFFILIATED HOSPITALS OF

KINGS COUNTY HOSPITAL CENTER,  
BROOKLYN VA MEDICAL CENTER,  
STATEN ISLAND UNIVERSITY HOSPITAL

**Handbook of the Nephrology Fellowship Program**

**By**

**Moro O. Salifu, MD, MPH, FACP  
Program Director**

**Eli A. Friedman, MD, MACP, FRCP  
Chief, Division of Nephrology**

**Approved by:**

**Jeanne Macrae, MD, Internal Medicine Program Director**

**Edmund J. Bourke, MD, Chair of Medicine**

**Effective November 1, 2004.**

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## **A. Foreword: From the Chief of Nephrology**

While the practice of medicine is as much art as science, it is nevertheless helpful to both fellows-in-training and faculty responsible for their instruction to have guidelines for their endeavor. Like a musical score, the core curriculum details the content of what is to be communicated and learned. Over two years, the nephrology fellow accumulates details pertaining to diverse renal disorders while experiencing real life encounters with individuals coping their renal afflictions. During this time, ethical, economic, and practical aspects of practicing nephrology will be scrutinized.

Complicating the task of designing a curriculum is the realization that our knowledge base is constantly expanding so that revision of pathophysiology and therapy are constantly occurring. Additionally, the exponential growth of molecular biology means that a fresh perspective for nearly every renal disorder demands continuous revision. Our hope is that your fellowship years provide a methodology for adding fresh information rather than a finite static bundle of facts that might prepare you for renal practice. By means of conferences covering molecular biology, renal pathology, and journal article review, the technique for digesting fresh reports will be assessed.

Your rotations will be diverse through four hospitals based on City, State, Federal, and Private administrative systems. Critical evaluation of the quality of instruction is vital to our curriculum modification. By either direct reaction to faculty of each rotation or anonymous report to Dr. Moro Salifu, Fellowship Director, or me, we need your guidance in order to grow. Lastly, though you will be working hard, your faculty believes that nephrology should be enjoyable and fulfilling. Our intent is to present the specialty to you with that perspective uppermost in our mind. Welcome!

**Eli A. Friedman, MD, MACP, FRCP**

## **B. From the Nephrology Fellowship Director**

Welcome to the Nephrology Fellowship at Downstate. In the next two years, the faculty and staff of this division will guide you to acquire comprehensive knowledge and skills in nephrology that will make you fully prepared for your nephrology boards and as an outstanding practicing nephrologist or investigator.

The faculty is enriched with the finest nephrologist, who will be available to you and will provide you with all the necessary tools you need to succeed. How well you achieve your goals will depend on how much effort you put in as a learner. This manual is intended to help you navigate smoothly through the fellowship; you should however note that some issues may change as we encounter new situations. You are also to abide by all institutional policies as explained to you by the GME office.

You will be covering four different hospitals in the course of the two years, all of which will give a different spin to your nephrology experience. By the end of the two years, you would have covered all contents of the curriculum. However, in your first year, you should target to accomplish the following:

1. A thorough approach to the patient with kidney disease, taking appropriate history and physical examination and generating appropriate differential diagnosis
2. A thorough understanding of the laboratory and imaging methods used to evaluate patients with kidney disease
3. Learn as many procedures as possible and demonstrate competence
4. Have a thorough understanding of the principles of hemodialysis, peritoneal dialysis, plasmapheresis, continuous renal replacement therapies and how to write both acute and chronic prescriptions and manage complications of these therapies.
5. Understand the principles of immunosuppression and how to evaluate the potential renal transplant donor and recipient
6. Learn to critically evaluate a scientific publication
7. Design a research project with a faculty or mentor, aiming to have an abstract for any of the annual nephrology meetings.

In your second year, you should target to accomplish the following:

1. Acquire a thorough understanding of the pathophysiologic basis of kidney disease
2. Acquire a thorough understanding of the management of the renal transplant recipient
3. Acquire more competence in the first year objectives
4. Prepare patients physically and mentally for outpatient dialysis and take care of all aspects of outpatient dialysis.
5. Pick a topic of choice and prepare for renal grand rounds as part of acquiring presentation skills.
6. Acquire the ability to work in the private practice setting, including an understanding of documentation and billing guidelines.
7. Acquire the highest level of professionalism and ready to represent the Nephrology Division at Downstate to the world.

In our effort to enhance your learning, the division will provide a benefit of \$250.00 per year towards the purchase of books. You will also be refunded for expenses up to a maximum of \$1000.00 towards participation and or presentation at an annual nephrology meeting.

The table below reflects the current composition of questions used by the American Board of Internal Medicine for Board Certification in Nephrology.

<b>Nephrology Blueprint</b>	
<b>Primary Category</b>	<b>Percentage</b>
Fluid, acid-base, and electrolyte physiology	20%
Medical management of chronic kidney disease	14%
Renal transplantation	12%
Glomerular/Vascular disorders	12%
Hypertension	10%
Tubular/Interstitial disorders	8%
Mineral metabolism	8%
Acute renal failure	8%
Clinical pharmacology and Miscellaneous	8%
<b>Total</b>	<b>100%</b>

Please refer to this manual and make the best out of it. Contact me if you have any suggestions. Good luck.

Moro O. Salifu, MD, MPH, FACP

### C. Nephrology Division Faculty and Staff

Name	Title	Area of Interest	Phone (718)
Eli A. Friedman, MD, MACP <a href="mailto:elifriedmn@aol.com">elifriedmn@aol.com</a>	Distinguished Teaching Professor of Medicine, Chief, Division of Nephrology, SUNY Downstate	Diabetic Nephropathy, Uremia	270-1584
Edmund J. Bourke, MD <a href="mailto:edmund.bourke@downstate.edu">edmund.bourke@downstate.edu</a>	Professor and Chair, Department of Medicine, SUNY Downstate	Acid-base	270-2030
Barbara G. Delano, MD, MPH <a href="mailto:bgdelano@pol.net">bgdelano@pol.net</a>	Professor of Medicine, Deputy Chief of Nephrology, Director, Home Dialysis, SUNY Downstate	Home Hem dialysis, CAPD, Epidemiology	270-2425
Moro O. Salifu, MD, MPH <a href="mailto:Moro.salifu@downstate.edu">Moro.salifu@downstate.edu</a>	Assistant Professor of Medicine, Director, Nephrology Fellowship Program, SUNY Downstate	Renal Transplant Outcomes, Allograft Dysfunction, Glomerular Diseases	270-1584
Mariana S. Markell, MD <a href="mailto:myohomom@aol.com">myohomom@aol.com</a>	Associate Professor of Medicine, Director, Transplant nephrology, SUNY Downstate	Post-transplant Metabolic Diseases	270-1584
Clinton D. Brown, MD <a href="mailto:crownbrown@aol.com">crownbrown@aol.com</a>	Assistant Professor of Medicine, Director, Parkside Ambulatory Dialysis Center, SUNY Downstate	Lipid Metabolism	270-1729
Yalem Woredekal, MD <a href="mailto:yworedekal@aol.com">yworedekal@aol.com</a>	Assistant Professor of Medicine, Director, of hemodialysis center, Kings County Hospital Center	Hemodialysis	270-1584
Jeanne Macrae, MD <a href="mailto:Jeanne.macrae@downstate.edu">Jeanne.macrae@downstate.edu</a>	Assistant Professor of Medicine, Director, Internal medicine residency Program	Clinical Nephrology	270-1566
Frieda Wolf <a href="mailto:wolffrieda@yahoo.com">wolffrieda@yahoo.com</a>	Assistant Professor of Medicine, Director, CME Activities, SUNY Downstate	Chronic Allograft Dysfunction	270-10454
Anthony J. Joseph, MD	Assistant Professor of Medicine,	Clinical Nephrology and Hemodialysis	270-2198

<a href="mailto:Anjoseph@netscape.net">Anjoseph@netscape.net</a>	Director, Inpatient Dialysis Services, SUNY Downstate		
Henry R. Paul, MD <a href="mailto:henry.paul@downstate.edu">henry.paul@downstate.edu</a>	Assistant Professor of Medicine, Attending Nephrologist, SUNY Downstate	Clinical Nephrology and Hemodialysis	270-1584
Carline Guirand, MD	Attending Nephrologist, Kings County Hospital Center	Clinical Nephrology	245-8157
Halim S. Ghali, MD <a href="mailto:hghali@hotmail.com">hghali@hotmail.com</a>	Attending Nephrologist, Kings County Hospital Center	Clinical Nephrology	270-1584
Man S. Oh, MD <a href="mailto:Man.oh@downstate.edu">Man.oh@downstate.edu</a>	Professor of Medicine Director, Fluid and Electrolytes, SUNY Downstate	Fluid and Electrolytes	270-1565
Hugh J. Carroll, MD <a href="mailto:Hugh.carroll@downstate.edu">Hugh.carroll@downstate.edu</a>	Professor of Medicine, Director Emeritus, Fluid and Electrolytes, SUNY Downstate	Fluid and Electrolytes	270-1564
<a href="mailto:Robert.barth@med.va.gov">Robert.barth@med.va.gov</a> Robert H. Barth, MD	Associate Professor of Medicine Chief of Dialysis & Affiliate Program Director, VA Medical Center	Hemodialysis, Infections, Nutrition, Bone Disease	836-3762
Phillip Goldwasser <a href="mailto:Phillip.goldwasser@med.va.gov">Phillip.goldwasser@med.va.gov</a>	Assistant Professor of Medicine Director of CAPD, VA Medical Center	Peritoneal Dialysis	836-3762
Morton J. Kleiner, MD	Chief of Nephrology and Affiliate Program Director, Staten Island University Hospital	Clinical and Interventional Nephrology	987-5942
Saggi Subodh, MD <a href="mailto:sjsaggi@aol.com">sjsaggi@aol.com</a>	Attending Nephrologist, Staten Island University Hospital	Clinical and Interventional Nephrology	987-5942
SUNY Office Phone			270-1584
SUNY Acute Dialysis			270-2511 270-2510
SUNY Chronic Dialysis			703-5920
KCH Acute Dialysis			613-8175
KCH chronic dialysis			613-8151

VA Office Phone			836-6600 X3762
VA Dialysis			836-6600 X 6775
Staten Island Office or Dialysis Phone			987-5942
Staten Island Acute Dialysis			226-9131

## **D. Curriculum of the Nephrology Fellowship Program**

### **I. Goals & Objectives**

#### **A. Goals**

1. The primary goal of the SUNY, Downstate Medical Center's Nephrology Fellowship Program is to provide outstanding nephrology training to highly motivated internists in all aspects of contemporary nephrology practice, including the acquisition of outstanding knowledge in procedural and interpersonal skills, professional attitudes and humanistic qualities.
2. The Nephrology Fellowship Program also introduces trainees to renal medicine's multiple opportunities for investigation, research and education. Opportunities in each of these areas are built into the overall curriculum. Trainees are encouraged to design individual specific projects emphasizing those areas of greatest personal interest, while fulfilling stipulated requirements for subspecialty certification.

#### **B. Objectives**

1. To acquire the knowledge base, judgment, clinical management skills and experience required to care for inpatients and outpatients with kidney, fluid-electrolyte, acid-base and hypertensive disorders.
2. To provide extensive experience in renal care delivery, under various settings, including inner city, the veterans, academic and private practice settings.
3. To develop of research skills as pertaining to investigations in renal physiology and renal pathology, diabetic nephropathy, dialysis delivery, vascular access, chronic kidney disease, mechanisms of renal allograft rejection and renal transplant outcomes. Such research skills shall include research regulation, project design and implementation, statistics and grant writing that will eventually lead to abstract presentation at annual nephrology meetings or full length manuscript in a peer reviewed journal.
4. To acquire a broad range of experience in end stage renal disease (ESRD) management.
5. To acquire a broad range of experience in the management of renal transplant recipients and evaluation of donors.
6. To acquire the technical skills relevant to the practice of nephrology.
7. To acquire a broad range of experience in teaching skills by contact with medical students, medical residents and other nephrology fellow trainees, by actively participating in presenting at journal clubs, renal grand rounds and other conferences.

8. Enhance life long learning skills in evidence-based medicine.

## II. Rotations

Clinical Rotations for the two years are divided among the participating affiliate hospitals as shown below:

- Kings County Hospital consultations (**Appendix 1: Synopsis of KCH**) 3 months
- University Hospital consultations (**Appendix 2: Synopsis of SUNY**) 2 months
- Veterans Administration (**Appendix 3: Synopsis of VA**) 6 months
- Staten Island University Hospital (**Appendix 4: Synopsis of SIUH**) 2 months
- Renal Transplantation (**Appendix 5: Synopsis of Transplant**) 3 months
- Research and Elective 5 months
- Ambulatory (**Appendix 6: Synopsis of Ambulatory Rotation**) 3 months
- Total 24 months

Vacation time is taken during research & elective or ambulatory months.

The various aspects of nephrology that are covered in each of these hospitals are inpatient nephrology, consultations, transplantation, ambulatory care and research as detailed below.

### a. Inpatient Nephrology

1. **Educational purpose:** Training under supervision of an attending physician in all aspects of inpatient nephrology on established nephrology patients, while also functioning as a teacher for internal medicine residents and medical students.

#### 2. Teaching Methods

- a) As pupil (learning from nephrology faculty)
- b) As teacher (internal medicine residents & students)
- c) Self learner: Reading in:
  - i. Textbooks
    - Daugirdas, J. T., Blake P. G., Ing T. S. (eds). Handbook of Dialysis. Philadelphia, Lippincott Williams & Wilkins
    - Greenberg, A., Cheung, A. K., Coffmann, T. M., Falk, R. J., Jenette, C. (eds). Primer on Kidney Diseases: National Kidney Foundation. California, Academic Press
    - Johnson, R. J., Feehally, J. (eds). Comprehensive Clinical Nephrology. Philadelphia, Elsevier Limited
    - Brenner, B. M., Levine, S. A. (eds). Brenner and Rector's The Kidney. W. B. Saunders Company
    - Schrier RW, Gottschalk CW (eds). Diseases of the kidney. Little, Brown
    - Hulley, S. B., Cummings, S. R., Browner, W. S., Grady, D., Hearst, N., Newman, T. B. (eds). Designing Clinical Research. Philadelphia, Lippincott Williams & Wilkins
    - Bradley, J., Johnston, D., Rubenstein, D. (eds). Lecture Notes on Molecular Medicine. London, Blackwell Science Ltd

- ii. Library resources free on SUNY Downstate Library site ([www.downstate.edu](http://www.downstate.edu)) includes Up-To-Date, Pubmed search and many more databases
- iii. Hypertension, Dialysis and clinical Nephrology (HDCN) Website ([www.hdcn.com](http://www.hdcn.com))
- iv. Nephrology Journals: The Journals marked \* are received by the renal division library. All journals can be found in the SUNY Downstate Medical Library
  - \*Journal of the American Society of Nephrology (JASN)-Associate Membership with Journal subscription is available to all fellows
  - \*American Journal of Kidney Disease (AJKD)- Associate Membership with Journal subscription is available to all fellows
  - \*Kidney International
  - American Journal of Nephrology
  - American Journal of Hypertension
  - Annals of Internal Medicine
  - Home Hemodialysis International
  - \*The New England Journal of Medicine

For a complete listing of nephrology journals, visit [www.milach.com/journal](http://www.milach.com/journal)

### 3. Mix of diseases

Endstage renal disease, acute renal failure, glomerular and tubulo-interstitial diseases, acid-base and electrolytes disorders as well as diabetes and hypertension

### 4. Patient characteristics

Inner city, middle class and veteran populations in Brooklyn

### 5. Types of clinical encounters

- a. ESRD
  - Hemodialysis
  - CAPD
  - Renal Transplant
- b. Pre ESRD
  - Acute renal failure
  - Nephritic & nephrotic syndromes

### 6. Procedures

- a. Hemodialysis
  - Acute hemodialysis prescription
  - Acute hemodialysis catheter placement
  - Vascular access management
  - Chronic hemodialysis prescription

- b. Peritoneal Dialysis
  - Acute peritoneal dialysis catheter placement
  - Acute peritoneal dialysis prescription
  - Ambulatory peritoneal dialysis prescription and catheter care
- c. Continuous Renal Replacement Therapies (CRRT), including plasma exchange
- d. Image guided kidney biopsy and ultrasonography. The fellow will schedule all renal biopsies and assist in ultrasound localization of kidney prior to biopsy. All kidney biopsies are done under direct supervision of the attending nephrologist, either as localized or direct visualization using real time. An ultrasound attending or technologist is present to assist in imaging the kidney before biopsy

**7. Renal histopathological handling and review**

The fellow will review all renal histopathological specimens with attending nephrologist and pathologist to formulate a diagnosis.

**8. Method of evaluation of Fellow's performance**

A biweekly undocumented and a monthly documented evaluation (**see Appendix 7: Monthly Attending Evaluation of Fellow**) is performed by the attending physician, which is discussed in detail with the fellow. The fellow acknowledges by signing the evaluation form. Areas of improvement are stressed and potential for investigation and write-ups are pointed out during the month. At the end of each month for all inpatient services, the fellow will submit an evaluation of the attending physician to the Program Director or designee (**see appendix 8: Trainee Evaluation of Attending Nephrologist**). The evaluations are reviewed biannually by the Program Director or designee with each trainee and attending physician.

**b. Consultations**

1. **Educational purpose:** Training under supervision of an attending physician all aspects of consultative nephrology on patients admitted to services other than nephrology, who manifest renal disease newly discovered by their physicians, or for management of known end-stage renal disease inpatients admitted for major non-renal problems. The fellow will function as a teacher, supervising medical residents and interns.
2. **Teaching Methods (see II, A2)**
3. **Mix of diseases (see II, A3)**
4. **Patient characteristics (see II, A4)**
5. **Types of clinical encounters**

- a. ESRD patients
- b. Patients requiring consultation for:
  - Disorders of mineral metabolism, including nephrolithiasis and renal osteodystrophy
  - Disorders of fluid, electrolyte, and acid-base regulation
  - Acute renal failure
  - Chronic renal failure and its management by conservative methods, including nutritional management of uremia
  - Hypertensive disorders
  - Renal disorders of pregnancy
  - Urinary tract infections
  - Tubulointerstitial renal diseases, including inherited diseases of transport, cystic diseases, and other congenital disorders
  - Glomerular and vascular diseases, including the glomerulonephritides, diabetic nephropathy, and atheroembolic renal disease
  - Disorders of drug metabolism and renal disorders
  - Genetic and inherited renal disorders
  - Geriatric aspects of nephrology, including disorders of the aging kidney and urinary tract

## **6. Procedures**

- Urinalysis
- Percutaneous biopsy of both autologous and transplant kidneys
- Placement of temporary vascular access for hemodialysis and related procedures
- Acute and chronic hemodialysis
- Continuous renal replacement therapy
- Peritoneal dialysis (prescription and management)
- Plasma exchange
- Placement of peritoneal catheters
- Renal ultrasound for guided biopsies

## **7. Reading lists (see II,A2.c)**

## **8. Method of evaluation (see II,A8)**

## **c. Weekly Renal Clinics**

**1. Educational purpose:** Weekly renal clinics provide training under supervision of an attending physician, all aspects of ambulatory care, with emphasis on the management of chronic kidney disease. The nephrology trainee will function as a teacher, supervising rotating medical residents and interns. Fellows will be assigned continuity clinics, where they will follow patients for the duration of their fellowship.

## **2. Types of clinics**

- a. **Weekly renal continuity clinics:** Fellows spend a half day in continuity clinics on a weekly basis. Continuity clinics are located in SUNY Downstate Medical Center attended by 2 fellows on (Mondays, 1:00 PM), Kings County Hospital Center, attended by 2 fellows each (Mondays, 1:00 PM and Wednesdays, 1:00 PM) and The VA Medical Center attended by 2 fellows on Thursdays 8:00AM-12:00PM. Office nephrology for outpatients is located at The Staten Island University Hospital (SIUH) and the timing is arranged between the fellow and attending. Continuity clinics vary by volume. Each Kings County clinics will see approximately 150 new patients while SUNY and the VA may see approximately 100 new patients each. Continuity clinics vary in volume.
    - i. If a fellow is on transplant rotation but has a clinic in the VA, the transplant clinic takes precedence. The VA consult fellow will cover the Thursday Clinic in VA.
    - ii. If SIUH renal clinic falls on a clinic at SUH or KCH, the SUH or KCH clinic takes precedence. If not, the fellow will attend renal clinic at SIUH.
  - b. **Weekly Renal Transplant Clinic:** This clinic is located at SUNY and is attended by the renal fellow rotating in transplant. If a fellow is on transplant rotation but has a clinic in the VA, which also occurs on Thursday mornings, the transplant clinic takes precedence as indicated above. There are approximately 70 visits per week.
  - c. **CAPD and home-hemodialysis clinic:** This clinic is located at the Parkside Hemodialysis Center and is attended by the fellow in ambulatory rotation, on Thursdays, at 1:00 PM. There are approximately 5-10 visits per week
3. **Teaching Methods:** In any of the above mentioned clinics, the fellow will see and examine the patient, formulate a management plan which is reviewed and discussed with the presiding attending. The fellow is assigned topics to read, which are discussed on each clinic encounter. Conferences for both trainee & senior staff are given on various topics of interest (**see appendix 9: Schedule of Weekly Activities**).
  4. **Mix of diseases:** Glomerular and tubulo-interstitial diseases, acid-base and electrolytes disorders as well as diabetes and hypertension.
  5. **Patient characteristics: (see II, A4)**
  6. **Types of clinical encounters**
    - Patients with chronic kidney disease of various etiologies
    - Renal transplant recipients or individuals for evaluation as a potential kidney donor
    - Home dialysis patients; home hemodialysis or peritoneal dialysis patients
  7. **Procedures and services**  
Urinalysis, kidney biopsy, various modalities of dialysis
  8. **Reading lists (see II, A2.c)**

**d. Specific Rotations:**

Each rotation has its specific strengths that compliment comprehensive nephrology training. The strength of each rotation is stressed in the educational objective.

**1. Educational purpose:**

- a. **SUNY Downstate Rotation:** To provide the fellow with the best possible exposure and training on acute and chronic renal failure, modalities of ESRD therapy, fluid/electrolyte disorders, glomerular/tubulointerstitial diseases and procedural techniques (femoral cannulations, renal biopsy, CRRT, etc.), under direct supervision.
- b. **Kings County Hospital Rotation:** To provide the fellow with the best possible exposure and training on acute and chronic renal failure, hemodialysis, fluid/electrolyte disorders, glomerular/tubulointerstitial diseases and procedural techniques (femoral cannulations, renal biopsy), in the inner city setting.
- c. **VA Rotation:** To provide the fellow with the best possible exposure and training on ambulatory hemodialysis, ambulatory peritoneal dialysis, and ICU nephrology in the VA setting.
- d. **Staten Island University Rotation:** To provide the fellow with the best possible exposure and training on private practice nephrology, rare interventional procedures, acute renal failure and hemodialysis.
- e. **On Call responsibility at SUNY and KCH:** During rotation with the main SUNY/KCH campus, the fellow takes 3-4 weekday calls plus 1 weekend call per month. All calls begin after 5:00 PM till 8:00 AM, the next business day.
- f. **On call responsibility at the VA Medical Center:** The VA receives two fellows each month and the call schedule is arranged between the two fellows. All calls begin after 5:00 PM till 8:00 AM, the next business day.
- g. **On call responsibility at Staten Island University Hospital:** There are no calls.

**The following pertain to all calls:** Being on call means that the fellow has assumed the medical and legal identity of the Renal Division. When the fellow responds to a request for consultation or dialytic support, he/she represents the entire division's intent to maintain excellence in patient care. There are several specific points in what is included in on call duty which must be clearly understood.

- The fellow must be physically present whenever acute hemodialysis is in progress. This means the fellow is not to cover on call from home. The attending nephrologist must know where the fellow is at all times during your shared coverage of nights and weekends.
- An on call room is provided for rest and study. The reason for obtaining this room is that telephone coverage during acute hemodialysis is not satisfactory. This means that for night on call, the fellow must not leave the Clarkson Avenue campus until completion of the last acute hemodialysis. After the last

acute dialysis, the fellow can take calls from home and prioritize which consultations need urgent attention. All decisions are made with the on call attending.

- We have greatly reduced the frequency of on call duty to the extent that proper discharge of your responsibility should in no way interfere with your overall training.
- It is imperative to regard the need to render effective coverage as an absolute condition of satisfactory performance during fellowship. There cannot be exceptions or exclusions.

**2. Teaching methods: (see II, A2)**

**3) Mix of diseases (see II, A3)**

**3. Patient characteristics (see II, A4)**

**5). Types of clinical encounters (see II, A5)**

**6) Procedures (see II, A6)**

**7) Renal Histopathological handling and review (see II, A7)**

**8) Method of evaluation of Fellow's performance (see II, A8)**

**e. Transplantation**

**1. Educational purpose:** To provide most up-to-date training, under direct supervision, on the management of (inpatients and outpatients) renal transplant recipients and donors. There are three months of transplant exposure over the two years. The fellow is supervised by the Transplant Nephrology fellow, who is a third year in nephrology training and both are closely supervised by the attending physician. SUNY Downstate is accredited to provide one-year training in transplant nephrology after two years of nephrology training by the United Network for organ Sharing (UNOS) and American Society of Transplantation (AST).

**2. Teaching methods: (see II, A2)**

**3. Mix of diseases:** Types of rejection, glomerular and tubulo-interstitial diseases, acid-base and electrolytes disorders as well as diabetes and hypertension.

**4. Patient characteristics: (see II, A4)**

**5. Types of clinical encounters**

- Evaluation of the potential renal transplant donor
- Preoperative evaluation and preparation of transplant recipients
- Immediate postoperative management of transplant recipients

- Clinical diagnosis of all forms of rejection including laboratory, histopathologic and imaging techniques
- Medical management of rejection including use of immunosuppressant drugs and other agents
- Recognition and medical management of surgical and non-surgical complications of transplantations
- Long-term follow-up of transplant recipients in the ambulatory setting
- Management of ESRD patients who have undergone vascular access procedures by the transplant surgical team.

**6. Procedures**

- Monitoring immunosuppressive levels
- Renal allograft biopsy
- Placement of acute dialysis catheters for dialysis
- Hemodialysis
- Tissue typing: the fellow attends tissue typing sessions at the tissue typing laboratory on Tuesdays at 8:30 AM

**7. Reading lists (see II, A2.c)**

**8. Pathological materials:** interpretation of transplant biopsy obtained for allograft dysfunction

**9. Evaluation (see II A8)**

**f. Research**

**1. Educational Purpose:** Research is a key element in nephrology training in our program and it is stressed throughout fellowship. Research is about finding out. It is about searching systematically for solutions to problems. It is about rules to guide your search. It is also about helping one to evaluate the research of others. The purpose of the research rotations is to provide an opportunity for the fellow to:

- To increase critical thinking and intellectual curiosity
- Develop systematic, controlled, empirical and critical investigation of hypothetical propositions about presumed relations among natural phenomena, under direct supervision
- To learn research methodology, biostatistics and the development of writing and presentation skills, that will eventually lead to abstract or full length manuscript submission

**2. Teaching Methods**

- Individual mentoring and guidance by faculty in the planning, protocol development and implementation
- Self study
- Conference preparation & presentation (local & national)

- Abstract & manuscript preparation & publication

**3) Setting & types of opportunities**

- a. Within the Division of Nephrology
- b. In collaboration with other divisions and departments

Fellows are briefed on all faculty and their research interest in July of each year. Fellows are then encouraged to identify their areas of interest within the first few months of fellowship and contact the faculty member with similar interest. In situations where the interest of the fellow cannot be directly addressed within the division, the Program Director or designee will identify faculty in other divisions for collaboration. The basic science departments of the medical school are outstanding in their scientific contributions including the Nobel Prize winning discovery of nitric oxide by Dr. Robert Furchgott. Fellows are encouraged to develop a project (includes aims, hypothesis, background, method, statistical analysis and references) by the middle of the first year, implement and aim towards submission of an abstract to a nephrology meeting in the second year and full manuscript preparation by the end of training. SUNY, Downstate Medical Center is equipped with the following support divisions:

- A full statistical division (The Academic and Scientific Computing Center), which will take an appointment to review project design and statistical analysis
- The Office of Research and Institutional Review Board, available to answer questions and guide research review and approval. Taken together, there are tremendous opportunities for research at SUNY Downstate.

**4. Reading List (see II, A2.c)**

**5. Method of Evaluation: the following areas will be used in evaluating the fellow during research:**

- Motivation and intellectual curiosity
- Extent of literature review
- Capacity to combine research and clinical duties
- Data Acquisition
- Writing skills

**III. Teaching Rounds and Conferences**

**a. Teaching rounds**

Teaching rounds occur daily on each rotation in different formats depending on the attending physician. Teaching rounds provide a forum for in-depth discussion of the pathophysiologic basis of renal disease, evidence based medicine and relevant literature pertinent to the case in question. The fellowship program at SUNY Downstate is enriched

by a diverse group of patients, with the potential to cover all aspects of clinical nephrology in the four participating hospitals by the end of training.

**1. Lines of responsibilities for Attending:**

- Attending physicians will make the final decision of patient management and supervise any procedures.

**2. Lines of responsibilities for the fellow:**

- Fellows provide consultation on the general medical services and critical care areas but are not to write orders except in an emergency situation except for dialysis, or immediately after a procedure. In all circumstances the decision to follow the subspecialty service's advice rests with the medical attending.

**b. Conferences:**

**The days and time of each of the following conferences are shown in Appendix 9: Schedule of Weekly Activities.**

1. **Morning Report:** Occurs in the office of the Chief of Nephrology (three times a week). Morning report is energetic, with its main backbone as evidence based medicine, which validates the adequacy of patient care, ethical issues disparities while identifying potential areas of research.
2. **Nephrology Grand Rounds (weekly):** Provides a forum for distinguished reviews on renal physiology, pathophysiology, diagnosis and therapy of renal and hypertensive disorders. The physiologic basis of all intrinsic renal and fluid-electrolyte disorders is stressed. Fellows share responsibility with faculty for presentation of cases and review of pertinent literature. The fellow is required to present at least one nephrology grand rounds before completion.
3. **Journal Club (bi-weekly):** The fellow is assigned a published article relating to renal medicine, diabetes or hypertension. It is the responsibility of the fellow to gather background information about the article, which is presented as a basis for the discussion of the published article. Background material is presented to prepare the audience for the papers being reviewed, stressing scientific methodology and biostatistics. Attendings take turns in journal club presentation. The fellow is required to present at least 2 articles, but is encouraged to attend all journal clubs.
4. **Renal Pathology Conference (bi-weekly):** Fellows review renal biopsies performed earlier, presenting the case history after which fellows are asked to formulate a diagnosis based on the clinical presentation. The pathologist then presents the slides, pointing out all salient areas and the final diagnosis. The pathologic slides include light microscopy, immunofluorescence and electron microscopy. Given the wide scope of the training program, fellows get the opportunity to review most renal pathologies during training.
5. **Combined Renal/Transplant Research Conference (once monthly):** This is a forum for the three disciplines in transplantation; nephrology, surgery and immunology to share and discuss work in progress in both basic and clinical science

arenas. Fellows are encouraged to present their work for discussion. Invited investigators, local and national, also participate.

6. **Combined renal and Transplant Conference** (bi-monthly): This is transplant grand rounds where invited speakers, nationally and internationally review topic in immunology, immunosuppression, rejection and other relevant areas of transplantation. The conference is attended by the nephrology fellow on transplant rotation but other fellows are welcome to attend.
7. **Renal Transplantation** (weekly). This conference is attended by the nephrology fellow on transplant rotation. The conference is preceded by review of a published article by a fellow or transplant resident, followed by a comprehensive case review of problems of all hospitalized transplant patients admitted to the hospital. Fellows participate in reviewing the progress of all transplant patients seen by them during the week in this conference.
8. **Medical Grand Rounds** (weekly): Experts in different fields of medicine nationally and internationally routinely give these lectures. They are very educational and the fellow is encouraged to attend.
9. **Patient care, Interdisciplinary Conferences:** These conferences are designed to discuss all new ESRD patients, their plan of care and transition to ambulatory care, addressing needs such as insurance, home services and other psychosocial issues. The conference is attended by the nephrology fellow, attending, acute dialysis head nurse, the social worker and directors of hemodialysis in each hospital. The conference days are reflected on **appendix 9**, but the timing is mutually arranged between the various services each month.
10. **Introductory Lecture Series:** In July and August of each year, all fellows attend a series of lectures delivered by faculty members on topics covering all aspects of nephrology. The schedule and place is released at the end of June of each year and is made available to both new and second year fellows and rotating housestaff.

**c. Core Curriculum topics:**

1. **Anatomy, physiology, and pathology of the kidney**
2. **Fluids and electrolytes**
  - 2.1 Physiology of sodium balance
    - a. Sensors of extracellular volume
    - b. Tubular sodium transport
    - c. Regulation of renal sodium excretion
      - Water balance
      - Tonicity sensors
    - d. Physiology of collecting duct water reabsorption
    - e. Regulation of renal water excretion

- f. Hyponatremia / Hypernatremia
- 2.2 Physiology of potassium balance
    - a. Transcellular potassium movement
    - b. Tubular transport processes for potassium reabsorption and secretion
    - c. Regulation of renal potassium excretion
- 3. Acid-base regulation**
    - 3.1 Acid-base balance
    - 3.2 CO<sub>2</sub> physiology
    - 3.3 Hydrogen ion balance
      - a. Renal acidification mechanisms
      - b. Physiology of bicarbonate reabsorption
    - 3.4. Clinical evaluation and therapy of acid-base disorders
      - a. Renal tubular acidosis
      - b. Other types of metabolic acidosis
      - c. Metabolic alkalosis
      - d. Respiratory acidosis
      - e. Respiratory alkalosis
      - g. Mixed acid-base disturbances
- 4. Glomerular disease**
    - 4.1 Common and uncommon causes of hematuria and proteinuria
    - 4.2 Minimal change disease
    - 4.3 Membranoproliferative glomerulonephritis types I, II, and III, and the association to hepatitis C and cryoglobulinemia
    - 4.4 Focal segmental glomerulosclerosis
    - 4.5. Membranous nephropathy, idiopathic and secondary
    - 4.6 IgA nephropathy
    - 4.7 Post-infectious glomerulonephritis
    - 4.8 Rapidly progressive glomerulonephritis
    - 4.9 Glomerular diseases associated with systemic diseases
      - a. Necrotizing/crescentic glomerulonephritis
      - b. Anti-glomerular basement membrane disease
      - c. Pauci-immune glomerulonephritis and small vessel vasculitis
      - d. Immune complex diseases, including lupus nephritis, Henoch-Schonlein purpura, and post-infectious glomerulonephritis
      - e. Other rheumatic disorders, including Sjögren's syndrome, systemic sclerosis, mixed connective tissue disease, rheumatoid arthritis, Bechet's syndrome, relapsing polychondritis, and familial Mediterranean fever
      - f. Renal diseases in the dysproteinemias, including multiple myeloma, amyloidosis, light and heavy-chain disease, fibrillary/immunotactoid glomerulopathy, mixed cryoglobulinemia, and Waldenström's macroglobulinemia

- g. Hypocomplementemic glomerular diseases, including lupus nephritis, cryoglobulinemia, post-infectious glomerulonephritis, visceral abscess, and shunt nephritis

**5. Diabetic nephropathy**

- 5.1. Epidemiology and course of nephropathy in diabetes mellitus types 1 and 2
- 5.2. Pathophysiologic mechanisms and histologic manifestations of diabetic nephropathy
- 5.3. Microalbuminuria – definition, interpretation and clinical use
- 5.4. Prevention
- 5.5. Therapy, including pancreas/ islet cell transplantation, and their relative merits

**6. Vascular diseases of the kidney**

**7. Tubulointerstitial diseases**

- 7.1. Structure and function of the normal renal tubules and interstitium
- 7.2. Pathophysiology of acute and chronic interstitial diseases
  - a. Immunologic mediated interstitial disease
  - b. Reflux nephropathy
  - c. Obstructive nephropathy
  - d. Association with tubular defects (diabetes insipidus, renal tubular acidification, potassium homeostasis)
  - e. Pathogenesis and treatment of urinary tract infections

**8. Cystic and inherited renal disorders**

- 8.1. Acquired and inherited cystic disorders
- 8.2. Role of genetic screening
- 8.3. Role of urinalysis, renal function testing, radiologic studies
- 8.4. Role of prenatal diagnosis and pretest counseling
- 8.5. Management of complications - pain, stones, hypertension, hematuria, infections, potential for malignancy and progressive renal failure in cystic renal disease
- 8.6. Management of extrarenal manifestations of polycystic kidney disease
  - a. Cerebral aneurysm
  - b. Mitral valve prolapse
  - c. Diverticular disease
  - d. Liver disease

**9. Chronic kidney disease**

- 9.1. Etiology, clinical findings, pathology, diagnoses and management
- 9.2. Role of hypertension, diet, anemia, proteinuria and electrolytes metabolism in the progression of chronic kidney disease
- 9.3. Predialysis management in ESRD of diet, anemia, hypertension, metabolic bone Disease and drug dosing
- 9.4. Disorders of sodium, water, and potassium balance in ESRD
- 9.5. Acid-base homeostasis in ESRD
- 9.6. Timing and appropriateness of access placement for Renal Replacement Therapy

- 9.7 Indications for initiation of renal replacement therapy
  - 9.8 Role of iron and erythropoietin replacement therapy
  - 9.9 Phosphorus metabolism, phosphate binders, calcium and parathyroid glands homeostasis in ESRD
  - 9.10 Renal osteodystrophy in chronic kidney disease/ Adynamic bone disease - role of bone biopsies in chronic kidney disease
  - 9.11 Interpretation of radiographic tests in chronic kidney disease
- 10. Mineral metabolism**
- 10.1 Normal mineral metabolism
  - 10.2 Calcium and phosphorous balance
  - 10.3 Renal handling of calcium, phosphorous, and magnesium
  - 10.4 Physiology of vitamin D, PTH, calcitonin, and PTH-RP
  - 10.5 Bone physiology
  - 10.6 Pathogenesis of calcium, urate, struvite, oxalate and cystine nephrolithiasis
  - 10.7 Medical/ Surgical management of nephrolithiasis
- 11. Hypertension – pathophysiology, diagnosis and management**
- 11.1 Primary hypertension
  - 11.2 Renovascular hypertension, including diagnosis and management
  - 11.3 Secondary causes of hypertension
    - a. Primary hyperaldosteronism
    - b. Pheochromocytoma
    - c. Cushing's syndrome
    - d. Congenital adrenal hyperplasia
    - e. Coarctation of the aorta
    - f. Thyroid disease
    - g. Hyperparathyroidism
    - h. Acromegaly
    - i. Sleep apnea
    - j. Medications
  - 11.4 Hypertensive urgencies and emergencies
- 12. Renal disorders of pregnancy**
- 12.1 Anatomical and functional changes of the urinary tract in pregnancy
  - 12.2 Blood pressure in normal pregnancies
  - 12.3 Renal function testing in pregnancy, including
  - 12.4 Pathogenesis and management of renal disorders in pregnancy
    - a. Urinary tract infections
    - b. Acute renal failure, preeclampsia, acute fatty liver, HUS/ TTP
  - 12.5 Chronic kidney disease in pregnancy
  - 12.6 RRT in pregnancy
  - 12.7 Pregnancy and the renal allografts
- 13. Immunology**
- 13.1 Basic principles of immunology

- 13.2 Immunologic mechanisms of renal disease
- 13.3 Fundamental aspects of diagnostic laboratory immunology for renal diseases

**14. Geriatric nephrology**

- 14.1 Physiology and pathology of the aging kidney and urinary tract
- 14.2 Drug dosing and renal toxicity in elderly patients

**15. Acute renal failure - differential diagnosis and pathophysiology**

- a. Prerenal azotemia
- b. Intrinsic renal failure (acute glomerular disease, acute interstitial diseases, acute tubular necrosis)
- c. Metabolic, hormonal, nutritional, electrolytes, acid-base consequences of acute renal failure
- d. Evaluation and management
- e. Vasoactive drugs in the critically ill patient
- f. Extracorporeal therapy in drug overdose (ethylene glycol, methanol, lithium, theophylline, salicylate, barbiturate)
- g. Prophylaxis

**16. Maintenance renal replacement therapy (RRT)**

- 16.1 Types of hemodialysis and peritoneal dialysis access
- 16.2 Principles of hemodialysis and peritoneal dialysis
- 16.3 Short-term and long-term complications of hemodialysis and peritoneal dialysis and their management
- 16.4 Urea kinetics and protein metabolism
- 16.5 Long-term follow up of patients on chronic dialysis
  - a. Modification of the dialysis prescription and assessment of adequacy
  - b. Anemia
  - c. Osteodystrophy
  - d. Anticoagulation
  - e. Hypertension
  - f. Amyloidosis
  - g. Hyperlipidemia
  - h. Acquired cystic disease
- 16.6 Complications of chronic hemodialysis
  - a. Infection
  - b. Vascular access
  - c. Hypotension
  - d. Fever
  - e. Disequilibrium
  - f. Cramps
  - g. Air leaks
  - h. Hypoxemia
  - i. Arrhythmias
  - j. Electrolyte disturbances
- 16.7 Complications of chronic peritoneal dialysis

- a. Exit site and tunnel infections
  - b. Peritonitis
  - c. Hernias
  - d. Pleural effusions
- 17. Water treatment, water delivery systems**
- 17.1 Artificial membranes and biocompatibility
  - 17.2 Reuse of artificial kidney filters
  - 17.3 Psychosocial and ethical issues of dialysis
  - 17.4 Financial issues occurring in care for ESRD patients
- 18. Transplantation**
- 18.1 Evaluation and selection of transplant candidates, including indications and contraindications
  - 18.2 Preoperative evaluation of recipients and donors, including histocompatibility testing
  - 18.3 Principles of organ harvesting, preservation, and sharing
  - 18.4 Post-operative management
  - 18.5 Rejection – pathophysiology, diagnosis, renal biopsy in transplant patients, medical management of rejection
  - 18.6 Surgical and medical complications
    - a. Pathogenesis and management of acute renal failure in transplantation
    - b. Urinary tract infections in transplantation
    - c. Radiology/ Imaging tests of the kidney and urinary tract
    - d. Disorders of fluids, electrolytes, and acid-base balance in transplantation
    - e. Long-term care of transplant recipients
- 19. Procedures**
- 19.1 Percutaneous biopsy of native and transplant kidneys
  - 19.2 Placement of temporary access of hemodialysis and peritoneal dialysis
  - 19.3 Acute and chronic hemodialysis
  - 19.4 CRRT – continuous renal replacement therapy
  - 19.5 Peritoneal dialysis
  - 19.6 Dialysis access care
    - a. Radiology of vascular access
    - b. Angioplasty of vascular access
  - 19.7 Renal Ultrasound
  - 19.8 Plasmapheresis
  - 19.9 Knowledge and use of urography such as:
    - a. Ultrasonography
    - b. Radionuclide scans
    - c. Computed tomography
    - d. Magnetic resonance imaging
    - e. Renal circulation imaging (angiography)
- 20. Drugs in kidney disease**
- 20.1 Principles of drug pharmacokinetics and renal handling

- 20.4 Drug prescribing in renal failure
- 20.5 Drug interactions
- 20.6 Mechanisms of drug nephrotoxicity
- 20.7 Drug-induced renal diseases
- 20.8 Therapeutic drug monitoring
- 20.9 Renal transplant immunosuppression

#### **IV. Professionalism**

The demonstration of professionalism by fellows is expected as part of the requisite clinical competency and is evaluated as a continuum throughout the training experience. Since all of the attributes of professionalism cannot be tested, patterns of behavior, as observed within the educational environment will play an important role in making these determinations. Recognizing that the focus of this document has been to define professionalism, the following descriptors serve to identify behavior which is unacceptable for meeting the standards of professionalism inherent in being a physician.

**a. Unmet professional responsibility.** The fellow,

- Needs continual reminders about fulfilling responsibilities to patients and to other health care professionals
- Cannot be relied upon to complete tasks
- Misrepresents or falsifies actions and/or information, for example, regarding patients, laboratory tests, research data

**b. Lack of effort toward self-improvement and adaptability.** The fellow,

- Is resistant or defensive in accepting criticism
- Remains unaware of own inadequacies
- Resists considering or making changes
- Does not accept responsibility for errors or failure
- Is overly critical/verbally abusive during times of stress
- Demonstrates arrogance

**c. Diminished relationships with patients and families.** The fellow,

- Lacks empathy and is often insensitive to patients' needs, feelings and wishes or to those of the family
- Lacks rapport with patients and families
- Displays inadequate commitment to honoring the wishes and wants of the patient

**d. Diminished relationships with health care professionals.** The fellow,

- Demonstrates inability to function within a health care team
- Lacks sensitivity to the needs, feelings and wishes of the health care team

Throughout training, the fellows acquire competence in humanistic qualities. Fellows must understand the responsibility of physicians to be respectful of every human being and to their integrity as individuals. This requires trainees to ponder issues such as when do the risks of renal replacement therapy outweigh the benefits, while balancing cultural

sensitivity in approaching patients. Fellows must know when to convey good and bad news in a way that is acceptable by patients and family members. Fellows must know when it is appropriate to initiate renal replacement therapy and deal with psychosocial and ethical issues of the patient. Issues of professionalism are reviewed on all evaluations.

## V. Procedures

- a. **Requirement:** Fellows will develop a comprehensive understanding of indications, contraindications, limitations, complications, techniques, and interpretation of results of those diagnostic and therapeutic procedures integral to nephrology trainees and will acquire knowledge of and skill in educating patients about the technique, rationale, and complications of procedures and in obtaining procedure-specific informed consent.
- b. **Supervision:** Faculty supervision of procedures performed by each fellow is required.
- c. **Documentation:** Each nephrology trainee will keep a record of procedures using the procedure book provided at the beginning of fellowship. The supervising attending physician will note proficiency and if trainee is self sufficient for the procedure.

### 2. Procedures

- Urinalysis
- Percutaneous biopsy of both native and transplanted kidneys (**see Appendix 10: Renal Biopsy Check List and Appendix 11: Step-by-step Guide to Renal Biopsy**)
- Placement of temporary vascular access for hemodialysis and related procedures (**Appendix 12: Step-by-step Guide to Central vein Cannulation**)
- Peritoneal dialysis (**Appendix 13: Step-by-step Guide to Acute PD Catheter Insertion**)
- Acute and chronic hemodialysis
- Continuous renal replacement therapy
- The trainees will demonstrate for the senior staff that they understand the indications, contraindications, complications, interpretation, cost effectiveness and application to patient care of
- Radiology of vascular access
- Balloon angioplasty of vascular access
- Therapeutic plasmapheresis
- Placement of acute peritoneal catheters
- Renal ultrasound
- Occupational Safety and Health Administration (OSHA) and Health-Care Regulations
- Residents must have formal instruction in current OSHA regulations and universal precautions and protection of health-care workers.

## VI. Mentoring Process

As early as possible, fellows must identify an attending with whom there is mutual interest in the academic and social wellbeing of the fellow. Each fellow will be assigned one mentor. Subsequently, the fellow is expected to speak with the assigned mentor and at least 2 more attendings of the division about on-going studies and areas of interest. Once an area of interest and project is identified, the fellow will either confirm the assigned mentor or indicate a second choice (**see Appendix 14: Mentor Selection and Meetings**). In situations where the mentor declines a selection, the fellow will take his/her next choice. The mentorship list will be kept by the Program Director or designee and meetings for mentorship are arranged at mutually acceptable times for at least 2 times a year to review progress. Each meeting is documented using a mentorship attendance sheet (**Appendix 14B**), which is signed by both attending and fellow. The attending makes comments on the fellow's progress. The sheet is returned to the Program Director or designee and filed in the fellows chart. Mentorship will entail overall guidance to:

- Follow academic progress
- Discuss any personnel or the inter-personnel problems/issues
- Plan career advise following training

## **VII. Trainee Evaluation of Program**

### **3. Monthly evaluation of attending by fellows**

- The fellow must submit a monthly evaluation of the attending physician (**see appendix 8**)

### **4. Bi-annual anonymous evaluation of program by fellows**

Every 6 months, all trainees are required to submit an anonymous survey of the program, evaluating areas on a scale of 0-10, such as:

- Overall, I feel that my Nephrology Training was adequate:
- Faculty supervision was constant, informative and helpful:
- Workload was reasonable and appropriate for training environment:
- Instruction in basic principles of pathophysiology was reasonable and thorough:
- Exposure to broad spectrum of acute and chronic clinical renal disorders was sufficient:
- Consideration of socioeconomic and ethical concerns in renal medicine was appropriate:
- Teaching rounds and conferences were timely and sufficient:
- Continuity clinics afforded appropriate opportunity for learning long-term management:
- Kings County Hospital rotation was appropriate and should be continued:
- Veterans Hospital rotation was appropriate and should be continued:
- University Hospital rotation was appropriate and should be continued
- Staten Island University Hospital rotation was appropriate and should be continued
- In addition to the above, I would like to communicate the following advice concerning structure and/or conduct of Nephrology Fellowship Training at Downstate.

## **E. Policies and Procedures of the Nephrology Fellowship Program**

### **I. Recruitment and Retention**

#### **a. Purpose**

These policies seek to establish guidelines for recruitment and retention of fellows in the Nephrology Training Program at SUNY Downstate Medical Center, Brooklyn, New York.

##### **1. Eligibility for Recruitment**

- The candidate for nephrology fellowship at SUNY Downstate must have satisfied the educational requirements for internal medicine residency training and every medical school attended by the applicant must be accredited by the Liaison Committee on Medical Education (LCME), or the American Osteopathic Association (AOA) or recognized and listed in the World Health Organization Directory of Medical Schools.
- The applicant must have passed USMLE Steps 1, 2 and 3 or applicable COMLEX examinations for osteopathic residents.
- At the time training commences, the applicant ordinarily is required to have completed postgraduate training in Internal Medicine in a program accredited by the ACGME or the American Osteopathic Association and is required to have satisfied those requirements necessary to sit for the certifying examination in Internal Medicine administered by the American Board of Internal Medicine or the American Osteopathic Association. Though rare, fellowship may be granted if the candidate can demonstrate recruitment into a residency training program after fellowship training.
- The applicant must meet minimum licensure requirements of the New York or other State Medical Boards and must be eligible for full licensure at the time of completion of fellowship training.

##### **2. International Medical Graduates (IMGs)**

- IMGs must be U.S. citizens, U.S. permanent residents or holders of J-1 Exchange Visitor visas issued by the Educational Commission on Foreign Medical Graduates (ECFMG) or H-1 visa, in order to be eligible for admission into the nephrology fellowship training program.
- An eligible IMG must meet all the requirement of the ECFMG and hold a currently valid ECFMG certificate.

#### **b. Procedure:**

##### **1. Credentials to be obtained from each applicant for nephrology fellowship**

- A completed application (blank applications for nephrology fellowship can be downloaded at [www.downstate.edu](http://www.downstate.edu))
- Three letters of recommendation, one of which must be written by the applicant's departmental Chairperson or Program Director

- Copies of medical school diploma and transcript
- For IMGs, an ECFMG Certificate or ECFMG letter which must be verified in writing by the Program Director
- Additional credentials and documents may be requested at the discretion of the Program Director
- Selected candidates shall interview with the Chief of Nephrology and Program Director or a designee.
- **Note:** Any document not printed in English must be accompanied by an acceptable original translation, performed by a qualified translator, which includes all written and printed material on the original. Each translation must be accompanied by an Affidavit of Accuracy.

## **2. Method of selection for interview**

- Only completed applications are reviewed for invitation for interview.
- The Program Director, Chief and Associate Chief of the Division of Nephrology shall review all applications and select applicants for interview on the basis of their accomplishments, preparedness, academic credentials and recommendations.
- Selected candidates are notified by mail or preferred contact and a date assigned for an interview.

## **3. Interview Process**

- The interview process is coordinated by the Program Director or designee and conducted by faculty members of the Division of Nephrology at the time of interview.
- Each applicant is evaluated on the basis of satisfying all requirements for fellowship, recommendations, medical knowledge, general knowledge, professionalism and scored on a scale of poor, average, above average and superior.

## **4. Method of selection and appointment for fellowship positions**

- The Program Director, Chief and Associate Chief of the Division of Nephrology shall review all applicants who have been interviewed and select applicants with the highest possible scores and recommend them to the Chair of Medicine for appointment.
- An initial offer of fellowship shall be sent to the applicant by the Program Director or Division Chief. The applicant shall return a signed copy of the offer indicating acceptance of the position.
- On receipt of the signed copy of the offer by the applicant, the Program Director or designee shall make a formal recommendation for fellowship to the Chair, who, upon verifying all credentials shall write a formal letter of appointment, which specifies the PGY level, commencement date and salary.
- On receipt of the appointment letter, the applicant shall return a signed copy to the Chair. The signed copy of the appointment letter together with all documents, are forwarded to the GME office.
- The Office of Graduate Medical Education and staff shall review the appointment and all supporting documentation for completion and compliance with institutional policies. The office of GME shall contact the applicant prior to commencement of

fellow as regards to terms and conditions of appointment, responsibilities, duties, privileges, responsibilities of SUNY Downstate, due process and appeal policy, compensation and benefits, rules and regulations pertaining to moonlighting, institutional policy on discrimination and sexual harassment and any necessary University, State and Federal regulations pertaining to residency training.

## **II. Promotion of Fellow to the next Level of Training**

### **a. Purpose**

These policies seek to establish guidelines for reappointment of fellows to the next level of postgraduate training in accordance with the agreement between the University and the Committee of Interns and Residents (CIR).

### **b. Procedures**

- Upon successful completion of first year of fellowship and having had satisfactory evaluations in all rotations, the fellow may be eligible for promotion to the next level of PGY training.
- The decision to offer a promotion to a fellow shall be conveyed to the fellow by the Program Director or designee after a review of his/her faculty evaluations and the personal observations of the Program Director and faculty.
- Written notification of reappointment shall be sent to the fellow via mail by the Chair of Medicine after written recommendation by the Program Director or Division Chief.
- Written notification of non-renewal of appointment to the next PGY level shall be given to the fellow by December 15<sup>th</sup> of the first year of service and not later than November 15<sup>th</sup> of the second year of service and thereafter, if their services are not to be renewed for the next year of a given residency training program.
- In the event that a fellow commences work on a date other than July 1<sup>st</sup>, the last date for non-renewal shall be no less than six months following the date on which such work commences. When possible, earlier notice of non-renewal shall be given to such fellow. Non-renewal of contracts may be appealed through the Programs Appeal Process which involves both the department Chair and Program Director, as outlined in section V.
- In the event a fellow's performance is not satisfactory, the Program Director, Division Chief or designee shall inform the fellow in writing. The outline or plan for remedial training requirements must be provided to the fellow in writing. This shall include the time period for remedial training and subsequent re-evaluation of the fellow's suitability for promotion. A timely written non-renewal notification shall be given which can be reversed if on re-evaluation the fellow is felt to be qualified for promotion.

## **III. Periodic Evaluation of Fellows Performance**

### **a. Purpose**

These policies seek to establish guidelines for periodic evaluation of fellows as required by the Residency Review Committee for Internal Medicine (RRC- IM) of the ACGME.

## **b. Requirements**

- The Program Director shall maintain responsibility for establishing the mechanism and frequency of performance evaluations as detailed in the 'curriculum' in compliance with RRC-IM requirements. The GME office shall monitor this mechanism through an internal review process.
- The program shall have in place a system of evaluation used to assess the academic performance of fellows on a continuing basis; this system shall be followed uniformly for all fellows in the program. This serves to enhance the education process and keep trainees apprised of their progress. There shall be timely feedback to fellows, particularly with regard to any deficiencies noted. Evaluations must be given as specified by the RRC-IM.
- The Program Director or designee shall inform the fellows annually, of the divisional procedure and schedule for performance of evaluations.
- Documentation of periodic performance evaluations shall be maintained in the fellow's academic record.
- In order to continue in the nephrology fellowship program, a fellow must make satisfactory academic progress as determined in accordance with the program's evaluation system.

## **c. Definitions**

- Academic issues include acquisition of knowledge in nephrology and medicine, as well as all aspects of the development of clinical and professional skills necessary for effective functioning as a nephrologist.
- Academic issues involved areas of professional development such as professional ethics and maintaining professional relationships with patients, with staff members, with students and with other health care professionals including subordinates, colleagues and superiors.
- When academic and employment-related or other non-academic-related issues emerge, they shall be treated as academic issues, since academic development of fellows drives the fellowship program, thus placing it at the highest possible priority.

## **d. Procedures**

### **Attending evaluation of fellow**

- A biweekly undocumented and a monthly documented evaluation shall be performed by the attending physician who has had significant interaction with the fellow. The evaluation shall be discussed in detail with the fellow.
- The evaluation shall focus on the acquisition of knowledge and of clinical and professional development, as required by the American Board of Internal Medicine that meets accreditation standards.

- The fellow acknowledges by signing the evaluation form. Areas of improvement are stressed and potential for investigation and write-ups are pointed out during the month.
- The evaluations shall be reviewed monthly by the Program Director or designee and biannually by the Program Director, Chief or Associate Chief of the Division of Nephrology, during which all performance measures shall be discussed.
- Other measures of academic performance may include but are not limited to:
  - Quality of research, presentations, publications, etc.
  - Success in achieving assigned goals, including remediation goals
  - Personal opinions of other nephrology faculty, for which there was no significant interaction but the interaction in its limited nature resulted in admiration or severe critique of the fellow's performance. Such opinions shall be documented, the fellow notified and filed.

#### **IV. Lines of Responsibility**

##### **a. Purpose**

These policies seek to establish guidelines for lines of responsibilities for both fellows and attending physicians as required by the Residency Review Committee for Internal Medicine (RRC- IM) of the ACGME.

##### **b. Requirements**

- The Chief of Nephrology, Program Director or their designee shall maintain responsibility for establishing and updating the lines of responsibility for operations in the nephrology as they pertain to patient care and training.

##### **c. Definitions**

- Lines of responsibility define the chain of command (increasing responsibility) in the daily operations of the fellow.
- Attending physician is the faculty member supervising, discussing and countersigning all notes and consultations written by the fellow in each rotation or while on call. The attending physician is the first line of command.

##### **d. Procedures**

###### **1. Lines of Responsibilities:**

- Issues relating to patient care and or training shall be resolved in order of increasing complexity as follows; Fellow, Attending Physician, Program Director or designee, Chief of Nephrology or designee and Chair of Medicine or designee. As much as possible, issues should be resolved at the lowest possible level. For patient care, attending physicians shall make final decisions and countersigns fellow's notes or consultations.

## 2. Responsibilities of Faculty (See also Appendix 15: Full Division Organizational Chart for SUH/KCH)

- **Chief, Division of Nephrology:** Runs and maintains the academic and administrative functions of the division, supervises all directors and staffing issues within the division. The chief chairs all divisional meetings and takes morning report. The chief endorses, modifies or refutes final decisions within the division.
- **Deputy Chief, Division of Nephrology:** Runs the division conjointly and also in the absence of the chief.
- **Director, Nephrology Fellowship Program:** Runs the fellowship program as it pertains to fellowship recruitment, fulfillment of the core curriculum areas, evaluations, promotion and certification, in accordance with ACGME guidelines.
- **Director, Transplant Nephrology Fellowship Program:** Runs the transplant nephrology fellowship program as it pertains to fellowship recruitment, fulfillment of the core curriculum areas, evaluations and certification, in accordance with the American Society of Transplantation/United Network for Organ Sharing guidelines.
- **Director, Home Dialysis Program, SUNY:** Runs the home dialysis program, which includes recruitment and management of patients on CAPD and home hemodialysis as well as runs the home dialysis clinic.
- **Director, Inpatient Hemodialysis, SUNY:** Runs inpatient dialysis at SUNY, providing administrative support and medical directorship in the acute dialysis unit.
- **Director of Ambulatory Dialysis, SUNY:** Runs outpatient dialysis at SUNY, providing administrative support and medical directorship in the ambulatory dialysis unit.
- **Director of Dialysis, KCHC:** Runs outpatient dialysis at KCHC, providing administrative support and medical directorship in the acute and ambulatory dialysis units.
- **Affiliate Program Directors:** Runs the fellowship program as it pertains to education in the core curriculum areas and providing evaluations in accordance with ACGME guidelines.
- **Attending Physicians:** Conduct working or teaching rounds with fellows as outlined in section D.II. The attending physician discusses all cases with the fellow, makes final decisions on patient care and countersigns fellow's notes or consultations. The attending supervises all procedures and generates research for the fellows. The attending physician also acts as a mentor for the fellows and shall help guide them at all times. Attending physicians submit monthly evaluation of fellows, bi-annual anonymous evaluation and signs fellow's procedure log books.

## 3. Responsibilities of Fellows

- **Inpatient Nephrology, Transplantation, Consultations and Clinics:** Fellows are the first line response to consultations on the general medical services and critical care areas but are not to write orders except in an emergency situation. Consultations must be discussed with attending physician before making final decisions. In all circumstances the decision to follow the nephrology advice rests with the consulting medical attending. Fellows shall write admitting and daily follow-up notes on nephrology service patients. Daily follow-up notes are needed on critical care patients. Follow-up notes on all other patients can be written as determined by the patient's condition. When rotating residents and students are present, the fellow assumes a

teaching role and generates topic that can be discussed with the attending. At the end of each month, the fellow shall submit an evaluation of the attending physician. The fellow also submits a bi-annual anonymous program evaluation.

- **Procedures:** All kidney biopsies shall be performed under direct supervision. All other procedures shall be done under attending physician supervision. The fellow shall maintain a log of all procedures performed.
- **Dialysis:** Fellows shall write dialysis orders, which will include length of dialysis, type of dialyzer and dialysate, amount of fluid removal, dose of erythropoietin, dose of heparin, dose of antibiotics if needed and any other medications as needed. Fellows shall respond and manage complications during dialysis but shall discuss with the attending physician
- **Conferences, Research, Mentorship, Committees:** The fellow shall attend all conferences as outlined in section D.III.b. The fellow shall remain a responsible working relationship with his/her mentor (section D.IV) and pursue research (section D.2.f) initiatives. The fellow shall participate in committees, within nephrology (grand rounds, program evaluations and grievance committees) or outside the division as part of professional growth.

## V. Due Process

### a. Purpose

These policies seek to establish guidelines for appeals related to academic and non-academic performance as required by the Residency Review Committee for Internal Medicine (RRC-IM) of the ACGME. The policies are adapted from the policies of the Department of Medicine, SUNY Downstate.

### b. Procedure

- When a fellow's performance is not adequate, notification of the deficiencies is made in a "letter of warning" to the fellow. The academic or behavioral aspects of the deficiencies shall be outlined specifically with a timetable for remediation, and clear definition of the requirements for successful remediation.
- Such a letter of warning may be issued by the Program Director after the semi-annual performance review by the Resident Evaluation Committee or at any time during the year when inadequate performance becomes apparent.
- In the event that a resident commits a serious violation of institutional or departmental rules, is judged to be impaired, or is functioning so poorly as to represent a threat to patients, immediate removal from clinical responsibilities by the program or service director is possible.
- In such a case, the departmental Chair will convene a panel to hold a full hearing into the matter. The panel will consist of the program director, two attending physicians appointed by the Chair, and one fellow.
- The panel will create its own rules of procedure and will expeditiously ascertain the facts and make a recommendation to the Chair. Any disciplinary action is governed by the procedures of the institutional GME committee and subject to appeal through the SUNY institutional grievance process and the Committee for Interns and Residents.
- In the event of an adverse annual evaluation, non-promotion or non-renewal, the resident

will be notified in person and in writing. The notification will include an explanation of the grievance procedures of the department and institution. A fellow may appeal such a decision to the department Chair within 15 days of receiving the notification. The Chair will convene a panel to review the grievance.

- The panel will consist of two attending physicians, one fellow and one of the nine members of the Resident Council. The panel will review the case and make a recommendation to the Chair and Program Director. If the adverse action is sustained, the resident may proceed to the institutional grievance process through the GME office.

## F. Appendices

### Appendix 1: Synopsis of King County Hospital Center (KCHC)

New York City's largest municipal hospital, Kings County Hospital is the site of the nation's first federally funded ambulatory hemodialysis program. KCHC also served as the stimulus for formation of the world's largest kidney patient's self-help group, the American Association of Kidney Patients (AAKP).

Situated in the largest urban minority center in the heart of Brooklyn, KCHC provides a busy inpatient and outpatient consulting service for management of acute and chronic kidney failure as well as performance of acute hemodialysis (HD), and peritoneal dialysis (PD), and continuous renal replacement (CRP) therapy. KCHC operates a large ambulatory hemodialysis facility as well as an acute hemodialysis unit.

Within the Department of Medicine, the renal fellow is responsible for coordinating medical care, ensuring adequate dialysis support during hospitalization of a diverse ambulatory HD/ PD population and arranging vascular and PD access when needed. Continuing patient care is afforded in two renal clinic sessions each week. The renal fellow performs femoral cannulations and percutaneous kidney biopsies.

At all times, supervision of the renal fellow is the responsibility of an attending nephrologist holding a faculty position within the Department of Medicine. Elective medical residents accompany the attending physician-renal fellow team on daily rounds. Night, weekend, and holiday renal coverage is arranged and noted in a monthly published schedule.

**Learning objectives:** Manage acute and chronic renal failure, modalities of ESRD therapy, fluid/electrolyte disorders, glomerular/tubulointerstitial diseases and procedural techniques (femoral cannulations, renal biopsy, CRRT)

**Consultations:** There is no Primary Renal Service. However, KCHC has a busy consultative service. The fellow is responsible for evaluating and coordinating patient management. The fellow rounds with an attending at a mutually acceptable time. The fellow will receive request for consultations from the medical service, surgical Service, critical care units or from the emergency room. All consultations must be seen as soon as possible and discussed with the attending.

**Acute Dialysis:** Dialysis received while being an in-patient is termed acute dialysis. Some patients receiving acute dialysis have working vascular accesses. For those patients without an access due to infection, thrombosis, etc, femoral cannulations for hemodialysis is performed 2 times a week until an access can be placed. Fellows are responsible for performing femoral cannulations under supervision of an attending. The fellow will contact the vascular resident and arrange for access placement before the patient is transferred to the chronic dialysis unit. All new admissions to the acute dialysis unit must have H&P, EKG, CXR report and pertinent laboratory work, in preparation for transfer when stable.

**Renal Biopsy:** Once the decision is made for a renal biopsy, call pathology office at SUNY 270-1651 to arrange for pathology presence and sonography X4698 to schedule. Consent must be obtained and placed in the chart. Write an order in the patient's chart to transport the patient to sonography and the scheduled time so that transportation will locate and transport the patient. All safety laboratory work, including coagulation profile, CBC, BMP, U/A must be done prior to biopsy. A biopsy tray is maintained and replenished in the fellows on call room and includes, gauze, gloves 10CC syringes, 25G, 22G and 18G needles, scalpel, lidocaine, betadine, 15G biopsy needles and a spinal tray.

**Weekly review:** The fellow attends a weekly discharge planning meeting with the acute dialysis head nurse, social worker and administrator.

## **Appendix 2: Synopsis of SUNY, Downstate Medical Center**

Brooklyn's singular State University of New York teaching hospital is immediately connected to the medical school's basic science building and is across the street (Clarkson Avenue) from KCHC. Serving private, managed care, and Medicaid patients, UHB provides a full menu of renal diseases including kidney transplant related experience. Within the Department of Medicine, the renal fellow is responsible for coordinating medical care, ensuring adequate dialysis support during hospitalization of a diverse ambulatory HD/ PD population and arranging vascular and PD access when needed. Continuing patient care is afforded in two renal clinic sessions each week.

Acute dialysis care is a key focus of the service, and exposure to acute hemodialysis, as well as continuous renal replacement therapy is extensive throughout the year. Off site management of severely ill patients is conducted in the Cardio-Thoracic Intensive Care Unit, the active Medical Intensive Care Unit and a busy Cardiac Catheterization/ Intervention laboratory. The offsite (two blocks) Parkside Hemodialysis Unit generates a daily requirement for access-related hemodialysis involving fellow performed procedures especially femoral cannulation for temporary HD catheters.

**Learning objectives:** Manage acute and chronic renal failure, modalities of ESRD therapy, fluid/electrolyte disorders, glomerular/tubulointerstitial diseases and procedures (femoral cannulations, renal biopsy, CRRT)

**Primary service:** The Primary service is the Renal Service patients. The fellow is responsible for evaluating, coordinating patient management with residents and interns and writing daily notes on all service patients. The fellow rounds with an attending at a mutually acceptable time. The fellow on call writes the weekend notes for Saturday and Sunday.

**Admissions:** All patients from Parkside Dialysis Unit (HD and CAPD patients) or from the renal clinic who require initiation of dialysis should be on the renal service. An admission note must be written for all service patients. If a patient from Parkside Dialysis Unit is admitted to critical care, renal service will follow the patient until recovery when the patient is transferred to renal service. If a patient from Parkside is admitted to any surgical service, renal will follow as a consultation until the patient is discharged. All other dialysis patients from different dialysis units do not require admission to renal service. They are often admitted under general medicine or hospitalist service. Renal will follow these patients as consultations, with adequate follow-up care.

**Consultations:** The fellow will receive request for consultations from the medical service, surgical Service, critical care units or from the emergency room. All consultations must be seen as soon as possible and discussed with the attending.

**Acute Dialysis:** Dialysis received while being an in-patient is termed acute dialysis. Some patients receiving acute dialysis have working vascular accesses. For those patients without an

access due to infection, thrombosis, etc, femoral cannulations for hemodialysis is performed 2 times a week until an access can be placed. Fellows are responsible for performing femoral cannulations under supervision of an attending. The fellow will contact the transplant team and arrange for access placement at the appropriate time.

**Transfers:** New ESRD patients who have been initiated on dialysis in the acute unit are referred for maintenance hemodialysis in an outpatient setting. The patient is ready for transfer when stable and has an access for dialysis (temporary catheter, graft or fistula). The fellow is responsible for coordinating the transfer process. The following documents from the chart are needed for a transfer: A copy of the face sheet (encounter form that includes the insurance information), Medical summary (admitting notes), EKG, CXR report and pertinent laboratory work. A multidisciplinary meeting is arranged at a mutually acceptable time to review all inpatient dialysis patients.

**Renal Biopsy:** Once the decision is made for a renal biopsy, call pathology office at 270-1651 to arrange for pathology presence and sonography at 270-2552 to schedule and make sure a transportation card is issued to the front desk from the sonogram office so that the transport service will locate and transport the patient to sonogram at the scheduled time. Consent must be obtained and placed in the chart. All safety laboratory work, including coagulation profile, CBC, BMP, U/A must be done prior to biopsy. A biopsy tray is maintained and replenished in the fellows on call room and includes, gauze, 10CC syringes, 25G, 22G and 18G needles, scalpel, lidocaine, betadine, 15G biopsy needles and a spinal tray. For outpatient renal biopsies, give name and insurance information to Lisa Ali in the renal office so that she can obtain approval and make a schedule. Outpatient biopsy request from rheumatology should come with a detailed H&P.

### **Appendix 3: Synopsis of the VA Medical Center**

With two assigned renal fellows, the VA Medical Center rotation permits continuous supervision of ambulatory renal patients in various stages of chronic renal disease (CRD). On a daily basis, on fellow rounds with an attending nephrologist serving as a consultant evaluating all nephrology patients admitted to the hospital as well as any new consultations. The fellow is responsible for coordinating the medical care ensuring adequate dialysis support during the hospital stay of a diverse chronic HD/ PD population and arranging dialysis access when needed. The fellow is responsible for performing all renal biopsies. The other fellow at the VA arranges care in the outpatient dialysis unit provides primary care to patients who have dialysis services provided by the VA. This rotation, supervised by Dr. Robert Barth provides intensive training in the mechanics and medical support of patients on chronic hemodialysis. In addition, the fellow provides primary care for the veterans with renal transplants. The two fellows take calls alternatively

**Learning objectives:** Manage acute and chronic renal failure, chronic maintenance hemodialysis, CAPD glomerular/tubulointerstitial diseases and procedural techniques (femoral cannulations, CRRT)

**Consultations:** There is no Primary Renal Service. The fellow will receive request for consultations from the medical service, surgical Service, critical care units or from the emergency room. All consultations must be seen as soon as possible and discussed with the attending. The fellow is responsible for evaluating and coordinating patient management with residents and interns. The fellow rounds with an attending at a mutually acceptable time.

**Acute Dialysis:** Dialysis received while being an in-patient is termed acute dialysis. Some patients receiving acute dialysis have working vascular accesses. For those patients without an access due to infection, thrombosis, etc, femoral cannulations for hemodialysis are performed 2 or 3 times a week until an access can be placed. Fellows are responsible for performing femoral cannulations under supervision of an attending. The fellow will contact the vascular resident and arrange for access placement before the patient is transferred to the chronic dialysis unit.

**Chronic Dialysis:** The fellow will monitor long-term dialysis patients addressing monthly issues as anemia, calcium, PO<sub>4</sub> and PTH metabolism, bone disease, nutrition, vascular access surveillance, CAPD or long-term issue such as cardiovascular disease. This is the best rotation to learn maintenance dialysis.

**Weekly review:** The fellow attends all renal related conferences during this rotation.

#### **Appendix 4: Synopsis of Staten Island University Medical Center**

Across the Narrows from Brooklyn, SIUH is the prime teaching hospital located on Staten Island (a 25 minute drive from UHB). Serving a mainly middle class population, SIUH has regularly referred both potential kidney transplant recipients and patients with multisystem disorders to UHB. Commencing July 1, 2004, the DMC renal program will expand from 8 to 9 fellows to permit continuous coverage at SIUH. Planned to function within the Department of Medicine, the renal fellow will be responsible for coordinating medical care, ensuring adequate dialysis support during hospitalization of a diverse ambulatory HD/ PD population and arranging vascular and PD access when needed. Continuing supervision of the fellow will be afforded by an assigned nephrologist on a rotational basis from a practice group of four nephrologists now based at SIUH. The renal fellow will have the responsibility for performance of femoral cannulations and percutaneous kidney biopsies under attending supervision.

**Learning objectives:** Acute dialysis, Private Practice Nephrology, Interventional Nephrology

**Primary service:** The Primary service is the Renal Service patients. The fellow will be assigned patients by the attending physician. It is the responsibility of the fellow to evaluate and coordinate patient management with residents and interns and writing daily notes on those patients after discussing with the attending. The fellow rounds with an attending at a mutually acceptable time. The fellow does not take call after 5PM or weekends.

**Admissions:** All patients from *Island Rehab Dialysis* Center or clinic patients of the nephrology group who present to the emergency room or admitted to the hospital on the medical floors are admitted under the nephrologist, who will inform the fellow to do the appropriate evaluation. The evaluation and plan is subsequently discussed with the attending. The fellow will follow these patients through the hospital stay. An admission note must be written for all such service patients. If a patient from Island Rehab is admitted to critical care, renal service will follow the patient until recovery when the patient is transferred to renal service. If a patient from Island Rehab is admitted to any surgical service, renal will follow as a consultation and the fellow may be asked to do a consultation and discuss with attending until the patient is discharged. All other dialysis patients from different dialysis units do not require admission to renal service. They are often admitted under medicine or other private practice nephrology groups and the fellow does not see these patients.

**Consultations:** When a consultation is received by the attending from the medical service, surgical Service, critical care units or from the emergency room, the fellow will be asked to see the patient. All consultations must be seen as soon as possible and discussed with the attending. All consultation must be followed appropriately.

**Acute Dialysis:** The fellow may be required to write acute dialysis prescriptions, do femoral cannulation or respond to a complication of acute dialysis, such as hypo/hyper-tension, fever, cramps, chest pain, arrhythmias vascular access complications, etc. All such encounters should be discussed with the attending after evaluation.

**Interventional Procedures:** Once an indication for renal biopsy is made concurrently by the fellow and attending, the patient undergoes CT-guided biopsy by interventional radiology. It is encouraged that the fellow be present to participate in CT-guided kidney biopsies. The fellow should follow-up on the biopsy results and discuss pathology (biopsy slides sent from Mount Sinai Hospital) and further management with the attending. It is encouraged that the fellow participates in other interventional procedures such as renal artery interventions as scheduled by the attending physician.

**Journal Club:** On Mondays and Fridays 8:00 -9:00 AM, the fellow will be presenting mini-cases and journal review pertinent to the case in question. It is recommended that the fellow reviews published literature on the case for an evidence-based discussion session. The fellow may attend all other internal medicine conferences as time allows.

**Clinic:** The fellow will be required to see clinic patients in the office and discuss outpatient management with the attending. The timing of these visits will be determined by the attending physician.

### **Appendix 5: Synopsis of the Transplant Rotation**

Functioning as a major Division of the Department of Surgery, the Transplant Service (TS) performs approximately 60-80 kidney transplants each year and provides hemodialysis vascular access for patients at KCHC and UHB. Assigned renal fellows round daily with a supervising transplant nephrologist who countersigns notes and explores treatment options. The renal fellow assists in postoperative and subsequent care of kidney donors and renal transplant recipients, scheduling and supervising needed interval dialysis as arranged in collaboration with the surgical housestaff and surgical transplant attending staff.

The substance of transplant medicine including assessment and provision of pre/posttransplant immunosuppression, treatment of acute and chronic rejection, management of opportunistic diverse complications and performance of renal transplant biopsy are emphasized. The fellow participates in all teaching conferences of the transplant team and attends transplant clinic during which long term recipient care is reviewed. One of four transplant nephrologists directly supervise the renal fellow throughout the transplant rotation.

## Appendix 6: Synopsis of the Ambulatory Rotation

The ambulatory rotation occurs within the main campuses of SUNY Downstate and Kings County Hospital Center. This rotation allows the fellow more time to read, while mastering skills in areas such as home dialysis and fluid and electrolyte abnormalities.

**Learning objectives:** Detailed review of CAPD, Home Hemodialysis, Fluid and Electrolyte physiology and management

**Fluid & Electrolytes:** The ambulatory fellow will meet with Dr. Carroll every morning, Monday through Friday to discuss topics in fluid and electrolyte management. Occasionally, the fellow may be needed to evaluate a patient on CAPD or home HD. The fellow should be in contact with the home dialysis nurse on a daily basis to see if any problem exists. On Wednesdays at 12:00 noon and Fridays at 1:00 PM, all fellows, including the ambulatory fellow will meet with Drs. Carroll and Oh respectively.

**CAPD:** The fellow will attend the **home dialysis clinic**, which occurs on Thursdays at 1:00 PM. The clinic is run by Dr. Delano, in conjunction with a nurse and physician assistant. Every patient is discussed in detail. Periodically, the fellow will be asked to do an annual physical examination, which is discussed fully with Dr. Delano. The fellow may be called to see a patient with an acute problem relating to CAPD at Parkside Dialysis Center. In this circumstance, the fellow will respond, examine the patient and discuss with Dr. Delano or covering attending. If a patient is referred to the ACRC, the SUH fellow will respond. The fellow should be in contact with the home dialysis nurse on a daily basis to see if any problem exists. If there is a patient in training, the fellow is expected to spend adequate time with the training nurse to learn all applicable techniques.

Specific learning objectives in this rotation include learning CAPD technique and prescription, adequacy of CAPD, PET test and fluid and peritonitis management. In addition, the fellow is required to identify and manage anemia, bone disease, nutrition, catheter related problems, cardiovascular surveillance and management of co-morbid conditions. The fellow is encouraged to read these topics ahead of time. Occasionally, the fellow will be asked to prepare a twenty minute presentation on a peritoneal topic of his/her choice for the other fellows. Dr. Delano will assist in the preparation. The more time spent in the home clinic, the more the learning process.

**Home HD:** Home hemodialysis patients attend the Thursday clinic as well. Specific learning objectives when reviewing home hemodialysis patients include learning home HD technique and prescription, adequacy of HD, anemia, bone disease vascular access, nutrition and cardiovascular and co-morbid disease management. The fellow is encouraged to read these topics ahead of time.

**Other Activities:** Except being on call over the weekend or weekdays, there are no Consultations expected for the fellow during this month. The ambulatory fellow attends all other division activities, including Tuesday 8:00 AM transplant conference, all morning reports, journal clubs, biopsy conferences and continuity clinics.

### Appendix 7: Attending Evaluation of Fellow at end of Rotation

Fellow's Name		Rotation Name		
Attending's Name	Rotation Period			Evaluation Date
Please provide specific comments and recommendations on the back of the form. Be as specific as possible, including reports of critical incidents and/or outstanding performance. Global adjectives or remarks, such as "good fellow," do not provide meaningful feedback to the fellow.				
<b>Please circle and sign to indicate you have reviewed the goals and objectives of the rotation:</b> Reviewed " " Not reviewed " "				
Signature				
		<b>Unsatisfactory</b>	<b>Satisfactory</b>	<b>Superior</b>
<b>1. Patient Care</b>				
Incomplete, inaccurate medical interviews, physical examinations, and review of other data; incompetent performance of essential procedures; fails to analyze clinical data and consider patient preferences when making medical decisions	1 2 3	4 5 6	7 8 9	Superb, accurate, comprehensive medical interviews, physical examinations, review of other data, and procedural skills; always makes diagnostic and therapeutic decisions based on available evidence, sound judgment, and patient preferences
		<input type="checkbox"/> Performance needs attention		
<input type="checkbox"/> Insufficient contact to judge				
<b>2. Medical Knowledge</b>				
Limited knowledge of basic and clinical sciences; minimal interest in learning; does not understand complex relations, mechanisms of disease	1 2 3	4 5 6	7 8 9	Exceptional knowledge of basic and clinical sciences; highly resourceful development of knowledge; comprehensive understanding of complex relationships, mechanisms of disease
		<input type="checkbox"/> Performance needs attention		
<input type="checkbox"/> Insufficient contact to judge				
<b>3. Practice-Based Performance Improvement</b>				
a) Does not read about patients; is defensive about mistakes and does not improve after constructive criticism b) Does not use computer/PDA technology to search for information	1 2 3	4 5 6	7 8 9	a) Reads about each patient; acknowledges mistakes and uses them as an opportunity to learn; improves after constructive criticism b) Uses computer/PDA technology to find information for patient care or education
		<input type="checkbox"/> Performance needs attention		
<input type="checkbox"/> Insufficient contact to judge				
<b>4. Interpersonal and Communication Skills</b>				
Does not establish even minimally effective therapeutic relationships with patients and families; does not demonstrate ability to build relationships through listening, narrative or nonverbal skills; does not provide education or counseling to patients, families, or colleagues	1 2 3	4 5 6	7 8 9	Establishes a highly effective therapeutic relationship with patients and families; demonstrates excellent relationship building through listening, narrative and nonverbal skills; excellent education and counseling of patients, families, and colleagues; always "interpersonally" engaged
		<input type="checkbox"/> Performance needs attention		
<input type="checkbox"/> Insufficient contact to judge				
		<b>Unsatisfactory</b>	<b>Satisfactory</b>	<b>Superior</b>

<b>5. Professionalism</b> Lacks respect, compassion, integrity, honesty; disregards need for self-assessment; fails to acknowledge errors; does not consider needs of patients, families, colleagues; does not display responsible behavior	1 2 3	4 5 6	7 8 9	Always demonstrates respect, compassion, integrity, honesty; teaches/role models responsible behavior; total commitment to self-assessment; willingly acknowledges errors; always considers needs of patients, families, colleagues
	<input type="checkbox"/> Performance needs attention			
<input type="checkbox"/> Insufficient contact to judge				
<b>6. Systems-Based Practice</b> a) Does not understand how ESRD care is reimbursed or what patients are entitled to; does not think of or know how to access available resources for patients, e.g. VNS, home oxygen b) Does not understand quality improvement; never has suggestions for improving the functioning of our hospitals	1 2 3	4 5 6	7 8 9	a) Understands how ESRD care is reimbursed and what patients are entitled to; can access available resources for patients, e.g. VNS services, home oxygen; b) Understands principles of quality improvement; suggests ways to improve the functioning of our hospitals
	<input type="checkbox"/> Performance needs attention			
<input type="checkbox"/> Insufficient contact to judge				
<b>Fellow's Overall Clinical Competence in Nephrology on this Specific Rotation</b>	1 2 3	4 5 6	7 8 9	
	<input type="checkbox"/> Performance needs attention			
<b>Attending's Comments</b>				
<b>Signatures: Fellow's</b> _____		<b>Attending's</b> _____		

## Appendix 8: Trainee Evaluation of Attending at end of Rotation

Attending Nephrologist: \_\_\_\_\_

Rotation: \_\_\_\_\_

Month/year: \_\_\_\_\_

For each of the following criteria, please rate the attending physician whose rotation you have just completed.

<b>1. Availability</b>	Not observed	Marginal	Satisfactory	Very Good	Excellent
• Was available as advisor	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
• Appeared for round and consultation on time	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
• Kept interruptions to a minimum	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
• Spent enough time on rounds; was unhurried	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
• Encouraged active fellow participation	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Comments:					

<b>2. Teaching</b>	Not observed	Marginal	Satisfactory	Very Good	Excellent
• Stated goals clearly and concisely	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
• Focused discussions on relevant topics	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
• Asked questions in non-threatening way	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
• Applied bedside teaching to demonstrate history-taking and physical exam skills	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
• Emphasized problem solving (thought process leading to decisions)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
• Integrated social, ethical/ethical aspects of medicine	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
• Stimulated team members to read, research and review pertinent topics	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
• Accommodated teaching to actively incorporate all members of the team	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
• Provided special help to team members	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Comments:					

<b>3. Patient care and Professionalism</b>	Not observed	Marginal	Satisfactory	Very Good	Excellent
• Placed the patients interest first	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
• Displayed sensitive, caring, respectful attitude towards patients	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
• Established a rapport with tem members	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
• Showed respect for residents	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
• Served as a role model	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
• Was enthusiastic and stimulating	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
• Demonstrated gender and cultural sensitivity	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
• Recognized own limitations; was appropriately self-critical	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
• Encouraged housestaff to bring up problems	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Comments:					

**Trainee Evaluation of Attending at end of Rotation -continued**

<b>4. Medical Knowledge</b>	<b>Not observed</b>	<b>Marginal</b>	<b>Satisfactory</b>	<b>Very Good</b>	<b>Excellent</b>
• Demonstrated broad knowledge of nephrology					
• Was up-to-date					
• Identified important elements in case analysis					
• Used relevant medical/scientific literature in supporting clinical advice					
• Discussed pertinent aspects of population and evidence-based medicine					
Comments:					

<b>5. Practice Based Learning and Improvement</b>	<b>Not observed</b>	<b>Marginal</b>	<b>Satisfactory</b>	<b>Very Good</b>	<b>Excellent</b>
• Explicitly encouraged further learning					
• Motivated residents to self-learn					
• Evaluated residents ability to analyze or synthesize knowledge					
Comments:					

<b>6. System-based Practice</b>	<b>Not observed</b>	<b>Marginal</b>	<b>Satisfactory</b>	<b>Very Good</b>	<b>Excellent</b>
• Reviewed expectations of each team member at beginning of rotation					
• Provided useful feedback including constructive criticism to team members					
• Based service responsibilities and teaching functions					
• Encouraged housestaff to bring up problems					
Comments:					

<b>7. Recommendations</b>	<b>Yes</b>	<b>NO</b>
Would you recommend that this faculty member continue to serve as an attending physician for the nephrology training program?		
To enhance professional development, would you recommend that this faculty member undergo formal training in teaching and faculty education?		
Has your evaluation been communicated in open discussion with the Attending nephrologists?		
Overall comments		

### Appendix 9: Schedule of Weekly Activities

Time	Monday	Tuesday	Wednesday	Thursday	Friday
7:00-8:30 AM	Femoral Cannulation: Inpatient Dialysis Units	Femoral Cannulation: Inpatient Dialysis Units	Femoral Cannulation: Inpatient Dialysis Units	Femoral Cannulation: Inpatient Dialysis Units	Femoral Cannulation: Inpatient Dialysis Units
8:30-11:00 AM	Consultation Round (CR)	Transplant Conference <sup>1</sup> 8:00-9:00 AM	Interdisciplinary Patient care conference (KCH fellow), TBA	(CR) medical Grand Rounds 8:30-9:30 AM: Alumni Auditorium near Library	(CR)
11:00-12:00 PM	Morning Report with Division Chief <sup>2</sup>	Morning Report with Division Chief <sup>2</sup>	Morning Report with Division Chief <sup>2</sup>	Morning Report with Division Chief <sup>2</sup>	Morning Report with Division Chief <sup>2</sup>
12:00-1:00 PM	CR Library Time Research Time Femoral Cannulation Lunch	CR Fellows Seminars & Luncheons TBA	Fellows seminar Fluid and electrolyte Lunch	CR Lunch	CR
1:00-2:00 PM	Renal Clinic <sup>3,4</sup>	CR	CR	CR Home dialysis Clinic, Parkside Dialysis Unit (Ambulatory Fellow) Transplant Conference <sup>1</sup> (Fellow in Transplant)	Fellows Seminar Renal Physiology and Hypertension
2:00-3:00 PM	Renal Clinic <sup>3,4</sup>	Renal Grand Rounds <sup>5</sup>	CR	CR Transplant Conference <sup>1</sup> (Fellow in Transplant)	CR
3:00-4:00 PM	Renal Clinic <sup>3,4</sup>	CR	CR	CR	CR
4:00-5:00 PM	CR	Journal Club <sup>6</sup> or Renal Biopsy Conference <sup>7</sup>	CR	CR Fellows seminar	CR

1. Surgery Conference Room, B8-343
2. Dr. Friedman's Office, B6-321
3. SUNY Downstate, suite A
4. KCHC, Walk in Clinic
5. Perrin Long Library, 6<sup>th</sup> Floor Medicine Department
6. Pathology Library-BSB Room B4-5
7. Special Functions Room near Library

Fellows should also check bulletin board outside Dr. Friedman's office for meeting notices, changes or cancellations

**Appendix 10: Renal Biopsy Check List**

PatientName \_\_\_\_\_ MR# \_\_\_\_\_

Admission Date: \_\_\_\_\_ Biopsy date \_\_\_\_\_

Place of Biopsy: KCH                      SUNY    Service; \_\_\_\_\_ Ward \_\_\_\_\_ Room: \_\_\_\_\_

Brief, pertinent, history: \_\_\_\_\_

Rationale for biopsy: \_\_\_\_\_

Differential diagnosis: \_\_\_\_\_

Relative contraindications: \_\_\_\_\_

Attending opinion: \_\_\_\_\_

**Mark each of the conditions below as reviewed and permitting safe biopsy:**

Two kidneys documented: \_\_\_\_\_                      Blood pressure satisfactory: \_\_\_\_\_

Consent signed: \_\_\_\_\_                      Post biopsy care planned: \_\_\_\_\_

Blood typed and ready now: \_\_\_\_\_                      Housestaff advised and agree: \_\_\_\_\_

Explaining note in chart: \_\_\_\_\_                      Pathology notified (scheduled): \_\_\_\_\_

**Confirm each item as reviewed:**

INR normal \_\_\_\_\_                      No aspirin, persantin, NSAID: \_\_\_\_\_

Hematocrit (date): \_\_\_\_\_                      BUN/creatinine (date): \_\_\_\_\_

No heparin for at least 6 hours: \_\_\_\_\_                      Platelets (date): \_\_\_\_\_

Comments: \_\_\_\_\_

Signed: \_\_\_\_\_ (attending) \_\_\_\_\_ (fellow)

Date: \_\_\_\_\_

A written H& P should be attached to the check list and submitted to the Program Director to be used in organizing biopsy conferences.

## Appendix 11: Step-by-step Guide to Renal Biopsy

1. Obtain informed consent and make sure the check list (see appendix 1 and 2 appendix) is filled out and there are no contraindications.
2. If the patient appears uremic, arrange for dialysis before the biopsy.
3. If the patient does not appear uremic but serum creatinine is  $>5$  mg/kg, give ddAVP 25 mcg in 100cc NS IV over 30 minutes on call to sonogram or consider dialysis before biopsy to reduce risk of bleeding.
4. Assemble your biopsy tray and make sure you have everything as detailed in appendices 1 and 2.
5. Make sure all arrangements are made to transport the patient on time to sonogram
6. In sonogram, for native biopsies, position the patient in prone position and introduce a pillow or stack of linen on the lower abdomen. When you support the lower abdomen this way, the back is flatter and kidney is more stable. For transplant biopsies, the patient remains supine or may need a slight tilt towards the side opposite the transplant kidney.
7. For native kidneys, assist sonographer in scanning both kidneys briefly and select the one with the best image. For both native and transplant biopsies, assist the sonographer to obtain the sonographic view as vertical as possible, towards the lower pole. Determine the distance of the surface and mid cortex of the lower pole of the kidney from the skin.
8. Mark the location with a marker, and follow the 'time out' procedure, which confirms the correct patient and site of procedure.
9. Clean your hands and wear a sterile gown, mask, cap and gloves.
10. Your assistant will open 4X4 gauze and pass to you in betadine.
11. Clean the marked area and surroundings three times.
12. Change your gloves.
13. Your assistant will open the spinal tray, where you will pick up sterile drapes
14. Drape the clean area with the blue drape and extend the sterile field with white drape.
15. Use a sterile 10CC syringe and 18 or 20G needle to draw lidocaine.
16. Remove the 18 or 20G needle and cap with a 25G needle.
17. Stick the skin in a horizontal position, creating a 'bleb'.
18. Remove the needle from the bleb and stick vertically in the middle of the bleb.
19. For native biopsies, proceed as follows:
  - a. Remove the 25G needle and cap with a 22G needle.
  - b. Stick vertically, with negative pressure, in the middle of the bleb and inject lidocaine as you advance to the length of the needle. The 22G needle is 3 inches and most native kidneys are deeper than 3 inches, however, be careful not to exceed the distance to the surface of the skin.
  - c. Exit the skin, remove the needle from the syringe and apply slight pressure. You might need to refill the syringe at this time with lidocaine in preparation for deeper anesthesia to the renal capsule.
  - d. Use #11 scalpel and open the skin: one stick vertically and slightly rotate.
  - e. Take the spinal needle from the tray and measure the distance to the surface of the kidney.
  - f. Insert the needle vertically or as determined from sonography to the desired depth.

- g. Remove the inner core of the spinal need, attach the outer core with the lidocaine filled syringe screwing carefully and holding the outer core so that it does not go deeper in the screwing process.
- h. Inject 2-3cc of lidocaine to anesthetize the renal capsule and exit with negative pressure as you give lidocaine to the tract.
- i. Load the biopsy gun, hold it like a pen and introduce through the tract, less 2cm and during quite inspiration advance the rest of the 2cm.
- j. Shoot and exit quickly. Expose the sample and deliver to the pathology technician. Apply pressure and wait for the technician to determine if kidney tissue.
- k. Load the gun and repeat as above to obtain more specimens if the initial specimen is inadequate.
- l. If kidney tissue is not obtained, repeat the sonogram and proceed as before. Alternatively, use the inner core of the spinal needle to introduce slowly to the mid cortex as previously determined. If the inner core is within the kidney, it will swing with respirations. Remove the inner core, noting how deep it was and the angle of insertion. Once re-located this way, note the direction of the needle and insert the gun to the same depth and direction.
- m. If adequate tissue is obtained and bleeding stops, apply band aid on the wound and turn the patient supine.
- n. Discard all sharps appropriately first, then other garbage
- o. Write a procedure note.
- p. Arrange to transport the patient back to the floor and obtain immediate vital signs.
- q. Write your post-biopsy orders as follows:
  - i. Monitor vitals q15 mins X 2 hrs
  - ii. Then q30 mins X 2 hrs
  - iii. Then q1hrly X 4 hours and if stable q-shift
  - iv. Bed rest X 8 hours
  - v. Stack and rack all urine specimens
  - vi. CBC in 6 hrs
- r. For outpatients, if vitals are stable, there is no hematuria and Htc is within 3% variance from baseline patient can be discharged. If there is hematuria, observe overnight and monitor CBC q4-6hrs, until hematuria clears, at which time, if hematocrit remains stable, the patient can be discharged.
- s. For inpatients, if stable, continue with standing orders. If there is hematuria, monitor CBC q4-6hrs until hematuria stops.
- t. Transfuse as needed
- u. Do not hesitate to call surgery if there is a significant and progressive decrease in hematocrit or if the patient has massive hematuria that will not resolve. Obtain CT of the kidney to determine nature of hematoma. Remember surgical consultation before any imaging studies in case the patient needs surgical intervention right away.

20. For Transplant biopsies, proceed as follows:

- a. Note that the 22G needle is 3 inches long, thus for transplant biopsies be careful to go ONLY the desired length of the needle since the kidney is very superficial. Give 2-3cc anesthesia to the surface of the allograft.
- b. Use the #11 scalpel to make a small 'nick' in the skin. This nick may be enough to open the skin since sometimes the transplant kidney may be 1 inch from the skin.
- c. Load the biopsy gun, hold it like a pen and introduce to the desired depth Shoot and exit quickly.
- d. Apply pressure immediately. There is a much better chance of stopping bleeding in the transplant kidney if adequate pressure is applied than with native kidneys since the allograft is superficial.
- e. Expose the sample and deliver to the pathology technician. Apply pressure and wait for the technician to determine if kidney tissue is obtained.
- f. Load the gun and repeat as above to obtain more specimens if the initial specimen is inadequate.
- g. If kidney tissue is not obtained, repeat the sonogram and proceed as before. Once adequate tissue is obtained and bleeding stopped, apply adequate pressure for at least 15 minutes, and then apply a pressure dressing.
- h. Discard all sharps appropriately first, then other garbage.
- i. Write a procedure note.
- j. Arrange to transport the patient back to the floor and obtain immediate vital signs.
- k. Write your post-biopsy orders as follows:
  - i. Monitor vitals q15 mins X 2 hrs
  - ii. Then q30 mins X 2 hrs
  - iii. Then q1hrly X 4 hours and if stable q-shift
  - iv. Bed rest X 8 hours
  - v. Stack and rack all urine specimens
  - vi. CBC in 6 hrs
- l. For outpatients, if vitals are stable, there is no hematuria and Htc is within 3% variance from baseline patient can be discharged. If there is hematuria, observe overnight and monitor CBC q4-6hrs.
- m. For inpatients, if stable, continue with standing orders. If there is hematuria, monitor CBC q4-6hrs.
- n. Do not hesitate to call surgery if there is a significant and progressive decrease in hematocrit or if the patient has massive hematuria that will not resolve. Obtain CT of the kidney to determine nature of hematoma. Remember surgical consultation before any imaging studies in case the patient needs surgical intervention right away.

***Real time ultrasound for guided biopsies:***

1. Proceed as above until ready to introduce the biopsy gun.
2. Use a sterile probe cover, with gel in it, to cover the probe. Apply gel lateral to the marked area.
3. Obtain a longitudinal view with the sonogram. When the lower pole is well positioned in the middle of the screen, insert the gun to the pre-determined depth and follow the need as a bright mark, as it enters the kidney.

4. Shoot the gun and exit.
5. Repeat as necessary to obtain an adequate specimen, but don't be overzealous and try to stay within the predetermined distance to the mid cortex.
6. Proceed as in 19.n or 20.h.

## Appendix 12: Step-by-step Guide to Central Venous Cannulation

1. Obtain informed consent and make sure there are no contraindications
2. Have your supplies ready (lidocaine, sterile gloves, gown, face mask, cap, sterile drapes, 25, 22, 20, 18G needles, 10cc syringe, 5cc syringe, introducer needle, guide wire, dilator and dual lumen central line). These supplies are usually put together by the nurse.
3. Position the patient in prone position and introduce a pillow or stack of linen on the lower back if obese, to expose the femoral vein more superficially.
4. For femoral cannulation, locate the femoral vein and mark 1cm medial but at least 3cm below the inguinal ligament. Note that hematomas can be compressed if well below the inguinal ligament. NEVER mark above the inguinal ligament, because bleeding cannot be controlled by compression.
5. For other central lines, locate the landmarks as described in critical care text.
6. Follow the 'time out' procedure, which confirms the correct patient and site of procedure.
7. Clean your hands and wear a sterile gown, glove, cap and face mask.
8. The nurse will open 4X4 gauze and pass to you in betadine.
9. Clean the marked area and surroundings three times.
10. Change your gloves.
11. The nurse will pass sterile drapes to you.
12. Drape the clean area and extend the sterile field as wide as possible to avoid contamination.
13. Use a sterile 10CC syringe and 18 or 20G needle to draw lidocaine.
14. Remove the 18 or 20G needle and cap with a 25G needle.
15. Stick the skin in a horizontal position, creating a 'bleb'.
16. Remove the needle from the bleb and stick at 30° toward the flow of the vein.
17. Remove the 25G needle and cap with a 22G needle.
18. Stick the marked area with the 22G at 30°, with negative pressure; advance, while giving lidocaine, until venous blood can be obtained.
19. Exit the skin, remove the needle from the syringe and apply slight pressure. You might need to refill the syringe at this time with lidocaine in preparation for deeper anesthesia if the patient is very obese.
20. Attach the introducer needle to the lidocaine-filled syringe and stick the marked area with the 22G at 30°, with negative pressure; advance, while giving lidocaine, until venous blood can be obtained.
21. Screw off the syringe and pass the guide wire through until well into the vein. While screwing off the syringe, keep the introducer needle as horizontal as possible because if the blood is arterial, it may splash on your face.
22. Remove the introducer needle, while making sure the guide wire does not come off the vein.
23. Pass the dilator through the guide wire and dilate the tract, into the vein.
24. Remove the dilator and apply pressure to the incision site.
25. Clamp the red port of the dual lumen catheter and pass the single end through the guide wire into the vein, applying moderate pressure.
26. REMOVE the guide wire.
27. Using a prefilled 10cc saline syringe, draw blood from the blue port to establish free flow, then flush it with saline. Repeat this process for the red port.

28. Discard sharps appropriately first, then other garbage
29. If in ICU, secure the line and use a central line dressing kit to dress the area.
30. In non-ICU settings, the central line should be removed after dialysis, pressure applied for at least 15 minutes and then dressed with a pressure dressing. Inpatients can be transported back to their floor for observation, whereas outpatients have to be observed for at least 4 hours before discharge.
31. For femoral cannulations, if accidental arterial puncture is noted, compress the area for at least 15 minutes, and then apply a pressure dressing. Continue as above on the opposite side or give sufficient time for bleeding from the arterial puncture to resolve before attempting on the same side.
32. For non-femoral cannulations, if arterial puncture is noted, do not try on the opposite side. Compress the area as much as possible, apply pressure dressing and obtain CXR to make sure there are no complications. Also after all non-femoral cannulations, a CXR is mandatory to confirm central venous placement.
33. All central lines can be placed under ultrasound guidance using all the steps above. The probe must be covered with a sterile gel-filled probe cover.

### **Appendix 13: Step-by-step Guide to Acute Peritoneal Dialysis Catheter Insertion**

1. Obtain informed consent and make sure there are no contraindications
2. Have your supplies ready (lidocaine, sterile gloves, gown, cap, face mask, sterile drapes, 25, 22, 20, 18G needles, 10cc syringe, 5cc syringe and your Cook catheter set, which includes an introducer needle, guide wire, dilator and the PD catheter).
3. Position the patient in prone position and identify the landmarks. The three landmarks are, with the lowest probability of blood vessels are:
  - a. Lateral to the rectus muscle on the line connecting the anterior superior iliac spine to the umbilicus on either side, preferably on the right side.
  - b. Midline, 3cm below the umbilicus
4. Mark the area, and follow the 'time out' procedure, which confirms the correct patient and site of procedure.
5. Clean your hands and wear a sterile gown, glove, cap and face mask.
6. The assistant will open 4X4 gauze and pass to you in betadine.
7. Clean the marked area and surroundings three times.
8. Change your gloves.
9. The assistant will pass sterile drapes to you.
10. Drape the clean area and extend the sterile field as wide as possible to avoid contamination.
11. Use a sterile 10CC syringe and 18 or 20G needle to draw lidocaine.
12. Remove the 18 or 20G needle and cap with a 25G needle.
13. Stick the skin in a horizontal position, creating a 'bleb'.
14. Remove the needle from the bleb and stick at right angles to the skin
15. Remove the 25G needle and cap with a 22G needle.
16. Stick the marked area with the 22G at slightly angling towards the pelvis, with negative pressure; advance, while giving lidocaine, until peritoneal fluid can be obtained, or sudden disappearance of resistance (usually about 3-5 inches deep).
17. Exit the skin, remove the needle from the syringe and apply slight pressure. You might need to refill the syringe at this time with lidocaine in preparation for deeper anesthesia if the patient is very obese.
18. Attach the introducer needle to the lidocaine-filled syringe and stick the marked area slightly angling towards the pelvis, with negative pressure; advance, while giving lidocaine, until peritoneal fluid can be obtained, or sudden disappearance of resistance (usually about 3-5 inches deep).
19. Screw off the syringe and pass the guide wire through, angling towards the pelvis until well into the peritoneum.
20. Remove the introducer needle, while making sure the guide wire does not come off the peritoneum.
21. Pass the dilator through the guide wire and dilate the tract, into the cavity.
22. Remove the dilator and apply pressure to the incision site.
23. Pass the longer end of the Cook catheter through the guide wire into the peritoneal cavity, aiming to place it in the pelvis.
24. REMOVE the guide wire.
25. Use an empty 10cc syringe to draw peritoneal fluid to confirm location.
26. Discard sharps appropriately first, then other garbage.

27. Secure the catheter to the abdomen and use a central line dressing kit to dress the area.
28. Do one small volume e.g. 500cc in and out to confirm patency.
29. Write a procedure note.
30. Call surgery and obtain imaging study for persistent abdominal pain, hemoperitoneum, or fecal material in the peritoneal fluid.
31. If patency is confirmed, write PD orders using Dianeal 1.5%, 2.5%, or 4.25%, 2L bags, 4 to 6 exchanges per day. The infusion, dwell and drain times can be calculated depending on the number of exchanges. Note that for acute PD, the more frequent the exchanges, the better the clearance and ultrafiltration.
32. PD catheters can also be placed using laparoscopic guidance but this requires more technical expertise.

**Appendix 14: Mentor Selection and Meetings**

**A. SELECTION:** Each fellow will be assigned one mentor. Each fellow is expected to speak with the assigned mentor and at least 2 more attendings of the division about on-going studies and areas of interest. Once an area of interest and project is identified, confirm your assigned mentor or indicate your second choice below. Please return this sheet to Judy Columbo before your next rotation.

Fellow's Name: \_\_\_\_\_

Attending	Date	Signature
Dr. Eli A. Friedman		
Dr. Barbara Delano		
Dr. Mariana Markell		
Dr. Clinton Brown		
Dr. Man Oh		
Dr. Robert Barth		
Dr. Phillip Goldwasser		
Dr. Yalem Woredekal		
Dr. Anthony Joseph		
Dr. Moro Salifu		
Dr. Frieda Wolf		
Dr. Morton Kleiner		
Dr. Saggi Subodh		

After speaking with the above attendings whose signatures appear above and after evaluating their interest and my interest:

- .. I confirm my assigned mentor as Dr.....
- .. I choose another mentor as Dr.....

Fellow's signature: \_\_\_\_\_ Date: \_\_\_\_\_

**B. MENTOR AND FELLOW MEETING SIGN IN SHEET**

Meeting #.....

Name of Attending \_\_\_\_\_

Name of Fellow \_\_\_\_\_

Attending Comments of fellows Progress \_\_\_\_\_

\_\_\_\_\_

### Appendix 15: Full Division Organizational Chart

