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A. Foreword: From the Chief of Nephrology

Welcome to the Nephrology Fellowship at Downstate. During your two years of fellowship, 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 nephrologists, who will be available to you and will provide you with all the necessary tools you need to succeed. The faculty: fellow ratio is 2:1, providing you with the best level of teaching and supervision. How well you achieve your goals will depend on how much effort you put in as a learner. The nephrology fellowship manual attached below 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 three 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. Optional third year is available for ACGME accredited Nephrology Critical Care line, or non ACGME accredited fellowship training in Interventional nephrology or Renal transplant, or ESRD administration. 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 an 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, and continuous renal replacement therapies. The fellow would also learn 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 AND understanding of the management of the renal transplant recipient
2. Acquire more competence in the first-year objectives
3. Prepare patients physically and mentally for outpatient dialysis and take care of all aspects of outpatient dialysis
4. Pick a topic of choice and prepare for renal grand rounds as part of acquiring presentation skills
5. Acquire the ability to work in the private practice setting, including an understanding of documentation and billing guidelines
6. Acquire the highest level of professionalism and be prepared to represent the Nephrology Division at Downstate to the world

The table below reflects Medical Content Categories used by the American Board of Internal Medicine for Board Certification in Nephrology.

Medical Content Category	% of Exam
Sodium and Water Abnormalities	8%
Acid-Base and Potassium Disorders	9%
Calcium, Phosphorus, and Magnesium Disorders and Stones	4%
Chronic Kidney Disease	22%
Hypertension	10%
Tubular, Interstitial, and Cystic Disorders	4%
Glomerular and Vascular Disorders	12%
Kidney Transplantation	11%
Pharmacology	5%
Acute Kidney Injury and Intensive Care Unit Nephrology	15%
	100%

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. 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, MBA, FACP
Chair of medicine

Saggi Subodh J, MD, MPH
Professor of Medicine, Program Director
Director, SUNY Ambulatory dialysis.
Director, Pancreas transplant and extracorporeal therapies
Subodh.saggi@downstate.edu

B. Nephrology Division Faculty and Staff

Name	Picture	Title	Area of Interest	Phone (718)

Moro O. Salifu, MD, MPH, MBA, MACP Moro.salifu@downstate.edu		Professor and Chair, Department of Medicine. Chief, Division of Nephrology. Director, Transplant Program.	Renal Transplant and dialysis Outcomes research, Allograft Dysfunction, Glomerular Diseases,	270-1584
Eli A. Friedman, MD, MACP, FRCP eli.friedman@downstate.edu		Distinguished Teaching Professor of Medicine SUNY Downstate	Diabetic Nephropathy, Uremia	270-1584
Barbara Delano, MD, MPH, FACP barbara.delano@downstate.edu		Distinguished Service Professor; Chairman, Dept of Community Health – School of Public Health	CKD, Epidemiology and Social determinates of health	270-2425
Man S. Oh, MD Man.oh@dowstate.edu		Professor of Medicine Director, Fluid and Electrolytes, SUNY Downstate	Fluid and Electrolytes	270-1565
Saggi Subodh, MD, MPH Subodh.saggi@downstate.edu		Professor of Medicine, Program Director and Director, SUNY ambulatory dialysis. Director, pancreatic transplant and extracorporeal therapies	AKI, clinical trials, Anemia in CKD and ESRD, metabolomics	270-1584

Gary Briefel, MD gary.briefel@downstate.edu		Associate Professor of Medicine, Nephrology and affiliate, Kings County Hospital	Clinical Nephrology, dialysis	613-8157
Name	**Picture**	**Title**	**Area of Interest**	**Phone (718)**
Clinton D. Brown, MD Clinton.brown@downstate.edu		Professor of Medicine, Deputy chief of nephrology and Chair of IRB SUNY Downstate	Lipid Metabolism Atherosclerosis in renal diseases	270-1729/1584
Mariana S. Markell, MD Mariana.markell@downstate.edu		Professor of Medicine, SUNY Downstate	Post-transplant Metabolic Diseases, Diabetic nephropathy, Social determinant of health	270-1584
Robert H. Barth, MD Robert.barth@va.gov		Associate Professor of Medicine of Dialysis, VA Medical Center	Hemodialysis, Infections, Nutrition, Bone Disease	836-3762
Mari Alex Michel Marie-alex.michel@va.go		Assistant Professor of Medicine Director, of Dialysis and affiliate Program Director, VA medical center	Hemodialysis	270-1584

Name	Picture	Title	Area of Interest	Phone (718)
Mary Mallappallil, MD Mary.Mallappallil@downstate.edu		Assistant Professor of Medicine, Director, CME Activities	Hemodialysis outcomes	613-8153
Arye, Kremer.MD Arye.kremer@downstate.edu		Clinical Assistant Professor of Medicine Director of inpatient hemodialysis	Interventional nephrology	760-0204
Anthony J. Joseph, MD Anthony.joseph@downstate.edu		Clinical Associate Professor of Medicine	Clinical Nephrology and Hemodialysis	270-2198
Akten Sine MD Sine.akten@downstate.edu		Clinical Assistant Professor of Medicine	Hemodialysis	613-8175
Ernie Yap MD Ernie.yap@downstate.edu		Clinical Assistant Professor of Medicine	Hemodialysis	270-1585
Phillip Goldwasser MD Phillip.goldwasser.@va.gov		Assistant Professor of Medicine Director of CAPD, VA Medical Center	Hemodialysis Dialysis	836-3762

C. Summary of the Fellowship Program

The Nephrology Training Program at Downstate Medical Center began in 1964 and has operated continuously since. As of July 1, 2004, there will be ten (10)

fellows enrolled in a two-year program. An optional third year, devoted to investigation, is contingent on gaining funding for suitable projects. Institutions participating in Downstate's Nephrology Training Program include:

Kings County Hospital Center (KCHC, 6 months) -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, femoral cannulations and percutaneous kidney biopsies. The renal fellow is responsible for coordinating medical care of all ESRD patients. CKD care is afforded in two renal clinic sessions each week. At all times, supervision of the renal fellow is the responsibility of an attending nephrologist.

University Hospital of Brooklyn (UHB, 9 months) -UHB provides a full menu of renal diseases including kidney transplant related experience. Acute dialysis care is a key focus of the service, and exposure to 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. When the fellows are in UHB they rotate in 3 different nephrology services, which includes consult, transplant and vascular access services rotations.

Brooklyn Veterans Hospital (BVH, 6 months) -With two assigned renal fellows, the BVH rotation focuses on managing ambulatory renal patients. This rotation supervised by Dr. Goldwasser and Mari-Alex Michel 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.

UHB Transplant (3 month) -The Transplant Service performs approximately 90 kidney transplants each year and provides hemodialysis vascular access for patients at KCHC and UHB. Renal fellows do daily rounds with a supervising transplant nephrologist. First year fellow does 1-month training and 2nd year fellow does 2 months training in transplant.

Mount Sinai Hospital (1 Month)

Nephrology second year fellows to rotate through the Home Dialysis Program at Mount Sinai School of Medicine/Mount Sinai Hospital for their training in home dialysis, which includes Home Peritoneal Dialysis as well as Home Hemodialysis. Downstate fellows will be trained in learning how to screen appropriate candidates for Home Dialysis, learn different types of procedures needed to accomplish access to either peritoneal membrane for Home Peritoneal Dialysis or vascular access appropriate for home hemodialysis therapies. Fellows will be trained with Dr. Jaime Uribarri, Home Dialysis Director. Fellows will also spend time in their outpatient Interventional facility to see PD catheters being placed under fluoroscopy, as well as observe in the Operating Room laparoscopic placement of PD catheters. Fellows will learn how to manage catheter post operatively, how to start low volume peritoneal dialysis immediate post op if needed.

Interventional Nephrology (1 month)- The fellow will gain the required knowledge and experience in managing all kinds of vascular access problems. The fellow is responsible for all dialysis patients at UHB and attends the weekly home dialysis clinics at Parkside.

Clinics: Each fellow is expected to attend several outpatient continuity clinics: UHB, KCH, and VA outpatient clinics. The Transplant Clinics are attended when the fellow participates on those respective services.

UHB Clinic: Typically, each fellow sees 4-8 CKD patients during a 1/2-day clinic and follows them over a two-year period, under the supervision of Dr. Barbara G. Delano and other attendings.
KCH Clinic: Typically, each fellow sees 4-8 CKD patients during 1/2-day clinics on Mondays and Wednesdays and follows them over a two-year period, under the supervision of Dr. Mary Mallappallil and Dr. Akten
VA Clinic: The fellow sees 4-8 patients during a 1/2-day clinic for each fellow every week. The fellows rotating at the VA attend this clinic, under the supervision of Dr Marie-Alex Michel and Phillip Goldwasser
Transplant Clinic: The fellow sees 4-6 transplant patients during 1/2-day clinic under the supervision of Drs. Salifu, Saggi and Markell.
Calls: Weekday calls begin at 5:00PM and ends at 8:00P.M. Weekend calls begin on Friday at 5:00PM ending at 8:00AM Saturday and then next fellow usually senior covers the Sunday 8 am to 8 am Monday. **However, to comply with the 10-hour and 16-hour rules (see below) the fellow leaves the**

hospital at completion of their work and comes back at 10 hours later in the next morning. All telephone calls from patients at night and on weekends from their homes should be discussed with the attending on call. The fellows are on call an average of five times per month.

Didactic Training: Clinical conferences, seminars, small discussion groups, journal clubs and one-on-one instruction are integral parts of the Nephrology Fellowship Program. The schedule of conferences includes:

- Mondays, Thursdays and Fridays 11:00AM - 12:00PM (Morning Report)
- Tuesday 3:00PM - 4:00PM (Journal Club or Biopsy conference Nephrology Grand Rounds), 4:00PM - 5:00PM (Nephrology Grand Rounds Journal Club or Biopsy conference)
- Thursdays 11:00AM – 12:00PM (Fluid and Electrolytes)
- Thursdays 8:00AM (Medicine Grand Rounds)

Duty Hours

The SUNY Downstate medical center Fellowship in Nephrology program complies fully with the ACGME duty hour guidelines. These guidelines are summarized as follows:

- Duty hours are limited to 80 hours per week averaged over a 4-week period.
- Fellows will be provided 1 day in 7 free from all educational and clinical responsibilities, averaged over a 4-week period.
- Continuous on-site duty must not exceed 24 consecutive hours. Fellows may remain on duty for up to 6 additional hours to participate in didactic activities, transfer care of patients, conduct outpatient follow-up clinics, and maintain continuity of patient care.
- No new patients may be accepted after 24 hours of continuous duty.
- Adequate time for rest and personal activities will be provided. This will consist of a 10-hour time period provided between all daily duty periods.

Nephrology fellow work hours are subject to the 80 hours per week limit as stated above. Although call is taken from home, fellows may be required to return to the hospital to assist in the care of a critically ill patient or to perform

a procedure. The hours the fellow spends in the hospital count toward the 80-hour limit for the week.

All fellows are required to submit their duty hours weekly in new-innovaiton. The duty hours are regularly monitored by the program coordinator and the program director.

First year fellow takes Friday and Saturday call and Second year fellow takes Sunday calls.

D. Curriculum of the Nephrology Fellowship Program

I. Goals & Objectives

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 procedures and in all 6 ACGME competency areas. The Program also introduces trainees to renal medicine's multiple opportunities for investigation, research and education. Trainees are encouraged to design individual specific projects emphasizing those areas of greatest personal interest, while fulfilling stipulated requirements for subspecialty certification. Specific objectives the fellow should achieve by the end of each rotation include assessment of the core competencies as follows:

Patient Care

- Obtain a comprehensive history and physical examination pertinent to the evaluation of kidney disease
- Accurately assess a patient for the presence of uremic symptoms
- Accurately assess a patient's volume status
- Utilize laboratory and imaging data to formulate a rational differential diagnosis for the commonly encountered presenting problems in nephrology
- Demonstrate the ability to estimate GFR from serum creatinine

- Demonstrate the ability to direct management of common electrolyte disorders
- Assess patients for adequacy of fistula/graft function
- Assess patients for adequacy of dialysis
- Identify patients who require management by nephrologists and those who can be managed by general internists

Medical knowledge

Demonstrate knowledge appropriate for a nephrologist of the following:

- Chronic kidney disease
- Glomerular/Vascular disorders
- Kidney transplantation
- Hypertension
- Electrolyte and acid-base physiology
- Mineral metabolism
- Tubular/Interstitial and cystic disorders
- Clinical pharmacology and Miscellaneous
- Acute renal failure/ICU nephrology
- Myeloma kidney
- Kidney stones
- Management of chronic renal failure
- Principles of dialysis
- Transplantation therapy

PBPI/SBP

- Demonstrate ability to use information technology to answer questions in nephrology and ability to analyze the quality of evidence supporting interventions in nephrology
- Identify patient safety issues in the dialysis unit and understand procedures in place/propose new procedures to minimize errors
- Demonstrate understanding of reimbursement for renal replacement therapies
- Understand the roles of members of the health care team treating end-stage renal disease patients – nurse, nephrologist, dietician, social worker, transplant coordinator, podiatrist, diabetes educator, vascular surgeon, etc and work effectively with other team members

Interpersonal and communication skills

- Demonstrate ability to write a coherent and useful consultation note
- Demonstrate empathy for patients with newly diagnosed end-stage renal disease and those with complications of renal replacement therapies
- Clearly and appropriately explain diagnostic thinking and management options/plans to patients and families;

Professionalism

- Consistently demonstrate respect for patients, staff, and colleagues
- Demonstrate understanding of the issues surrounding informed consent for procedures in nephrology
- Demonstrate understanding of major ethical issues in nephrology

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Teaching methods and evaluation of the competencies

	Teaching methods	**Evaluation**
Patient Care	Clinical rounds, role modeling, self learning	Faculty evaluation
Medical knowledge	Core curriculum teaching, didactics, reading assignments, conferences, morning report, grand rounds, self learning	Faculty evaluations, written exams
PBPI/SB	Role modeling, didactics, multidisciplinary conferences, M&M review, self learning	Faculty evaluations, 360o evaluations, patient questionnaires
Interpersonal and communication skills	Role modeling, didactics, multidisciplinary conferences, self learning	Faculty evaluations, 360o evaluations,
Professionalism	Role modeling, didactics, multidisciplinary conferences, self learning	Faculty evaluations, 360o evaluations,

II. Rotations

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

Kings County Hospital consultations (**Appendix 1)**	6 months
University Hospital consultations **(Appendix 2)**	4 months
Veterans Administration **(Appendix 3)**	6 months
Renal Transplantation **(Appendix 5)**	3 months
Research / Vacation	2 months
Ambulatory/Home HD MSH **(Appendix 6)**	1 months
Dialysis/Interventional **(Appendix 7)**	2 month
Total	24 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. The above timelines are a general guideline and not all fellows will get the exact same time rotation which depends on number of fellows we get each year and is also under the discretion of program director.

a. Inpatient Nephrology

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.

Teaching Methods:

As pupil (learning from nephrology faculty)

As teacher (internal medicine residents & students)

Self learner: Reading in:

The fellow MUST read the textbooks in bold

- **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**
- **Gabriel M Danovitch: Handbook of Kidney Transplantation (Lippincott Williams & Wilkins Handbook)**

- 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
- Library resources free on SUNY Downstate Library site (www.downstate.edu) includes Up-To-Date, PubMed search and many more databases
- Hypertension, Dialysis and clinical Nephrology (HDCN) Website, (www.hdcn.com)
- Nephrology Journals:
- 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
- Hemodialysis International
- The New England Journal of Medicine

For a complete listing of nephrology journals, visit www.milach.com/journal

Mix of diseases:
End stage renal disease, acute renal failure, glomerular and tubulo-interstitial diseases, acid-base and electrolyte disorders as well as diabetes and hypertension

Patient characteristics:
Inner city, middle class and veteran populations in Brooklyn

Types of clinical encounters:
ESRD
Hemodialysis
CAPD
Renal Transplant

Home hemodialysis and peritoneal dialysis

Pre-ESRD
Acute kidney injury
CKD
Nephritic & nephrotic syndromes

Procedures:
Hemodialysis
Acute hemodialysis prescription
Acute hemodialysis catheter placement
Vascular access management
Chronic hemodialysis prescription

Peritoneal Dialysis
Acute peritoneal dialysis catheter placement
Acute peritoneal dialysis prescription
Ambulatory peritoneal dialysis prescription and catheter care

Continuous Renal Replacement Therapies (CRRT), including plasma exchange

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

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

Method of evaluation of Fellow's performance:
A biweekly undocumented and a monthly documented evaluation **(see I and 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

Educational purpose: Training under supervision of an attending physician in 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.

Teaching Methods (see II, a)
Mix of diseases (see II, a)
Patient characteristics (see II, a)
Types of clinical encounters

ESRD patients

- Patients requiring consultation for dialysis and management of complication such as anemia, hyperphosphatemia, etc
- 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 glomerulonephritis, 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

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

Reading lists (see II, a)
Method of evaluation (see II, a)

c. Interventional nephrology
Educational purpose: Training under supervision of an attending physician in all aspects of interventional nephrology. This rotation is procedure oriented and the fellow will master all the technical skills in managing dialysis vascular access.

Teaching Methods (see II, a)
Mix of diseases (see II, a)
Patient characteristics (see II, a)
Types of clinical encounters
CKD ESRD patients requiring access evaluation and management
Procedures
- Temporary vascular catheter insertion and removal
- Tunneled catheter insertion and removal
- Angiography of the arterovenous fistula and grafts
- Angioplasty of arterovenous fistula and grafts
- Thrombectomy of arterovenous fistula and grafts
- Placement of peritoneal catheters
- Renal ultrasound for guided biopsies

Reading list:

Gerald beathard (eds.) Vascular Access for Interventional nephrologists

Method of evaluation (see II, a)

d. Weekly Renal Clinics

Educational purpose: Weekly renal clinics provide training under supervision of an attending physician, in 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.

Types of clinics

Weekly renal continuity clinics: Fellows spend a half day in continuity clinics on a weekly basis. Continuity clinics are 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-12:00 PM. 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.

Weekly Renal Transplant Clinic: This clinic is located at SUNY and is attended by the renal fellow rotating in transplant service.

CAPD and home-hemodialysis clinic: This clinic is located at the Parkside Hemodialysis Center and is attended by the fellow in vascular access rotation, on Thursdays, at 1:00 PM. There are approximately 5-10 visits per week. Second year fellow also rotate for a month, at Mount Sinai Hospital to learn more about home hemodialysis, peritoneal dialysis and learn about PD catheter insertion and management.

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).**

Mix of diseases: Glomerular and tubulointerstitial diseases, acid-base and electrolytes disorders as well as diabetes and hypertension.

Patient characteristics: (see II, a)

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

Procedures and services

Urinalysis, kidney biopsy, various modalities of dialysis

Reading lists (see II, a)

e. Specific Rotations:

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

Educational purpose:

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.

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, ICU nephrology, glomerular/tubulointerstitial diseases and procedural techniques (femoral cannulations, renal biopsy), in the inner city setting.

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.

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. For 2 weeks rotation schedule 1st fellows is on 1 week on call from home and then switch with the second fellow. On time when there is only one fellow rotating at VA then the fellow will get Friday day off and one fellow from SUNY will cover for the fellow at VA.

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 and can go home after the last dialysis. 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 performance of the fellow's responsibility should in no way interfere with your overall training.
- If the night is busy and fellow is unable to adequately rest before next tour of duty, the fellow can take an 8hr break and should report to duty after this break to continue their rotation obligations. The chief fellow and program director track the need for additional rest if needed and will arrange appropriate coverage.
- 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.

Teaching methods: (see II, a)

Mix of diseases (see II, a)
Patient characteristics (see II, a)
Types of clinical encounters (see II, a)
Procedures (**see II, a)**
Renal Histopathological handling and review (see II, a)
Method of evaluation of Fellow's performance (see II, a)

f. Transplantation
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).

Teaching methods: (see II, a)
Mix of diseases: Types of rejection**,** glomerular and tubulo-interstitial diseases, acid-base and electrolytes disorders as well as diabetes and hypertension.
Patient characteristics: (see II, a)
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.

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

Reading lists (see II, a)
Pathological materials: interpretation of transplant biopsy obtained for allograft dysfunction
Evaluation (see II, a)

g. Research
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

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

Setting & types of opportunities

- Within the Division of Nephrology
- 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.

Reading List (see II, a)

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

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.

Lines of responsibilities for the attending:

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

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, 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. **Fellows cannot make independent management decisions without talking to the attending for approval. In cases where the fellow cannot reach the attending, the Chief should be notified and serially the Chair of medicine and Medical Director of the Hospital.**
- **Escalation policy:** In case the fellow is unable to reach attending physician for any reason, the fellow shall call the chief fellow and if no response call program director and if no response calls the chair of medicine and if no response Chief Medical Officer. The fellow is encouraged to call the attending on service at Kings County or Downstate.

Conferences:

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

Morning Report: Occurs every Mondays, Thursday and Friday in Renal Conference room. Thursday morning fellow attend Dr. Oh fluid and electrolyte lectures. Morning report is energetic, with its main backbone as evidence-based medicine, which validates the adequacy of patient care and disparities in ethical issues while identifying potential areas of research.

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.

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.

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.

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.

Combined renal and Transplant Conference (monthly): This is transplant grand rounds where invited speakers, nationally and

internationally, review topics 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.

Renal Transplantation Multidisciplinary Conference (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.

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.

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.

Core Curriculum 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 are released at the end of June of each year and is made available to both new and second year fellows and rotating housestaff.

IV. 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 CO2 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
Necrotizing/crescentic glomerulonephritis

Anti-glomerular basement membrane disease

Pauci-immune glomerulonephritis and small vessel vasculitis

Immune complex diseases, including lupus nephritis, Henoch-Schönlein purpura, and post-infectious glomerulonephritis

Other rheumatic disorders, including Sjögren's syndrome, systemic sclerosis, mixed connective tissue disease, rheumatoid arthritis, Bechet's syndrome, relapsing polychondritis, and familial Mediterranean fever

Renal diseases in the dysproteinemias, including multiple myeloma, amyloidosis, light and heavy-chain disease, fibrillary/immunotactoid glomerulopathy, mixed cryoglobulinemia, and Waldenströms macroglobulinemia

Hypocomplementemia 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
   a. Cerebral aneurysm
   b. Mitral valve prolapses
   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
Primary hyperaldosteronism
Pheochromocytoma
Cushing's syndrome
Congenital adrenal hyperplasia
Coarctation of the aorta
Thyroid disease
Hyperparathyroidism
Acromegaly
Sleep apnea
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
Urinary tract infections

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
Urea kinetics and protein metabolism
Long-term follow up of patients on chronic dialysis
Modification of the dialysis prescription and assessment of adequacy
Anemia

Osteodystrophy
Anticoagulation
Hypertension
Amyloidosis
Hyperlipidemia
Acquired cystic disease

16.6 Complications of chronic hemodialysis
Infection
Vascular access
Hypotension
Fever
Disequilibrium
Cramps
Air leaks
Hypoxemia
Arrhythmias
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 handing

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

V. 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 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,

- Abandons patients and responsibilities which leaves undue stress to patients, families, colleagues and the program
- 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 and does not follow due process

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.

VI. Procedures

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.
Supervision: Faculty supervision of procedures performed by each fellow is required.

Documentation: Each nephrology trainee will keep a record of procedures using the new-innovation web-based software. The supervising attending physician will note proficiency and if trainee is self sufficient for the procedure.

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 and thrombectomy 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

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VII. Mentoring Process

As early as possible, fellows must identify an attending with whom there is mutual interest in the academic and social well being 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 fellow's chart. Mentorship will entail overall guidance to:

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

VIII. Trainee Evaluation of Program

Monthly evaluation of attending by fellows

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

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
- 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

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.

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.

- 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.

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.

Procedure:

Credentials to be obtained from each applicant for nephrology fellowship

- All applications are places through the Electronic Residency Application System (ERAS)
- 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.

Method of selection for interview

- Only completed applications through ERAS 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 shall participate and be matched to the program through the National Residency Matching Program (NRMP) for Nephrology Fellowship.

Interview Process

- The interview process is coordinated by the Program Director or designee and conducted by at least two faculty members of the Division of Nephrology at the time of interview.
- Each applicant is evaluated and scored, on the basis of satisfying all requirements for fellowship, interpersonal relationships, USMLE or COMLEX performance, letters of recommendations, humanistic qualities, research experience and interest in academic medicine.
- A rank order list of applicants is generated based on interview scores.

Method of selection and appointment for fellowship positions

- Upon successfully matching to the program through NRMP, an initial offer of fellowship, or commitment letter 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 fellowship 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

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).

Procedures

- Upon successful completion of first year of fellowship and having had

satisfactory evaluations in all rotations and passing a written test in November of every year, 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 15th of the first year of service and not later than November 15th 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 1st, 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 a 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

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.

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.

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.

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. Policy for supervision and Escalation (Lines of Responsibility)

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.

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.

Definitions

- Lines of responsibility define the chain of command (increasing responsibility for making decisions) 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.
- Escalation: refers to whom the fellow should call next, should they not be able to reach the supervising attending.

Procedures

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, Chair of Medicine or designee and Medical Director of the Institution 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 countersign fellow's notes or consultations. **Fellows CANNOT make independent decisions without talking to and getting approval from the attending physician. Note that although the intent is to make the fellow independent in their interactions with patients, fellows are still required to discuss all patient care with the attending. It is expected that by the end of training the attendings will not need to give any additional input into the care of the patients when presented to them.**

Escalation policy: In case the fellow is unable to reach attending

physician for any reason, the fellow shall call the chief fellow and if no response call program director and if no response calls the chair of medicine and if no response Chief Medical Officer. The fellow is encouraged to call the attending on service at Kings County or Downstate whoever is the one that cannot be reached.

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 evaluations and signs fellow's procedure logbooks.

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. 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 them with the attending physician
- **Conferences, Research, Mentorship, Committees:** The fellow shall attend all conferences as outlined in section D.III. The fellow shall remain a responsible working relationship with his/her mentor (section D.VII) and pursue research (section D.II) 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.
- **Order writing: General orders:** Fellows are the first line response to consultations on the general medical services, emergency department and critical care areas but do not write orders except in an emergency situation. The internal medicine resident, in consultation with his/her attending physician is responsible for writing orders requested by the nephrology fellow. There are some circumstances where nephrology fellows will write orders on a medicine resident's patient (i.e. DNR/DNI, dialysis, post-procedure). In these circumstances the nephrology fellow must communicate his/her action to the resident in a timely manner. Fellows write dialysis orders which includes; 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 respond and manage complications during dialysis in consultation with the attending nephrologist.

    - **Duty hours:** Duty hours for fellow shall be limited to 80 hours per week, averaged over a four-week period, inclusive of all in-house call activities as required by ACGME. With the current one Saturday and one Sunday call per month, the fellow spends an average of ≤60 hours/week over a four-week period, which is within ACGME requirement. The second rule is that you cannot be in the hospital for >16 hours at a stretch. So, come to

work at 8AM and leave at 5:00PM if you are not on call or after the last acute HD if you are on call. The third rule is that you must have 10 hours between in-house calls. When a fellow is on call over the weekend and leaves the hospital at 11PM or later, to comply with the 8-hour rule, the fellow can only come back at 9AM or later, the next morning. There is flexibility with this rule given that we are not close to the 80-hour work week. The fourth rule is that you must have one non-working day in a week that you are free of responsibility.

- **Moonlighting:** Fellows should not moonlight without the explicit consent of the Program Director. Moonlighting has the potential to interfere with the educational objectives of the nephrology training program. However, under certain circumstances such as financial hardships and the fellow's performance has been satisfactory, permission to moonlight may be granted in writing by the program director, in consultation with the GME office. In that case, the program director would monitor the fellow's performance to make sure that factors such as fatigue are not contributing to diminished learning or performance or detracting from patient safety. The program director may also choose to limit the number of hours allowable for moonlighting and the months that are allowable for moonlighting to make sure that workload is not extreme and also to make sure if moonlighting is internal, the total hours/week does not exceed 80 hours. All nephrology fellows engaged in moonlighting would be required to have a NY State Medical license. It is however the responsibility of the institution hiring the nephrology fellow to determine whether such licensure is in place, adequate liability coverage is provided, and whether the fellow has the appropriate training and skills to carry out assigned duties.

V. Due Process

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.

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.

VI. Policy on Committees of the Renal Division

Purpose

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

Requirements

The Chief of Nephrology, Program Director or their designee shall maintain responsibility for establishing and updating the list of committee members as they pertain to the required functions.

Definitions

- **Clinical Competence Committee:** This committee shall be made up of at least 3 faculty members charged with evaluation of fellows and faculty
- **Program Evaluations Committee:** This committee shall be made up of at least 3 faculty members and a fellow, charged with evaluation of the program.
- **Grand Rounds and Visiting Lectureship Committee:** The committee shall be made up of the Director of CME for the division who will chair the meeting, faculty and at least 3 fellows
- **Grievance and Appeals Committee:** The committee shall be chaired by Dr. Delano, a faculty member and at least 3 fellows
- **Residents Subcommittee of the GME Committee.** The Chief fellow assigns on a rotational schedule, fellows to attend the GMEC.

Procedures

Clinical Competence Committee (CCC):

A Clinical Competency Committee (CCC), chaired by the PD, will meet semi-annually to review fellow evaluations and prepare a written summary assessment of each fellow's performance in the six competency domains. The fellow's strengths and weaknesses will be discussed and areas for improvement stressed. The PD will meet with each fellow semi-annually to discuss the findings and recommendations of the CCC and will complete a semi-annual evaluation form to be signed by fellow and PD. A copy of the signed semi-annual evaluation will be given to the fellow and the original placed in the Fellow's File. A similar evaluation of faculty shall be performed, and a summary of the evaluation submitted to the attendings. The CCC shall monitor

progress of implementation of each recommendation for improvement of fellows and faculty.

Program Evaluation Committee (PEC):
A Program Evaluations Committee (CCC), chaired by the PD, will meet at least once a year to review summary assessment of the program and provide recommendations for improvement. The PEC shall also monitor progress of implementation of each recommendation. A copy of the signed semi-annual evaluation will be given to the fellow and the original placed in the Fellow's File.

Grand Rounds and Visiting Lectureship Committee: The committee shall be meet in the summer of every year and discuss educational needs and identify speakers to meet those educational needs. Once the speakers are identified, the CME director is responsible for inviting and drafting the schedule which is then reviewed by faculty and fellows and posted.
Grievance and Appeals Committee: This is an adhoc committee and convenes whenever a fellow disagree with adverse actions. The committee is expected to be fair and issue a recommendation to the PD, who will then make a determination for disposition. If the fellow is not satisfied with the PD decision, the fellow can make an appeal to the chair of medicine as outlined in institutional guidelines.

Residents Subcommittee of the GME Committee. The PD receives notices of GMEC meetings and passes them onto the chief fellow who assigns on a rotational schedule, fellows to attend the GMEC. GMEC then acknowledges attendance in writing to PD.

VII. Policy on Evaluations of fellows, faculty and program

Purpose
These policies seek to establish guidelines for evaluations of the renal division as required by the Residency Review Committee for Internal Medicine (RRC-IM) of the ACGME.

Requirements
The Chief of Nephrology, Program Director or their designee shall maintain responsibility for establishing and updating these policies as deemed necessary by the RRC. All evaluations are required to be completed by the 15th of each month.

Definitions

- **Attending Evaluation of Fellow at end of Rotation:** This evaluation of fellow performance, based on **6 competencies and associated milestones** is formative (written) and completed in 'New Innovations' and discussed with fellow at the end of each month.
- **Trainee Anonymous Evaluation of Attending at end of Rotation:** This evaluation of the attending at the end of the month is completed by the fellow in 'New Innovations'.
- **Trainee Anonymous Evaluation of Program:** This evaluation of the program by the fellows at the end of each year is completed by the fellow in 'New Innovations' or in written form.
- **Attending Anonymous Evaluation of Program:** This evaluation of the program by attendings at the end of each year is completed by the attending in 'New Innovations' or in written form.
- **Continuity Clinic evaluation:** This evaluation of the fellow by attendings at the end of each year is completed by the attending in in written form.
- **Semi-annual fellow evaluation:** This evaluation of the fellow by the CCC in December of each year is completed by the CCC chair and signed by the fellow in written form and placed in the folder.
- **End of year fellow evaluation:** This evaluation of the rising second year fellow by the CCC in June of each year is completed by the CCC chair and signed by the fellow in written form and placed in the folder.
- **Exit fellow evaluation:** This evaluation of the graduating fellow by the CCC in June of each year is completed by the CCC chair and signed by

the fellow in written form and placed in the folder.

Procedures:

1. Attending Evaluation of Fellow at end of Rotation:

At the beginning of each rotation, the attending nephrologist reviews the goals and objectives of the rotation. In the middle of the rotation, a summative (verbal feedback) evaluation is provided to the fellow. At the end of each rotation, the attending nephrologist will log into New Innovations and provide a formative (written) evaluation of the fellow on each of the 6 core competencies, based on milestones achieved for that competency. Milestones are rated fails to meet expectation, below expectation, meets expectation, exceeds expectation and masters competency. The attending also provides specific comments and recommendations at the end of each rotation. The attending is 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.

The following 6 core competencies:

- Patient Care rating
- Medical Knowledge rating
- Practice-Based Performance Improvement: Unsatisfactory
- Interpersonal and Communication Skills: Unsatisfactory
- Professionalism
- Systems-Based Practice

The attending must check the box in new innovations to indicate that they have discussed the evaluation with the fellow. The check box is a 'hard stop' that will not allow submission unless it is checked.

2. Trainee Anonymous Evaluation of Attending at end of Rotation:

For each of the following criteria, the fellow please rates the attending physician at the end of each rotation on a scale of; not observed, marginal, satisfactory, very good or excellent. These evaluations are reviewed on a biannual basis so as to keep it as anonymous as possible.

- Availability
- Teaching
- Patient care and Professionalism
- Medical Knowledge
- Practice Based Learning and Improvement

- System-based Practice

3. **Trainee Anonymous Evaluation of Program:**

- Overall, I feel that my Nephrology Training is adequate
- Faculty supervision is constant, informative and helpful
- Workload is reasonable and appropriate for training environment
- Instruction in basic principles of pathophysiology is reasonable and thorough
- Exposure to broad spectrum of acute and chronic clinical renal disorders is sufficient
- Consideration of socioeconomic and ethical concerns in renal medicine is appropriate
- Teaching rounds and conferences are timely and sufficient
- Continuity clinics are appropriate opportunity for learning long-term management
- Kings County Hospital rotation is appropriate and should be continued
- Veterans Hospital rotation is appropriate and should be continued
- University Hospital rotation is appropriate and should be continued
- SIU Hospital rotation is appropriate
- Intervention rotation is appropriate and should be continued

4. **Attending Anonymous Evaluation of Program**
   For each of the following criteria, the attending rates the program from 1 (Superb) to 9 (Terrible) with suggestions for constructive change.

- Program Directors Attention to Faculty Career Development
- Overall Nurturing of Fellows in Training

- Rotation Value (Efficacy): Fellows at Downstate-Kings County

- Rotation Value (Efficacy): Fellows at VA Hospital

- Rotation Value (Efficacy): Fellows at Staten Island Hospital
- Rotation Value (Efficacy): Fellows at VA Hospital

- Research Assignment and Supervision of Fellows
- Intensity of Clinical Demand on Fellows

- Fellows instruction in Presentation of Papers and Research
- Allocation of Faculty Free Time for Research
- Support, Compensation, and Environment for Faculty
- Preparation of Fellows for Actual Nephrology Practice
- Preparation of Fellows for Interventive Procedures
- Preparation of Fellows for Ethical Decision Making
- Unstructured Comments About Program, Department, or Anything Else

5. **Continuity Clinic evaluation: (Range is deficient, acceptable, superior outstanding)**
    - Attendance, Punctuality, Participation
    - Professionalism, Empathy for Patients
    - Evidenced Based Management Approach
    - Quality of Notes and Consultations
    - Overall assessment as a Subspecialist
6. **Semi-annual fellow evaluation: (Range is deficient, acceptable, superior outstanding)**
    - Attendance, Punctuality, Participation
    - Technical and Procedural Proficiency
    - Affinity for Investigation
    - Professionalism, Empathy for Patients
    - Quality of Notes and Consultations
    - Overall assessment as a Subspecialist

7. **End of year fellow evaluation: (Range is deficient, acceptable, superior outstanding)**
    - Attendance, Punctuality, Participation
    - Technical and Procedural Proficiency
    - Affinity for Investigation
    - Professionalism, Empathy for Patients
    - Quality of Notes and Consultations
    - Overall assessment as a Subspecialist

8.
9. **Exit fellow evaluation: (Range is deficient, acceptable, superior outstanding)**
    - Attendance, Punctuality, Participation
    - Technical and Procedural Proficiency
    - Affinity for Investigation
    - Professionalism, Empathy for Patients
    - Quality of Notes and Consultations
    - Overall assessment as a Subspecialist
    - **Overall Evaluation: It is the consensus of the faculty that has demonstrated the skills necessary to practice independently and without supervision as stipulated in RRC requirements.**

VIII. Policy on Fatigue/sleep deprivation of the Renal Division

Purpose

These policies seek to establish guidelines for recognition and management of fatigue and sleep deprivation of faculty and fellows of the renal division as required by the Residency Review Committee for Internal Medicine (RRC- IM) of the ACGME.

Requirements

The Chief of Nephrology, Program Director or their designee shall maintain responsibility for establishing and updating RRC guidelines on fatigue and provide an annual update during in-service.

Definitions

Fatigued residents typically have difficulty with:

· Appreciating a complex situation while avoiding distraction
· Keeping track of the current situation and updating strategies
· Thinking laterally and being innovative
· Assessing risk and/or anticipating consequences
· Maintaining interest in outcome
· Controlling mood and avoiding inappropriate behavior

More specifically, signs of fatigue include:

· Involuntary nodding off
· Waves of sleepiness
· Problems focusing
· Lethargy
· Irritability
· Mood lability
· Poor coordination
· Difficulty with short-term recall
· Tardiness or absences at work

High risk times for fatigue-related symptoms are:

· Midnight to 6:00 AM
· Early hours of day shifts
· First night shift or call night after a break
· Change of service
· First 2 to 3 hours of a shift or end of shift
· Early in residency or when new to night call

Fatigue can be modeled as the result of forces producing fatigue and forces reversing its effects, i.e. recovery.

Management of fatigue/sleep deprivation:

· Adhere to 80-hour average work week and other duty hours as in duty hour policy
·Rule out physical illness, depression, psychiatric illness etc and seek treatment as needed.
Annual updates and instructions for fellows and faculty to observe each other
Fellows will be relieved of duties if signs of fatigue/sleep deprivation are evident, until full recovery.
Fellows are encouraged to use the on-call room to rest if they feel fatigued and encouraged to tell program director if they cannot drive home so that alternate transportation can be arranged.

F. Appendices

Appendix 1: Synopsis of King County Rotation

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 therapy (CRRT). 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.

Goals & objectives:

For 1st year fellow

- Learn the appropriate history and physical of the patient with acute and chronic renal failure in the inner-city disadvantaged population, including but not limited to viral nephritidis
- Learn basic differential diagnosis of AKI and ICU nephrology
- Learn basic acid-base and electrolyte management
- Learn the risks, benefits and indications for the various forms of acute renal replacement therapy
- Learn basic acute hemodialysis prescription
- Learn basic continuous renal replacement therapy prescription
- Learn modification of the chronic hemodialysis prescription for ESRD patients admitted to the hospital
- Learn urinalysis
- Learn central venous catheterization for acute hemodialysis access
- Learn renal biopsy techniques for native kidneys
- Learn communication skills with the primary team
- Learn communication skills with the chronic dialysis unit regarding patients admitted to the hospital
-

Initially, all patients and decisions on patient care must be reviewed with the attending prior to making recommendations to the primary team. All emergent and urgent consults are immediately discussed with the attending. Other consultations are discussed with the attending during work rounds. As the year progresses, recommendations regarding basic nephrologic care can be made by the fellow before discussing them with the attending, but they must be discussed with the attending soon after being made as the attending has the ultimate responsibility for all recommendations.

For 2nd year fellow

In addition to skills learned in the first year:

- Learn more complete acid-base disturbances and management
- Learn complete differential diagnosis of acute renal failure
- Learn more complete electrolyte disturbances and management
- Learn to write acute hemodialysis prescription without attending assistance
- Learn to write continuous renal replacement therapy without attending assistance
- Refine central venous catheter placement and biopsy techniques
- Learn to write modification of the chronic hemodialysis prescription for ESRD patients

Initially, recommendations regarding basic renal care can be made by the 1st fellow before discussing them with the attending, but they must be discussed with the attending soon after being made as the attending has the ultimate responsibility for all recommendations. Later, the fellow can make more in-depth recommendations, but again they must be discussed with the attending soon after being made as the attending has the ultimate responsibility for all recommendations. All emergent and urgent consults are immediately discussed with the attending. Other consultations are discussed with the attending during work rounds.

Consultations: There is no Primary Renal Service. However, KCHC has a busy consultative service. **ALL NEW PATIENTS MUST HAVE A CONSULTATION RESPONDED TO IN THE ELECTRONIC**

MEDICAL RECORD AND DISCUSSED WITH THE ATTENDING PROMPTLY. 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 requests for consultations from the medical service, the surgical service, the critical care units or from the emergency room. All consultations must be seen as soon as possible and discussed with the attending. The fellow will not be responsible for femoral access placement for the first shift. This responsibility will be taken by the interventional fellow.

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 first shift femoral cannulations are the responsibility of the interventional fellow. The fellow will however contact the vascular resident and arrange for access placement before a 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 SUNY pathology office at 270-1651 to pick up a biopsy dish, which contains gauzed moistened in preservative and forceps. Also call sonography on the EX.4698 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 replenished biopsy tray and microscope is maintained in the acute dialysis unit. The tray includes, gauze, gloves 10CC syringes, 25G, 22G and 18G needles, scalpel, lidocaine, betadine, 15G biopsy needles and a spinal tray. All biopsy specimens will be reviewed by the attending nephrologist under the microscope, placed into the dish and submitted as soon as possible to the SUNY pathology office.

Appendix 2: Synopsis of SUNY Rotation

Supervisor: Attending on service, Contact 270-1584

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. The fellow will not be responsible for femoral access placement for the first shift. This responsibility will be taken by the interventional fellow.

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.

Goals & objectives:

For 1st year fellow

- Learn the appropriate history and physical of the patient with acute renal failure
- Learn basic differential diagnosis of acute renal failure
- Learn basic acid-base disturbances and management
- Learn basic electrolyte disturbances and management
- Learn the risks, benefits and indications for the various forms of acute renal replacement therapy
- Learn basic acute hemodialysis prescription
- Learn basic continuous renal replacement therapy prescription
- Learn modification of the chronic hemodialysis prescription for ESRD patients admitted to the hospital
- Learn urinalysis characteristics and their diagnostic significant.
- Learn central venous catheterization for acute hemodialysis access
- Learn renal biopsy techniques for native kidneys
- Learn communication skills with the primary team

- Learn communication skills with the chronic dialysis unit regarding patients admitted to the hospital

Initially, all patients and decisions on patient care must be reviewed with the attending prior to making recommendations to the primary team. All emergent and urgent consults are immediately discussed with the attending. Other consultations are discussed with the attending during work rounds. As the year progresses, recommendations regarding basic renal care can be made by the fellow before discussing them with the attending, but they must be discussed with the attending soon after being made as the attending has the ultimate responsibility for all recommendations.

For 2nd year fellow

In addition to skills learned in the first year:

- Learn more complete differential diagnosis of acute renal failure
- Learn more complete acid-base disturbances and management
- Learn more complete electrolyte disturbances and management
- Learn to write acute hemodialysis prescription without attending assistance
- Learn to write continuous renal replacement therapy without attending assistance
- Refine central venous catheter placement and biopsy techniques
- Learn to write modification of the chronic hemodialysis prescription for ESRD patients
- admitted to the hospital without attending assistance

Initially, recommendations regarding basic renal care can be made by the 1st year fellow before discussing them with the attending, but they must be discussed with the attending soon after being made as the attending has the ultimate responsibility for all recommendations. Later, the fellow can make more in-depth recommendations, but again they must be discussed with the attending soon after being made as the attending has the ultimate responsibility for all recommendations. All emergent and urgent consults are immediately discussed with the attending. Other consultations are discussed with the attending during work rounds.

Primary service: The Primary Service is the Renal Service patients from Parkside dialysis unit. The fellow is responsible for evaluating, coordinating

patient's 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 on Saturdays and Sundays.

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 notes must be written for all service patients and discussed with the attending**. 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 service will follow and provide consultation service until the patient is discharged. All other dialysis patients from different dialysis units do not require admission to renal service and they are often admitted under general medicine or hospitalist service. Renal service will follow these patients and consultation service, 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 and documented 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 primary team must arrange for outpatient dialysis center before discharging the patient. The patient is ready for transfer when stable and has an access for dialysis (temporary catheter, graft or fistula). 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. To expedite this, call the scheduling office at 270-4438 to make sure your request for ultrasound has been delivered to ultrasound. 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.

Additional notices:

1. The first shift of dialysis begins at 7AM, Mondays to Saturdays. So, be at work by 7:30AM to avoid delays for the rest of the day. The second shift is earmarked for 10AM. The on-call fellow is responsible until 8AM. The regular service fellow resumes responsibility thereafter
2. All patients admitted from Parkside, if they don't have a primary care physician, should be admitted to renal service. All other ESRD patients should be admitted to other services.
3. All patients admitted to our service need an admitting note by the fellow. All other ESRD patients admitted to other services need an initial consult and a review of medications to make sure they are properly prescribed. Dialysis patients on other services should be reviewed on their dialysis days to make sure they are receiving the appropriate doses of their required medication.

Daily notes must be written on all our service patients, ICU, CCU and CTICU. For all routine dialysis patients, the dialysis note written by the attending serves as a daily note and the fellow must wright a note at least once a week unless there is a change in the patient level of care.

Appendix 3: Synopsis of the VA Rotation

Supervisor: Dr. Goldwasser, Contact 718-8366600-6775

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, one 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 other fellow at the VA arranges care to the outpatient dialysis unit and provide primary care to patients who have dialysis services provided by the VA. This rotation supervised by Dr. Marie Alex Michel and Dr. Philip Goldwasser. Fellows will have 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 (Home calls 7 days a week).

Goals & objectives:

For 1st year fellow

- Learn the appropriate history and physical of the patient with acute renal failure
- Learn basic differential diagnosis of acute renal failure
- Learn basic acid-base disturbances and management
- Learn basic electrolyte disturbances and management
- Learn the risks, benefits and indications for the various forms of acute renal replacement therapy
- Learn basic acute hemodialysis prescription
- Learn basic continuous renal replacement therapy prescription
- Learn modification of the chronic hemodialysis prescription for ESRD patients admitted to the hospital
- Learn urinalysis
- Learn central venous catheterization for acute hemodialysis access
- Learn communication skills with the primary team

Initially, all patients and decisions on patient care must be reviewed with the attending prior to making recommendations to the primary team. All emergent and urgent consults are immediately discussed with the

attending. Other consultations are discussed with the attending during work rounds. As the year progresses, recommendations regarding basic renal care can be made by the fellow before discussing them with the attending, but they must be discussed with the attending soon after being made as the attending has the ultimate responsibility for all recommendations.

For 2nd year fellow

In addition to skills learned in the first year:

- Refine chronic dialysis experience
- Refine how to write chronic hemodialysis prescription for ESRD patients
- Refine how to write chronic peritoneal dialysis prescriptions
- Learn anemia management
- Learn calcium and phosphate management
- Learn basic general medical care of the chronic dialysis patient
- Learn to write acute hemodialysis prescription without attending assistance
- Learn to write continuous renal replacement therapy without attending assistance
- Refine central venous catheter placement techniques

The second-year fellow can make more in-depth recommendations, but again they must be discussed with the attending soon after being made as the attending has the ultimate responsibility for all recommendations. All emergent and urgent consults are immediately discussed with the attending. Other consultations are discussed with the attending during work rounds. In addition, the attending meets with the fellow outside of rounds once or twice per week for **dedicated teaching sessions on dialysis topics in more depth than** would be covered during patient rounds.

Consultations: There is no Primary Renal Service. The fellow will receive request for consultations from the medical service, the 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, PO4 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 the Transplant Rotation
Supervisor: Attending on service, Contact 718-2701584

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. The transplant fellow is also responsible for the medical management of patients directly admitted under the transplant surgeons. Femoral from transplant in the first shift are the responsibility of the interventional fellow. This will allow more time for morning round with the transplant attending. One of four transplant nephrologists directly supervise the renal fellow throughout the transplant rotation.

Please note:

The transplant nephrology fellow or the nephrology fellow on transplant rotation take weekend calls as per chief fellow's schedules. Pre-op clearance must be given to all deceased donor kidney transplant recipients. The transplant fellow will be responsible for these evaluations in the regular working hours. After hours and weekends, the fellow on call will do the pre-op evaluations before they go in for their transplant. The key issue in the evaluation is to determine whether dialysis is needed prior to the transplant and whether there is any medical contraindication not picked up before.

Specific Goals & objectives

For 1st year fellows

- Learn history and physical of the renal transplant patient
- Learn donor and recipient evaluation
- Learn acute peri-transplant management
- Learn basics about immunosuppressive medications
- Learn basics of outpatient transplant management
- Learn biopsy techniques of transplanted kidneys
- Attend transplant protocol meetings
- Learn communication with referring nephrologisits and with the surgical transplant team

Initially, all patients and decisions on patient care must be reviewed with the attending prior to making recommendations to the transplant surgery team. All emergent and urgent consults on transplant patients are immediately discussed

with the attending. Other consultations are discussed with the attending during work rounds. As the year progresses, recommendations regarding basic transplant care can be made by the fellow before discussing them with the attending, but they must be discussed with the attending soon after being made as the attending has the ultimate responsibility for all recommendations.

For 2nd year fellow

- In addition to skills learned in the first year:
- Learn to adjust and change immunosuppressive medications
- Refine biopsy techniques of transplanted kidneys
- Learn outpatient management without the assistance of the attending
- Actively participate in refining protocols at the transplant protocol meetings
- Initially, recommendations regarding basic transplant care can be made by the fellow before discussing them with the attending, but they must be discussed with the attending soon after being made as the attending has the ultimate responsibility for all recommendations. Later, the fellow can make more in-depth recommendations, but again they must be discussed with the attending soon after being made as the attending has the ultimate responsibility for all recommendations. All emergent and urgent consults are immediately discussed with the attending. Other consultations are discussed with the attending during work rounds.

Core competencies to be evaluated include:

Patient Care

- Obtain comprehensive history and physical examination pertinent to the evaluation of the kidney transplant patient
- Accurately assess a patient for the differential diagnosis of rise in serum creatinine
- Accurately assess a patient's volume status, diabetes, hypertension and dietary status
- Assess patients for adequacy of immunosuppression
- Assess patients for adequacy of diabetes and hypertension control
- Utilize laboratory and imaging data to formulate a rational differential diagnosis for the commonly encountered presenting problems in transplant nephrology

- Demonstrate the ability to directly manage transplant recipients in the immediate postoperative period
- Demonstrate the ability to direct management of common electrolyte disorders
- Demonstrate the ability to directly manage immunosuppression in kidney transplant patients
- Demonstrate the ability to directly manage various forms of transplant rejection
- Demonstrate the ability to directly manage various medical complications after kidney transplantation

Medical knowledge

- Demonstrate knowledge appropriate for a general nephrologist of the following:
- Basic transplant immunology
- Mechanisms of action of immunosuppressive drugs
- Acute Rejection
- Chronic Allograft Nephropathy
- Acute renal failure
- Posttransplant infectious diseases
- Posttransplant metabolic disorders
- Posttransplant urinary system disorders
- Posttransplant recurrent diseases
- Evaluation of the kidney transplant recipient
- Evaluation of the kidney transplant donor
- Outpatient management of the well kidney transplant recipient
- Interpretation of laboratory abnormalities
- Interpretation of renal imaging techniques (MAG3, DTPA, USG)

PBPI/SBP

- Demonstrate ability to use information technology to answer questions in transplant nephrology and ability to analyze the quality of evidence supporting interventions
- Identify patient safety issues in the dialysis unit and understand procedures in place/propose new procedures to minimize errors
- Demonstrate understanding of reimbursement for renal replacement therapies

- Understand the roles of members of the health care team treating kidney transplant patients – nurse, nephrologist, dietician, social worker, transplant coordinator, podiatrist, diabetes educator, vascular surgeon, etc and work effectively with other team members

Interpersonal and communication skills

- Demonstrate ability to write a coherent and useful consultation note
- Demonstrate empathy for patients posttransplant
- Clearly and appropriately explain diagnostic thinking and management options/plans to patients and families

Professionalism

- Consistently demonstrate respect for patients, staff, and colleagues
- Demonstrate understanding of the issues surrounding informed consent for procedures in transplant nephrology
- Demonstrate understanding of major ethical issues in transplant nephrology

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Appendix 5: Synopsis of the Ambulatory Rotation
Supervisor: Dr. Saggi and Uribarri

The ambulatory rotation is a component of the home hemodialysis Dialysis and peritoneal dialysis rotation detailed in the next section. The fellow can attend the home dialysis clinic located at Parkside HD unit on Thursday afternoons. This rotation allows the fellow to mastering skills in home dialysis management.

CAPD/CCPD: The second-year fellow will attend the **home dialysis clinic and peritoneal dialysis clinic at Mt. Sinai hospital for 1 month. Fellows can also attend downstate**, outpatient home hemodialysis which occurs on Thursdays at 1:00 PM. The clinic is run by Dr. Saggi, in conjunction with a nurse and physician assistant. Every patient is discussed in detail. 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. Saggi or covering attending. If a patient is referred to the ED, then 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. **As part of the rotation,** the fellow will be asked to prepare a twenty-minute presentation on a peritoneal topic of his/her choice for the other fellows. Dr. Saggi 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. Fellows will get more in-depth training on home HD and peritoneal dialysis at Mt. Sinai hospital.

Specific Goals & objectives

For 1st year fellows

- Learn how to write chronic hemodialysis prescriptions
- Learn how to write chronic peritoneal dialysis prescriptions
- Learn anemia management, nutrition
- Learn management of bone disease
- Monitor vascular access function
- Learn basic general medical care of the chronic dialysis patient
- Learn communication with the inpatient teams when a chronic dialysis patient is sent to the emergency department

The fellow is expected to make decisions and then discuss those decisions with the attending before implementing the plan.

For 2nd Year fellows

- In addition to skills learned in the first year:
- Learn to write dialysis prescriptions (hemo- and peritoneal) without the assistance of the attending

- Learn to manage all the general medical care of the chronic dialysis patient
- Learn the physical functioning of the dialysis unit including water treatment, filter reuse, and business practices

At a minimum, the attending is physically present at rounds once a week. If the attending was not physically present, the fellow contacts the attending to discuss each shift. Initially, all patients are discussed. Later in the year, only patients with active issues are discussed; stable patients are not specifically discussed.

Core competencies to be evaluated include:

Patient Care

- Obtain comprehensive history and physical examination pertinent to the evaluation of the kidney on CAPD, home hemodialysis and electrolyte physiology
- Accurately assess a patient for the differential diagnosis of electrolyte, acid base and volume disorders, CAPD and home hemodialysis
- Demonstrate the ability to recognize and manage common electrolyte, acid base and volume disorders, CAPD and home hemodialysis
- Demonstrate the ability to recognize and manage various medical complications of common electrolyte, acid base and volume disorders, CAPD and home hemodialysis

Medical knowledge

Demonstrate knowledge appropriate for a general nephrologist of the following:

- Electrolyte, acid-base and mineral disorders
- Hypo and hypervolemia
- Normal and high anion gap metabolic acidosis
- HD and CAPD technique and prescription
- Adequacy of PD, PET testing
- Peritonitis management
- HD technique and prescription
- Adequacy of HD
- Anemia, bone disease vascular access, nutrition, cardiovascular and co-morbid disease management

PBPI/SBP

- Demonstrate ability to use information technology to answer questions in this rotation and ability to analyze the quality of evidence supporting interventions
- Identify patient safety issues in the dialysis unit and understand procedures in place/propose new procedures to minimize errors
- Demonstrate understanding of reimbursement for CAPD and home hemodialysis
- Understand the roles of members of the health care team treating CAPD and home hemodialysis patients– nurse, nephrologist, dietician, social worker, transplant coordinator, podiatrist, diabetes educator, vascular surgeon, etc and work effectively with other team members

Interpersonal and communication skills

- Demonstrate ability to write a coherent and useful consultation note
- Demonstrate empathy for patients on CAPD and home hemodialysis
- Clearly and appropriately explain diagnostic thinking and management options/plans to patients and families;

Professionalism

- Consistently demonstrate respect for patients, staff, and colleagues
- Demonstrate understanding of the issues surrounding informed consent for procedures in CAPD and home hemodialysis
- Demonstrate understanding of major ethical issues in this rotation

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Appendix 6: Synopsis of the Dialysis/ Interventional Rotation

Supervisors: Drs. Moro O. Salifu and Fasika Tedla

Beepers 917-7600155/917-761-1579

The dialysis/interventional rotation occurs within the main campus of SUNY Downstate Medical Center. This rotation allows the fellow to focus on acute dialysis care, home dialysis care and advanced training in vascular access care including femoral cannulations, vein mapping, central venous catheter exchange and placement, arteriovenous fistula creation, AV fistula angioplasty and stent placement. Fellows will master these skills that will allow them for timely recognition and referral of vascular access problems.

Details of the rotation: All dialysis patients admitted to the hospital will be evaluated and managed by the dialysis/interventional fellow on a daily basis, Monday-Friday. On Tuesdays, the fellow will report to the flatland vascular access center for half a day and leave back to the hospital at noon to join attending rounds. On Thursday afternoon, the fellow will go to Parkside to attend the home dialysis clinic. If there is a femoral on Tuesday morning, it will

be done by the consult fellow. The consult fellow is still responsible for all new consultations including the initial consultation for admitted dialysis patients. After the initial evaluation, the dialysis fellow takes over the management of dialysis patients as noted above.

Specific Goals & objectives
For 1st year fellows

- Learn history and physical examination of vascular access
- Learn basic differential diagnosis of vascular access pathology
- Learn details of the acute dialysis prescription and management of the dialysis patient in an acute setting
- Learn communication with referring physicians
- Learn the risks, benefits and indications for the various forms of interventional procedures
- All fellows must present all patients to an attending faculty physician at each visit. The attending will see the patient and either observe the fellow with the patient or repeat critical components of the history and physical. This occurs weekly throughout the academic year.

For 2nd year fellows
In addition to skills learned in the first year:

- Refine the history and physical for vascular access
- Refine the differential diagnosis of vascular access problems to be more complete

All fellows must present all patients to an attending faculty physician at each visit. The attending will see the patient and either observe the fellows with the patient or repeat critical components of the history and physical. This occurs weekly throughout the academic year

Core competencies to be evaluated
Patient Care

- Obtain comprehensive history and physical examination pertinent to the evaluation of the acute dialysis patient, home dialysis patient and vascular access
- Accurately assess a patient for the appropriate and individualized acute dialysis prescription
- Accurately assess a patient for the differential diagnosis of vascular access malfunction

- Demonstrate the ability to recognize and manage various complications of vascular access malfunction

Medical knowledge

- Demonstrate knowledge appropriate for a general nephrologist of the following:
- Anatomy and types of vascular access
- Vascular access monitoring
- Vascular access surveillance
- Diagnosis of access stenosis
- Diagnosis of access thrombosis
- Understand indications for referral for access interventions
- Understand rationale for angioplasty and thrombectomy procedures
- Understand acute dialysis management for patients with access malfunction
- Placement of temporary and tunneled dialysis catheters
- Treatment goals for the home dialysis patient

PBPI/SBP

- Demonstrate ability to use information technology to answer questions in this rotation and ability to analyze the quality of evidence supporting interventions
- Identify patient safety issues in the dialysis unit and understand procedures in place/propose new procedures to minimize errors
- Demonstrate understanding of reimbursement for access procedures
- Understand the roles of members of the health care team treating access problems; nurses, nephrologist, dietician, vascular surgeon, etc and work effectively with other team members

Interpersonal and communication skills

- Demonstrate ability to write a coherent and useful consultation note
- Demonstrate empathy for patients with access malfunction
- Clearly and appropriately explain diagnostic thinking and management options/plans to patients and families

Professionalism

- Consistently demonstrate respect for patients, staff, and colleagues

- Demonstrate understanding of the issues surrounding informed consent for procedures Demonstrate understanding of major ethical issues in vascular access.

Appendix 7: Synopsis of the Continuity Clinics

Supervisors: Drs. Delano, Mallappallil, Goldwasser
718-270-1584

Continuity clinics are mandatory and must be attended by all fellows. Assignment of clinics is for a one to two-year term. Fellows doing continuity clinic at the VA in the first year will be rotated to SUNY or KCH to ensure a balance in assessing female patients. Below are the locations and must report to their assigned locations for their clinics. Lateness is not tolerated and counts against fellow evaluation.:

	Monday 1PM-5PM	Wed 1PM-5PM	Thursday 9AM-12:30PM	Friday 9AM-11AM
SUNY	CKD		Transplant	Transplant
KCH	CKD	CKD		
VA			CKD	
Parkside			CAPD/CCPD/HD	

Goals and Objectives:

For 1st year fellows

- Learn history and physical of the outpatient with renal disease
- Learn basic differential diagnosis of the outpatient with CKD
- Learn to manage complications of CKD, including anemia, bone disease and medical optimization
- Learn appropriate timing of vascular access evaluation and referral for access placement
- Learn communication with referring physicians
- Learn the risks, benefits and indications for the various forms of chronic renal replacement therapy
- Learn to prepare patients for chronic renal replacement therapy

All fellows must present all patients to an attending faculty physician at each visit. The attending will see the patient and either observe the fellow with the patient or repeat critical components of the history and physical. This occurs weekly throughout the academic year.

For 2nd year fellows

In addition to skills learned in the first year:

- Refine the history and physical
- Refine the differential diagnosis to be more complete
- Learn to discuss renal replacement therapy options without the assistance of the attending

All fellows must present all patients to an attending faculty physician at each visit. The attending will see the patient and either observe the fellows with the patient or repeat critical components of the history and physical. This occurs weekly throughout the academic year.

Continuity clinic evaluation:

Evaluation of continuity clinic performance will cover the following content areas

- Attendance, Punctuality, Participation
- Professionalism, Empathy for Patients
- Evidenced Based Management Approach
- Quality of Notes

- Overall assessment as a Subspecialist

Appendix 8: Attending Evaluation of Fellow at end of Rotation

At the beginning of each rotation, the attending nephrologist reviews the goals and objectives of the rotation. In the middle of the rotation, a summative (verbal feedback) evaluation is provided to the fellow. At the end of each rotation, the attending nephrologist will log into New Innovations and provide a formative (written) evaluation of the fellow on each of the 6 core competencies, based on milestones achieved for that competency. Milestones are rated fails to meet expectation, below expectation, meets expectation, exceeds expectation and masters competency. The attending also provides specific comments and recommendations at the end of each rotation. The attending is 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.

The following 6 core competencies:

1. Patient Care rating

2. Medical Knowledge rating

3. Practice-Based Performance Improvement: Unsatisfactory

4. Interpersonal and Communication Skills: Unsatisfactory

5. Professionalism

6. Systems-Based Practice

The attending must check the box in new innovations to indicate that they have discussed the evaluation with the fellow. The check box is a ‘hard stop’ that will not allow submission unless it is checked.

Appendix 9: Trainee Anonymous Evaluation of Attending at end of Rotation

For each of the following criteria, the fellow please rates the attending physician at the end of each rotation on a scale of; not observed, marginal, satisfactory, very good or excellent. These evaluations are reviewed on a biannual basis so as to keep it as anonymous as possible.

1. Availability

2. Teaching

3. Patient care and Professionalism

4. Medical Knowledge

5. Practice Based Learning and Improvement

6. System-based Practice

7. Recommendations
The fellow indicates whether he or she would recommend the faculty member to continue to serve as an attending physician for the nephrology training program

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Appendix 10: Schedule of Weekly Activities

Time	Monday	Tuesday	Wednesday	Thursday	Friday
7:30-8:0 AM	Run patient list with HD unit	Run patient list with HD unit	Run patient list with HD unit	Run patient list with HD unit	Run patient list with HD unit
8:0-10 AM	Consult	Consult	Renal biopsy	Consult	Consult
8:30-11:00 AM	Consultation	Transplant Conference1 8:00-9:00 AM	Renal biopsy	medical Grand Rounds 8:30-9:30 AM: Alumni Auditorium near Library	Consult
11:00-12:00 PM	Morning Report 2	Consult	Renal biopsy	Morning Report 2 Fluid/electrolytes	Morning Report 2
12:00-1:00 PM	Lunch/Round	Lunch/Round	Lunch/Round	Lunch/Round	Lunch/Round

1:00-2:00 PM	Renal Clinic[3,4]	Consult/Round	Renal biopsy	Consult/Round	Consult/Round
2:00-3:00 PM	Renal Clinic[3,4]	Consult	Renal Clinic KCH	Transplant Conference[1]	Consult/Round
3:00-4:00 PM	Renal Clinic[3,4]	Journal [5]Club/Biopsy Conf.[6]	Renal Clinic KCH	Interdisciplinary Patient care conference (KCH/SUH fellow), TBA	Consult/Round
4:00-5:00 PM	Renal Clinic[3,4]	Renal Grand Rounds[5]	Renal Clinic KCH	Consult/Round	Consult/Round

[1]Surgery Conference Room
[2]B6-321 or Renal Conference room B6-320
[3]SUNY Downstate, suite A
[4]KCHC,
[5]Renal Conference room
[6]Pathology Library-BSB Room B4-5

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

Appendix 11: Renal Biopsy Check List

Patient Name_____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: _____(fellow) (attending)

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 12: 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 1and 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:
20. Remove the 25G needle and cap with a 22G needle.
21. 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.
22. 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.
23. Use #11 scalpel and open the skin: one stick vertically and slightly rotates.
24. Take the spinal needle from the tray and measure the distance to the surface of the kidney.
25. Insert the needle vertically or as determined from sonography to the desired depth.
26. Remove the inner core of the spinal needle, 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.
27. Inject 2-3cc of lidocaine to anesthetize the renal capsule and exit with negative pressure as you give lidocaine to the tract.
28. 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.
29. Shoot and exit quickly. Expose the sample and deliver it to the pathology technician (at KCHC, the attending nephrologist would review the quality of the specimen). Apply pressure and wait for the technician to determine if it is kidney tissue.
30. Load the gun and repeat as above to obtain more specimens, if the initial specimen is inadequate.
31. 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.

a. If adequate tissue is obtained and bleeding stops, apply band aid on the wound and turn the patient supine.
b. Discard all sharps appropriately first, then other garbage.
c. Write a procedure note.
d. Arrange to transport the patient back to the floor and obtain immediate vital signs.
e. 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
f. 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.
g. For inpatients, if stable, continue with standing orders. If there is hematuria, monitor CBC q4-6hrs until hematuria stops.
h. Transfuse as needed.
i. 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.

For Transplant biopsies, proceed as follows:

1. 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.
2. 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.
3. Load the biopsy gun, hold it like a pen and introduce to the desired depth Shoot and exit quickly.
4. 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.
5. Expose the sample and deliver to the pathology technician. Apply pressure and wait for the technician to determine if kidney tissue is obtained.
6. Load the gun and repeat as above to obtain more specimens if the initial specimen is inadequate.
7. 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.
8. Discard all sharps appropriately first, then other garbage.
9. Write a procedure note.
10. Arrange to transport the patient back to the floor and obtain immediate vital signs.
11. Write your post-biopsy orders as follows:
12. Monitor vitals q15 mins X 2 hrs
13. Then q30 mins X 2 hrs
14. Then q1hrly X 4 hours and if stable q-shift
15. Bed rest X 8 hours
16. Stack and rack all urine specimens
17. CBC in 6 hrs

32. 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.
    a. For inpatients, if stable, continue with standing orders. If there is hematuria, monitor CBC q4-6hrs.
    b. 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 13: 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_{o} 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_{o}, 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 30o, 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 14: 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 15: 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 Lisa after selection.

Fellow's Name: _____

Attending	Date	Signature
Dr. S. Saggi		
Dr. Barbara Delano		
Dr. Mariana Markell		
Dr. Clinton Brown		
Dr. Man Oh		
Dr. Phillip Goldwasser		
Dr. Ernie Yap		
Dr. Moro Salifu		
Dr. Saggi Subodh		
Dr. Sine Akten		
Dr. Mary Mallappallil		
Dr. Mari Alex Michel		
Dr. Arye Kremer		

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 required to meet periodically

Appendix 16: Chief fellow's rules and guidelines

Dialysis/Interventional Month

- Coverage for July and August is provided by split coverage. Regular rotations start in September
- The Dialysis/Interventional Fellow will perform the duties specified in the rotation description.

Coverage Pool

- Calling in Sick is highly discouraged given the limited number of fellows and very tight call schedule
- ALL sick coverage on call days and weekends are pay backs. NO coverage will be provided for personal errands e.g. ACLS, BLS, interviews etc, you must provide your own coverage for these purposes
- The coverage pool comprises of fellows in following order 1. Service fellows,→ 2. Access fellow,→ 3. Ambulatory fellow,→ 4. Research fellow and→ 5. VA Fellow
- In the event the fellow first on call was on call the day prior or is on call the next day of the Sick call the coverage would be done by the person next on call and so on.
- It is the duty of the fellow calling in sick to inform the person next on call and chief fellow.
- All requests for absence MUST be recorded with Lisa and this includes changes in coverage, Vacation and travel requests.
- 1st year fellows cover Friday and Saturday on-call and 2nd year fellows cover Sunday on-call.

Sign outs

- ALL critically ill patients as well as offsite dialysis patients must be signed out.
- Provide verbal as well as written sign out.
- Written sign out to be emailed in the appropriate XL format.
- Maintain the format XL sheet sign and fill in all appropriate date in the designated area.
- Sign-outs occur at 5pm, however it is expected that active patient issues occurring before this time be assessed and completed by the service fellow.
- Avoid signing out routine femoral catheterization for the weekend or for the weekday on call fellow.

Clinic coverage's

- Everyone would know in advance what clinics they have to cover (for fellows on vacation, Conference) if they cannot make it to the clinic assigned, they have to provide their own coverage

Monthly Requests

- All requests for the next month call should be emailed to chief fellows before the end of 1st week of the previous month so the adjustments can be made in the schedule.

Academic sessions

- Academic sessions are mandatory and NOT optional.
- Core curriculum lectures for months of July and August are scheduled from 7:0-8:0AM Mondays, Tuesdays and Fridays.
- All fellows are expected to attend morning report on Monday, Wednesday and Friday at 11 am promptly except if you are at VA or on access. (attendance will be recorded)
- Biopsy conference is held on Tuesdays at 3 pm on the 4th floor basic sciences building. All fellows, except the VA fellows are expected to be present and be prepared to present (as per the schedule) and participate in the discussion. This is alternated with journal club due

to illness or vacation, the chief and Dr. Saggi should be informed as soon as possible. You will be rescheduled.

- Journal club is alternated with biopsy conference and is presented by faculty members (fellows and attending) as per schedule.
- Grand Rounds are held on Tuesdays at 4pm in the Internal Medicine conference room. All fellows are expected to be present. Fellows are expected present at least 1 grand round per academic year

On Call

- All pages must be answered promptly.
- Attendings on call must be made aware of all service patients admitted and all consults done during call hours
- Once patients are being dialyzed, the fellow on call must remain accessible.
- Fellows cannot refuse to see a consult
- If emergent dialysis is needed, nursing administration as well as the technician and dialysis nurse on call should be notified and the time of notification recorded.
- Any dialysis nurse or technician not responding to their page should be reported to the head of the dialysis unit and escalated to Dr. Salifu.

Complaints

- Let's treat each other as mature as possible.
- If you have a problem talk to the person and attempt to resolve the problem, if not sorted then escalate the matter to the Chief Fellow and then to the Program director. If I am unable to resolve it then either one or both of us will talk to Dr. Salifu for resolution.

Appendix 17: Orientation to SUNY Downstate Consult Rotation

A. Acute Dialysis and Consults

- Respond to your pages at all times, immediately unless you are in the midst of a procedure or engaged in a patient encounter.

- First dialysis begins at 7:00AM, at the bedside, usually in the critical care areas. Make sure patients on the early schedule have their orders written the evening before.
- Report to work to the acute unit at 7.30AM. Ensure that all dialysis orders are written and femoral are placed to ensure that dialysis starts in a timely manner. All types of renal replacement therapy options should be discussed with patients and/or designates.
- Parkside Dialysis is Division's center and is the first choice to transfer acute patients unless a patient requests a specific unit. Keep in mind that, at times, Health Care Insurances may dictate where a patient should be dialyzed.
- Refer to Ms. Marcia Joseph (718-703-5938) or Ms. Adanim Luboa (718-703-5939) individuals interested in Home Hemodialysis or Peritoneal Dialysis.
- Pre-transplants coordinators can be contacted at (718) 270-3169 to make appointments for pre-transplant evaluation.
- At discharge, dialysis patient patients should return to their dialysis centers. **CKD patients MUST not leave the hospital without a clinic appointment. The fellow MUST call Linda x3174 to get the appointment for the team discharging the patient.**

B. Vascular Accesses for new ESRD patients

- Arterovenous fistula is the best vascular access for dialysis patients. The Centers for Medicare and Medicaid Services (CMS) recommend that at least 60% of prevalent ESRD patients have a functioning fistula. In consequence, renal fellows should:
- **Make sure that all new ESRD patients are referred for vascular mapping and A.V. access creation during their current hospitalization.**
- Explain to nurses, residents, and phlebotomists the importance of vein preservation. The non-dominant arm should not be used for blood draws or IV above the wrist.
- Ask Ms. Lisa Tam-Ali (270-1585) to schedule patients who could not have vascular mapping during their hospitalization.
- Refer them to one of our access surgeons after vascular mapping (x3169)

- Dr. Saggi and her staff will refer PD candidates for catheter insertion. The PD team determines whether or not a patient is a good candidate.

C. Orders

Dialysis orders should contain:

1. Treatment Length
2. Dialyzer
3. Blood Flow Rate
4. Dialysate Flow Rate
5. Ultrafiltration Goal and Dry Weight
6. Type and site of Vascular access (AV Fistula-AV Graft-Dialysis Catheter)
7. Needle Gauges
8. Lab Tests
9. Intradialytic Drugs as necessary:
    a. -Heparin
    b. -Erythropoiesis-Stimulating Agent (ESA)
    c. -Vitamin D Analog
    d. IV Iron
    e. -Diphenhydramine HCL
10. Intra-catheter drugs:
    a. -Alteplase to manage catheter obstruction
    b. -Heparin

Ideally, antibiotics should be administered when patients returned to their ward. If they don't have any venous access, antibiotics can be given during or after dialysis depending on their pharmacokinetics.

The pharmacy department requests that all orders contain the following items:

- Allergy Alert
- Date and Time
- Legibly written drug name
- Route of administration and schedule (Mon-Wed-Fri or Tue-Thurs-Sat)
- Duration (one month or four weeks)
- Signature
- Physician's stamped or printed name

- License or NPI (National Provider Identification) number

D. Consents

Informed consent should be obtained before performing femoral vein cannulation and initiating dialysis. Witness cannot be member of your team at KCH.

Observe "time out" prior to femoral vein cannulation.

E. Renal Fellows are responsible for all new ESRD or failed transplant patients seen in consultation

1. At initial consultation, the assessment and plan should include consults for social worker, dietician, and a vascular surgeon during the hospitalization if they don't have a permanent access. Ask the primary care team to consult the aforementioned health consultants.
2. In concert with a social worker, arrangements should be made for maintenance dialysis after discharge. The nurse manager, clerk, and medical director of the acute unit will help you with this process. Make sure that your patient won't miss any treatment after discharge.
3. The accepting dialysis unit will require the following items:
   - Demographic Data/Insurance information
   - History and Physical Examination
   - List of co-morbid conditions
   - List of current medications
   - EKG
   - Chest X-Rays report
   - Lab tests including CBC, Comprehensive metabolic panel, Iron studies, PTH, 25OH Vitamin D.
   - Hepatitis B Profile (HBsAg, HBsAb, HB C Ab). Include lab tests of the last three months if available
   - Psycho-social evaluation by a social worker Any significant report (CT-Scan, MRI, Biopsy, etc…)

F. Emergency Dialysis Treatments

- Indications: hyperkalemia, fluid overload, severe metabolic acidosis, uremic encephalopathy

- Always notify the covering attending immediately if emergent dialysis is imminent and the above indications are present. **DON'T WAIT FOR REPEAT LABS** before calling the attending. "If it smells like dialysis, it is dialysis"
- Initiate medical treatment of hyperkalemia pending dialysis
- Page Administrator on duty and tell him to activate the dialysis nurse and technician as soon as acute dialysis is imminent. If the attending cannot be reached, call Dr. Salifu or any other renal attending for back-up. Worst case scenario, call Medical director of the hospital if you cannot reach any nephrologist

G. Femoral Vein Cannulation

- Perform femoral vein cannulation under sono guidance
- Use sterile technique (cap, mask, sterile gown, and gloves)
- Dialysis catheter needs to be sutured
- Dialysis catheter should be place in the following places: ER, MICU, CCU, Dialysis unit.
- Catheter should never be placed on the floor.
- **Remove catheter after dialysis.**
- **When cannulation is difficult, catheter can be sutured and removed after the second treatment**

H. Chronic dialysis patients admitted to the hospital

Call dialysis units and get information about:

- Current dialysis prescriptions, intradialytic drugs, and dry weight
- Intradialytic complications: hypotension, hypertension, angina, and pruritus
- Other dialysis related complications: reaction to ethylene oxide or dialyzer membrane, heparin induced thrombocytopenia
- Hepatitis B status
- Notify primary nephrologist of any information that may not be included in interns' discharge summary: new ESA or Vitamin D dosages, ESRD-related procedures or complications (vascular mapping, AV access thrombosis, angioplasty, and stent placement)

I. **Interactions with the nursing staff**

An excellent rapport with the dialysis nurses facilitates your tasks and is essential for good patients' care. In addition, you can learn a lot from them. Dr. Salifu is using a system of reciprocal evaluation. At the end of the month, the rotating fellow will evaluate the nurses. Conversely, the nursing staff will evaluate the fellow.

J. **Monthly Acute Dialysis Meeting**
Fellows rotating at Downstate should participate in the monthly acute dialysis meeting

Nephrology Critical Care

Critical care nephrology subspecialties program has emerged as an exciting opportunity for new aspiring nephrologist. Over half of the patients admitted to intensive care unit (ICU) develop acute kidney injury, fluid overload, electrolyte abnormality and severe acidosis. Critically ill patient frequently requires renal replacement therapy.

We are proud to announce new opening of nephrology critical subspecialty program at SUNY Downstate Medical Center. Fellow who match in NCC program will practice general nephrology including transplant and vascular access for first and second year followed by dedicated 3rd year of critical care medicine.

The Department of Medicine at SUNY Downstate subspecialty Fellowship in Pulmonary and Critical Care Medicine is now offering two Critical Care Fellowship tracks – Critical Care -Infectious Disease and Critical care – Nephrology Fellowship Track within the ACGME accredited Dual Subspecialty Training Program of Pulmonary and Critical Care Medicine at SUNY Downstate Medical Center.

In an effort to allow collaboration and pursuit of a single subspecialty Track (Critical care - Infectious Disease and Critical care –Nephrology Fellowship Track) within an ACGME accredited Dual Subspecialty Training Program (Pulmonary and Critical Care Medicine) our two critical care track positions provide Nephrology and Infectious Disease fellows with a unique training experience. This Critical Care Medicine Fellowship provides advanced education to allow fellows from other subspecialty- Infectious Diseases and Nephrology to train and pursue Critical Care Medicine within the ACGME accredited combined Pulmonary and Critical Care Medicine Program thereby serving our community with much needed well-trained Intensivists to take care of the aging population with complex medical conditions and comorbidities.

One (or two) Fellows will be accepted each year into each combined track, with some critical care training integrated into their first two years of their respective subspecialty in form of electives. In the Critical Care, training Year (as F3) there will be a heavy focus on pure critical care training encompassing all aspects of intensive care medicine. Please see our proposed rotation schedule-block Diagram for a typical distribution of the assignment of rotation as F3.

Participating Sites:

The Fellows (F3) are required to rotate through all (or most) during their Critical Care Medicine Training year.

Downstate Medical Center campus

- Kings County Hospital Center (NYC HHC)
- University Hospital of Brooklyn (SUNY)

Affiliated institutions

- Brooklyn Veterans Administration Medical Center (VA New York Harbor Health Care System)
- Coney Island Hospital (NYC HHC)
- NYU –Lutheran Medical center
- The program will be run under the directorship of Dr. Robert Foronjy. The Associate Program Director is Dr. Aaliya Burza. At each participating site There is a sufficient number of faculty with current documented qualifications to instruct and supervise all fellows at that location. The Institution, the participating sites and the program also have adequate resources in terms of space, equipment and other personnel for fellow education and effective administration of the

Educational Program:

Each F3 fellow will be required to participate in the weekly didactic core conferences at SUNY DMC in addition to the conferences held at the participating sites.

Summer Series: This series of orientation lecture sets comprising of Attending driven lectures and workshops that covers a wide range of topics fundamental to the practice of Critical Care Medicine like airway management, introduction to bronchoscopy, ventilator management, capnography, acid-base balance, basic physiology.

Following the summer series, multidisciplinary clinical conferences are scheduled two days per week throughout the academic year.

These include:

- **Critical Care Core Conference**: Every Wednesday
- **Journal Club**: Once per month. This is one-hour review in the methodology and results of up-to-date publications critical care pulmonary, nephrology and Infectious diseases.
- **M&M Conference:** Monday morning once per month to discuss and highlight cases of interest and educational value.
- **Board Review Series**: this series takes place routinely throughout the academic year.
- **Internal Medicine Grand Rounds**: Weekly Department of Internal Medicine conference by SUNY DMC faculty and invited speakers

- **City-wide Case Conference (Briscoe Lung Club)** - this conference is hosted by Weill Cornell Medicine with the Division of Pulmonary and Critical Care Medicine of various institutions sharing in the presentations on a rotating basis which include topics not limited to pulmonary but encompassing critical care including nephrology and or Infectious diseases
- **Research Lectures**: These lectures will be interspersed within the core conference lectures to advance fellows Knowledge of the basic principles of research, including how research is conducted, evaluated and applied.
- **QA/QI Presentations:** A series of the fellows' scholarly activities in form of QA/QI projects under dedicated mentorship are highlighted and presented in the Month of May of each academic cycle.

There is the availability of "GoToMeetings" to enable maximum participation by all the fellows rotating at the affiliate hospitals.

ICU Rotations- Medical ICU and other Subspecialty ICU:

Each fellow is required to have 7-9 months of Medical ICU training of which at least 3 are in subspecialty critical care training (CCU, neuro ICU, SICU/Trauma or CT-ICU).

The aim of the Medical ICU rotations is to provide the Fellows with training and education encompassing all aspects of critical care, including ARDS, PE, shock, respiratory failure, circulatory failure, and hypertensive emergencies, upper and lower GI bleeds, liver failure, hematological/oncological emergencies, renal disorders, perioperative critically ill patients, toxic and metabolic disorders. During these months, fellows will be supervised to competently perform medical, diagnostic and surgical procedures including airway management, use of variety of positive pressure ventilator modes, vent-weaning techniques, non-Invasive ventilation modes, and therapeutic flexible fiber-optic bronchoscopy procedures. The fellows will also be expected to perform lumbar punctures, thoracentesis, chest tubes, emergency cardioversion, insertion of dialysis catheters central and arterial lines if not already done during their respective internal medicine residency programs. The F3 Fellow by the beginning of the second half of the academic year is expected to be a Junior attending leading MICU team rounds and reviewing action plans with the

attending physician and also participate in end-of-life and palliative care discussions. This graduated responsibility provides the fellow more autonomous growth and confidence in handling an ICU upon graduation.

Fellows rotating through the **SICU/Trauma Unit** will help manage surgical pre and post-operative patients, participate in trauma codes, and help run the Trauma ICU.

Cardiovascular/Thoracic ICU rotation - The fellow will gain experience with flow directed pulmonary artery catheters, post-operative care of cardiothoracic patients, and manage the care of those patients admitted to the intensive care unit following coronary artery bypass graft surgery, valvular heart surgery, and thoracic surgery. The fellow will also gain experience in ECMO, Impella and introduction to VAD. The CT-ICU at UHB is one of the few centers in the country that does **Robotic-CABG**. This will be a unique experience for the fellows to participate in the cutting-edge technology of robotic surgeries.

Transplant ICU (SICU) –The UHB site also offers the fellows the opportunity to care for the renal transplant patients as well as pancreatic transplant who overlap between CTICU and MICU units. The multidisciplinary rounds between the medical and the surgical teams is a great educational value and an early training for the fellows who would be consulting intensivists in surgical ICU's in future. These rotations will benefit the renal and the ID trained fellows who will be able to bring value to the rotating teams.

Neurosurgical ICU – This rotation provides the fellow with instruction and experience in the diagnosis and management of variety of neurological illnesses (e.g. Intra cranial bleeds, strokes, prolonged mechanical ventilation, increased intracranial pressure) and will participate in bedside percutaneous tracheostomies.

CCU: The fellows can rotate through the CCU either at UHB or KCHC. This rotation will help them gain training with ACS patients, hemodynamic monitoring, emergency cardioversion, transcutaneous pacemakers, IABP (Intra-Aortic balloon pumps).

Advanced Critical Care Echocardiography. The fellows rotating through the medical, CT-ICU and CCU will be introduced to ACCE via board eligible/board certified Faculty and mentored to gain NBE certification in ACCE. This will be a great advantage for the fellows after graduation.

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Full Division Organizational Chart