

Northwestern Transplant Hepatology Fellowship Handbook 2022-2023

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Introduction

The Transplant Hepatology (TH) Fellowship offers advanced training in all aspects of liver disease, particularly focused upon the management of decompensated cirrhosis, hepatobiliary cancers, and post-transplant care. There is extensive exposure and engagement to complex clinical cases and procedures (endoscopy and biopsy) supplemented by numerous educational sessions and research conferences.

Our Liver Transplant (LT) Program has demonstrated continued success with both high volume (over 100 LTs per year, of which ~ 10-15% are living donation) and excellent patient outcomes in-line with national norms. We are one of the few LT centers in the United States to offer both specialized Hispanic and African-American Transplant Programs. Our Hepatology faculty have diverse interests and attachments to research (clinical, translational, and basic sciences), education, national organizations, and industry.

This fellowship is administratively contained within the Department of Medicine, but functions operationally within the Division of Solid Organ Transplantation. This organizational structure underlies the inherent multi-disciplinary nature of this specialty.

We believe in, and strongly support a collegial work environment with our colleagues and staff members. In such an environment enhanced patient-care, scientific collaboration, mentorship and deep friendships can all flourish.

This is an ACGME-accredited fellowship (1-2 positions/year) after which the fellows are eligible for TH Board Certification.

Mission & Aims

To provide excellent patient care, generate substantive research, and train future academic leaders. We proudly serve the Chicagoland and Midwest region, with particular emphasis to under-served populations, exemplified by our African-American and Hispanic Transplant Programs.

- A. Clinical expertise in advanced and complex liver disease (General Hepatology, Pre- and Post-Transplant Hepatology).
- B. Service in the form of clinical care and clinical education to Northwestern University, Chicagoland, and the Midwest region.
- C. Generate substantive research in clinical, translational, and basic science through close collaboration with Faculty mentors.

Fellow Supervision & Evaluation Process

Definition

TH fellow: a 4th year fellow (traditional pathway: completed a 3-year GI fellowship), or a 3rd year fellow (integrated pathway: completion of 2 years of the GI fellowship, pending completion of the TH fellowship - at the same institution).

Policies

To ensure both patient safety and full educational opportunities, all TH fellows will be supervised by an Attending (Hepatologist and/or Transplant Surgeon) while caring for patients at Northwestern Memorial Hospital (NMH), and during their rotation at Lurie Children's Hospital (LCH).

- A. TH fellows are trainees, under the supervision of the faculty. Graduated clinical responsibility is based upon the hierarchical progression of education, experience, and judgment (overall competence).
- B. Specific credentialing documentation appropriate for the level of training is maintained.
- C. Inpatient primary services have a supervisory attending during the day to monitor and assess trainees for: (1) communication and interviewing skills; (2) accurate and detailed recording of history; (3) performance of detailed examinations, and (4) procedural safety and competence; (5) overall appropriate management of patients; and, (6) appropriate interactions with junior trainees, referring specialists and colleagues/staff.
- D. Faculty supervise trainees in all outpatient settings. Each patient encounter is documented.
- E. Documentation of trainee supervision during procedures (EGD, colonoscopy, biopsy) is maintained by TH fellow and the Program Director (PD)/Program Coordinator (PC).
- F. Subspecialty experiences (Pediatric TH and Transplant Infectious Diseases (TID)) are under the supervision of faculty, as determined by the Residency Review Committee.

Work Schedule

The TH fellowship occurs over 1 year, divided into 12 blocks (1 month/block) for one to two fellows. The fellows alternate month to month between out-patient (clinic (4) + external rotations (0.5 x 2) + vacation (1)) and in-patient services (6). Outpatient and inpatient months provide complex and complimentary exposure to clinical and educational experiences. There is more than sufficient faculty oversight and interaction throughout all of these experiences. As the months progress, and the experience and competency of the fellows increases, as deemed appropriate by both the faculty and the fellow(s), graduated autonomy (always with proximate supervision) will occur.

The assessment of their current status is rendered through: (1) daily 1:1 feedback from the supervising attending and the PD; (2) feedback directly from attendings at end of rotation, and formally through New Innovations (NI) evaluations which detail competency across traditionally assessed domains (and when taken over time) can reflect progression and/or need for remediation; (3) quarterly meetings with the PD; and, (4) semi-annual Clinical Competence Committee reviews (in-person; in-writing).

Supervised Services

- A. Inpatient (Hepatology primary service and Hepatology consultations)
- B. Outpatient clinics (General Hepatology, Pre-LT and Post-LT)
- C. Procedures (EGD and colonoscopy, biopsy)
- D. Research and/or Quality Improvement projects involving patients

Inpatient

Fellows have operational control of admissions, management and discharge of patients (under attending supervision), whilst directing and educating residents on the Hepatology primary service. Ultimately, in November of the academic year (5th month of fellowship), fellows can round on the service as the *de facto* attending, with immediate follow-up with the supervising attending shortly thereafter (in-person, or by phone). In particular, admissions, unexpected discharges or significant change in clinical status (e.g. to ICU, or death) requires specific attending consent (with clinical context permitting).

Outpatient

As the year progresses, and fellow competency and comfort increases, graduated autonomy occurs in these encounters: (1) evaluation of patients independently with comprehensive assessment and plan rendered to the supervising physician; (2) facilitating direct admissions (from clinic, or urgent care) to the Hepatology primary service; (3) nuanced management and triage of care regarding the substantive and sundry results that comprise post-transplant Nursing rounds; and, (4) procedures in the form of endoscopy and liver biopsy (*vide infra*). Regarding Post-LT Nursing Rounds, referral to outside consultants or clinics, and/or referral for invasive diagnostic and/or therapeutic procedures, e.g. biopsy, ERCP/EUS, requires specific attending consent.

Procedures

All procedures occur throughout all rotations. Diagnostic and therapeutic procedures, in the form of EGD and/or colonoscopy, and liver biopsies are critical parts of the fellowship experience (cognitive and mechanical competency and performance). In particular, the following require specific attending attention and consent: (1) consent of the patient; (2) the initiation and termination of all procedures; (3) administration of medications; and, (4) engaging therapeutic actions, e.g. variceal banding.

Evaluation of the fellow

The assessment of the fellow's current status is rendered through: (1) daily 1:1 feedback from the supervising attending and the Program Director (PD); (2) feedback directly from attendings at end of rotation, and formally through New Innovations (NI) evaluations (*vide infra*) which detail competency across traditionally assessed domains (and when taken over time) can reflect progression and/or need for remediation; (3) quarterly meetings with the PD; and, (4) semi-annual CCC reviews (in-person; in-writing).

The fellowship has rotation specific evaluation forms of the fellow in NI (outpatient rotations, 1 month block continuously; inpatient, 1 month block with one attending per week). These will be sent to the supervising attendings at the end of each month, with 1 week to complete. Content and completion of these forms will be monitored by the PC and the PD.

Evaluations of the faculty

The fellowship has rotation specific evaluation forms of the faculty in NI (outpatient rotations, 1 month block continuously; inpatient, 1 month block with one attending per week). These will be sent to the fellow upon completion of each month block, with 1 week to complete. As this is a small fellowship (1-2 fellows), their evaluations are integrated into a larger pool of GI fellow evaluations (and then rendered in a delayed fashion): to protect fellow anonymity.

Evaluation of the fellowship

Fellows and faculty do evaluate the program throughout the year (1:1 personal correspondence with the PD; fellow office hours; CCC meetings semi-annually; and, Program Evaluation Committee (PEC) meetings, annually. NI evaluations are sent out in December and June.

Furthermore, Northwestern GME and the ACGME both mandate separate comprehensive annual reviews (objective data and interviews) of the fellowship to maintain certification and otherwise optimize the fellowship experience.

Faculty & Selected Staff

Transplant Surgery: Daniel Borja-Cacho, MD; Juan Carlos Caicedo, MD; Derrick Christopher, MD, MBA; Zachary Dietch, MD, MBA; Daniela Ladner, MD, MPH; Joseph Leventhal, MD, PhD; Satish Nadig, MD, PhD (Chief); Vinayak Rohan, MD; Dinee Simpson, MD

Hepatology: Justin Boike, MD, MPH; Amanda Cheung, MD; Andres Duarte-Rojo, MD, PhD; Daniel Ganger, MD; Richard Green, MD; Anne Henkel, MD; Dempsey Hughes, MD; Sean Koppe, MD; Laura Kulik, MD; Josh Levitsky, MD, MS (Academic Chief); Christopher Moore, MD; Sarang Thaker, MD, MS

Transplant Hepatology Fellowship Coordinator: Angela Tucker

Transplant Social Services: Janet Aminoff, LCSW (Clinical lead); Martha Escamilla, LCSW; Norma Haro, LCSW; Lydia Loveland, LCSW

Transplant Psychiatry/Psychology: John Franklin, MD

Telephone Numbers

Hospital Area Code	312-xxx-xxxx
	extensions
	6-xxxx = 926-xxxx
	5-xxxx = 695-xxxx
	4-xxxx = 694-xxxx
	2-xxxx = 472-xxxx
14 East RN station (Feinberg: Hepatology inpatients)	6-2853
14 East Residents Room (Feinberg: Hepatology inpatients)	6-1394
Admissions	6-2074
Endoscopy (Galter: inpatient, or outpatient MAC)	6-6197 (Recovery) 6-6198 (Admitting) 4-0571 (Charge nurse)

Endoscopy (Lavin: outpatient conscious sedation/MAC)	6-2656 (Nurses station) 4-0375 (Charge nurse)
ER (Feinberg)	6-5188
General Hepatology Clinic (Lavin - Workstation)	2-6992
Operator	6-2000
Pre-LT Hepatology RN Office (Arkes)	5-5437
Pre/Post Transplant Clinic (Arkes - “Nerve Center”)	5-0476
Post-LT Hepatology RNs (Arkes - “Quiet Room”)	5-6963
Surgical Pathology (Galter)	6-3211
Transfer Center (admissions to Hepatology primary service)	6-3321

Fellowship Overview

The fellowship will provide the knowledge and experiences to become an independent and highly-qualified TH physician. By the end of the fellowship, fellows will have easily met and surpassed all requirements to take the ACGME TH Board Examination.

Fellows will care for patients manifesting a large variety of illnesses and in varying stages (acute or chronic presentations). This care will be within the framework of a multidisciplinary team (Hepatology, Surgery, Radiology, Interventional GI, Infectious Diseases, Nephrology, Mental Health, Nutrition and Social Services). The fellows will have a meaningful working relationship with residents and co-fellows in other disciplines as well. We strongly believe that this approach (both vertically and horizontally), not only improves patient care but enhances the quality of our Divisions, Departments and NMH generally.

A main objective of this fellowship is to better understand medical illnesses not only at a biological level, but within a larger psycho-social context. Daily teaching rounds and several weekly conferences will be an integral part of fellowship training and the principles aligned with it. Fellows will be given the opportunity to participate in professional organization meetings and institutional committee activities as well. The fellowship curriculum will be re-evaluated frequently to keep it relevant to the needs of the trainees. Faculty in the Divisions of Transplantation and of Gastroenterology and Hepatology serve as mentors and role models in clinical care, research, and overall professionalism.

The core experience of the fellowship will consist in the evaluation and management of LT candidates and recipients. This will be achieved through extensive exposure in both the in- and outpatient settings, including a post-LT Hepatology/(continuity) clinic throughout the year.

Fellows will be expected to maintain competency in General Hepatology (through *ad hoc* clinics) and endoscopy (EGD and colonoscopy). These experiences can certainly be augmented with extra clinical/procedural opportunities, as requested. Didactic and research conferences related to TH activities are mandatory. The fellow will easily gain facility with interpreting liver biopsies (at least 200). Notably, the requirement for performance of percutaneous liver biopsy has been withdrawn by the ACGME as of 2022 (*vide infra*). The fellow will attend/participate in transplant surgeries (at least 3), organ procurement (at least 1), and other relevant surgical procedures in order to learn the principles of donor selection and gain a thorough understanding of the unique surgical issues and perspectives related to the care of LT recipients.

Fellowship Goals & Objectives

The goal of the fellowship is to fully prepare our trainees for the broad and deep complexity of LT medicine and healthcare. This preparation is achieved by very close faculty mentorship during a multitude of interdisciplinary experiences throughout the academic year. These experiences are highlighted by an awareness of the current social-cultural context (e.g. population disparities). Our efforts are targeted to provide premium care and education to patients. The fellowship experiences are complemented by both formalized and individual didactic meetings. Our research atmosphere, in a high-volume transplant center, facilitates fellow scholarly engagement. The fellow will practice with graduated autonomy throughout the year in preparation for an academic career.

- A. Comprehensive evaluation and management of general hepatology and pre-LT patients.
- B. Comprehensive evaluation and management of post-LT patients.
- C. Appreciation for the complex interventions and evaluations by our sub-specialty colleagues and the communication required for comprehensive and efficient care of patients.
- D. An appreciation for and facility with multidisciplinary evaluation and management of transplant patients; the nuances of forming consensus in group actions.
- E. An appreciation for and facility with the social-cultural context in which transplant evaluation and management takes place and efforts to identify, account for, and even in some cases remedy disparities as they impact upon transplant eligibility and management.
- F. Further development as an educator and/or mentor to trainees and colleagues in our local and regional communities: (1) through operational control on our resident-run inpatient services; (2) and attendance and/or participation in educational/research meetings, respectively.
- G. An appreciation for systemic issues that affect patient care outcomes (“quality”), and creating/facilitating projects that target these areas, e.g. quality improvement (QI) projects.
- H. Maintaining and augmenting medical professionalism, in-regards to: (1) patient care; (2) faculty/staff interaction; (3) community engagement; and, (4) trainee/colleague education. Faculty and staff will serve as role-models in this regard, furthered by formal educational conferences provided by the Department of Medicine and Division of GI and Hepatology.

Progression in training

Progression in training, in particular, graduated autonomy (from formal direct supervision most of the time, to part of the time, to indirect supervision/independence), is manifest in 4 domains (with attending discretion, and consent of the fellow) (1): *outpatient* clinical encounters, i.e., evaluation of patients alone and development of assessment and plan; (2) *endoscopy* (diagnostic and therapeutic) and *liver biopsy* procedures - occurs during in/outpatient rotations; (3) *outpatient* post-

LT nurse rounds, i.e. the evaluation and management of acute, sub-acute and chronic outpatient clinical, blood, imaging, procedural and biopsy results - occurs during in/outpatient rotations; (4) *inpatient* (Hepatology primary service); management of patients, and oversight and education of the resident team, is granted in full on Saturdays (rounding without an attending physically present), starting in November. The attending is always available by phone to staff patients, and can be deemed to be in person, if they or the fellow requests it.

The assessment of their current status is rendered through: (1) daily 1:1 feedback from the supervising attending and the Program Director (PD); (2) feedback directly from attendings at end of rotation, and formally through New Innovations (NI) evaluations which detail competency across traditionally assessed domains (and when taken over time) can reflect progression and/or need for remediation; (3) quarterly meetings with the PD; and, (4) semi-annual CCC reviews (in-person; in-writing).

Clinical Services Overview

The fellowship is designed to meet the requirements of the ACGME through varied and in-depth clinical experiences over the course of 1 academic year. Traditionally these Inpatient and Outpatient months are alternated (whether there are 2 fellows per year or not). As such, depending on the schedule, services, clinics, and/or procedures may be without the TH fellow. All such services, clinics and/or procedures function autonomously without the fellow. The details of each clinical experience are detailed in their designated section (*vide infra*).

- A. 6 months of Inpatient services (Post-LT Hepatology/(Continuity Clinic) continues).
- B. 4 months of Outpatient Hepatology clinics (2 pre-LT, 2 post-LT [Hepatology/(Continuity Clinic) and Surgery Clinic], 1 General Hepatology (*Ad hoc*) clinic, 2 endoscopy ½ days)
- C. ½ month Pediatric TH in/outpatient (Post-LT Hepatology/(Continuity) Clinic and Surgery clinic continue); location is LCH
- D. ½ month TID in/outpatient (Post-LT Hepatology/(Continuity Clinic) and Surgery Clinic continue); location is NMH
- E. 1 month (20 working days) vacation
- F. 5 days to attend national conferences (timeframe within the sections A-E)

Hepatology Outpatient Schedule

	Monday	Tuesday	Wednesday	Thursday	Friday

AM	<p>Endoscopy 8:00-12:00 Ganger Kulik</p> <p>Hepatology 8:00-12:00 Hughes/Thaker</p> <p>Post-LT Surgery 8:30-12:00 Attendings</p>	<p>Pre-LT Return 8:30-12:00 Attendings^s</p>	<p>Hepatology 8:00-12:00 Kulik Cheung</p> <p>Endoscopy 8:00-12:00 Boike</p>	<p>Hepatology 8:00-12:00 Levitsky Moore</p> <p>Pre-LT New 8:30-12:00 Attendings</p>	<p>Hepatology Conf 7:00-8:00</p> <p>Pathology Conf 8:00-8:30</p> <p>Multi-Disc Conf 8:30-10:30</p>
PM	<p>HBS 1:00-4:00 Kulik Attendings</p> <p>Hepatology 1:00-5:00 Green Attendings</p> <p>Endoscopy 1:00-5:00 Duarte Hughes/Thaker</p> <p>Post-LT 1:00-5:00 Moore</p>	<p>Hepatology 1:00-5:00 Ganger</p> <p>Post-LT 1:00-5:00 Boike Duarte</p> <p>Endoscopy 1:00-5:00 Levitsky</p> <p>Fellow's Lecture Series 4:30-5:30</p>	<p>Post-LT 1:00-5:00 Ganger Levitsky</p> <p>MAC Endoscopy 1:00-5:00 Attendings</p> <p>CTC Lecture Series 4:30-5:30</p>	<p>Liver Biopsy 1:00-2:30 Moore</p> <p>Radiology Conf 1:00-2:30</p> <p>Hepatology 1:00-5:00 Boike Duarte Ganger</p> <p>Post-LT 1:00-5:00 Cheung Hughes Thaker</p> <p>Case Discussions 2:00-3:00 Green</p>	<p>Endoscopy 1:00-5:00 Moore</p>

Locations

- A. Case Discussions: Feinberg Pavilion, 14th floor, Hepatology Resident Team Room
- B. Endoscopy: Lavin Pavilion, 16th floor, Digestive Health Center (DHC) Endoscopy suites
- C. Fellow's Lecture Series: Arkes Pavilion, 19th floor, Solid Organ Transplant Center (SOTC) Conference Rooms (or virtual)
- D. Hepatobiliary Surgery (HBS) Clinic: Arkes Pavilion, 19th floor, (SOTC) Transplant Clinic
- E. Radiology Conference: Arkes Pavilion, 4th floor, Department of Radiology Conference Room (or virtual)
- F. Hepatology: Lavin Pavilion, 16th floor, DHC Pod B1/B2

- G. Hepatology Conference: Arkes Pavilion, 19th floor, SOTC Conference Room (or virtual)
- H. Jon Fryer, MD CTC Lecture Series: Arkes Pavilion, 19th floor, SOTC Conference Rooms (or virtual)
- I. Liver Biopsy: Arkes Pavilion, 19th floor, SOTC Transplant Procedure Bays
- J. MAC Endoscopy: Galter Pavilion, 4th floor, Endoscopy Suites
- K. Multi-Disciplinary Conference (MDC): Arkes Pavilion, 19th floor, SOTC 19-083 (or virtual)
- L. Pathology Conference: Galter Pavilion, 7th floor, Pathology Labs (or virtual)
- M. Pre-LT (New/Return): Arkes Pavilion, 19th floor, SOTC Transplant Clinic
- N. Post-LT Surgery: Arkes Pavilion, 19th floor, SOTC Transplant Procedure Bay Area
- O. Post-LT: Arkes Pavilion, 19th floor, SOTC Transplant Clinic

Hepatology Inpatient Schedule

Note: Conferences and Educational meetings continue; Post-LT Hepatology/(Continuity) Clinic continues.

Monday – Thursday: Standard schedule

7:45 ~ 8:30 am	MDR
8:30 ~11:00 am	Hepatology primary service rounds
Late morning/Afternoon	Hepatology consult service and procedures (Optional)
Afternoon	Service follow-up; educate residents; administrative time

Friday: Non-standard schedule

7:00 – 8:00 am	Hepatology Conference (modular)
8:00 – 8:30 am	Pathology Conference
8:30 – 10:30 am	MDC
Morning/Afternoon	Rounding; service follow-up; educate residents; endoscopy

Saturday: Non-standard schedule

8:00 am ~ 12:00pm	Hepatology primary service rounds
	*Coverage dates determined by TH fellows
	*TH fellow round independently (starting in November)

Sunday: Off

On-Call Status

The fellow will be expected to keep the pager on throughout the day until 6pm, but will not, in general, be expected to manage patients after-hours (whether in- or outpatient). If the fellow is going to be unavailable, the pager should be forwarded to their co-fellow (if available), or the GI

fellow on-call. The fellow will not exceed the 80-hour work week; this has never in fact been an issue. Fellows will actively document the weekly duty hours; non-compliance can result in temporary suspension of privileges. Moonlighting is allowed, but does require TH Fellowship Program Director (PD) approval. Total work cannot exceed (combined with official work hours), the stated maximum hours, per ACGME.

Didactic Curriculum

Lectures (Group learning)

The GI and TH fellows will participate in weekly hour-long lectures (Fridays from 7:00-8:00 am), starting in September and running through June. These lectures are modular, and include: (1) formal didactic presentations by Hepatology and allied faculty; (2) invited external guest faculty to speak on an area of their expertise (Hepatology Grand Rounds: note, Thursdays at 7:00 am); (3) clinical cases, pathology review and journal clubs presented by both the GI and TH fellows; and, (4) Morbidity and Mortality presented by Transplant fellows (surgery and hepatology) semi-annually. This conference is attended by Hepatology faculty (predominantly) and GI/TH fellows and Hepatology advanced practice providers. This conference simultaneously functions as part of the fellows “Academic Conferences” (*vide infra*). At the end of the year, the TH fellow(s) will present their scholarly activity during one of these sessions. These lectures take place in Feinberg Pavilion, 14th floor, Division of GI and Hepatology Conference Room (or virtual).

The TH fellows, along with fellows from Transplant Nephrology and Transplant Surgery will engage in weekly hour-long lectures (“Fellow’s Lecture Series”), held on Tuesdays from 4:30-5:30 pm, presented by the allied Transplant faculty, on topics that span the transplant field. These lectures occur throughout the academic year, on Tuesdays from 4:30-5:30 pm in Arkes Pavilion, 19th floor, SOTC Conference Rooms (or virtual).

Review (Self-learning)

Fellows have access to the Comprehensive Trainee Curriculum (CTC) videos (up to 1 hour each) (<https://www.myast.org/comprehensive-trainee-curriculum-ctc>), produced by the American Society of Transplantation (AST) covering all aspects of solid-organ transplant. These are to be viewed on a weekly basis (recommended). A comprehensive reading list of general Hepatology and TH topics, curated by the PD, will also be provided on a monthly basis. Fellows will be given access to the TH Board Review Lectures. Our institution has specific acute and chronic post-LT patient protocols, which will be distributed separately.

Office hours

Every week (Fridays from 12:00-12:30 pm), the fellows can meet with Christopher Moore, MD (TH Fellowship PD). This meeting is multi-purpose: (1) for clinical questions that arise from in- and outpatient services and/or readings; (2) to further discuss and expound upon the weekly CTC videos; (3) to ensure individual wellness; and, (4) facilitate feedback for improvement. The PD is readily available to discuss all issues facing the fellows and the fellowship daily. The PD office is in Arkes Pavilion, 19th floor, SOTC 19-037.

Clinical Experiences

Preamble

The NMH SOTC is administratively divided into medical and surgical services, which each have pre- and post-LT components for Liver and Kidney patients. Pertinently, for inpatients needing a LT and/or a simultaneous liver and kidney transplant (SLKT) who are hospitalized, two broad categories exist: (1) Hepatology primary service for pre-L(K)T and long-term post L(K)T patients who are suitable for a medical floor (*vide infra*); (2) Transplant surgical service for pre-L(K)T in the CTICU, or short-term post L(K)T patients who are suitable for the surgical floor (*vide infra*). As a result, depending on the patient's issues, and/or their time from L(K)T, the TH personnel will either function as a primary service, or a consultant; and *vice versa* for the Transplant surgery personnel. Thus, the daily practice is inherently interdisciplinary, collaborative and cognitively and technically challenging.

General Hepatology/(Ad Hoc) Clinic

The General Hepatology clinic evaluates acute hepatobiliary injury, chronic hepatobiliary disease including compensated and decompensated cirrhosis, and hepatobiliary lesions and cancers for patients. Patients remain here insofar as they remain medically controlled and/or ineligible and/or uninterested for LT evaluation when indicated. The General Hepatology clinic is for both “new” and “return” patients; though invariably patients being discharged from the Hepatology primary service, or the Hepatology consult service, will be “returns” - having been staffed during their inpatient stay. Most Hepatology primary service patients will follow-up in the Pre-LT clinic (“New” or “Return”). However, if deemed not a pre-LT candidate, patients will become General Hepatology patients. This clinic takes place in Lavin Pavilion, 16th floor, DHC Pod B1/B2.

The fellow participates in this clinic during their outpatient service months (usually). While the bulk of this fellowship deals with issues related to the pre- and post-LT experiences, solidifying, and augmenting general hepatology knowledge not only informs the LT experience, but is also crucial for the long-term successful practice of any hepatologist (whether they choose to remain at an academic center with or without LT capability). The fellow can choose from several faculty to work with, insofar as it does not conflict with their Post-LT Hepatology/(Continuity) Clinic or other responsibilities. The fellow can work with all faculty.

Hepatobiliary Surgery Clinic

This clinic evaluates both benign and malignant hepatobiliary lesions for optimal radiologic and/or surgical intervention (which do not include destination LT). The clinic can assist with all patients (General Hepatology, Pre- or Post-LT). It is staffed jointly by Hepatology, Transplant Surgery and Interventional Radiology. Given the nature of the disease, anatomic access, and patient comorbidities, this clinic will utilize advanced techniques in nuanced ways, in many cases, beyond what one would expect (or even be considered) from guidelines. These clinics occur on Mondays 1:00 - 5:00 pm, Arkes Pavilion, 19th floor, SOTC Transplant Clinic.

This clinic, while not part of the standard fellow curriculum, is of obvious utility to all parts of Hepatology. Fellows are encouraged to attend, insofar as it does not conflict with their mandated responsibilities.

Hepatology Consult Service Rounds

Patients on the consult service fall into these general categories: (1) acute and/or chronic hepatobiliary diseases that are ineligible and/or inappropriate LT; (2) long-term post-LT recipients

admitted for non-transplant issues, with otherwise stable graft function; and, (3) hepatic risk assessment for non-LT surgeries. This service is managed directly by the GI fellow, with the assistance of a senior resident and APP, and staffed directly with the attending. These rounds occur in the late morning and/or afternoon and are decentralized - encompassing Galter, Feinberg and Olson Pavilions, and Prentice Hospital.

The fellow is not responsible for the operation of this service, but is nonetheless encouraged to attend rounds, to solidify and augment their own hepatology fund of knowledge. It is the reality that some patients on the consult service may in time, or with otherwise new information, become eligible for further transplant evaluation, and/or require, e.g., transplant immunologic adjustments. As such, it benefits the fellow to: (1) monitor this service; (2) advise the GI fellow for workflow assistance; and (3) coordinate care *ad hoc* with transplant staff. For pre/post LT ICU patients, the fellow may indeed be the primary consultant (schedule permitting, otherwise defaulting to the GI fellow).

Hepatology Primary Service Rounds

Hepatology primary service houses up to 12 patients, under the direct management of the attending and fellow and resident team (3 interns and 1 senior). Interns and residents will admit, manage, present, and discharge all patients. Detailed assessment and management of the following will occur: (1) active medical issues for which they are admitted; (2) issues affecting listing capability or maintenance (a) medical; (b) surgical; (c) frailty; (d) psycho-social; and (e) financial.

Given the nature of our patients and their complexity, a number of allied consultants are commonly involved: (1) TID will assist with nuanced management of complex and/or atypical infections, particularly in the immuno-suppressed state; (2) Transplant Nephrology, as relates to volume management with diuretics and acute kidney injury, chronic kidney disease, and determination of KT eligibility; (3) Interventional GI will assist with biliary complications, particularly in the post-LT patients, transgastric liver biopsies; (4) Interventional Radiology will assist with TIPS, vascular and biliary access, HCC liver-directed therapies; fluid removal through thora/paracentesis; (5) Transplant Surgery will handle/direct all issues such as cholecystectomy or appendectomy and/or vascular issues affecting the post-LT hepatic artery and portal vein; (6) PT and nutrition - almost universally consulted on our patients given their severe advanced disease state and deconditioning; and, (7) Psychiatry - their evaluation, particularly for alcohol patients is essential in terms of assessing for patient success in the post-LT state. These rounds take place from 8:30- 11:00 am in Feinberg Pavilion, 14th floor, East.

The fellow is expected to have up-to-date and detailed knowledge of all patients, for both their immediate issues and LT status (studies required for listing or maintenance of listing) and living donor status (as applicable). Overall, the fellow will gain the experience of managing a broad spectrum of inpatient pre- and post-LT issues. The fellow serves several critical roles: (1) facilitating communication between the attending and residents; (2) helping the residents to understand the complex multidisciplinary issues of these patients; (3) ensuring good communication with our consultants and transplant staff; and, (4) providing an essential continuity-of-care function for these complex patients – given that the attendings rotate on a weekly basis.

The fellow will communicate with the pre-LT nurses daily regarding patient medical and listing issues. The fellow will communicate with the post-LT nurses whenever transplanted patients are discharged to ensure accurate and safe continuity-of-care. In general, all endoscopic procedures for this service will be performed by the concurrent GI fellow, who staffs the Hepatology consult service (*vide infra*). In some cases, the TH fellow may perform these procedures and/or provide oversight to the GI fellow during the procedure. The pre- and post-LT nursing staff are all located on Arkes Pavilion, 19th floor, SOTC (or virtual).

Multidisciplinary Rounds

MDR is the daily meeting to discuss all patients housed on the SOT services (*vide supra*). The groups represented at MDR include (1) fellows and attendings for TH, Transplant Surgery, Transplant Nephrology, TID; (2) Inpatient Social Services; (3) Transplant nurse coordinators; and, (4) Surgical ICU attending. The fellows will each present, briefly, on their respective service patients: (1) active medical issues for which they are admitted; (2) issues affecting listing capability or maintenance (a) medical; (b) surgical; (c) frailty; (d) psycho-social; and (e) financial. These rounds take place from 7:45-8:30 am in Feinberg Pavilion, 7th floor, CTICU Conference Room (or virtual).

The MDR represents a significant opportunity for the education and overall training of the fellow in understanding the complex nature of these patients: (1) developing concise, substantive presentations; (2) communication with consultants; and (3) learning from consultants regarding the unique complications and nuanced management in these patients.

Pediatric Transplant Hepatology Rotation

LCH, adjacent to NMH, has a large pediatric LT program that has close collaboration with our program. This rotation will address the nuanced issues of Pediatric TH: (1) etiologies and management of end-stage liver disease; (2) immunosuppressive medications and complications; (3) procedural/surgical complications; and (4) the psycho-social environment surrounding the patients. This rotation lasts 2 weeks, and is to take place during the second-half of the academic year. It will comprise both in- and outpatient services. These services are staffed by Pediatric TH attendings and their fellows.

Note that the fellow's post-LT Hepatology/(continuity) clinic and Post-LT Surgery clinic will continue throughout this rotation. This rotation should be planned a few months in advance with Catherine Chapin, MD (Pediatric TH Fellowship PD); contact by email. These services will be entirely contained within LCH.

Post-LT Hepatology/(Continuity) Clinic

This Post-LT Hepatology clinic handles: (1) immunosuppression medications and side-effects; (2) infectious prophylaxis and infectious complications; (3) nutrition; (4) kidney function and volume management; and, (5) primary care issues, which may be exacerbated given the nature of immunosuppressive medications. Patients are seen in the Post-LT Hepatology clinic approximately 4 weeks after their LT, in all cases after they have been through the Post-LT Surgery clinic. Approximately 10-12 patients are seen in these clinics during a half-day.

A full support staff, including post-LT nurses and coordinators, are available to carry out management plans and follow-up with the patients. These clinics take place in Arkes Pavilion, 19th floor, Solid SOTC Transplant Clinic.

When the fellow is inpatient, they are responsible, via the residents, for coordinating the discharge plans (timely follow-up date, and summary of hospitalization) to the post-LT RNs (via Epic). If no fellow is on service that month, then the residents will handle this, with support from the inpatient TH attending, or the patient's TH outpatient attending.

This clinic functions as a continuity clinic for the TH fellow throughout the year. In general, the fellow will join the clinic of a TH attending for a 3-month period. This clinic is mandatory, except during fellow vacations.

Post-LT Nursing Rounds

There is a vast amount of data on being retrieved on our post-LT patients (rapidly with new patients, and more slowly with longer term patients, into perpetuity). This data comprises: (1) transplant surgical and immuno-suppressive issues; (2) primary care issues, generally enhanced by the immunosuppression; (3) psychosocial issues; and (4) financial and occupational issues. The interpretation and action upon this data requires nuanced understanding of the patient's history, the current medical status, and a practical sense of utility for both the patient's health and healthcare limitations.

Fellows are assigned to an attending (Epic inbox) for 3 months (a quarter) at a time; *ergo*, they will work with 4 attendings per year in this regard. Post-LT RNs will be able to send up to 5 patient issues (an issue may contain multiple messages back-and-forth) per day to fellows, with the attending cc'd on it. Probationary period: for at least the first week of each quarter (and likely more so in the first quarter), fellows will work closely with the attending to learn and integrate clinical practice patterns and nuances to outpatient post-LT care. After a consensus plan is formulated (ideally the same day), it can be forwarded to the Post-LT RN team. Fellows and attendings should agree upon a common time of contact (duration to be usually < 15 min). It is attending discretion regarding how autonomous they want the fellow to be in responding to nurses after the probation period ("graduated autonomy"). As fellow efficiency and competency increases, they can determine greater amounts of clinical effort in this regard. These rounds take place in Arkes Pavilion, 19th floor, SOTC Quiet Room (or virtually).

Post-LT Surgery Clinic

After patients have undergone LT, and are discharged (usually by postoperative day 5), they will return to the Post-LT Surgery clinic (usually within a week). This clinic is supervised by Transplant Surgery attendings and assisted by post-LT nurses. Several complex issues are managed: (1) immunosuppression medications and side-effects; (2) infectious prophylaxis and infectious complications; (3) nutrition; (4) kidney function and volume management; and (5) surgical complications. This clinic may also contain long-term LT patients who have had recent surgical complications, and/or are otherwise deemed to warrant evaluation (at the discretion of the attending). It is the case that the details of the donor, the graft, the anatomic connections, and the immediate post-operative complications may have significant and long-standing consequences for the patient. Thus, a facility with this critical and complex surgical-medical state is vital to

understanding the patient's trajectory, and their natural history (retrospectively). This clinic takes place on Mondays 8:00 am - 12:00 pm, in Arkes Pavilion, 19th floor, SOTC Procedural Bay Area.

This clinic will provide a very unique experience as it is essentially surgical in nature (with a number of in-clinic procedures to be performed). This is an excellent continuity-of-care opportunity, as in most cases the fellow is following a patient they managed pre-LT, and in some cases participated in the transplant operation as well. This clinic is to continue during external rotations (Pediatric TH and TID); fellows are exempt during their vacation. Fellows should inform the administrative assistant of the attending if they are to be absent, and/or when they are on inpatient service months (i.e. if only 1 fellow that year).

Pre-LT New & Return Clinics

The Pre-LT *New* clinic evaluates decompensated cirrhotic and/or hepatobiliary cancer patients who could benefit from LT. Usually 5-8 patients are evaluated weekly (Thursday mornings) by a multidisciplinary team that includes Transplant Surgery, Hepatology, Psychiatry, Physical Therapy, Nutrition, and Social Services. Patients may be referred from: (1) General Hepatology clinic at NMH; (2) GI clinics in the Chicagoland area; (3) second opinions from other LT centers; and (4) international locales, e.g., the United Arab Emirates. Management of acute and chronic hepatologic complications, and overall appropriateness (medical, surgical, financial, frailty/function and psycho-social) for further LT evaluation and/or listing are considered and engaged. Fellows will see patients individually and staff with available attendings.

These patients are discussed by the attendings (and in some instances by the fellow) the next morning at the MDC (*vide infra*) and, if deemed appropriate, will subsequently follow-up in the Pre-LT *Return* clinic. This clinic, comprising usually 8-16 patients, meets weekly (Tuesday mornings). It continues the management of the patients' acute and chronic conditions, while simultaneously working-up, completing and/or maintaining their listing status.

A full support staff, including pre-LT nurses and coordinators, are available to carry out management plans and follow-up with the patients. These clinics take place on Tuesdays (*Return*) and Thursdays (*New*) from 8:30 am - 12:00 pm, Arkes Pavilion, 19th floor, SOTC Transplant Clinic.

Satellite Clinics

These clinics allow for patients (Pre- and Post-LT and General Hepatology) who live far away to be seen conveniently by our Hepatology group (attendings and/or Advanced Practice Providers (APPs)). Each clinic is staffed differently, and appropriateness for the clinic is determined uniquely. These clinics occur all over the Chicagoland area and northwest Indiana.

In general, these clinics are not staffed by fellows; however, if the fellow has a particular interest to access this clinic, or under extraordinary circumstances of short staffing, the fellow may certainly join, or their presence be requested, respectively.

Transplant Infectious Diseases Rotation

Given the nature of our pre and post-LT patients, a wide variety of infectious complications are manifest, in many cases with atypical, and/or more severe presentations. This rotation lasts 2

weeks, and is to take place during the second-half of the academic year. This rotation has both in- and outpatient services. During the inpatient component, the fellow is part of the TID consultative service, which usually has TID fellows and Internal Medicine residents on it. The outpatient component comprises pre- and post-LT patients seen for a variety of active and preventative infectious issues.

Note that the fellow's Post-LT Hepatology/(continuity) clinic and Post-LT Surgery clinic will continue throughout this rotation. This rotation should be planned a few months in advance with Michael Angarone, DO; contact by email. Outpatient services will be in Arkes Pavilion; whereas inpatient rounds are decentralized, and encompass Galter, Feinberg and Olson Pavilions, and Prentice Hospital.

Urgent Evaluation Clinic

This clinic is activated to determine if a "return" pre- or post-LT patient (i.e., staffed prior with a transplant attending in the in- and out-patient setting) requires direct admission to the Hepatology primary service, thus expeditiously bypassing the complexities of the ER, or needs rapid and direct ER assessment. These evaluations typically occur a few times per month (scheduled usually in the days prior or even the same day). Ultimate decisions will be made in conjunction with both the patient's primary outpatient Hepatologist and the Hepatology primary service. These urgent visits do not require a formal admission note, but rather a verbal sign-out to the Hepatology primary service. This clinic takes place *ad hoc* in Arkes Pavilion, 19th floor, SOTC Procedural Bay Area.

Clinical Procedures

Fellows throughout the year (and heavily during outpatient months) participate in weekly endoscopy (EGD and colonoscopy) sessions with Justin Boike, MD, MPH (Wednesday mornings) and Christopher Moore, MD (Friday afternoons), and a variety of Hepatology attendings for EGD and colonoscopy MAC cases on Wednesday afternoons. Indeed, interested fellows can scope with any and all Hepatologists. These experiences will allow the fellow to maintain and augment their skillset. TH fellows will not usually perform endoscopy on inpatient services – this is reserved for the GI fellow on consults. These procedures take place either in Lavin Pavilion 16th Floor, DHC Endoscopy Suites (mostly conscious sedation, select MAC cases), or, Galter Pavilion 4th floor, Endoscopy Suites (all MAC cases). In general, please discuss with attendings prior to joining them for procedures.

The fellows will attend/participate in transplant surgeries (at least 3) and organ procurement (at least 1; more are strongly encouraged). Surgical activities should be undertaken in the second-half of the academic year, and completed before June. Transplant Surgery operations will take place in Feinberg Pavilion, 7th floor, Operating Rooms (OR). Fellows should coordinate case times with the Transplant Surgery procurement team, and adjust as needed for appropriate coverage of their inpatient and/or outpatient obligations. For OR access/protocols and scrubs, please contact the Transplant Surgery fellows that day. Note, Living Donor surgeries are scheduled weeks in advance, and as such these are excellent opportunities to plan ahead of time to obtain exposure to donor and recipient experiences .

It is highly encouraged that the fellow learn how to perform ultrasound-guided percutaneous liver biopsies. In the setting of: (1) changes to disease-state protocols; (2) access to other interventional methods (IR or GI); (3) patient preference; and, (4) limitations imposed by COVID-19 on elective/outpatient procedures, the number of procedural biopsies available to the fellow have declined. Given these facts, achieving the minimum number of procedural biopsies to achieve competency have and will continue to occur. These concerns and results are echoed across the country, and as such, as of 2022, the ACGME has withdrawn the requirement for liver biopsies as a fellowship criterion. As a pragmatic response, our program will deem competency based upon the quality and quantity of the fellow procedures. Fellows, if interested, can also perform outpatient biopsies on Post-LT patients, per agreement with the attending. These procedures take place in Arkes Pavilion, 19th floor, SOTC Procedural Bay Area.

The fellow is to keep a detailed record of their procedures, most importantly: (1) biopsies performed; (2) biopsies reviewed; and (3) organ procurements and transplants. These details are invariably requested by institutions for the purposes of hiring, maintaining and/or advancing faculty through academic appointments..

Scholarly Activities

This is a clinical fellowship, and as such, formal primary research is not a requirement. However, one intra-mural QI project is required and to be submitted to the PD/PC before the end of fellowship. Publishable scholarship is strongly encouraged (ideally at least 3), and many opportunities are available given the varied interests and intensity of faculty research. Given the nature of the fellow's traditional schedule, there is in fact ample time to generate a successful QI project and/or publish scholarly work. The fellows' scholarly activity is to be presented during the Hepatology conference (*vide infra*) at the end of the academic year. Fellows are highly encouraged to attend national conferences, whether presenting research or not, such as the AASLD Liver Conference.

Academic Conferences & Lectures

Bile Conference

Bile conference brings together Transplant surgeons, Hepatologists, Interventional Radiology and Interventional Gastroenterology to discuss complex and/or otherwise recurrent biliary issues in our patient population (mostly post-LT). In many cases, novel solutions to biliary issues will comprise a combined (e.g., rendezvous procedures between Interventional Radiology and Interventional Gastroenterology) or stage-based approach to surgical revision. This conference provides an excellent opportunity to understand natural, pathological, and iatrogenically-induced anatomy and physiology of the biliary system and its effect upon the liver and the patient. This group meets on Fridays at 7:00-8:00 am, once a month in Arkes Pavilion, 19th floor, SOTC 19-083 (or virtual).

Note that this conference time will conflict periodically with Academic/Didactic Conferences (7:00-8:00 am). It is the fellow's prerogative to decide which one to attend; in the second half of the year the Bile conference may be more useful. For cases that require discussion please alert/email Vicki Garcia (Administrator Coordinator, Transplant Surgery).

Case Discussions

This conference is geared mostly towards internal medicine residents who rotate through the Hepatology primary service, but is nonetheless useful to any and all GI and/or TH fellows who wish to attend. Throughout the week, the service residents will collate one or multiple complex inpatient cases to review with Richard Green, MD. The residents are expected to present a vignette and then discuss the nuances of management, and/or theory underlying the relevant disease states. Given the nature of our patient population, topics will overlap amongst medical specialties, ethics and economics, and more generally healthcare at-large. These discussions take place every Thursday from 2:00 - 3:00 pm, in Feinberg Pavilion, 14th floor, Hepatology Resident Team Room (or virtual).

Cost-effective Analysis

While there is not a formal course in this fellowship for cost-effective analysis, this subject is discussed daily with the fellow during daily 1:1 interactions on clinical services (inpatient/outpatient and procedures). This subject is also reviewed during: (1) Journal Clubs (an existing module of the “Hepatology Friday Conferences;” (2) MDC every Friday; (3) QAPI every 2 weeks on Friday (prior to MDC); and, (5) fellows can attend (and are made aware of) relevant DOM Grand Rounds (every Tuesday morning during the academic year). Fellows also have the ability to meet NMH financial associates in regards understanding, documenting and implementing appropriate billing.

Department of Medicine Grand Rounds

The Department of Medicine (DOM) Grand Rounds brings to NMH speakers of national and international renown to expound upon their research and/or discuss major issues within Medicine, Science, and healthcare. While these speakers address the DOM, the larger NMH community is invited as well. Grand Rounds occur throughout the academic year, on Tuesdays at 7:30-8:30 am in the Feinberg Pavilion, 3rd floor, Feinberg Conference Room (or virtual).

Fellow’s Lecture Series

These lectures, presented by NMH Transplant faculty, showcase a broad array of solid organ transplant topics highly focused on day-to-day clinical practice. The main target audience is NMH transplant fellows (hepatology, nephrology and surgery), but certainly all trainees and faculty are welcome. These lectures occur throughout the academic year, on Tuesdays from 4:30-5:30 pm in Arkes Pavilion, 19th floor, SOTC Conference Rooms (or virtual).

Hepatology Conference

This conference is modular, and include: (1) formal didactic presentations by Hepatology and allied faculty; (2) invited external guest faculty to speak on an area of their expertise (Hepatology Grand Rounds: note, Thursdays at 7:00 am); (3) clinical cases, pathology review and journal clubs presented by both the GI and TH fellows; and, (4) Morbidity and Mortality presented by Transplant fellows (surgery and hepatology) semi-annually. This conference is attended by Hepatology faculty (predominantly) and GI/TH fellows and Hepatology advanced practice providers. This conference simultaneously functions as part of the fellows “Didactic Curriculum” (*vide supra*). The conference runs from September through June, every Friday from 7:00-8:00 am in Arkes Pavilion, 19th floor, SOTC Conference Rooms (or virtual).

Jon Fryer, MD CTC Lecture Series

These lectures focus on NIH transplant-related funded research generated by faculty from NMH or, more broadly, Northwestern University and/or other institutions. The objectives include dissemination of relevant research to our transplant faculty, to generate multi-disciplinary collaborations, and more generally enhance collegiality amongst colleagues. The target audience includes Transplant faculty and fellows, and all other Northwestern faculty and staff so interested. The series runs throughout the year, occurring every Thursday from 4:30-5:30 pm in Arkes Pavilion, 19th floor, SOTC Conference rooms (or virtual).

Multidisciplinary Conference

The MDC comprises Transplant Surgeons, Hepatologists, Nurses, Psychiatrists, Nutritionists, Social workers, and as needed TID, Cardiology, and Oncology sub-specialists. This meeting has manifold interests: (1) it serves to review potential patients for LT, seen the day prior in the Pre-LT *new* clinic; (2) reviews pending patients for LT, who are being managed in the Pre-LT *return* clinic; (3) review inpatients on the Transplant Surgery and Hepatology primary services; (4) evaluation of living donors; (5) evaluation of HCC and/or Cholangiocarcinoma patients, some of whom may not be transplant eligible; and (6) discuss operational, administrative and ethical issues important to the Division. The outpatient fellow will present patients they staffed in the Pre-LT *new* clinic, whereas the inpatient fellow will present patients that are currently on the Hepatology primary service, or who have been on service in the last weeks. This meeting is held every Friday from 8:30-10:30 am in Arkes Pavilion, 19th floor, SOTC 19-083 (or virtual).

Note that Fridays in particular have many activities that overlap in time, e.g. the MDC with traditional Hepatology primary service rounds. Depending on the attending and the needs of the service, rounds may begin earlier or later than usual, and in some cases are interrupted by communications with the MDC. How to navigate this dilemma is fellow dependent, but note that it is recommended that the fellow's first responsibility during this time frame is to their education. Thus, regardless of service dynamics, the fellow's time for Hepatology conference, MDC and Pathology conference are protected. If the fellow seeks to join rounds and listen in on MDC - that is solely at their discretion. The attendings are aware of the primacy of the fellow experience.

Pathology Conference

This conference is an excellent opportunity to improve diagnostic interpretations of biopsies as pertains to both regular hepatologic issues (acute and chronic liver diseases, inflammation patterns, and fibrosis staging), and, post-LT rejection (acute and chronic) presentations. Many difficult cases, and thus nuanced management, are based on discussions at this conference. In attendance are fellows and attendings from Hepatology and Pathology. This conference occurs every Friday from 8:00-8:30 am in Galter Pavilion, 7th floor, Surgical Pathology Laboratory (or virtual).

The fellow should thoroughly document all liver biopsies reviewed for their own records; this will also be submitted to the PD/PC at the end of the year.

Quality Assurance/Performance Improvement (QAPI)

The Quality Assurance/Performance Improvement (QAPI) conference is a multidisciplinary meeting comprising Transplant Surgeons, Hepatologists, Nurses, Social Workers, Dieticians and

Psychiatrists. QAPI seeks to assess complications, adverse outcomes and/or otherwise unexpected events that befall our LT patients. In this assessment, we perform root cause analysis of the event(s) and ultimately seek an action plan to eliminate and/or mitigate such occurrences (trends) in the future. QAPI occurs every 2 weeks (2nd and 4th week of the month), from 8:30-9:00 am (these days a MDC starts immediately afterwards) in Arkes Pavilion, 19th floor, SOTC 19-083 (or virtual).

Radiology Conference

Radiology conference is a multidisciplinary meeting comprising Transplant Surgeons and Hepatologists, Oncologists and Interventional Radiologists. Therein the group reviews approximately 20-30 cases. Most reviews involve patients with HCC and/or cholangiocarcinoma (for resection, LT, and/or liver-directed therapies), but benign lesions are evaluated as well. In certain cases, non-malignant biliary and pertinent hepatobiliary vascular issues are discussed. Differential diagnosis, diagnostic considerations, and treatment options are the focus of this meeting. This conference provides an excellent opportunity to understand the complex anatomy and physiology that surrounds pre- and post-LT patients, and the multi-modal approach utilized (radiologic and/or surgical) to handle hepatobiliary diseases. This group meets every Thursday from 1:00 - 2:00 pm in Arkes Pavilion, 4th floor, Department of Radiology Conference Room (or virtual).

For cases that require discussion at this conference, please alert Karen Grace, RN (Program Coordinator, Interventional Radiology). Summaries of each patient are later collated and sent out by email that same week to the conference group members.

Supplemental Services

Fellows will gain significant working knowledge of associated sub-specialties, including Transplant Nephrology (acute kidney injury, hepato-renal syndrome, chronic kidney disease, renal replacement therapies, indications for simultaneous liver-kidney transplant, post-LT kidney injury) and Interventional Radiology (chemo/radio-embolization for HCC and other lesions; TIPS ± shunt embolization for bleeding or other portal hypertension complications). There is daily collaboration between subspecialty faculty and fellows throughout the year in managing these complex patients. However, if specific, more in-depth training is requested, *intra-mural* 2-week rotations can be obtained, insofar as the other requirements of the fellowship are met.

Interested fellows can participate in detailed immunologic discussions as related to organ (tissue) typing/matching, transplant, and rejection with the Transplant Immunohistology Laboratory group. Fellows can contact Anat Tambur, PhD throughout the year to set-up meetings.

Administrative Responsibilities

Fellows will participate in two formal *intra-mural* committees at NMH that are administratively aligned with those of the GI fellowship. This fellowship is a natural extension of the GI fellowship (conceptually and operationally with shared patients, procedures, and supervising faculty) and thus shared resources and personnel for these committees are utilized.

The Program Evaluation Committee (PEC). The PEC formally meets annually to evaluate: the (1) current status; (2) strengths and deficiencies; and (3) implement corrective action plans for the fellowship. Notably, the fellowship is assessed/adjusted throughout the year through feedback sessions that occur as part of weekly Office Hours between the TH fellows and PD (*vide supra*). This committee is composed of Leila Kia, MD (GI Fellowship PD) and Christopher Moore, MD (TH Fellowship PD), and other key clinical faculty, and the Program Coordinator for GI and TH fellowships, Ms. Angela Tucker. One fellow will serve as a representative of the fellowship.

The Wellness Committee (WC). The WC formally meets annually to evaluate the overall well-being (*vide infra*) of the fellows, including: (1) psychological satisfaction with fellowship education and clinical experiences; (2) work-life balance; and, (3) collegiality with faculty and staff. Notably, wellness is assessed/adjusted throughout the year through feedback sessions that occur as part of weekly Office Hours between the fellows and PD (*vide supra*). This committee is composed of Leila Kia, MD (GI Fellowship PD) and Christopher Moore, MD (TH Fellowship PD), and other key clinical faculty, and the Program Coordinator for GI and TH fellowships, Ms. Angela Tucker. One fellow will serve as a representative of the fellowship.

Wellness

The physical and psychological well-being (wellness) of the fellows are top priorities at NMH. We believe our program provides a very supportive and responsive environment to our fellows to ensure their well-being and overall success. Wellness is assessed in many ways: (1) 1:1 dialogue between fellows and faculty through shared clinical encounters in real-time; (2) weekly Office Hours between the fellows and PD, and *ad hoc* daily as the case may be; and, (3) formally as part of the annual WC meeting (*vide supra*). Fellow wellness is also assessed during the semi-annual Clinical Competency Committee (aggregated faculty review of trainees' progress based upon formal written evaluations and consensus discussion). Furthermore, a Northwestern Graduate Medical Education (GME) Internal Review committee meets yearly with both fellows and faculty (separately) to assess the overall well-being of our fellows, and the compliance of our fellowship program with the expectations set forth by Northwestern GME Office and the ACGME. Historical review of such data has demonstrated that our program maintains excellent fellow well-being.

We continually strive to understand and meet the needs of our fellows in a complex and changing work environment. Wellness social events are always held on a monthly basis (in some cases in conjunction with the Wellness events of co-fellows from Transplant Nephrology and Surgery and/or GI).

Time-off/Absences

During the fellowship there is 1 month (20 working days) vacation time allotted; it is an ACGME mandate that fellows take all their vacation time. These days should be taken off during outpatient blocks. If absence is required during an inpatient block, the co-fellow (if extant) should cover inpatient services. fellows should not take vacation at the same time. Please inform the relevant attendings and/or staff of your absence. As these arrangements/adjustments can take some time, plan for vacations/absences (and commensurate coverage as needed) at least 1 month in advance.

Sign-over pagers to your co-fellow (if extant) and implement the relevant restrictions to your Epic and work email. Consider informing GI fellows of endoscopy availability given the generally strong demand for cases.

Attendance at national/inter-national conferences is encouraged (up to 5 working days). It is understood that inpatient responsibilities may conflict with the ability to attend. Ultimately, attendance is at the discretion of the service attending as pertains to patient care. As such, plan accordingly, at least a month in advance. Reimbursements regarding academic travel should be pro-actively discussed with the Program Coordinator to understand the degree of financial coverage/appropriateness (budget variability).

Preparation & Application for a Faculty Position

Beyond the training of the fellowship itself, is the important and simultaneous process of preparing for the next step after graduation, in most cases, as a TH faculty member at a major academic medical center. We believe that our program has been quite successful in both domains, as evidenced by the feedback of our fellow alumni (and now colleagues). As such, we offer strategic advice as the fellow (applicant) engages in this non-obvious process, quite different from the matriculations that trainees are accustomed to.

Before reaching out to programs, plan to have meetings with the PD and all TH faculty. Our faculty are experienced, influential and have significant collaborative relationships with all the major academic centers around the country. Thus, not only can we provide granular guidance about the process and considerations one should think about in applying for quality jobs (and the lifestyle surrounding it), but in many cases our recommendation on the applicant's behalf may be the critical element in securing interviews and/or offers. Furthermore, our alumni are also available and interested to help the applicant in this process. It becomes more obvious than ever that networking (fellow to faculty, and faculty to faculty) are truly important.

Accommodations can be easily made so that interview timeframes (in-person or virtual) are not compromised by clinical duties (and will not require utilization of vacation time). Applying usually begins in August. In most cases, decisions to hire will be made in the first months of the new year (but there is large variation to this, in part due to institutional inertia). After receipt of an offer/contract, we are also interested in reviewing it for the applicant. Some important points to remember: (1) your success is our success; (2) maintain a continuous dialogue with the PD and the faculty so that we can help you navigate and troubleshoot issues quickly and efficiently; (3) in regards to job and lifestyle, you owe yourself and your family - do not worry about perceived allegiances to institutions or faculty - this is your life; and, (4) whatever your ultimate goal is (academic variations, or private practice) you have the full support of the faculty and the confidence and confidentiality of the PD.

COVID-19 Contingencies

Hepatology primary service census: The resident support (and thus the census) is subject to change; the former is determined by Internal Medicine Residency PD and the DOM, and the latter is calibrated by the Hepatology faculty. Ultimately, fellow roles may be expanded to those

traditionally assigned to residents. To offset this strain to training and overall wellness, supplementary personal and/or work-hour modifications will be made *ad hoc*. If Hepatology primary service is full, overflow patients will go to Hepatology consult service: these are still managed by the fellow (as a consultant, if not quarantined (*vide infra*)), and staffed with attending, as a traditional consult would be. The decision to return to work is ultimately decided by NW Corporate Health policies, without exceptions.

Two Fellow Algorithm

- A. If the inpatient fellow is quarantined (“quarantined fellow”); then the outpatient fellow (“non-quarantined fellow”) takes over all in-patient responsibilities.
- B. How the non-quarantined fellow is utilized in the inpatient role is determined by the attending on the inpatient service. The ability of the non-quarantined fellow to continue their traditional outpatient role (e.g., endoscopy) is at the discretion of the attending on service.
- C. The quarantined fellow (if not too ill; self-determined) will take over outpatient roles virtually – particularly important would be: (a) Post-LT Hepatology/(Continuity) clinic; (b) Post-LT Surgery clinic; and, (c) Post-LT Nursing Rounds. Fellows will inform attendings beforehand for all clinics that will require staffing modifications.
- D. If the outpatient fellow is quarantined then: (a) inpatient staffing and responsibilities stays the same; and (b) outpatient staffing and responsibilities are tele-modified as per item (D).
- E. The non-quarantined fellow (if originally designated the outpatient fellow) should count *ad hoc* inpatient days as true inpatient days. As such these days should be paid back by the other fellow within the quarter (subsequent 3 months) to maintain equity.

One Fellow Algorithm

- A. If the fellow is quarantined during inpatient services, the attending will take over all their responsibilities.
- B. The quarantined fellow (if not too ill; self-determined) may participate virtually with the Hepatology primary services, at their discretion. This can involve communicating with the residents: (a) pre-rounds review/guidance for overnight events/admissions; (b) post-rounds guidance; (c) afternoon review of work-flow issues and/or new admissions; and, (d), education.
- C. Similarly, if the fellow is quarantined during outpatient services, (if not too ill; self-determined), they may participate virtually in clinics and/or allied services (e.g. post-LT RN rounds).
- D. The fellow will inform attendings beforehand for all clinics that will require staffing modifications.