UNIVERSITY OF MINNESOTA

2012 – 2013 FELLOWSHIP
Policy & Procedure Addendum

Fellowship in Transplant/Hepatology

Rev: 6/25/12
i. INTRODUCTION AND WELCOME TO NEW FELLOWS

On behalf of the faculty and staff, welcome to the Transplant/Hepatology Specialty Training Program at the University of Minnesota. We hope that the time you spend with us will be both educational and enjoyable.

The information contained in this Addendum pertains to all transplant/hepatology fellows in the department's program. General information also is found in the Institution Manual (GME) and Internal Medicine Residency Program. Institution Manual contains residency/fellowship guidelines and policies that apply to all residents throughout the University of Minnesota Academic Health Center. Internal Medicine Residency Program is specific to internal medicine, and policies are written in accordance with the American Board of Internal Medicine and the Accreditation Council for Graduate Medical Education. Policies apply to all educational experiences within the program and are subject to periodic review and change by the faculty, program director, and department chair.

Institution Manual contains information about benefits, policies, and procedures that apply to all residents in a residency-training program at the University of Minnesota. Should information in the Internal Medicine Residency Program Manual conflict with the Institution Manual, the Institution Manual takes precedence.

Fellows are responsible for knowing and adhering to the policies and guidelines contained in these handbooks.

ii. DEPARTMENT MISSION STATEMENT/PHILOSOPHY

The mission of the University of Minnesota Department of Medicine and Gastroenterology Division is to enhance the health of the people of Minnesota, the nation, and the world, through innovation and research, education, and patient care. (Also See Internal Medicine Residency Manual)

iii. PROGRAM MISSION STATEMENT

It is the mission of our program to both provides excellent training in the practice and science of transplant/hepatology by immersion in patient care, with emphasis upon critical reasoning, scholarship, and professional responsibility, and to promote personal and professional satisfaction. Our goal is to provide excellence in clinical and procedural training, and to facilitate diverse opportunities for trainees to develop academic and/or clinical careers.

The University of Minnesota Transplant/Hepatology Training Program endorses and adheres to the "Transplant/Hepatology Core Curriculum," as drafted by the Transplant/Hepatology Leadership Council and the ACGME. This curriculum is available in this manual and in division offices and serves as the basis for our training program. The specific objectives in this summary are derived from the curriculum.
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SECTION I. STUDENT SERVICES

Please refer to Institution Policy Manual for Medical School Policy on the following: Academic Health Center Portal Access; Child Care; Computer Discount; Credit Unions; Disability Accommodations; Legal Services; Library Services; Medical School Campus Maps; Residency Assistance Program; Tuition Reciprocity; University Card (U Card); University Recreation Sports Center; University Events Box Office.

University Pagers
Each fellow will be assigned a pager to be carried throughout clinical rotations. Pager is available from the GI Office. Pager has an 80 mile radius. Batteries for pager are available at the GI office or switchboard at the hospital. Fellows should turn in their pager to GI Office if their pager needs repair, and a temporary pager will be assigned. At the end of rotations, pagers should be returned to GI Office before leaving.

E-Mail and Internet Access
E-mail addresses can be found by searching the University of Minnesota web site at http://www1.un.edu/tc/lookup.cgi. Additional web sites for University of Minnesota fellowship programs are listed at the end of this addendum.

Transplant/Hepatology Fellows are assigned an e-mail account at the beginning of their training. A directory of the addresses is located in the Housestaff Manual. E-mail addresses can also be found by searching the University of Minnesota web site at http://search.umn.edu. Important messages are sent to transplant/hepatology fellows via this e-mail address and fellows are responsible for reading email on a regular basis.

E-mail training is available to incoming transplant/hepatology fellows to ensure proficiency with their e-mail account. This account is used for all evaluations, so it is vital that all fellows are familiar with how to use it.

Computer training is offered at University of Minnesota Medical Center. The Biomedical Library staff present an overview of the services and resources offered through the use of computers, and also demonstrate search strategies for medical practice and research. Using on-line demonstrations of the library's on-line web forms to request services (e.g., photocopying) and databases to search for health related information (e.g. Medline and electronic journals), fellows can learn how to connect to these resources from within the library, from their clinics, or from home.

Information is updated monthly to give fellows access to the most current health topics. The Biomedical Library will also assist residents in any other computer-related issues they might have.
# Computer/Clinical Application

<table>
<thead>
<tr>
<th>Application Name</th>
<th>What it does</th>
<th>Location(s) in use</th>
</tr>
</thead>
<tbody>
<tr>
<td>Secure Gateway</td>
<td>Provides access to Fairview clinical applications from computers on the University network.</td>
<td>UMMC</td>
</tr>
<tr>
<td>EPIC - AllScripts (EMR/Touchworks)</td>
<td>UMP outpatient electronic medical record</td>
<td>UMP clinics</td>
</tr>
<tr>
<td>FV Intranet</td>
<td>Provides links to MD resources for training, Allscripts, library resources, etc</td>
<td>Any pc that can connect to FV network</td>
</tr>
<tr>
<td>EPIC - FCIS</td>
<td>Inpatient electronic medical record: enter orders and review results and dictated documents</td>
<td>All metro Fairview hospitals</td>
</tr>
<tr>
<td>PACS – Image Cast</td>
<td>View radiology images</td>
<td>All metro Fairview hospitals</td>
</tr>
<tr>
<td>Dictaphone</td>
<td>Dictate reports, H&amp;P’s, discharge summaries, etc</td>
<td>UMMC</td>
</tr>
<tr>
<td>OTTR</td>
<td>Organ Transplant Tracking Record – Electronic database replacing the “shadow charts” in the Transplant Office – for all solid organs</td>
<td>UMMC, All metro Fairview hospitals</td>
</tr>
<tr>
<td>(RMS) Residency Management Suite</td>
<td>New medicare reporting that tracks the duty hours and activity of each resident/fellow.</td>
<td>Any pc that can connect to the internet</td>
</tr>
<tr>
<td>Provation</td>
<td>Chart procedure notes</td>
<td>Endoscopy – UMMC &amp; Riverside</td>
</tr>
<tr>
<td>Emtek / C2K</td>
<td>Nursing documentation of meds and daily cares, review lab results</td>
<td>UMMC-UC: 4A, 4B, 4C, 4D, 5C, 5D, 6C, 6D, BMT clinic, UMMC-RC: NICU</td>
</tr>
<tr>
<td>CVIS</td>
<td>Report and billing for procedures</td>
<td>UMMC: Echo Lab, Cardiac Cath Lab, and Stress/ECG Lab</td>
</tr>
<tr>
<td>Powerscribe</td>
<td>Radiologists use to dictate/edit/sign reports</td>
<td>UMMC</td>
</tr>
</tbody>
</table>

Administrator staff in GI Office will give you your username/password for some of the applications used. You may not use all or have access to all applications. If there is an application you do not have information for, please let the admin staff know to get you access.

If you have are having problems logging into these systems, please call the Information Center at 612-672-6805 (for EPIC, Imagecast) or the UMPhysicians Help Desk at 612-884-0884 (for Allscripts). Please note that the **AllScripts passwords deactivate after six months**. You will need to call the UMP Help Desk to reactivate your account.

**Fellows Computer:** Endoscopy – UMMC 1-110 or V374 (by GI Office)
RESIDENCY MANAGEMENT SUITE (RMS) (See also Institution Policy Manual)
New Innovation Inc.’s Residency Management Suite is a tool that allows you to unify data into a centralized data warehouse and to complete tasks, historically performed using multiple, incompatible methods, through one common interface. An individual Program, Practice, or Fellowship can use the Residency Management Suite to assist with tasks such as scheduling, procedure logging, evaluations, monitoring conference attendance, duty hours and general personnel tracking.

Medicare Reporting now requires that programs track the duty-hours and activity of each resident/fellow using RMS. This tracking is directly connected to Medicare reimbursement and federal regulation. In the past, Medicare has utilized the schedule sent to them by divisions, using the fellow’s activities on the first day of the month as a template. We are now required to report on specific activities; such as rotation block schedules, continuity clinics, conferences, attending schedule, and vacations. Besides the reporting, fellows will be responsible to login and approve the duty hours that are assigned to them and report any new conferences attend, attending schedules at each site, and vacations taken on a daily basis.

Login Instructions (UMN-IMED-Gastroenterology)
Division coordinator will give you your user name and initial password.
2. Click on “Client Login.”
3. Type “MMCGME” (must be in CAPS) in the text box, and click on “submit.”
4. Type in your user name and password, and click on “login.”
   a. Hint: Add this Login page to your list of favorite Internet pages for future ease of access.
5. Change your password by click on “Change Password” on the top menu bar.
Choose “Log My Duty Hours” from the “My Favorites” box on the Welcome page.

Web Site – Department & Division
Department of Medicine – www.dom.umn.edu
Gastroenterology Division – www.med.umn.edu/gi/

Web Sites - Miscellaneous
https://www.myu.umn.edu
myU Portal for Graduate Medical Education (GME) is a central communication tool for residents and fellows. It provide a wide range of information and single site, direct access to the some of the following: details about your immunization status at Boynton Health Service, HIPAA training/status, and many more University services including financial aid, email, library resources such as OVID and Medline, Up-To-Date, bookstores, Recreational Sports Center, etc.

https://my.ahc.umn.edu
My AHC is your Academic Health Center portal, offering a variety of news, tools, discussion boards, opportunities to publish and share your own content, the chance to connect with others who share your interests, and the ability to access a variety of University applications and resources.

http://hrss.umn.edu
This is the Self-Service site on which you can access many links regarding your University pay statement, change of address form and other things…
http://www1.umn.edu/twincities/index.php
This is the University of Minnesota homepage, where you can view campus calendar highlights for the week, links to the four other University locations, links to the different libraries on campus, link to onestop (information and services for students, faculty, and staff), and different links within the campus.

http://search.umn.edu/
Use this website to search for people, things or department within the University of Minnesota.

**Campus Mail**
The fellow(s) will have a mailbox in the GI Office, room V366.

**Mailing Address**
Division of Gastroenterology/Hepatology/Nutrition
University of Minnesota
406 Harvard St. SE
MMC 36
Minneapolis, MN  55455

**HIPAA Training**
All incoming fellows are required to participate in HIPAA Clearance / Computer Lab during their initial mandatory orientation. The four mandatory modules include: Intro Video; Safeguarding PHI on Computers; Privacy and Confidentiality in Research and; Privacy and Confidentiality in Clinical Settings.

**OSHA Training**
All new fellows to the GI training program should complete this training at their earliest convenience. Annual refresher training, which fellow will take next year, will be conducted on an annual basis, hopefully as a group effort, at City-wide Conference (we are currently coordinating refresher training for the 2nd and 3rd year fellows at an upcoming conference).

Fellow will want to go to:  http://www.dehs.umn.edu/.
Then link to **“New Employee Safety Training”** and complete all three modules:  *Introduction to Research Safety: Chemical Safety: and Chemical Waste Management.* Then also complete **“Preventing Employee Exposure to Bloodborne and Other Pathogens.”** After completing the training, print out & sign confirmation and turn these forms into Sheryl Broad.

**Faculty Advisors**
If they wish, fellows may choose a faculty advisor, from whom they can seek counsel throughout their training. The role of the advisor is to:
- Serve as a mentor and support person throughout the program
- Keep the fellow informed regarding faculty and medical center issues
- Provide advice regarding rotation schedules
- Actively follow the academic progress of the fellow, including review of the mid-year and year-end evaluations, and the results of the in-training examination
- Provide advice regarding career choices
- Facilitate problem solving
- Most importantly, advisors can serve as a research mentor during the 6-12 month research segment of training
Fellows and the transplant/hepatology training director must meet a minimum of twice per academic year, and should also communicate regularly either by phone or via e-mail. Feedback will be provided by the facility service chief at the midpoint of each three-month clinical rotation. Meetings with the research mentor/advisor will be more frequent. If you wish to have a minority professional advisor for the metropolitan community, contact the program director, or Mary Tate in the Medical School Office of Minority Affairs (625-1494).

**BCLS/ACLS Training**
BCLS/ACLS training is available, and certification should be maintained (see Part B Manual).

**Career Search Resources**
In order to assist fellows with their post-fellowship career search, the Gastroenterology Division and the program director maintain a file of employment opportunities at the Minneapolis VA Medical Center and at the University of Minnesota.

**SECTION II. BENEFITS**

*Please refer to Institution Policy Manual for Medical School Policy on the following: Boynton Health Services; Employee Health Services; FICA; Dental Insurance; Health Insurance; Life Insurance; Long-Term Disability; Short-Term Disability; Insurance Coverage Changes; Loan Deferment; Minnesota Medical Association Membership; Optional Retirement Contribution; Pre-Tax Flexible Spending Accounts; Professional Liability Insurance; Resident/Fellow Exercise Room; Resident/Fellow Leave; Bereavement Leave; Maternity Leave; Paternity Leave; Extended Illness/Injury Leave; Holidays; Jury/Witness Duty; Military Duty; Personal Leave of Absence; Professional/Academic Leave; Sick Leave; Vacation; Policy on Effect of LOA for Satisfying Completion of Program; Stipends; Worker’s Compensation Benefits; Veterans Benefits.*

**Stipend Levels** (See also Institution Policy & Internal Medicine Residency Program)
Listed below are the 2012/2013 base stipends for the Department of Medicine:

- PGY4 $54,407
- PGY5 $56,500
- PGY6 $58,484
- PGY7 $60,354  Transplant / Hepatology Fellow

**Vacation and Sick Policy**
In accordance with ABIM policy, fellows will be given one month (28 days) leave per academic year to be used for vacation, sick, parental or family leave (including pregnancy-related disabilities and paternal leave).

Vacation/sick time includes 20 weekdays and eight weekend days. One full week is defined as Sunday through the following Saturday. Exceptions to this one full week policy must be approved by the Program Director. It is preferred that vacations are limited to one week at a time, and that only one vacation week be taken during each rotation.
Training must be extended to compensate for any absences, which exceed one month per year of training (3 months total for entire fellowship). See Institution Policy Manual for information pertaining to Family Medical Leave Policy / Childbirth or Adoption.

Requesting / Reporting and Tracking Leave
Fellows will receive blank vacation/sick sheets each month, which must be completed and returned to the GI administrative offices. (Please note: The U of M is required to record fellow time away for purposes of Medicare reimbursement.)

In addition: In an effort to ensure timely and appropriate communications of leave time, Transplant/Hepatology fellows are asked to review and comply with the following protocol:

1) Allow a minimum of six weeks advance request for leave.

2) Complete the leave form, making sure to have it signed by the attending during the leave time. (It is understood that at times the faculty attending information may not be available at the time of your request.)

Note: Administrative will assist in obtaining signatures, as needed.

3) Submit the signed form to:
   a) Bao Moua at the U of M: Fax 612-625-5620

Routing information is also included on the form.

Blank forms will always be available at the GI administrative offices.

Note: This form does not replace the leave request forms required to cancel continuity clinics.

Sick Time: Fellows must notify the divisional administrative staff at their rotation site. If extended sick leave is anticipated, the U of M GI office must also be notified (625-8999).

Graduating fellows are allowed to take vacation during one of the last two weeks of their training. Please plan accordingly and retain one week of vacation, if you plan to use it at the end of the academic year.

Professional and Academic Leave of Absence/ Travel Reimbursement Policy
Fellow is required to receive pre-approval for all educational travel. Reimbursement allotments will be discussed with the Program Director and Administrative Director.

Parental Leave: Maternity/Paternity Leave
Fellows are provided with 6 weeks of paid maternity leave and 2 weeks of paid paternity leave. Fellows should notify their Program Director and Administrator as far in advance as possible of the request for personal or maternity/paternity leave.
When requesting a Leave of Absence, please consider the following:
- The ABIM allows one year of training to be interrupted by only four weeks, including vacation, sick leave, educational leave and Maternity/Paternity Leave.
- Any time off exceeding four weeks will extend your training.

If you take maternity leave (6 weeks paid) or paternity leave (2 weeks paid), consider the following:
- This leave time in addition to any vacation time could extend your training.
- **Maternity Leave** (6 weeks paid):
  - 4 weeks – If no vacation time was used in the year, you do not need to be make up these 4 weeks of maternity leave. And it is paid time.
  - 2 weeks – This time will need to be made up, but it is paid time

**Anything past this will not be paid and all time over four weeks will need to be made up.**

**Salary Source During Maternity Leave**
- The first 14 days of maternity leave, the U of MN pays 100% of salary
- Weeks 3-6, 30% is paid from the U of MN, 70% is from the short-term disability carrier

*The fellow should exercise consideration in informing the program director as early as possible to allow scheduling of curriculum plans to accommodate the leave. It is the responsibility of the fellow and the program director to ensure that Board eligibility requirements are met within the original fellowship period or that alternative arrangements are made.*

**SECTION III. DISCIPLINARY AND GRIEVANCE PROCEDURES**

*Please refer to Institution Policy Manual for Medical School Policy on the following: Discipline/Dismissal/Non-Renewal of Residents/Fellows; Conflict Resolution Process for Student Academic Complaints; University Senate on Sexual Harassment Policy; Sexual Harassment and Discrimination Reporting; Sexual Assault Victim’s Rights Policy; Resident Dispute Resolution Policy.*

*The Executive Committee of the Gastroenterology Division consists of section chiefs at each hospital, the division chief and Transplant/Hepatology Program Director (Dr. Charmaine Stewart) the GI Fellowship Training Director (Dr. John Lake), Associate GI Fellowship Training Director (Dr. Aasma Shaukat), advanced fourth-year Training Director (Dr. Martin Freeman), one senior GI Fellow, Administrative Director (Sheryl Broad), and affiliated faculty. The committee meets monthly and will address all disciplinary and grievance issues in a format consistent with University of Minnesota policy, as outlined in the Institution Policy and Part B manuals.*
SECTION IV. GENERAL POLICIES AND PROCEDURES

Please refer to Institution Policy Manual for Medical School Policy on the following: AHC Student Background Checks Policy; Appointment Documentation Requirements; Blood Borne Diseases Policy; Classification Policy; Compact Between Resident Physician and Their Teachers; Dress Code Policy; Duty Hours/On-Call Schedules; Duty Hours Policy; Duty Hours Prioritization of On-Call Rooms; Eligibility and Selection of Residents/Fellows; Essential Capacities for Matriculation, Promotion and Graduation; Evaluation Policy; GME Core Curriculum Seminar Series; GMEC Resident Representative Policy; Health Insurance Portability and Accountability Act; Immunization and Vaccinations; Impaired Resident/Fellow Policy and Procedure; Institution Duty Hour Survey Policy and Procedure; Institution and Program Requirements; International Medical Graduates Visa Requirements; Licensure/Residency Permit Policy; Moonlighting Policy; Nepotism Policy; New Training Program Policy; Observer Policy; Post-Call Fatigue Cab Voucher Policy; Program Oversight; Release of Resident/Fellow Contact Information Policy; Residency Closure/Reduction; Resident/Fellow Standing and Promotion Policy; Supervision Policy; Transitional Year Policy/Procedure; USMLE Step 3 Policy; Without Salary Appointment Policy.

Supervision Policy

Please refer to Institution Policy Manual for Medical School Policy on Supervision Policy. Please see individual rotation descriptions for specific responsibilities. Some general guidelines for lines of responsibility are outlined below:

Fellows are expected to:

- Supervise the medical student and residents in obtaining history and physical, developing a differential diagnosis and assessment, and preparing a management plan on inpatient and outpatient consults.
- Fellows are responsible for providing short didactic as well as bedside teaching to the medical students and residents.
- Fellows must communicate with primary medicine team, other specialists, nurses, and allied staff in the hospital for patient care.
- Fellows are responsible for running a service smoothly and efficiently.
- The ultimate responsibility of the team lies with the supervising faculty member.

Supervising faculty are expected to:

- The faculty member must round on all inpatients and outpatients seen by the fellows, medical students and resident.
- Observe the fellow perform history taking, physical exam, discuss the assessment and management plan with the fellow.
- Review and co-sign all dictated and written notes by the fellows, medical students and resident.
- Supervising faculty is responsible for didactic and bedside teaching for fellows and must prioritize fellow education over patient care.
- Supervising faculty must be present in the hospital at all times when on-service and available by pager and phone.
- Supervise fellows throughout any procedure, from obtaining consent to performing the procedure.
- Faculty supervision is continually available and, in fact, required for billing purposes.
<table>
<thead>
<tr>
<th>Function/activity</th>
<th>Beginning</th>
<th>Developing</th>
<th>Proficient</th>
</tr>
</thead>
<tbody>
<tr>
<td>Clinical data collection*</td>
<td>Independent, with staff supplementation</td>
<td>Independent, with staff confirmation</td>
<td>Independent, with selective staff confirmation</td>
</tr>
<tr>
<td>Formulation of clinical assessments/plans*</td>
<td>Jointly, with staff</td>
<td>Independent, with staff confirmation</td>
<td>Independent, with selective staff confirmation</td>
</tr>
<tr>
<td>Communication of recommendations to primary teams/referring MDs*</td>
<td>After discussion with staff</td>
<td>Preliminary, independent; final, after discussion with staff</td>
<td>Independent, with selective staff confirmation</td>
</tr>
<tr>
<td>Procedure performance**</td>
<td>With staff assistance and supervision</td>
<td>Independent, with direct staff supervision</td>
<td>Independent, with direct and selective staff confirmation</td>
</tr>
<tr>
<td>Case conference preparation (advancement based upon demonstrated skills)</td>
<td>Jointly with staff</td>
<td>Independent, with staff confirmation</td>
<td>Independent</td>
</tr>
<tr>
<td>Supervision of students/residents (advancement based upon demonstrated skills)</td>
<td>Jointly with staff</td>
<td>Independent, with staff review</td>
<td>Independent, or with selective staff review</td>
</tr>
<tr>
<td>Research (typically the primary focus of Year 3)</td>
<td>Directed background reading, tutored skill development (late Year 1, initial month, Year 2)</td>
<td>Execution of existing projects with staff oversight (bulk of Year 2)</td>
<td>Analysis and presentation of results, new project development, independent conduct of research with selective staff review (end of Year 2, Year 3)</td>
</tr>
</tbody>
</table>

* As assessed by supervising faculty based on observation of fellow's performance; clinical proficiency levels correspond approximately with the first, second, and third years of clinical experience, but individual fellows move through the levels at different rates depending on their rate of developing the relevant competencies.

** Independence and competency in procedure performance is assessed by the training program director after a year review of procedure performance and numbers. Credentialing is based upon numbers performed (as per ASGE guidelines) and skill as assessed by faculty mentoring.
Transplant Hepatology Fellowship Program Goals & Objectives

The Transplant Hepatology Fellowship Program is a one year fellowship, which offers a thorough, advanced education in all aspects of hepatology. The curriculum has been designed to provide a balance of transplant and non-transplant clinical, didactic and research experience, and to prepare for a career in academic hepatology.

The primary objective is to train superior physicians in the pathophysiological mechanisms, clinical manifestations, and management of liver disease leading to board certification by ABIM in transplant hepatology.

The fellowship program consists of ambulatory, inpatient, consultation and research experiences. Because of the highly specialized nature of the fellowship, training experiences are largely longitudinal over the course of the year. Goals and objectives for each component of the training program are outlined in the next sections and are referenced to the ACGME core competencies of: Patient Care, Medical Knowledge, Professionalism, Systems-based Practice, Communication Skills, and Practice-based Learning improvement.

This is a one-year program that requires successful completion of a three year accredited gastroenterology fellowship.

Our program provides one year of advanced training utilizing the full complement of UMMC clinical hepatology / transplant and both basic and outcomes research resources.

Program Goals
1. To provide graded, progressive, and supervised clinical/cognitive experience evaluating and treating patients with advanced liver disease
2. To provide graded, progressive, and supervised training in management of the pre- and post liver transplant patient
3. To evaluate progress on a quarterly basis and to advance responsibilities based upon performance
4. To enable trainees to become credentialed and certified in transplant hepatology and to undertake academic and/or clinical careers in the specialty

Clinical Goals and Objectives at UMMC
1. Provide daily inpatient transplant / hepatology consultations on the UMMC-Fairview Liver Service and longitudinal follow-up ½ day/week, supervised by faculty members.

2. The Transplant /Hepatology fellow will supervise and teach general internal medicine residents and students rotating on the GI service with a focus on transplant/hepatology. In addition, they will play a role in the teaching of Gastroenterology Fellows during the hepatology rotation at UMMC.

3. Under supervision, they will perform endoscopic procedures for hepatology/ transplant inpatient consults and selected outpatients. Responsibilities and independence in managing Liver Service inpatients is advanced based upon the trainee’s experience, proficiency, and performance, as evaluated by supervising faculty members (using GI E-Value criteria).

Evaluation: E-Value criteria for patient care, professionalism and ethics, and procedural competency, as evaluated quarterly by the Program Director and by supervising clinical mentors
**Research Goals and Objectives at UMMC**
The transplant / hepatology fellow curriculum will include the following research periods:

1. Provide a wide variety of research opportunities, to meet the needs of the advanced fellow for their future hepatology / transplant career path. Opportunities include a variety of labs, with a focus on molecular mechanisms, hepatitis C and immunology. Current Principal Investigators represent key faculty mentors.

2. Clinical outcomes projects related to both pre- and post- liver transplantation, in conjunction with the Transplant Center, the Division of Gastroenterology (Medicine), and the Departments of Pediatrics and Surgery.

Evaluation: Continuous monitoring and evaluation of research progress is provided in written narrative by the research mentor; a scholarly product from the research effort (publication, abstract, formal presentation, etc) is expected and will be reviewed by the GI Executive Committee and the faculty.

**Longitudinal Outpatient Clinics**
This is a one-half day continuous clinic for the duration of the fellowship and an Ambulatory clinic.

1. To train the advanced hepatology / transplant fellow in outpatient pre- and post transplant evaluation and the management of patients with non-transplant hepatological diseases
2. To assure an opportunity to initiate care of new patients, and to follow the course of disease and treatment / transplant over one year. The fellow is assigned to see 1-3 new patients and 3-6 follow-up patients each week.

Evaluation: The transplant / hepatology fellow is supervised within the clinic by key hepatology/transplant faculty members. The faculty person reviews patient care and medical records concurrently with patient visits and provides evaluation of care and competency directly to the specialty fellow and via the E-Value process.
Rotations Description

1. **Ambulatory Transplant Hepatology Clinic**

I. **Educational Goals and Objectives in the Context of the ACGME Core Competencies**

**Patient Care:**
Upon completion of the fellowship training the fellow should be able to:
- Diagnose and manage hepatocellular carcinoma and cholangiocarcinoma including transplantation, non-transplantation in the outpatient setting
- Manage chronic viral hepatitis in the pre-transplantation, peri-transplantation, and post-transplantation settings.
- Use techniques of interventional radiology in the diagnosis and management of portal hypertension.
- Appropriate use of ultrasound localized, laparoscopy-guided and transjugular liver biopsies
- Perform psychosocial evaluation of all candidates, in particular those with a history of substance abuse.
- Lead the primary evaluation, presentation and discussion at selection conference of potential transplant candidates.
- Conduct follow up medical care for new transplant recipients including:
  - management of acute cellular rejection
  - treatment of recurrent disease,
  - Treatment of infectious diseases, and
  - Treatment of biliary tract complications.

**Medical Knowledge:**
Upon completion of training, the fellow is expected to demonstrate thorough understanding of:
- Strategies for prevention of acute and chronic end-stage liver disease
- Drug hepatotoxicity and the interaction of drugs with the liver
- The natural history of chronic liver disease
- Factors involved in nutrition and malnutrition and its management

**Practice-Based Learning and Improvement:**
- Accurately identify strengths, deficiencies and limits in one’s knowledge and expertise
- Accesses and appropriately utilizes current hepatology research and information in the care of patients.
- Appropriately seeks feedback on his/her performance
- Understands the major methods and steps of continuous quality improvement
- Applies steps of CQI to an area in his/her patient care
- Effectively teaches medical students, residents, fellows and other health care professionals.
- Understands and/or applies relevant practice guidelines in hepatology to clinical conditions

**Interpersonal and Communication Skills:**
- Gather essential and accurate information including sensitive psychosocial information regarding substance abuse and relevant sexual activity from patients and/or families in a respectful manner.
- Clearly communicate key issues and treatment plans to patients and families.
- Discuss risks/benefits of treatment regimes and procedures with patients and families to
• Communicate effectively with physicians, other health professionals, and health-related agencies, while respecting patient privacy
• Effectively and succinctly presents patient cases with necessary and relevant detail included
• Maintains comprehensive, timely, and legible medical records

Professionalism:
• Understand the major considerations relating to liver transplant donors.
• Understand the principles for and the selection of appropriate organ recipients.
• Completes medical record documentation in a timely and appropriate manner
• Responds to pages, calls and e-mail correspondence in a timely and effective manner

Systems-Based Practice:
• Work effectively as a consultant to in the various health care delivery settings and systems relevant to transplant/hepatology (transplantation, outpatient and ambulatory care).
• Work to coordinate multiple aspects of the care of patients with acute and chronic liver disease (other physicians and health care professionals)
• Acquire a current working knowledge of the organizational and logistic aspects of liver transplantation, including the role of nurse coordinators and other support staff (e.g. social work).

Graded Responsibilities in the Context of the ACGME Core Competencies –Transplant Hepatology Clinic

KEY: Patient Care (PC); Medical Knowledge (MK); Practice-Based Learning and Improvement (PBL); Interpersonal and Communication Skills (CS); Professionalism (Prof); Systems-Based Practice (SBP).

First Six Months
By the completion of the first 6 months of this rotation the Transplant hepatology fellow will be a participant in the care of patients related to the following activities.

History: The transplant hepatology fellow should be able to obtain an accurate independent history on all outpatients with simple liver diseases (PC, Prof)
Physical Exam: The transplant hepatology fellow should be able to perform an accurate detailed examination on all outpatients in hepatology clinic, including those with subtle exam findings (PC, MK, P)
Formulation: The transplant hepatology fellow should be able to offer a reasonable case formulation on all outpatients, addressing simple liver diseases for the first 6 months with supervision by staff hepatologists. (PC, MK, PBL Prof, SBP)
Evaluation/Management: The transplant hepatology fellow should be able to articulate a reasonable diagnostic and management plan for all outpatients with simple acute and chronic liver diseases, with direct assistance or direction from staff hepatologist. (PC, MK, PBL Prof, SBP)

Last Six Months
• In addition to the requirements for the first 6 months, the competency based goals and objectives will include:
• Mastering the understanding and use of techniques of interventional radiology in the diagnosis and management of portal hypertension. (MK, PBL, Prof., SBP)
• Diagnosis and management of hepatocellular carcinoma (HCC) and cholangiocarcinoma (CCA) including transplantation, non-transplantation in the outpatient setting, including recurrent HCC and CCA post-liver transplantation (PC, MK, PBL, Prof, SBP)
• Management of chronic viral hepatitis in the pre-transplantation, peri-transplantation, and post-transplantation settings (including complex cases, such as cholestatic hepatitis C). (PC, MK, PBL, Prof, SBP)
• Mastering the management of post-liver transplant complications involving other organ-systems, including renal dysfunction, bone disease, and recurrent liver diseases (such as primary sclerosing cholangitis) (PC, MK, PBL, Prof, SBP)

II. Graded Responsibility

<table>
<thead>
<tr>
<th>Clinical Activity</th>
<th>Level of Responsibility / Autonomy by Proficiency Level</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Clinical Activity</strong></td>
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</tr>
<tr>
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</tr>
<tr>
<td>Supervisor of care team</td>
<td>Jointly with staff; begins efforts at teaching other team subspecialty to subspecialty</td>
</tr>
</tbody>
</table>
III. Organization of the Rotation

The following summarizes the organization of the Transplant Hepatology fellow’s educational experience during the rotation, taught and supervised by the Hepatology staff in the Division of Gastroenterology, Hepatology and Nutrition in our program.

Location: University of Minnesota Medical Center, PWB Clinic 2A
Duration (Frequency): 5.75 months
Faculty: Staffed by 1 hepatology attending. The Transplant hepatology fellow will attend to outpatients with acute and chronic liver diseases; patients who are pre- and post liver transplantation, supervised by the attending hepatologist.

Call: No call requirements.
The attending physician and fellowship director are required to monitor duty hours and signs of fatigue. The attending physician will see additional patients to prevent fellow fatigue.

General Description and Patient Care:
This is a clinic for the management of outpatients with a variety of acute and chronic liver disease. This experience will provide fellows with the opportunity to work closely with experienced clinicians in the outpatient setting. The hepatology fellow will attend to patients who are under the care of the attending hepatologist. As time progresses, the care of the patient (with the assistance of the attending hepatologist) will be assumed by the fellow and level of complexity and autonomy will increase according to the expectation of an advancing hepatology fellow. Communication with the referring or primary care practitioner and general communication of the progress of each patient, attended to by the fellow will be primarily done via notes from each encounter.

Fellow Responsibilities: The fellow is expected to provide care of these patients addressing all medical issues and offering appropriate referrals when needed. The care of these patients will include, but not limited to, patients with acute on chronic liver diseases; managing complications of cirrhosis; recognizing the indications for liver transplantation and taking part in this process and referring for such evaluation; coordinating care for patients who are on the liver transplant waiting list; communicating with surgeons, nurse coordinators and other practitioners who are involved with the care of these patients.

Patient Volumes: To assure an opportunity to initiate care of new patients in outpatient hepatology clinic, and to follow the course of disease and treatment / transplant over one year. The fellow is assigned to see up to 4 patients per session (new and follow-up encounters).

Fellow Supervision & Evaluation in Clinic: The transplant/hepatology fellow is supervised within the clinic by key hepatology/transplant faculty members. The faculty assigned to clinic will review patient care and medical records concurrently with patient visits and provides evaluation of care and competency directly to the specialty fellow and via the E-Value process.

Random review of 10 patient charts will be performed to assess the quality of the evaluation, management, and coordination of care.

Clinic triage: If the fellow’s during the evaluation of the patient, it is determined that hospitalization is needed, then this should be coordinated among the hepatology fellow, the nursing staff in clinic, the admitting firm, and the attending hepatologist.
Teaching: The fellow is responsible for searching the medical literature and providing relevant references to the service, both for educational purposes and to facilitate care of patients with unusual problems.

IV. Patient Characteristics

Our hepatology clinics service a diverse population referred for a variety of basic and complex liver diseases.

V. Types of Clinical Encounters

These have been described above. In the outpatient setting, transplant hepatology fellow evaluate new and follow-up patients and then obtain immediate consultation with the staff hepatologist who also sees the patient and formulates a diagnostic and management plan in conjunction with the transplant hepatology fellow.

VI. Procedures

The residents may perform percutaneous liver biopsies during this rotation. There is feedback on the performance techniques and interpretation of histological findings on a patient-by-patient basis. During the first 6 months of the rotation the fellow will be closely observed and provided feedback on techniques, such as obtaining informed consent; administering adequate local anesthetic and monitoring for response to the anesthetic; monitoring for signs of discomfort and complications after the procedure. During the last 6 months all these aspects will be monitored, but it is expected that the fellow will be proficient and autonomous. By the end of the academic year it is expected that the transplant hepatology fellow will be able to develop a therapeutic plan based on the histological findings.

VII. Evaluation: Assessment of the fellow by the attending will reviewed with the fellow on a six-monthly basis

Review of 10 randomly selected charts by the hepatology attending to determine appropriateness of care, communication of care to patients, referring physician and consultants.

Global evaluation, using 360 degree system, with input from physicians, nurses, administrative staff, ancillary medical staff, and patients.
Transplant Hepatology Competency Assessment

At orientation for new fellows the core competencies are discussed in detail. Faculty complete evaluations for each fellow at the end of each rotation. The program director meets with the fellows as a group every quarter and in addition reviews their performance individually twice during the year. The program director provides fellows with a composite of performance based on reviews submitted by each clinical faculty member. If specific problems arise, the program director is available for discussion with the fellow and if necessary the fellow is put on “probation” where concerns are delineated and expectations for improved performance is clearly defined. The program director then meets with the fellow 2 weeks later to review issues and assess improvement in performance.

1. Patient Care

Patient care is a primary aspect of the fellowship program. Fellows will learn to perform consultative services to inpatients and their primary physicians, provide primary care for liver transplant both pre-transplant and post-transplant patients, learn outpatient ambulatory care management with special attention to the following aspects:

- Timely response to consultation requests
- Performance of accurate and complete history and physical exam
- Comprehensive and efficient review of available diagnostic data (laboratory, radiology and pathology reports)
- Generation of an appropriate differential diagnosis
- Planning of an appropriate diagnostic work-up based on available evidence, sound judgment, and patient preference.
- Knowledge of indications and contraindications for therapeutic procedures, indications of screening procedures, and medications administered for conscious sedation.
- Performance of appropriate or indicated endoscopic procedures with proper technique, after obtaining informed consent and recognizing risks and benefits.
- Communication of plan with referring physicians
- Demonstration of kindness, compassion, and communication in a caring and respectful manner with inpatients and their families

At the end of each rotation trainees will demonstrate:

1. A thorough knowledge of history-taking, including family, genetic, psychosocial, and environmental histories, and the ability to perform a comprehensive and accurate physical examination.
2. The ability to arrive at an appropriate differential diagnosis, to outline a logical plan for specific and targeted investigations pertaining to the patient’s complaints, and to formulate a plan for management and follow-up treatment of the patient.
3. The ability to present effectively the results of a consultation orally and in writing and to defend the clinical assessment, differential diagnosis, and diagnostic and management plan.
4. Procedural skills appropriate to the level of training. Since all fellows accepted into our fellowship are board-eligible in gastroenterology, they have already fulfilled criteria for gastroenterology. For transplant hepatology they must demonstrate proficiency in the following: 1) Upper Endoscopies Requiring Acute and/or prophylactic variceal band ligation; 2) Performance of at least 30 percutaneous liver biopsies of which some will be done using ultrasonography guidance; 3) Evaluation of at least 5 potential living related donors; 4) Observation of at least 1 cadaveric liver procurements and 3 liver transplantations.
Methods of Evaluating Trainee Competence
Methods used to evaluate the trainee’s competence include direct observation during procedures, rounds, and conferences, formal evaluation forms from each faculty member who comes in contact with the trainee and log books for competency assessments for all endoscopic procedures. Since all of our fellows have already completed an ACGME-accredited GI fellowship or International Equivalent GI fellowship, particular attention is paid to specialized care provided by a transplant hepatologist.

2. Medical Knowledge
This experience is designed to give the trainees the breadth of experience necessary to become competent in assessment of patients with acute and chronic liver disease. Fellows are provided with didactic lectures on key clinic topics (outlined in syllabus) by clinical and visiting faculty. In addition, fellows present clinical cases at weekly conferences and prepare discussions regarding pertinent clinical issues. Upon completion of the fellowship, each fellow will have demonstrated competence in the skills of an inpatient consultant and ambulatory care provider as described above for evaluating all problems including but not limited to, evaluation of patients with the following conditions:

- Evaluation and management of patients with acute variceal bleeding
- Evaluation and management of patients with fulminant hepatic failure
- Evaluation and management of patients with end-stage liver disease
- Evaluation and management of patients listed for liver transplantation (OLT)
- Evaluation and management of patients with biliary tract disease
- Evaluation and management of patients with hepatocellular carcinoma
- Evaluation and management of patients with complications of portal hypertension
- Evaluation and management of patients with ascites
- Evaluation and management of patients with jaundice
- Evaluation and management of recurrent disease post-OLT (esp. Hepatitis C)
- Evaluation and management of early and late complications post-OLT
- Evaluation and management of living-related donors
- Evaluation and management of patients requiring re-transplantation

At the end of each rotation trainees will demonstrate a core fund of knowledge in hepatobiliary physiology, pathophysiology, and clinical pharmacology. In addition they will be able to present effectively the results of a consultation orally and in writing and to defend the clinical assessment, differential diagnosis, and diagnostic and management plan.

Methods of Evaluating Trainee Competence
1. Faculty Assessment
2. Direct Observation on clinical rounds
3. Evaluation of fellows during clinical case presentations

3. Practice Based Learning
Fellows participates in scheduled weekly conferences, these include ambulatory care lecture series, journal club, Transplant grand rounds, Clinical Case Conferences, GI/Liver Research Conference, Transplant Mortality and Morbidity Conference. Visiting scholars, professors and investigators are invited to speak at Transplant Grand Rounds and research seminars to stimulate new thoughts and ideas among fellows and faculty. Additionally, fellows are required to present topics at various conferences throughout the year. Scientific literature and information technology is utilized to facilitate life-long learning.
Each fellow evaluates and analyzes his/her own patient care practices and incorporates feedback into improving activities by evaluating teaching, conferences and rotations. Scientific literature and information technology is utilized to improve patient care and facilitate life-long learning.

**Methods of Evaluating Trainee Competence**
1. Journal club is used as a forum to teach the skills of critical literature reading, detection of biases, assessment of validity of controls, application of statistics, generalizability of results, and related attributes of scientific studies, biostatistics, and clinical epidemiology.
2. Interdisciplinary conferences with radiology, pathology, and surgery services are held weekly, with a once weekly pathology conference and a once weekly interdisciplinary clinical conference.
3. A series of lectures/discussions are held throughout the period of training to cover a core curriculum of physiology, pathophysiology, and clinical pharmacology.

4. **Interpersonal and Communication Skills**
   Fellows listen well, show sensitivity to, and communicate effectively with patients and their families. They are able to communicate endoscopic findings to patients and family members as well as other members of patient’s health care team.

   Each fellow will be able to provide effective and professional consultation to other physicians and dictate and/or write coherent, legible and effective consultation notes and ambulatory care notes. In addition, they should be able to generate accurate and concise endoscopic reports. The fellow should be an effective teacher, guiding and teaching residents and medical students rotating through their GI elective.

   Each fellow is confident, empathetic, humane, personal, forthright, respectful, and thorough in their interactions with patients.

**Methods of Evaluating Trainee Competence**
1. Direct observation during inpatient rounds, ambulatory care clinics, and endoscopic teaching.
2. Formal evaluation forms from each faculty member who comes into contact with the trainee.
3. At least twice per year, each fellow will meet with the Fellowship Program Director to obtain feedback on their performance.
4. At least twice a year, endoscopy nurses and staff nurses on the Liver Transplant floors will be asked to evaluate fellows.

5. **Professionalism**
   Each fellow is respectful and appropriate to other members of the health care team. The fellow demonstrates respect and compassion towards patients and is sensitive to cultural, age, gender, religious, sexual preferences, and disability differences/issues. They should demonstrate a responsible work ethic with regard to acceptance of responsibility, initiative, attendance at clinics and conferences, completion of work assignments, personal demeanor and modification of behavior in response to criticism.

**Methods of Evaluating Trainee Competence**
1. Direct observation during inpatient rounds, ambulatory care clinics, and endoscopic teaching.
2. Formal evaluation forms from each faculty member who comes into contact with the trainee.
3. At least twice per year, each fellow will meet with the Division Chief and Fellowship Program Director to obtain feedback on their performance.
4. At least twice a year, endoscopy nurses and staff nurses on the Liver Transplant floors will be asked to evaluate fellows.

6. Systems Based Practice
The fellow applies evidence based medicine and utilizes cost-effective health care principles to provide optimal patient care, both in and outpatient and inpatient setting. They are able to utilize community and clinic resources for successful patient care and acts as an advocate for the patient within the health care system. Each fellow will also be able to plan effective and appropriate diagnostic work-up and perform necessary procedures for the benefit of patient care.

Methods of Evaluating Trainee Competence
1. Direct observation during inpatient rounds, ambulatory care clinics, and endoscopic teaching.
2. Formal evaluation forms from each faculty member who comes into contact with the trainee.

Corrective Action Plan:
If the program director is notified or observes a deficiency in any of the above competencies, the fellow will meet with the program director and the division chief to discuss problematic issues. Feedback will be ascertained from faculty regarding improvement in performance. The program director will meet again with the fellow 2 weeks after the initial meeting and provide feedback regarding improvement in performance. Depending on the magnitude and persistence of the problem other disciplinary measures will be pursued.
2. Inpatient Transplant Hepatology Rotation

I. Educational Goals and Objectives in the Context of the ACMGE Core Competencies

Patient Care in the Inpatient Hepatology Setting.
Upon completion of the fellowship training the fellow should be able to:

- Diagnose and manage hepatocellular carcinoma and cholangiocarcinoma including transplantation, non-transplantation, surgical and non-surgical approaches
- Manage chronic viral hepatitis in the pre-transplantation, peri-transplantation, and post-transplantation settings.
- Use techniques of interventional radiology in the diagnosis and management of portal hypertension, as well as biliary and vascular complications.
- Appropriate use of ultrasound localized, laparoscopy-guided and transjugular liver biopsies
- Manage fulminant hepatic failure
- Manage acute on chronic liver disease
- Perform psychosocial evaluation of all candidates, in particular those with a history of substance abuse.
- Lead the primary evaluation, presentation and discussion at selection conference of potential transplant candidates.
- Conduct follow up medical care for new transplant recipients including:
  - management of acute cellular rejection
  - treatment of recurrent disease,
  - Treatment of infectious diseases, and
  - Treatment of biliary tract complications.
  - Recognition and management of hepatic artery thrombosis
  - Recognition and management of primary non-function
  - Recognition and management of early rejection
  - Recognition and management of acute cellular rejection
  - Recognition and management of chronic rejection
  - Recognition and management of patients in need of re-transplantation

Medical Knowledge:
Upon completion of training, the fellow is expected to demonstrate thorough understanding of:

- Strategies for prevention of acute and chronic end-stage liver disease
- Major principles of transplant immunology, including blood group matching, histocompatibility, drug interactions and tissue typing, and infectious and malignant complications of immunosuppression
- Drug hepatotoxicity and the interaction of drugs with the liver
- Principles of nutritional support of patients with chronic liver disease
- The anatomy, physiology, pharmacology, pathology, and molecular virology related to the liver and biliary tract
- The natural history of chronic liver disease
- Factors involved in nutrition and malnutrition and its management
- Clinical research issues and transplant hepatology
- Diagnosis and management of acute on chronic liver disease
- Types of rejection in the liver transplant setting
Practice-Based Learning and Improvement:
- Accurately identify strengths, deficiencies and limits in one’s knowledge and expertise
- Accesses and appropriately utilizes current hepatology research and information in the care of patients.
- Appropriately seeks feedback on his/her performance
- Understands the major methods and steps of continuous quality improvement
- Applies steps of CQI to an area in his/her patient care
- Effectively teaches medical students, residents, fellows and other health care professionals.
- Understands and/or applies relevant practice guidelines in hepatology to clinical conditions
- Develop and implement a quality improvement project

Interpersonal and Communication Skills:
- Gather essential and accurate information including sensitive psychosocial information regarding substance abuse and relevant sexual activity from patients and/or families in a respectful manner. Clearly communicate key issues and treatment plans to patients and families.
- Discuss risks/benefits of treatment regimes and procedures with patients and families
- Communicate effectively with physicians, other health professionals, and health-related agencies, while respecting patient privacy
- Effectively and succinctly presents patient cases with necessary and relevant detail included
- Maintains comprehensive, timely, and legible medical records

Professionalism:
- Understand the major considerations relating to liver transplant donors, including questions related to living donors, non-heart beating donors,
- Understand the principles for and the selection of appropriate organ recipients.
- Completes medical record documentation in a timely and appropriate manner
- Responds to pages, calls and e-mail correspondence in a timely and effective manner

Systems-Based Practice:
- Work effectively as a consultant to in the various health care delivery settings and systems relevant to transplant/hepatology (transplantation, inpatient consultation, outpatient and ambulatory care) for coordination of patient care.
- Work to coordinate multiple aspects of the care of patients with acute and chronic liver disease (other physicians and health care professionals)
- Acquire a current working knowledge of the organizational and logistic aspects of liver transplantation, including the role of nurse coordinators and other support staff (e.g. social work), organ procurement, and UNOS policies, including those regarding organ allocation. Participate in teams to improve aspects of inpatient care of patients with liver disease.

Graded Responsibilities in the Context of the ACGME Core Competencies- Inpatient Transplant Hepatology Rotation
KEY: Patient Care (PC); Medical Knowledge (MK); Practice-Based Learning and Improvement (PBL); Professionalism (Prof); Systems-Based Practice (SBP
First Rotation
During the first rotation, it is expected that the fellow will function more as a participant with supervision by the inpatient hepatologist.

- acute liver disease (MK, PC, P, SBP)
- Inpatients with chronic end-stage liver disease (PC, MK, PBL, P, SBP)

Obtain thorough medical history, complete physical examinations, and use data to develop thorough case base assessments (Prof, PC, CS)

Second Rotation
In addition to above, in the 2nd rotation the fellow is expected to be more autonomous with less direct supervision by the hepatologist.

- Provide comprehensive management of patients, high on the transplant list, in the intensive care setting with complications of end-stage liver disease, including:
  - refractory ascites (PC, MK, PBL, Prof., SBP)
  - hepatic hydrothorax (PC, MK, PBL, Prof., SBP)
  - hepatorenal syndrome (PC, MK, PBL, Prof., SBP)
  - hepatopulmonary and portal pulmonary syndromes (PC, MK, PBL, Prof., SBP)
  - refractory portal hypertensive bleeding (PC, MK, PBL, Prof., SBP)
  - and other complications of liver failure (PC, MK)
  - manage patients with acute superimposed on chronic liver disease (PC, MK, PBL, Prof., SBP)

Last Rotation
During the last rotation, the fellow is expected to be fully autonomous and the leader for rounds; multidisciplinary care conferences; and family conferences fulfilling each of the ACGME competencies as outlined; and be proficient in the following:

- Satisfactorily perform and interpret Liver biopsies and make clinico-pathological correlation to aid in the management of inpatients, for example patients with acute cellular rejection (PC, MK, PBL, Prof, SBP)
- Maintain comprehensive, timely, legible, and appropriately detailed consultation notes and daily follow-up notes (PC, MK, PBL, Prof, SBP, CS)
- Demonstrate an appropriate therapeutic relationship with patients and families (PC, MK, PBL, Prof., SBP, CS)
- Demonstrate ability to lead a team in the effective delivery of health care (MK, Prof, CS, SBP).
- Demonstrate competence in the prescription and administration of immunosuppression and appropriate clinical care (MK, PC)
- Evaluate and manage common and complex liver diseases (MK, PC, Prof)
- Understanding pathophysiology of underlying liver diseases of inpatients (MK, PC)
- The fellow will participate in teaching the residents and mid-level providers (Prof, CS, MK).
- Understand the interrelationships and supporting roles of various wards, units and support services (Prof., CS, SBP).
II. Graded Responsibility

<table>
<thead>
<tr>
<th>Clinical Activity</th>
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<th>Proficient</th>
</tr>
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<td>Independent, with staff confirmation</td>
<td>Independent, with staff confirmation of selected issues</td>
</tr>
<tr>
<td>Formulation of clinical assessments/plans</td>
<td>Jointly with staff</td>
<td>Independent, with staff confirmation; independent utilization of evidence based medicine resources and sharing of information with care team</td>
<td>Independent, with staff confirmation of selected issues; demonstrated mastery of large set of subspecialty based skills and is preparing to practice independently; consistently incorporates evidence based medicine and system based practices into improving self practice of medicine</td>
</tr>
<tr>
<td>Consultant: Communication of recommendations to primary care team/referring physician</td>
<td>Jointly with staff</td>
<td>Independent, with staff confirmation; independent utilization of evidence based medicine resources and sharing of information with primary team</td>
<td>Independent, with staff confirmation of selected issues; consistently incorporates evidence based medicine and system based practices into improving effectiveness of consultation</td>
</tr>
<tr>
<td>Supervisor of care team</td>
<td>Jointly with staff; begins efforts at teaching other team subspecialty to subspecialty</td>
<td>Independent, with staff confirmation of patient care issues; increasing responsibility for teaching of team members</td>
<td>Independent, with staff confirmation of selected patient care issues; shared responsibility with staff for teaching of team members</td>
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III. Organization of the Rotation

Location: University of Minnesota Medical Center, Fairview
Duration: 3 months
Staff: This rotation will be supervised by the assigned consulting hepatologist.
Call: Not required
Patient Volume: Up to 15 patients

General Description and Patient Care: This inpatient experience is provided to complete the requirements for training in Transplant Hepatology. It is organized to provide a broad supervised clinical experience necessary for fellows to master the knowledge, skills and attitudes essential to the practice of Transplant Hepatology subspecialty.
This is rotation exposes the Transplant Hepatology fellow to a variety of acute and chronic liver disease. This experience will provide fellows with the opportunity to work closely with experienced clinicians in the inpatient setting. As time progresses, the care of the patient (with the assistance of the attending hepatologist) will be assumed by the fellow and level of complexity and autonomy will increase according to the expectation of an advancing hepatology fellow. Communication with the referring or primary care practitioner and general communication of the progress of each patient with the other consultants who are involved with the care of the patients will be provided by the Transplant Hepatology fellow, with the assistance of the attending hepatologist, if necessary.

Upon completion of the fellowship the fellow is expected to:

a. Demonstrate expertise in the diagnosis and management of patients with:
   o acute liver disease
   o inpatients with chronic end-stage liver disease
   o Provide comprehensive management of patients, high on the transplant list, in the intensive care setting with complications of end-stage liver disease, including:
     • refractory ascites
     • hepatic hydrothorax
     • hepatorenal syndrome
     • hepatopulmonary and portal pulmonary syndromes
     • refractory portal hypertensive bleeding
     • and other complications of liver failure
   o manage patients with acute superimposed on chronic liver disease
   o incorporate the clinical, radiologic, and pathologic features of liver disease into the management decisions of patients
   o Practice in a professional manner; demonstrate respect for patients and patient privacy, as well as for professional peers
   o Appropriately and promptly responds to patient/family needs and requests
   o Fulfills clinical duties in a timely manner and alerts appropriate supervisory personnel (i.e. senior resident, attending hepatology / transplant physician and surgeon) when difficulty is encountered
   o Follows through on patient care activities and interface with other consultative services so that patient experiences integrative medical care

b. Satisfactorily perform and interpret Liver biopsies and make clinico-pathological correlation to aid in the management of inpatients, for example patients with acute cellular rejection

c. Maintain comprehensive, timely, legible, and appropriately detailed consultation notes and daily follow-up notes.

d. Demonstrate an appropriate therapeutic relationship with patients and families.

e. Demonstrate ability to lead a team in the effective delivery of health care.

f. Demonstrate competence in the prescription and administration of immunosuppression and appropriate clinical care.

g. Demonstrate competence in the management of hepatobiliary malignancies, understand indication for liver transplant
**Patient Care:** Demonstrate increasing autonomy in the management of patients with acute and chronic liver diseases in the transplant and non-transplant settings. Understand the pathophysiology of the disease processes of these patients and incorporate clinical features, radiological, and histopathology findings in developing a treatment plan. Communicate management strategies with the respective services involved in the patients care. Ensure that discharge plans are well understood by involved care teams.

**Teaching:** The fellow is responsible for searching the medical literature and providing relevant references to the service, both for educational purposes and to facilitate care of patients with unusual problems

**Fellow Supervision & Evaluation:** The transplant hepatology fellow is supervised by the assigned transplant hepatologist. The faculty persons review patient care and medical records concurrently with the fellow patient during the rotation and provides evaluation of care and competency directly to the transplant hepatology fellow and via the E-Value and 360 process

Central to these goals is the fellows’ attainment, at the level of a new practitioner, of the six ACGME core competencies in patient care, medical knowledge, practice-based learning and improvement, interpersonal and communication skills, professionalism, and systems-based practice.

**IV. Patient Characteristics**

Our Inpatient Transplant Hepatology service a diverse population referred for a variety of basic and complex liver diseases.

**V. Types of Clinical Encounters**

These have been described above. In the inpatient setting, transplant hepatology fellow evaluate new and follow-up patients and then obtain immediate consultation with the staff that also sees the patient and formulates a diagnostic and management plan in conjunction with the transplant hepatology fellow.

**VI. Procedures**

The transplant hepatology fellow may perform percutaneous liver biopsies during this rotation. There is feedback on the performance techniques and interpretation of histological findings on a patient-by-patient basis. During the first 6 months of the rotation the fellow will be closely observed and provided feedback on techniques, such as obtaining informed consent; administering adequate local anesthetic and monitoring for response to the anesthetic; monitoring for signs of discomfort and complications after the procedure. During the last 6 months all these aspects will be monitored, but it is expected that the fellow will be proficient and autonomous. **By the end of the academic year it is expected that the transplant hepatology fellow will be able to develop a therapeutic plan based on the histological findings.**

**VII. Evaluation:** Assessment of the fellow by the attending will reviewed with the fellow on a six-monthly basis

Global evaluation, using 360 degree system, with input from physicians, nurses, administrative staff, ancillary medical staff, and patients.
Reading List

**Evaluation of the Liver Transplant Recipient**

- [www.ustransplant.org/annual%5Freports/current/default.htm](http://www.ustransplant.org/annual%5Freports/current/default.htm) accessed 9.23.09

**Hepatic Encephalopathy**


**Complications of Cirrhosis**

**Transplant Hepatology Competency Assessment**

At orientation for new fellows the core competencies are discussed in detail. Faculty complete evaluations for each fellow at the end of each rotation. The program director meets with the fellows as a group every quarter and in addition reviews their performance individually twice during the year. The program director provides fellows with a composite of performance based on reviews submitted by each clinical faculty member. If specific problems arise, the program director is available for discussion with the fellow and if necessary the fellow is put on “probation” where concerns are delineated and expectations for improved performance is clearly defined. The program director then meets with the fellow 2 weeks later to review issues and assess improvement in performance.

**1. Patient Care**

Patient care is a primary aspect of the fellowship program. Fellows will learn to perform consultative services to inpatients and their primary physicians, provide primary care for liver transplant both pre-transplant and post-transplant patients, learn outpatient ambulatory care management with special attention to the following aspects:

- Timely response to consultation requests
- Performance of accurate and complete history and physical exam
- Comprehensive and efficient review of available diagnostic data (laboratory, radiology and pathology reports)
- Generation of an appropriate differential diagnosis
- Planning of an appropriate diagnostic work-up based on available evidence, sound judgment, and patient preference.
- Knowledge of indications and contraindications for therapeutic procedures, indications of screening procedures, and medications administered for conscious sedation.
- Performance of appropriate or indicated endoscopic procedures with proper technique, after obtaining informed consent and recognizing risks and benefits.
- Communication of plan with referring physicians
- Demonstration of kindness, compassion, and communication in a caring and respectful manner with inpatients and their families

At the end of each rotation trainees will demonstrate:

1. A thorough knowledge of history-taking, including family, genetic, psychosocial, and environmental histories, and the ability to perform a comprehensive and accurate physical examination.
2. The ability to arrive at an appropriate differential diagnosis, to outline a logical plan for specific and targeted investigations pertaining to the patient's complaints, and to formulate a plan for management and follow-up treatment of the patient.
3. The ability to present effectively the results of a consultation orally and in writing and to defend the clinical assessment, differential diagnosis, and diagnostic and management plan.
4. Procedural skills appropriate to the level of training. Since all fellows accepted into our fellowship are board-eligible in gastroenterology, they have already fulfilled criteria for gastroenterology. For transplant hepatology they must demonstrate proficiency in the following: 1) Upper Endoscopies Requiring Acute and/or prophylactic variceal band ligation; 2) Performance of at least 30 percutaneous liver biopsies of which some will be done using ultrasonography guidance; 3) Evaluation of at least 5 potential living related donors; 4) Observation of at least 1 cadaveric liver procurements and 3 liver transplantations
Methods of Evaluating Trainee Competence
Methods used to evaluate the trainee’s competence include direct observation during procedures, rounds, and conferences, formal evaluation forms from each faculty member who comes in contact with the trainee and log books for competency assessments for all endoscopic procedures. Since all of our fellows have already completed an ACGME-accredited GI fellowship or International Equivalent GI fellowship, particular attention is paid to specialized care provided by a transplant hepatologist.

2. Medical Knowledge
This experience is designed to give the trainees the breadth of experience necessary to become competent in assessment of patients with acute and chronic liver disease. Fellows are provided with didactic lectures on key clinic topics (outlined in syllabus) by clinical and visiting faculty. In addition, fellows present clinical cases at weekly conferences and prepare discussions regarding pertinent clinical issues. Upon completion of the fellowship, each fellow will have demonstrated competence in the skills of an inpatient consultant and ambulatory care provider as described above for evaluating all problems including but not limited to, evaluation of patients with the following conditions:

- Evaluation and management of patients with acute variceal bleeding
- Evaluation and management of patients with fulminant hepatic failure
- Evaluation and management of patients with end-stage liver disease
- Evaluation and management of patients listed for liver transplantation (OLT)
- Evaluation and management of patients with biliary tract disease
- Evaluation and management of patients with hepatocellular carcinoma
- Evaluation and management of patients with complications of portal hypertension
- Evaluation and management of patients with ascites
- Evaluation and management of patients with jaundice
- Evaluation and management of recurrent disease post-OLT (esp. Hepatitis C)
- Evaluation and management of early and late complications post-OLT
- Evaluation and management of living-related donors
- Evaluation and management of patients requiring re-transplantation

At the end of each rotation trainees will demonstrate a core fund of knowledge in hepatobiliary physiology, pathophysiology, and clinical pharmacology. In addition they will be able to present effectively the results of a consultation orally and in writing and to defend the clinical assessment, differential diagnosis, and diagnostic and management plan.

Methods of Evaluating Trainee Competence
1. Faculty Assessment
2. Direct Observation on clinical rounds
3. Evaluation of fellows during clinical case presentations

3. Practice Based Learning
Fellows participates in scheduled weekly conferences, these include ambulatory care lecture series, journal club, Transplant grand rounds, Clinical Case Conferences, GI/Liver Research Conference, Transplant Mortality and Morbidity Conference. Visiting scholars, professors and investigators are invited to speak at Transplant Grand Rounds and research seminars to stimulate new thoughts and ideas among fellows and faculty. Additionally, fellows are required to present topics at various conferences throughout the year. Scientific literature and information technology is utilized to facilitate life-long learning.
Each fellow evaluates and analyzes his/her own patient care practices and incorporates feedback into improving activities by evaluating teaching, conferences and rotations. Scientific literature and information technology is utilized to improve patient care and facilitate life-long learning.

**Methods of Evaluating Trainee Competence**

1. Journal club is used as a forum to teach the skills of critical literature reading, detection of biases, assessment of validity of controls, application of statistics, generalizability of results, and related attributes of scientific studies, biostatistics, and clinical epidemiology.
2. Interdisciplinary conferences with radiology, pathology, and surgery services are held weekly, with a once weekly pathology conference and a once weekly interdisciplinary clinical conference.
3. A series of lectures/discussions are held throughout the period of training to cover a core curriculum of physiology, pathophysiology, and clinical pharmacology.

**4. Interpersonal and Communication Skills**

Fellows listen well, show sensitivity to, and communicate effectively with patients and their families. They are able to communicate endoscopic findings to patients and family members as well as other members of patient ‘s health care team.

Each fellow will be able to provide effective and professional consultation to other physicians and dictate and/or write coherent, legible and effective consultation notes and ambulatory care notes. In addition, they should be able to generate accurate and concise endoscopic reports. The fellow should be an effective teacher, guiding and teaching residents and medical students rotating through their GI elective.

Each fellow is confident, empathetic, humane, personal, forthright, respectful, and thorough in their interactions with patients.

**Methods of Evaluating Trainee Competence**

1. Direct observation during inpatient rounds, ambulatory care clinics, and endoscopic teaching.
2. Formal evaluation forms from each faculty member who comes into contact with the trainee.
3. At least twice per year, each fellow will meet with the Fellowship Program Director to obtain feedback on their performance.
4. At least twice a year, endoscopy nurses and staff nurses on the Liver Transplant floors will be asked to evaluate fellows.

**5. Professionalism**

Each fellow is respectful and appropriate to other members of the health care team. The fellow demonstrates respect and compassion towards patients and is sensitive to cultural, age, gender, religious, sexual preferences, and disability differences/issues. They should demonstrate a responsible work ethic with regard to acceptance of responsibility, initiative, attendance at clinics and conferences, completion of work assignments, personal demeanor and modification of behavior in response to criticism.

**Methods of Evaluating Trainee Competence**

1. Direct observation during inpatient rounds, ambulatory care clinics, and endoscopic teaching.
2. Formal evaluation forms from each faculty member who comes into contact with the trainee.
3. At least twice per year, each fellow will meet with the Division Chief and Fellowship Program Director to obtain feedback on their performance.
4. At least twice a year, endoscopy nurses and staff nurses on the Liver Transplant floors will be asked to evaluate fellows.

6. Systems Based Practice
The fellow applies evidence based medicine and utilizes cost-effective health care principles to provide optimal patient care, both in and outpatient and inpatient setting. They are able to utilize community and clinic resources for successful patient care and acts as an advocate for the patient within the health care system. Each fellow will also be able to plan effective and appropriate diagnostic work-up and perform necessary procedures for the benefit of patient care.

Methods of Evaluating Trainee Competence
1. Direct observation during inpatient rounds, ambulatory care clinics, and endoscopic teaching.
2. Formal evaluation forms from each faculty member who comes into contact with the trainee.

Corrective Action Plan:
If the program director is notified or observes a deficiency in any of the above competencies, the fellow will meet with the program director and the division chief to discuss problematic issues. Feedback will be ascertained from faculty regarding improvement in performance. The program director will meet again with the fellow 2 weeks after the initial meeting and provide feedback regarding improvement in performance. Depending on the magnitude and persistence of the problem other disciplinary measures will be pursued.
3. **Inpatient Transplant Hepatology Surgery Rotation**

I. **Educational Goals and Objectives in the Context of the ACGME Core Competencies**

**Patient Care in the Inpatient Surgical Setting.**

Upon completion of the fellowship training the fellow should be able to:

- Diagnose and manage hepatocellular carcinoma and cholangiocarcinoma including transplantation, non-transplantation, surgical and non-surgical approaches, such as endoscopic and interventional radiology management.
- Use techniques of interventional radiology in the diagnosis and management of biliary and vascular complications in the peri-transplant and post transplant settings.
- Appropriate use of ultrasound localized, laparoscopy-guided and transjugular liver biopsies.
- Perform psychosocial evaluation of all candidates, in particular those with a history of substance abuse.
- Lead the primary evaluation, presentation and discussion at selection conference of potential transplant candidates.
- Be familiar with and assist in the diagnosis of the surgical complications in the peri-liver transplant setting.
- Be familiar with and assist in the management of long-term surgical complications.
- Conduct follow up medical care for new transplant recipients including:
  - management of acute cellular rejection
  - treatment of recurrent disease,
  - Treatment of infectious diseases, and
  - Treatment of biliary tract complications.
  - Recognition and management of hepatic artery thrombosis
  - Recognition and management of primary non-function
  - Recognition and management of early rejection
  - Recognition and management of acute cellular rejection
  - Recognition and management of chronic rejection
  - Recognition and management of patients in need of re-transplantation

**Medical Knowledge:**

Upon completion of training, the fellow is expected to demonstrate thorough understanding of:

- Major principles of transplant immunology, including blood group matching, histocompatibility, drug interactions and tissue typing, and infectious and malignant complications of immunosuppression.
- The anatomy, physiology, pharmacology, pathology, and molecular virology related to the liver and biliary tract.
- Factors involved in nutrition and malnutrition and its management.
- Principles and application of artificial liver support.
- Clinical research issues and transplant hepatology.
- Surgical approaches used in liver transplantation.
- Types of rejection in the liver transplant setting.

**Practice-Based Learning and Improvement:**

- Accurately identify strengths, deficiencies and limits in one’s knowledge and expertise.
- Accesses and appropriately utilizes current hepatology and transplant hepatology research and information in the care of patients.
• Appropriately seeks feedback on his/her performance
• Understands the major methods and steps of continuous quality improvement
• Applies steps of CQI to an area in his/her patient care
• Effectively teaches medical students, residents, fellows and other health care professionals.
• Understands and/or applies relevant practice guidelines in liver transplantation to clinical conditions

Interpersonal and Communication Skills:
• Gather essential and accurate information including sensitive psychosocial information regarding substance abuse and relevant sexual activity from patients and/or families in a respectful manner. Clearly communicate key issues and treatment plans to patients and families.
• Discuss risks/benefits of treatment regimes and procedures with patients and families to optimize patient care
• Communicate effectively with physicians, other health professionals, and health-related agencies, while respecting patient privacy
• Effectively and succinctly presents patient cases with necessary and relevant detail included
• Maintains comprehensive, timely, and legible medical records

Professionalism:
• Understand the major considerations relating to liver transplant donors, including questions related to living donors, non-heart beating donors,
• Understand the criteria for brain death
• Understand the principles for and the selection of appropriate organ recipients.
• Completes medical record documentation in a timely and appropriate manner
• Responds to pages, calls and e-mail correspondence in a timely and effective manner

Systems-Based Practice:
Work effectively as a consultant in the various health care delivery settings and systems relevant to transplant/hepatology (transplantation, inpatient consultation) for coordination of patient care.

Work to coordinate multiple aspects of the care of patients with acute and chronic liver disease with other physicians and health care professionals

Acquire a current working knowledge of the organizational and logistic aspects of liver transplantation, including the role of nurse coordinators and other support staff (e.g. social work), organ procurement, and UNOS policies, including those regarding organ allocation
Participate in teams to improve aspects of inpatient care of patients with liver disease.

Graded Responsibilities in the Context of the ACGME Core Competencies- Inpatient Transplant Hepatology Surgery Rotation
KEY: Patient Care (PC); Medical Knowledge (MK); Practice-Based Learning and Improvement (PBL); Interpersonal and Communication Skills (CS); Professionalism (Prof); Systems-Based Practice (SBP)

At the beginning of training and especially during the first rotation, the fellow will be a participant. It is expected that the fellow will become more autonomous with each rotation and will lead rounds; the
multidisciplinary care of the patients; and lead family conferences, fulfilling each of the ACGME competencies as outlined.

During the first rotation the Transplant Hepatology fellow is expected to recognize surgical complications that may arise after liver transplantation.

- The fellow is expected to be an integral member of the surgical transplant teams (Prof, CS, PC, MK, SBP, PBL)
- Maintain comprehensive, timely, legible, and appropriately detailed medical records. (CS, Prof)
- The fellow is expected to provide pre-operative evaluation, peri-operative and post operative care of patients in the setting of liver transplantation. (PC, MK)
- Fellow is expected to recognize surgical complications that may arise after liver transplantation. (MK, PBL)

In addition to the above, during the second rotation, the Transplant Hepatology fellow is expected to develop therapeutic options for management of post liver transplant surgical complications.

- Demonstrate competence in the prescription and administration of immunosuppression and appropriate clinical care. (MK, PC)
- The fellow will participate in the management of immunosuppression and over time increase autonomy in managing immunosuppression regimens. (MK, PC)
- develop therapeutic options for management of post liver transplant surgical complications. (MK, PC)
- The fellow will observe the procurement of organs for transplantation; observe the performance of liver transplants, including live liver transplantation; the surgical management of the complications of liver transplantation (MK)

In addition to the above, during the third rotation, the Transplant Hepatology fellow is expected to play an integral role in the management of the common post liver transplant surgical complications and participate in the teaching of residents and ancillary staff members of the team.

- Demonstrate an appropriate therapeutic relationship with patients and families. (CS, Prof)
- Demonstrate ability to lead a team in the effective delivery of health care. (Prof, MK, PC, CS)
- Understand and manage surgical complications in the liver transplant setting (MK, PC)
- Understand and manage long-term complications in the liver transplant setting (MK, PC)
- Practice in a professional manner; demonstrate respect for patients and patient privacy, as well as for professional peers (Prof, SBP)
- Incorporate the clinical, radiologic, and pathologic features of liver disease into the management decisions of patients (SBP, PC, MK)

The fellow will participate in teaching the residents and mid-level providers.
### II. Graded Responsibility

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</tr>
<tr>
<td>Supervisor of care team</td>
<td>Jointly with staff; begins efforts at teaching other team subspecialty to subspecialty</td>
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### III. Organization of the Rotation

**Location:** University of Minnesota Medical Center Fairview, Fairview 6th floor  
**Duration (Frequency):** 3 months  
**Staff:** This rotation will be supervised by the assigned liver transplant surgeon and assigned transplant hepatologist, and will include mid-level providers, and residents.  
**Patient Volume:** Up to 20 patients  
**Call:** Not required

**General Description:**  
This is a rotation on the inpatient service at the UMMC and attending to inpatients with a variety of acute and chronic liver diseases who are pre- liver transplant or post liver transplant. The overall goal
of the rotation is for the Transplant Hepatology fellow to develop expertise in the care and management of patients who are potential liver transplant recipients and who are post liver transplantation.

“Sit down” rounds are held in the afternoon, at about 2 pm or as determined by the attending(s). The mid-level providers are responsible for seeing their patients and preparing for sit-down rounds. The charge nurse, pharmacist, and sometimes the coordinator join rounds. Sit down rounds is followed by “walk rounds” management plans that have been developed by the Transplant Hepatology fellow will be presented to the hepatologist or surgeon and decisions made regarding the implementation of these plans.

**Patient Care:** Demonstrate increasing autonomy in the management of patients with acute and chronic liver diseases in the transplant and non-transplant settings. Understand the pathophysiology of the disease processes of these patients and incorporate clinical features, radiological, and histopathology findings in developing a treatment plan. Communicate management strategies with the respective services involved in the patients care. Ensure that discharge plans are well understood by involved care teams.

**Teaching:** The fellow is responsible for searching the medical literature and providing relevant references to the service, both for educational purposes and to facilitate care of patients with unusual problems.

**Fellow Supervision & Evaluation:** The transplant hepatology fellow is supervised by the assigned transplant hepatologist. The faculty persons review patient care and medical records concurrently with the fellow patient during the rotation and provides evaluation of care and competency directly to the transplant hepatology fellow and via the E-Value and 360 process.

Central to these goals is the fellows’ attainment, at the level of a new practitioner, of the six ACGME core competencies in patient care, medical knowledge, practice-based learning and improvement, interpersonal and communication skills, professionalism, and systems-based practice.

### IV. Patient Characteristics

Our Inpatient Transplant Hepatology surgery service a diverse population referred for a variety of basic and complex liver diseases.

### V. Types of Clinical Encounters

These have been described above. In the inpatient setting, transplant hepatology fellow evaluate new and follow-up patients and then obtain immediate consultation with the staff that also sees the patient and formulates a diagnostic and management plan in conjunction with the transplant hepatology fellow.
VI. Procedures

The transplant hepatology fellow may perform percutaneous liver biopsies during this rotation. There is feedback on the performance techniques and interpretation of histological findings on a patient-by-patient basis. During the first 6 months of the rotation the fellow will be closely observed and provided feedback on techniques, such as obtaining informed consent; administering adequate local anesthetic and monitoring for response to the anesthetic; monitoring for signs of discomfort and complications after the procedure. During the last 6 months all these aspects will be monitored, but it is expected that the fellow will be proficient and autonomous. By the end of the academic year it is expected that the transplant hepatology fellow will be able to develop a therapeutic plan based on the histological findings.

VII. Evaluation: Assessment of the fellow by the attending will reviewed with the fellow on a six-monthly basis

Global evaluation, using 360 degree system, with input from physicians, nurses, administrative staff, ancillary medical staff, and patients.

Reading List

Acute liver failure:

Evaluation of the Liver Transplant Recipient
- www.ustransplant.org/annual%5Freports/current/default.htm accessed 9.23.09

Live Donor Liver Transplantation


Transplant Hepatology Competency Assessment

At orientation for new fellows the core competencies are discussed in detail. Faculty complete evaluations for each fellow at the end of each rotation. The program director meets with the fellows as a group every quarter and in addition reviews their performance individually twice during the year. The program director provides fellows with a composite of performance based on reviews submitted by each clinical faculty member. If specific problems arise, the program director is available for discussion with the fellow and if necessary the fellow is put on “probation” where concerns are delineated and expectations for improved performance is clearly defined. The program director then meets with the fellow 2 weeks later to review issues and assess improvement in performance.

1. Patient Care
Patient care is a primary aspect of the fellowship program. Fellows will learn to perform consultative services to inpatients and their primary physicians, provide primary care for liver transplant both pre-transplant and post-transplant patients, learn outpatient ambulatory care management with special attention to the following aspects:

- Timely response to consultation requests
- Performance of accurate and complete history and physical exam
- Comprehensive and efficient review of available diagnostic data (laboratory, radiology and pathology reports)
- Generation of an appropriate differential diagnosis
- Planning of an appropriate diagnostic work-up based on available evidence, sound judgment, and patient preference.
- Knowledge of indications and contraindications for therapeutic procedures, indications of screening procedures, and medications administered for conscious sedation.
- Performance of appropriate or indicated endoscopic procedures with proper technique, after obtaining informed consent and recognizing risks and benefits.
- Communication of plan with referring physicians
- Demonstration of kindness, compassion, and communication in a caring and respectful manner with inpatients and their families

At the end of each rotation trainees will demonstrate:

1. A thorough knowledge of history-taking, including family, genetic, psychosocial, and environmental histories, and the ability to perform a comprehensive and accurate physical examination.
2. The ability to arrive at an appropriate differential diagnosis, to outline a logical plan for specific and targeted investigations pertaining to the patient’s complaints, and to formulate a plan for management and follow-up treatment of the patient.
3. The ability to present effectively the results of a consultation orally and in writing and to defend the clinical assessment, differential diagnosis, and diagnostic and management plan.
4. Procedural skills appropriate to the level of training. Since all fellows accepted into our fellowship are board-eligible in gastroenterology, they have already fulfilled criteria for gastroenterology. For transplant hepatology they must demonstrate proficiency in the following: 1) Upper Endoscopies Requiring Acute and/or prophylactic variceal band ligation; 2) Performance of at least 30 percutaneous liver biopsies of which some will be done using ultrasonography guidance; 3) Evaluation of at least 5 potential living related donors; 4) Observation of at least 1 cadaveric liver procurements and 3 liver transplantations.
Methods of Evaluating Trainee Competence
Methods used to evaluate the trainee’s competence include direct observation during procedures, rounds, and conferences, formal evaluation forms from each faculty member who comes in contact with the trainee and log books for competency assessments for all endoscopic procedures. Since all of our fellows have already completed an ACGME-accredited GI fellowship or International Equivalent GI fellowship, particular attention is paid to specialized care provided by a transplant hepatologist.

2. Medical Knowledge
This experience is designed to give the trainees the breadth of experience necessary to become competent in assessment of patients with acute and chronic liver disease. Fellows are provided with didactic lectures on key clinic topics (outlined in syllabus) by clinical and visiting faculty. In addition, fellows present clinical cases at weekly conferences and prepare discussions regarding pertinent clinical issues. Upon completion of the fellowship, each fellow will have demonstrated competence in the skills of an inpatient consultant and ambulatory care provider as described above for evaluating all problems including but not limited to, evaluation of patients with the following conditions:

- Evaluation and management of patients with acute variceal bleeding
- Evaluation and management of patients with fulminant hepatic failure
- Evaluation and management of patients with end-stage liver disease
- Evaluation and management of patients listed for liver transplantation (OLT)
- Evaluation and management of patients with biliary tract disease
- Evaluation and management of patients with hepatocellular carcinoma
- Evaluation and management of patients with complications of portal hypertension
- Evaluation and management of patients with ascites
- Evaluation and management of patients with jaundice
- Evaluation and management of recurrent disease post-OLT (esp. Hepatitis C)
- Evaluation and management of early and late complications post-OLT
- Evaluation and management of living-related donors
- Evaluation and management of patients requiring re-transplantation

At the end of each rotation trainees will demonstrate a core fund of knowledge in hepatobiliary physiology, pathophysiology, and clinical pharmacology. In addition they will be able to present effectively the results of a consultation orally and in writing and to defend the clinical assessment, differential diagnosis, and diagnostic and management plan.

Methods of Evaluating Trainee Competence
1. Faculty Assessment
2. Direct Observation on clinical rounds
3. Evaluation of fellows during clinical case presentations

3. Practice Based Learning
Fellows participates in scheduled weekly conferences, these include ambulatory care lecture series, journal club, Transplant grand rounds, Clinical Case Conferences, GI/Liver Research Conference, Transplant Mortality and Morbidity Conference. Visiting scholars, professors and investigators are invited to speak at Transplant Grand Rounds and research seminars to stimulate new thoughts and ideas among fellows and faculty. Additionally, fellows are required to present topics at various conferences throughout the year. Scientific literature and information technology is utilized to facilitate life-long learning.
Each fellow evaluates and analyzes his/her own patient care practices and incorporates feedback into improving activities by evaluating teaching, conferences and rotations. Scientific literature and information technology is utilized to improve patient care and facilitate life-long learning.

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1. Journal club is used as a forum to teach the skills of critical literature reading, detection of biases, assessment of validity of controls, application of statistics, generalizability of results, and related attributes of scientific studies, biostatistics, and clinical epidemiology.
2. Interdisciplinary conferences with radiology, pathology, and surgery services are held weekly, with a once weekly pathology conference and a once weekly interdisciplinary clinical conference.
3. A series of lectures/discussions are held throughout the period of training to cover a core curriculum of physiology, pathophysiology, and clinical pharmacology.

4. Interpersonal and Communication Skills
Fellows listen well, show sensitivity to, and communicate effectively with patients and their families. They are able to communicate endoscopic findings to patients and family members as well as other members of patient ’s health care team.

Each fellow will be able to provide effective and professional consultation to other physicians and dictate and/or write coherent, legible and effective consultation notes and ambulatory care notes. In addition, they should be able to generate accurate and concise endoscopic reports. The fellow should be an effective teacher, guiding and teaching residents and medical students rotating through their GI elective.

Each fellow is confident, empathetic, humane, personal, forthright, respectful, and thorough in their interactions with patients.

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1. Direct observation during inpatient rounds, ambulatory care clinics, and endoscopic teaching.
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Each fellow is respectful and appropriate to other members of the health care team. The fellow demonstrates respect and compassion towards patients and is sensitive to cultural, age, gender, religious, sexual preferences, and disability differences/issues. They should demonstrate a responsible work ethic with regard to acceptance of responsibility, initiative, attendance at clinics and conferences, completion of work assignments, personal demeanor and modification of behavior in response to criticism.

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The fellow applies evidence based medicine and utilizes cost-effective health care principles to provide optimal patient care, both in and outpatient and inpatient setting. They are able to utilize community and clinic resources for successful patient care and acts as an advocate for the patient within the health care system. Each fellow will also be able to plan effective and appropriate diagnostic work-up and perform necessary procedures for the benefit of patient care.

Methods of Evaluating Trainee Competence
1. Direct observation during inpatient rounds, ambulatory care clinics, and endoscopic teaching.
2. Formal evaluation forms from each faculty member who comes into contact with the trainee.

Corrective Action Plan:
If the program director is notified or observes a deficiency in any of the above competencies, the fellow will meet with the program director and the division chief to discuss problematic issues. Feedback will be ascertained from faculty regarding improvement in performance. The program director will meet again with the fellow 2 weeks after the initial meeting and provide feedback regarding improvement in performance. Depending on the magnitude and persistence of the problem other disciplinary measures will be pursued.
4. Radiology Rotation

I. Educational Goals and Objectives in the Context of the ACGME Core Competencies

Patient Care:
Upon completion of the fellowship training the fellow should be able to:
• Understand the indications for imaging techniques for evaluation of liver diseases, using Doppler sonography; cross sectional imaging, such as CT scans and MRI with and without intravenous contrast; cholangiograms; and interventional radiology techniques, such as transjugular intrahepatic portosystemic shunt (TIPS)
• Manage chronic viral hepatitis in the pre-transplantation, peri-transplantation, and post-transplantation settings using radiological correlation.
• Use techniques of interventional radiology in the diagnosis and management of portal hypertension, as well as biliary and vascular complications .
• Appropriate use of ultrasound localized, laparoscopy-guided and transjugular liver biopsies .
• Strategies for using imaging for the rudimentary recognition of benign and malignant neoplasms.
• Recognition of fatty liver disease through imagining.
• Recognition of metastatic diseases through imagining.
• Interpretation of portal pressure measurements.
• Recognize the radiological features post chemoembolization and radiofrequency ablation.

Medical Knowledge:
Upon completion of training, the fellow is expected to demonstrate thorough understanding of:
• Strategies for using imaging for the rudimentary recognition of benign and malignant neoplasms.
• Recognition of fatty liver disease
• Recognition of metastatic diseases
• Interpretation of portal pressure measurements
• Recognize the radiological features post chemoembolization and radiofrequency ablation
• Recognition of radiological features of post liver transplant complications

Practice-Based Learning and Improvement:
• Accurately identify strengths, deficiencies and limits in one’s knowledge and expertise
• Accesses and appropriately utilizes radiological findings with current hepatology research and information in the care of patients.
• Appropriately seeks feedback on his/her performance
• Understands the major methods and steps of continuous quality improvement
• Applies steps of CQI to an area in his/her patient care
• Communicates effectively with the radiologist in order to obtain the most appropriate diagnostic tests and interpretation of results.

Interpersonal and Communication Skills:
• Clearly communicate key issues and treatment plans to patients and families based on findings of imaging studies.
• Communicate effectively with physicians, other health professionals, and health-related agencies, while respecting patient privacy
• Effectively and succinctly presents patient cases with necessary and relevant detail included
• Maintains comprehensive, timely, and legible medical records
Professionalism:
- Understand the principles for and the selection of appropriate organ recipients who have a diagnosis of hepatocellular carcinoma.

Systems-Based Practice:
- Work effectively as a consultant to in the various health care delivery settings and systems relevant to transplant/hepatology (transplantation, inpatient consultation, outpatient and ambulatory care).
- Use radiological findings to facilitate coordination of multiple aspects of the care of patients with acute and chronic liver disease (other physicians and health care professionals)
- Participate in teams to improve aspects of inpatient and ambulatory care of patients with liver disease.

II. Graded Responsibility

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<td>Proficient: Independent, with staff confirmation of selected issues; consistently incorporates evidence based medicine and system based practices into improving effectiveness of consultation</td>
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<tr>
<td>Supervisor of care team</td>
<td>Beginning: Jointly with staff; begins efforts at teaching other team subspecialty to subspecialty</td>
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<td></td>
<td>Developing: Independent, with staff confirmation of patient care issues; increasing responsibility for teaching of team</td>
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<tr>
<td></td>
<td>Proficient: Independent, with staff confirmation of selected patient care issues; shared responsibility with staff for teaching of team members</td>
</tr>
</tbody>
</table>
III. Organization of the Rotation

Location: UMMC-Fairview 2 and floor radiology or PWB 1
Duration: 10 half days
Staff: Dr. Sidney Walker
Call: Not applicable

Description: In an effort to provide rudimentary, formal instruction in the interpretation of commonly used imaging studies, for the assessment and management of patients with acute and chronic liver diseases, Transplant Hepatology fellow is required to review, on a one-to one basis, sonography, cross-sectional imaging of the abdomen, and interventional studies with an assigned radiologist.

Liver Imaging Educational Objectives:
Review the indications for imaging techniques for evaluation of liver diseases, using dopple sonography; cross sectional imaging, such as CT scans and MRI with and without intravenous contrast; cholangiograms; and interventional radiology techniques, such as transjugular intrahepatic portosystemic shunt (TIPS) used in the diagnoses and management of patients with liver diseases. Review the results of the findings of these imaging studies in specific patients and the relevance of the findings in the management.

During the first rotation, the fellow is expected to be more an observer; it is expected that at the end of the rotation the fellow will have developed a rudimentary ability to recognize common benign and malignant lesions of the liver, while adhering to the ACGME competencies as outlined.

Fellow Responsibilities: Meet with the radiologists at assigned times and review the relevant imaging; it is encouraged that studies relevant to the care of patients for whom the fellow attends should be reviewed.

IV. Patient Characteristics

Our radiology service reviews a diverse population for a variety of basic and complex liver diseases.

V. Types of Clinical Encounters

These have been described above. In the radiology setting, transplant hepatology fellow evaluate new and follow-up patients and then obtain immediate consultation with the staff radiologist who also sees the patient and formulates a diagnostic and management plan in conjunction with the transplant hepatology fellow.

VI. Procedures

The transplant hepatology fellow may perform percutaneous and observe transjugular liver biopsies during this rotation. There is feedback on the performance techniques and interpretation of histological findings on a patient-by-patient basis. During the first 6 months of the rotation the
fellow will be closely observed and provided feedback on techniques, such as obtaining informed consent; administering adequate local anesthetic and monitoring for response to the anesthetic; monitoring for signs of discomfort and complications after the procedure. During the last 6 months all these aspects will be monitored, but it is expected that the fellow will be proficient and autonomous. By the end of the academic year it is expected that the transplant hepatology fellow will be able to develop a therapeutic plan based on the histological findings.

VII. Evaluation: Assessment of the fellow by the attending will reviewed with the fellow on a six-monthly basis

Global evaluation, using 360 degree system, with input from physicians, nurses, administrative staff, ancillary medical staff, and patients.
Transplant Hepatology Competency Assessment

At orientation for new fellows the core competencies are discussed in detail. Faculty complete evaluations for each fellow at the end of each rotation. The program director meets with the fellows as a group every quarter and in addition reviews their performance individually twice during the year. The program director provides fellows with a composite of performance based on reviews submitted by each clinical faculty member. If specific problems arise, the program director is available for discussion with the fellow and if necessary the fellow is put on “probation” where concerns are delineated and expectations for improved performance is clearly defined. The program director then meets with the fellow 2 weeks later to review issues and assess improvement in performance.

1. Patient Care
Patient care is a primary aspect of the fellowship program. Fellows will learn to perform consultative services to inpatients and their primary physicians, provide primary care for liver transplant both pre-transplant and post-transplant patients, learn outpatient ambulatory care management with special attention to the following aspects:

- Timely response to consultation requests
- Performance of accurate and complete history and physical exam
- Comprehensive and efficient review of available diagnostic data (laboratory, radiology and pathology reports)
- Generation of an appropriate differential diagnosis
- Planning of an appropriate diagnostic work-up based on available evidence, sound judgment, and patient preference.
- Knowledge of indications and contraindications for therapeutic procedures, indications of screening procedures, and medications administered for conscious sedation.
- Performance of appropriate or indicated endoscopic procedures with proper technique, after obtaining informed consent and recognizing risks and benefits.
- Communication of plan with referring physicians
- Demonstration of kindness, compassion, and communication in a caring and respectful manner with inpatients and their families

At the end of each rotation trainees will demonstrate:

1. A thorough knowledge of history-taking, including family, genetic, psychosocial, and environmental histories, and the ability to perform a comprehensive and accurate physical examination.
2. The ability to arrive at an appropriate differential diagnosis, to outline a logical plan for specific and targeted investigations pertaining to the patient’s complaints, and to formulate a plan for management and follow-up treatment of the patient.
3. The ability to present effectively the results of a consultation orally and in writing and to defend the clinical assessment, differential diagnosis, and diagnostic and management plan.
4. Procedural skills appropriate to the level of training. Since all fellows accepted into our fellowship are board-eligible in gastroenterology, they have already fulfilled criteria for gastroenterology. For transplant hepatology they must demonstrate proficiency in the following: 1) Upper Endoscopies Requiring Acute and/or prophylactic variceal band ligation; 2) Performance of at least 30 percutaneous liver biopsies of which some will be done using ultrasonagraphy guidance; 3) Evaluation of at least 5 potential living related donors; 4) Observation of at least 1 cadaveric liver procurements and 3 liver transplantations
Methods of Evaluating Trainee Competence
Methods used to evaluate the trainee’s competence include direct observation during procedures, rounds, and conferences, formal evaluation forms from each faculty member who comes in contact with the trainee and log books for competency assessments for all endoscopic procedures. Since all of our fellows have already completed an ACGME-accredited GI fellowship or International Equivalent GI fellowship, particular attention is paid to specialized care provided by a transplant hepatologist.

2. Medical Knowledge
This experience is designed to give the trainees the breadth of experience necessary to become competent in assessment of patients with acute and chronic liver disease. Fellows are provided with didactic lectures on key clinic topics (outlined in syllabus) by clinical and visiting faculty. In addition, fellows present clinical cases at weekly conferences and prepare discussions regarding pertinent clinical issues. Upon completion of the fellowship, each fellow will have demonstrated competence in the skills of an inpatient consultant and ambulatory care provider as described above for evaluating all problems including but not limited to, evaluation of patients with the following conditions:

- Evaluation and management of patients with acute variceal bleeding
- Evaluation and management of patients with fulminant hepatic failure
- Evaluation and management of patients with end-stage liver disease
- Evaluation and management of patients listed for liver transplantation (OLT)
- Evaluation and management of patients with biliary tract disease
- Evaluation and management of patients with hepatocellular carcinoma
- Evaluation and management of patients with complications of portal hypertension
- Evaluation and management of patients with ascites
- Evaluation and management of patients with jaundice
- Evaluation and management of recurrent disease post-OLT (esp. Hepatitis C)
- Evaluation and management of early and late complications post-OLT
- Evaluation and management of living-related donors
- Evaluation and management of patients requiring re-transplantation

At the end of each rotation trainees will demonstrate a core fund of knowledge in hepatobiliary physiology, pathophysiology, and clinical pharmacology. In addition they will be able to present effectively the results of a consultation orally and in writing and to defend the clinical assessment, differential diagnosis, and diagnostic and management plan.

Methods of Evaluating Trainee Competence
1. Faculty Assessment
2. Direct Observation on clinical rounds
3. Evaluation of fellows during clinical case presentations

3. Practice Based Learning
Fellows participates in scheduled weekly conferences, these include ambulatory care lecture series, journal club, Transplant grand rounds, Clinical Case Conferences, GI/Liver Research Conference, Transplant Mortality and Morbidity Conference. Visiting scholars, professors and investigators are invited to speak at Transplant Grand Rounds and research seminars to stimulate new thoughts and ideas among fellows and faculty. Additionally, fellows are required to present topics at various conferences throughout the year. Scientific literature and information technology is utilized to facilitate life-long learning.
Each fellow evaluates and analyzes his/her own patient care practices and incorporates feedback into improving activities by evaluating teaching, conferences and rotations. Scientific literature and information technology is utilized to improve patient care and facilitate life-long learning.

Methods of Evaluating Trainee Competence

1. Journal club is used as a forum to teach the skills of critical literature reading, detection of biases, assessment of validity of controls, application of statistics, generalizability of results, and related attributes of scientific studies, biostatistics, and clinical epidemiology.
2. Interdisciplinary conferences with radiology, pathology, and surgery services are held weekly, with a once weekly pathology conference and a once weekly interdisciplinary clinical conference.
3. A series of lectures/discussions are held throughout the period of training to cover a core curriculum of physiology, pathophysiology, and clinical pharmacology.

4. Interpersonal and Communication Skills
Fellows listen well, show sensitivity to, and communicate effectively with patients and their families. They are able to communicate endoscopic findings to patients and family members as well as other members of patient ’s health care team.

Each fellow will be able to provide effective and professional consultation to other physicians and dictate and/or write coherent, legible and effective consultation notes and ambulatory care notes. In addition, they should be able to generate accurate and concise endoscopic reports. The fellow should be an effective teacher, guiding and teaching residents and medical students rotating through their GI elective.

Each fellow is confident, empathetic, humane, personal, forthright, respectful, and thorough in their interactions with patients.

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1. Direct observation during inpatient rounds, ambulatory care clinics, and endoscopic teaching.
2. Formal evaluation forms from each faculty member who comes into contact with the trainee.
3. At least twice per year, each fellow will meet with the Fellowship Program Director to obtain feedback on their performance.
4. At least twice a year, endoscopy nurses and staff nurses on the Liver Transplant floors will be asked to evaluate fellows.

5. Professionalism
Each fellow is respectful and appropriate to other members of the health care team. The fellow demonstrates respect and compassion towards patients and is sensitive to cultural, age, gender, religious, sexual preferences, and disability differences/issues. They should demonstrate a responsible work ethic with regard to acceptance of responsibility, initiative, attendance at clinics and conferences, completion of work assignments, personal demeanor and modification of behavior in response to criticism.

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6. Systems Based Practice
The fellow applies evidence based medicine and utilizes cost-effective health care principles to provide optimal patient care, both in and outpatient and inpatient setting. They are able to utilize community and clinic resources for successful patient care and acts as an advocate for the patient within the health care system. Each fellow will also be able to plan effective and appropriate diagnostic work-up and perform necessary procedures for the benefit of patient care.

Methods of Evaluating Trainee Competence
1. Direct observation during inpatient rounds, ambulatory care clinics, and endoscopic teaching.
2. Formal evaluation forms from each faculty member who comes into contact with the trainee.

Corrective Action Plan:
If the program director is notified or observes a deficiency in any of the above competencies, the fellow will meet with the program director and the division chief to discuss problematic issues. Feedback will be ascertained from faculty regarding improvement in performance. The program director will meet again with the fellow 2 weeks after the initial meeting and provide feedback regarding improvement in performance. Depending on the magnitude and persistence of the problem other disciplinary measures will be pursued.
5. **Continuity Clinic**

I. **Educational Goals and Objectives in the Context of the ACMGE Core Competencies**

**Patient Care:**
Upon completion of the fellowship training the fellow should be able to:

- Diagnose and manage hepatocellular carcinoma and cholangiocarcinoma including transplantation, non-transplantation, surgical and non-surgical approaches
- Manage chronic viral hepatitis in the pre-transplantation, peri-transplantation, and post-transplantation settings.
- Use techniques of interventional radiology in the diagnosis and management of portal hypertension, as well as biliary and vascular complications.
- Appropriate use of ultrasound localized, laparoscopy-guided and transjugular liver biopsies
- Manage fulminant hepatic failure
- Perform psychosocial evaluation of all candidates, in particular those with a history of substance abuse.
- Lead the primary evaluation, presentation and discussion at selection conference of potential transplant candidates.
- Conduct follow up medical care for new transplant recipients including:
  - management of acute cellular rejection
  - treatment of recurrent disease,
  - Treatment of infectious diseases, and
  - Treatment of biliary tract complications.

**Medical Knowledge:**
Upon completion of training, the fellow is expected to demonstrate thorough understanding of:

- Strategies for prevention of acute and chronic end-stage liver disease
- Major principles of transplant immunology, including blood group matching, histocompatibility, and tissue typing, and infectious and malignant complications of immunosuppression
- Drug hepatotoxicity and the interaction of drugs with the liver
- Principles of nutritional support of patients with chronic liver disease
- The anatomy, physiology, pharmacology, pathology, and molecular virology related to the liver and biliary tract
- The natural history of chronic liver disease
- Factors involved in nutrition and malnutrition and its management
- Clinical research issues and transplant hepatology

**Practice-Based Learning and Improvement:**

- Accurately identify strengths, deficiencies and limits in one’s knowledge and expertise
- Accesses and appropriately utilizes current hepatology research and information in the care of patients.
- Appropriately seeks feedback on his/her performance
- Understands the major methods and steps of continuous quality improvement
- Applies steps of CQI to an area in his/her patient care
- Effectively teaches medical students, residents, fellows and other health care professionals.
- Understands and/or applies relevant practice guidelines in hepatology to clinical conditions
Interpersonal and Communication Skills:
- Gather essential and accurate information including sensitive psychosocial information regarding substance abuse and relevant sexual activity from patients and/or families in a respectful manner. Clearly communicate key issues and treatment plans to patients and families.
- Discuss risks/benefits of treatment regimes and procedures with patients and families.
- Communicate effectively with physicians, other health professionals, and health-related agencies, while respecting patient privacy.
- Effectively and succinctly presents patient cases with necessary and relevant detail included.
- Maintains comprehensive, timely, and legible medical records.

Professionalism:
- Understand the major considerations relating to liver transplant donors, including questions related to living donors, non-heart beating donors.
- Understand the principles for and the selection of appropriate organ recipients.
- Completes medical record documentation in a timely and appropriate manner.
- Responds to pages, calls and e-mail correspondence in a timely and effective manner.

Systems-Based Practice:
- Work effectively as a consultant to in the various health care delivery settings and systems relevant to transplant/hepatology (transplantation, outpatient and ambulatory care).
- Work to coordinate multiple aspects of the care of patients with acute and chronic liver disease (other physicians and health care professionals).
- Acquire a current working knowledge of the organizational and logistic aspects of liver transplantation, including the role of nurse coordinators and other support staff (e.g. social work).
- Participate in teams to improve aspects of ambulatory care of patients with liver disease.

Graded Responsibilities in the Context of the ACGME Core Competencies – Continuity Hepatology Clinic
KEY: Patient Care (PC); Medical Knowledge (MK); Practice-Based Learning and Improvement (PBL); Interpersonal and Communication Skills (CS); Professionalism (Prof); Systems-Based Practice (SBP)

First Six Months
By the completion of the first 6 months of this rotation the Transplant hepatology fellow will be a participant in the care of patients related to the following activities.

**History:** The transplant hepatology fellow should be able to obtain an accurate independent history on all outpatients with simple liver diseases (PC, CS, Prof).

**Physical Exam:** The transplant hepatology fellow should be able to perform an accurate detailed examination on all outpatients in hepatology clinic, including those with subtle exam findings. (PC, MK, Prof).

**Formulation:** The transplant hepatology fellow should be able to offer a reasonable case formulation on all outpatients, addressing simple liver diseases for the first 6 months with supervision by staff hepatologists. (PC, MK, PBL, Prof., SBP).

**Evaluation/Management:** The transplant hepatology fellow should be able to articulate a reasonable diagnostic and management plan for all outpatients with acute and chronic liver diseases, simple with direct assistance or direction from staff. (PC, MK, PBL, Prof., SBP, CS)
During the last 6 months and especially at the end of the fellowship it is expected that the fellow will be more proficient and autonomous in the care of her/his patients. The fellows’ competence evolves from beginner to proficient during the rotation.

Fulfilling each of the ACGME competencies as outlined the fellow will be able to:

- Demonstrate expertise in the diagnosis, interpretation of test results, and evaluation and management of outpatients with acute liver disease. (MK, PC, Prof., SBP)
- Evaluate and manage outpatients with chronic end-stage liver disease (MK, PC, CS, Prof.)
- Construct appropriate differential diagnoses and management plan for patients with a variety of acute and chronic liver diseases in the outpatient setting. (MK, PC, SBP)
- Articulate a reasonable diagnostic and management plan for patients with simple and complex liver diseases. (CS, MK, PC, SBP)
- Understand ancillary care options that are available in the community, for example, for patients who need rehabilitation for substance abuse. (SBP, PBL, CS, Prof.)
- Determine candidacy for liver transplantation, using the United Network for Organ Sharing (UNOS) guidelines for prioritization of liver transplantation; and the Model for End—Stage Liver Disease (MELD) criteria. (MK, PC, SBP, PBL)
- Perform pre-transplant evaluation of patients (MK, PC)
- Gain experience and expertise in performing post-transplant management. (MK, PC, SBP, PBL)
- Manage patients with non-transplant hepatological diseases (MK, PC, PBL)
- Understand the course of major hepatological diseases (MK, PC)
- Evaluate and triage urgent outpatient cases (MK, PC, SBP, PBL, CS)
- Communicate with patients and families the common course of the disease process. (CS, MK, PC)
- Accurately discuss treatment options with major risks and benefits with patients. (PC, MK)
- Improve communication skills with patients and families through the development of long term therapeutic relationships (CS, PBL, SBP)

II. Graded Responsibility

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<thead>
<tr>
<th>Clinical Activity</th>
<th>Beginning</th>
<th>Developing</th>
<th>Proficient</th>
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<tbody>
<tr>
<td>Clinical data collection</td>
<td>Independent, with staff supplementation</td>
<td>Independent, with staff confirmation</td>
<td>Independent, with staff confirmation of selected issues</td>
</tr>
<tr>
<td>Formulation of clinical assessments/plans</td>
<td>Jointly with staff</td>
<td>Independent, with staff confirmation; independent utilization of evidence based medicine resources and sharing of information with care team</td>
<td>Independent, with staff confirmation of selected issues; demonstrated mastery of large set of subspecialty based skills and is preparing to practice independently; consistently incorporates</td>
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III. Organization of the Rotation

The following summarizes the organization of the Transplant Hepatology fellow’s educational experience during the rotation, taught and supervised by the Hepatology staff in the Division of Gastroenterology, Hepatology and Nutrition in our program.

Location: University of Minnesota Medical Center, PWB Clinic 2A
Duration(Frequency): 12 months (three half days per week)
Faculty: Staffed by 1 attending hepatologist. The Transplant hepatology fellow will have his/her own continuity clinic consisting of patients with acute and chronic liver diseases who are attended to on a longitudinal basis by the fellow, supervised by the attending hepatologist.

Call: No call requirements. The attending physician and fellowship director are required to monitor duty hours and signs of fatigue. The attending physician will see additional patients to prevent fellow fatigue.

General Description and Patient Care: In an effort to comply with the institutional and program requirements of the ACGME and RRC in Transplant Hepatology, the University of Minnesota fellowship training program in Transplant Hepatology is organized to provide the intellectual environment, formal instruction, peer interaction and broad supervised clinical experience necessary for fellows to master the knowledge, skills and attitudes essential to the practice of Transplant Hepatology subspecialty, research or a teaching career in Transplant Hepatology. Central to these goals is the fellows’ attainment, at the level of a new practitioner, of the six ACGME core competencies in patient care, medical knowledge, practice-based learning and improvement, interpersonal and communication skills, professionalism, and systems-based practice. We provide 1 year of well-supervised graduate medical education experience with graded and progressive responsibility.
This is a longitudinal clinic for the management of outpatients with a variety of acute and chronic liver disease. This experience will provide fellows with the opportunity to work closely with experienced clinicians in the outpatient setting. The hepatology fellow will attend to their own patients in this clinic with the assistance of the attending hepatologist. As time progresses, the care of the patient (with the assistance of the attending hepatologist) will be assumed by the fellow and level of complexity and autonomy will increase according to the expectation of an advancing hepatology fellow. Communication with the referring or primary care practitioner and general communication of the progress of each patient, attended to by the fellow will be primarily done via notes from each encounter.

**Fellow Responsibilities:** The fellow is expected to provide care of these patients addressing all medical issues and offering appropriate referrals when needed. The care of these patients will include, but not limited to, patients with acute on chronic liver diseases; managing complications of cirrhosis; recognizing the indications for liver transplantation and taking part in this process and referring for such evaluation; coordinating care for patients who are on the liver transplant waiting list; communicating with surgeons, nurse coordinators and other practitioners who are involved with the care of these patients.

**Patient Volumes:** To assure an opportunity to initiate care of new patients in outpatient hepatology clinic, and to follow the course of disease and treatment / transplant over one year. The fellow is assigned to see 1-3 new patients and 3-6 follow-up patients each week.

**Fellow Supervision & Evaluation in Clinic:** The transplant/hepatology fellow is supervised within the clinic by key hepatology/transplant faculty members. The faculty assigned to clinic will review patient care and medical records concurrently with patient visits and provides evaluation of care and competency directly to the specialty fellow and via the E-Value process.

**Clinic triage:** If the fellow’s outpatients on arrival are deemed to need hospitalization then this should be coordinated among the hepatology fellow, the nursing staff in clinic, the admitting firm, and the attending hepatologist.

**Teaching:** The fellow is responsible for searching the medical literature and providing relevant references to the service, both for educational purposes and to facilitate care of patients with unusual problems.

**IV. Patient Characteristics**

Our hepatology clinics service a diverse population referred for a variety of basic and complex liver diseases.

**V. Types of Clinical Encounters**

These have been described above. In the outpatient setting, transplant hepatology fellow evaluate new and follow-up patients and then obtain immediate consultation with the staff hepatologist who also sees the patient and formulates a diagnostic and management plan in conjunction with the transplant hepatology fellow.
VI. Procedures

The residents may perform percutaneous liver biopsies during this rotation. There is feedback on the performance techniques and interpretation of histological findings on a patient-by-patient basis. During the first 6 months of the rotation the fellow will be closely observed and provided feedback on techniques, such as obtaining informed consent; administering adequate local anesthetic and monitoring for response to the anesthetic; monitoring for signs of discomfort and complications after the procedure. During the last 6 months all these aspects will be monitored, but it is expected that the fellow will be proficient and autonomous. By the end of the academic year it is expected that the transplant hepatology fellow will be able to develop a therapeutic plan based on the histological findings.

VII. Evaluation:

Assessment of fellow by attending, which will be reviewed, with fellow on a 6 monthly basis.

Evaluation: Staff verification of performed procedures in E-value.

a. Satisfactorily perform and interpret liver biopsies. Histology will be reviewed with the pathologist in pathology conference. Clinicopathological correlations will be made and management decisions will be based on results.

b. Demonstrate an understanding of allocation of resources that does not compromise quality of care as well as the role of each member of the health care team through active participation in health team rounds.

c. Demonstrate ability to lead a team in the effective delivery of health care.

   Evaluation: E-value global rating form by attending staff based on direct observation of the fellow’s performance. One 360 degree evaluation must be completed.

d. Demonstrate competence in the prescription and administration of appropriate transplant biologic agents through all therapeutic routes.

   Evaluation: E-value global rating form by the attending staff and Review of the log by the fellowship director.
Transplant Hepatology Competency Assessment

At orientation for new fellows the core competencies are discussed in detail. Faculty complete evaluations for each fellow at the end of each rotation. The program director meets with the fellows as a group every quarter and in addition reviews their performance individually twice during the year. The program director provides fellows with a composite of performance based on reviews submitted by each clinical faculty member. If specific problems arise, the program director is available for discussion with the fellow and if necessary the fellow is put on “probation” where concerns are delineated and expectations for improved performance is clearly defined. The program director then meets with the fellow 2 weeks later to review issues and assess improvement in performance.

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At the end of each rotation trainees will demonstrate:

1. A thorough knowledge of history-taking, including family, genetic, psychosocial, and environmental histories, and the ability to perform a comprehensive and accurate physical examination.
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3. A series of lectures/discussions are held throughout the period of training to cover a core curriculum of physiology, pathophysiology, and clinical pharmacology.

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Methods of Evaluating Trainee Competence
1. Direct observation during inpatient rounds, ambulatory care clinics, and endoscopic teaching.
2. Formal evaluation forms from each faculty member who comes into contact with the trainee.

Corrective Action Plan:
If the program director is notified or observes a deficiency in any of the above competencies, the fellow will meet with the program director and the division chief to discuss problematic issues. Feedback will be ascertained from faculty regarding improvement in performance. The program director will meet again with the fellow 2 weeks after the initial meeting and provide feedback regarding improvement in performance. Depending on the magnitude and persistence of the problem other disciplinary measures will be pursued.
**Research/Scholarly Activity**

**Location:** Division of Gastroenterology, Hepatology and Nutrition. VFW Building.  
**Duration:** Concurrent with other rotations  
**Staff:** Staff hepatologist

**Objectives:** This occurs concurrently with other rotations. It provides the basic principles of research design and methodology, including the ethical conduct of clinical research; interpretation of results and extrapolation of those results to patient care.

- Fellows will be advised and supervised by qualified faculty members in the meaningful conduct of research.
- Fellows will demonstrate understanding and ability to apply the standards of ethical conduct of research, design and interpretation of research studies, responsible use of informed consent, research methodology, and interpretation of data.
- Fellows will demonstrate the ability to determine research questions, variables, development of hypotheses, selection and testing of subjects, analysis of results, determination of statistical and clinical significance, and the scientific communication of results.
- Fellows will demonstrate comprehension and use of the IRB process, statistical methods and report modalities.
- Fellows will participate in the preparation of at least one research project or participate with faculty in the initiation and conduct of clinical trials within the division, or participate in Quality Assurance, Quality Improvement or Process Improvement Projects.

**Evaluation:**

Scholarly activity performance of the fellow is assessed through:
1. Quarterly/semiannual documented review meetings with the Program Director.  
2. Frequent communication with the research mentor.  
3. Productivity of presentations, research projects, posters and publications.

**Research Oversight**

**Career Development Committee:** Each fellow must identify a primary mentor from the senior faculty (the mentor may be from the Division of Gastroenterology, Hepatology and Nutrition or Liver Transplant Program at the University of Minnesota or any department on Campus); as well as 2 additional faculty members to serve as secondary mentors on his/her Career Development Committee. If the primary mentor is not in the Division of Gastroenterology, Hepatology and Nutrition, then at least 1 of the additional faculty members must be with the Division of Gastroenterology, Hepatology and Nutrition. Throughout the year of training, the fellow is responsible for arranging Committee meetings on a quarterly basis to review progress and obtain feedback on research activities and career plans. These research activities are assessed and reviewed with the Program Director at quarterly review sessions.
Conferences

a. Liver biopsy conference on 2 days of the month: 4th Wednesday it will be held at 12 noon in the Benson Conference room in Pathology, Mayo Building Room C456; the other liver biopsy conference will be 2nd Thursday of the month at 7AM in the GI conference room, VFW building room V372. The case list will be presented to the pathologist by the senior hepatology fellow on the Friday of the previous week and will consist of most of the liver biopsies performed during the month or that were sent in for consultation for patients seen in clinic. Other cases will be chosen from Dr. Jessurun’s teaching files. The purposes of this conference are to teach the basics of liver pathology interpretation and to review in a meaningful manner the clinicopathological relationships among cases.

b. On the 4th Thursday of the month: A combination of Journal Club and hepatology related case discussion will be held. It is expected that the senior hepatology fellow and the GI fellow rotating on hepatology will prepare the article and the cases. A pathologist and/or radiologist will be present, depending on the case. The title of the article to be discussed, it is suggested that the title be given to Ms Bao Moua on the Friday of the previous week so that is will be distributed by email to the attendees of the conference. If the input of a particular hepatologist is needed, then this person should be contacted so that their attendance is assured.

c. Multidisciplinary hepatobiliary/pancreas Oncology conference on Monday at 5pm is mandatory. Relevant cases (Hepatic masses; hepatocellular carcinoma; cholangiocarcinoma) should be submitted to Tina Russell [russe041@umn.edu] the Wednesday of the week before the conference, by the GI fellow rotating on hepatology. If the fellow is unable to attend, due to conflict with clinic, for example, then the list of cases should include a brief history, consisting of a few sentences.

d. Monthly research conferences will be held. Faculty and fellow (s) will present their research protocols which are in development stage and also results of those in progress and which have been completed.

Liver Biopsy Procedure

Evaluation of Coagulation: INR, Platelet
Informed Consent
Special Conditions
Chronic Renal Failure
Oral Anticoagulants
Hemophilia
Amyloidosis
Sickle Cell Hepatopathy

Types of Needles:
Suction needles (Menghini, Klatskin, Jamshidi needles)
Cutting needles (Vin-Silverman, Trucut needles)
Spring-loaded cutting needles with a triggering action (Microvasive)
Patients should be asked if they need to use the restroom prior to beginning the procedure since they will be required to remain at bed rest for at least three hours afterward. With the patient in the supine position and right hand under the head, the point of maximum liver dullness (in both inspiratory and expiratory phases) is percussed over the right hemithorax at the mid-axillary line. The point of maximum liver dullness is usually between the sixth and ninth (usually eighth) intercostal spaces, the site is marked, and then a bedside ultrasound is done to confirm the appropriateness of the biopsy site. If the point of maximum liver dullness is uncertain, ultrasound guidance is mandatory. Some operators use a 22 gauge spinal needle to help determine the depth that the needle needs to penetrate through the diaphragm before reaching the hepatic capsule.

If a suction technique needle is used, it is first attached to a 10 or 20 mL syringe containing 5 to 10 mL of sterile saline. Lidocaine (up to 10 cc of a 1 percent solution) is injected over the upper border of the rib to avoid intercostal vessels that traverse along the lower border of each rib. A small scalpel incision is made. A trocar can be used to dilate the tract. The biopsy needle is then inserted through the small incision, past the subcutaneous tissue and the parietal peritoneum. A small amount of saline is flushed into the peritoneal cavity to eliminate any fat tissue that may have entered the needle during the passage into the peritoneal cavity. Then while applying suction and with the patient holding his/her breath transiently in expiration phase, the biopsy is done minimizing the time during which the needle is within the liver. A similar approach without saline flushing applies to cutting needles, including either the manual Trucut needle or the spring-loaded and automatic needles.

Role of ultrasound guidance — Ultrasonography prior to a liver biopsy identifies silent mass lesions and defines the anatomy of the liver and the relative positions of the gallbladder, lung, and kidney. Many practitioners routinely recommend an ultrasound of the liver prior to performing a percutaneous biopsy. Others perform an ultrasound only in selected patients such as those who have a history of prior upper abdominal surgery, those in whom the point of maximal hepatic dullness cannot be elicited, and those who are suspected of having advanced cirrhosis with possible atrophy of the right lobe of the liver based upon clinical or laboratory grounds.

The size of the tissue should be 2 cm or more. No more than 2 passes with the biopsy needle should be made by one operator. If inadequate tissue is obtained after the second pass then the patient should be sent to radiology for a biopsy or the staff hepatologist should attempt one pass.

**Objectives:**
- The fellow is required to obtain informed consent
- Communicate effectively the method of the procedure to the patient
- The fellow is required to ensure that the procedure can safely be performed, for example by ensuring the coagulation status is adequate.
- The procedure should be performed with the supervision of the staff hepatologist.
- The fellow is required to administer post-liver biopsy care with the assistance of the nursing staff
- The fellow is required to assess the patient after the biopsy for signs of adverse outcome and manage patients appropriately
- The fellow is required to review the histology with the pathologist, inform the patient of these results and develop a treatment plan based on the clinico pathological correlations.
- During the first 6 months the fellow will be expected to be a participant in the performance of the liver biopsies. During the last 6 months the fellow is expected to be proficient with the performance of liver biopsies and to be autonomous in the performance of these biopsies.
A fellow will be deemed proficient when the above objectives are met and the liver biopsy can be consistently performed in the manner described above.

**Graded Responsibility:** The fellowship training is longitudinal in nature in that fellows participate in clinical experiences over the course of the year rather than discrete rotations. Because of this structure, we use the following matrix as a guide to fellow progression in the acquisition of skills and knowledge. In each of the areas of practice identified above, the fellow is expected to perform at the level of a beginner for the first three to four months of training. After that period of time, faculty expects that the fellow will demonstrate a level of performance at the level of developing for the next three to four months. For the remainder of the training period, the faculty attending expect the fellow to demonstrate appropriate autonomy and seek confirmation and validation whenever necessary.

<table>
<thead>
<tr>
<th>Clinical Activity</th>
<th>Level of Responsibility / Autonomy by Proficiency Level</th>
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</table>
| Clinical data collection                              | **Beginning** Independent, with staff supplementation  
**Developing** Independent, with staff confirmation  
**Proficient** Independent, with staff confirmation of selected issues |
| Formulation of clinical assessments/plans             | **Beginning** Jointly with staff  
**Developing** Independent, with staff confirmation; independent utilization of evidence based medicine resources and sharing of information with care team  
**Proficient** Independent, with staff confirmation of selected issues; demonstrated mastery of large set of subspecialty based skills and is preparing to practice independently; consistently incorporates evidence based medicine and system based practices into improving self practice of medicine |
| Consultant: Communication of recommendations to primary care team/referring physician | **Beginning** Jointly with staff  
**Developing** Independent, with staff confirmation; independent utilization of evidence based medicine resources and sharing of information with primary team  
**Proficient** Independent, with staff confirmation of selected issues; consistently incorporates evidence based medicine and system based practices into improving effectiveness of consultation |
| Supervisor of care team                               | **Beginning** Jointly with staff; begins efforts at teaching other team subspecialty to subspecialty  
**Developing** Independent, with staff confirmation of patient care issues; increasing responsibility for teaching of team members  
**Proficient** Independent, with staff confirmation of selected patient care issues; shared responsibility with staff for teaching of team members |
**Core Curriculum:**

Since we have one fellow the following topics will be reviewed in lecture format during GI grand rounds, medical grand rounds, GI/ hepatology case conferences, patient selection conferences, weekly transplant conference, and during clinics and hospital service in reference to relevant patient care. Subjects such as, transplant immunology for which conferences are not provided will be addressed in the AST/ATC transplant fellow’s course offered nationally for fellows and the Post graduate course by the American Association for the Study of Liver Diseases (AALSD).

<table>
<thead>
<tr>
<th>Core Curriculum</th>
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<tbody>
<tr>
<td>Prevention, evaluation and management of acute and chronic end stage liver disease</td>
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<tr>
<td>(includes genetic disorders involving the liver, alcoholic and non-alcoholic steatohepatitis)</td>
</tr>
<tr>
<td>Comprehensive management of critically ill patients awaiting transplant with complications including:</td>
</tr>
<tr>
<td>Refractory ascites</td>
</tr>
<tr>
<td>Hepatic hydrothorax</td>
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<tr>
<td>Hepato-renal syndrome</td>
</tr>
<tr>
<td>Hepatopulmonary and portal pulmonary syndromes</td>
</tr>
<tr>
<td>Refractory portal hypertensive bleeding</td>
</tr>
<tr>
<td>Diagnosis and management of hepatocellular carcinoma and cholangiocarcinoma including transplantation, non-transplantation, surgical and non-surgical approaches</td>
</tr>
<tr>
<td>Management of chronic viral hepatitis in the pre-, peri- and post-transplantation settings</td>
</tr>
<tr>
<td>Management of fulminant liver failure</td>
</tr>
<tr>
<td>Psychosocial evaluation of transplant candidates, in particular those with history of substance abuse</td>
</tr>
<tr>
<td>Transplant immunology including blood group matching, histocompatibility, tissue typing and malignant complications of immunosuppression</td>
</tr>
<tr>
<td>Drug hepatotoxicity</td>
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<tr>
<td>Interaction of drugs with the liver</td>
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<tr>
<td>Nutritional support of patients with liver disease</td>
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<tr>
<td>Use of interventional radiology in diagnosis and management of portal hypertension, as well as biliary and vascular complications</td>
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<tr>
<td>Ethical considerations relating to liver transplant donors</td>
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<tr>
<td>Performance of at least 30 percutaneous liver biopsies</td>
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<tr>
<td>Indications, contraindications and complications of liver allograft biopsies</td>
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<tr>
<td>Interpretation of at least 200 native and allograft liver biopsies</td>
</tr>
<tr>
<td>Appropriate use of ultrasound localized, laparoscopy-guided and transjugular liver biopsies</td>
</tr>
</tbody>
</table>
University of Minnesota Mandatory GME Core Curriculum
Dates to be established:

Critical Review of Literature
Ethics
Taking Care of Yourself
Prevention

Statistics
Medical / Legal Issues
Physical as Communicator and Physician as Teacher-Dr.

Research design
Health Care Delivery Systems / SYMPAL Project
Cost Containment /QA/QI/

Suggested Reading List

Hepatitis B

Hepatitis C
- Chevaliez S, Pawlotsky JM. Practical use of hepatitis C virus kinetics monitoring in the treatment of chronic hepatitis C. J. Viral Hepat 2007; 14 Suppl 1: 77-81
Non Alcoholic Fatty Liver Disease

- Parekh S and Anania FA. Abnormal lipid and glucose metabolism in obesity: implications for nonalcoholic fatty liver disease. Gastroenterology 2007; 132: 2191-2207

Hepatology Malignancies

Hepatocellular carcinoma

- Lok AS, Seef LB, Morgan TR,, et al. Incidence rates and risk factors associated with hepatocellular carcinoma (HCC) in patients with advanced liver disease due to hepatitis C: Results of the HALT-C trial. J. Hepatol 2008; 48 Suppl 2; S45

Cholangiocarcinoma


Drug Induced Liver Injury

Acute liver failure

Training / Program Requirements
The ACGME mandates the following:

1. The program must provide a minimum of two institutionally-based faculty members, including the program director, with at least one key clinical faculty member with demonstrated expertise and primary focus in transplant/hepatology. The Program Director must be certified in the specialty of Transplant/Hepatology.

2. The training program must be a member in good standing of the United Network for Organ Sharing (UNOS) and must be affiliated with a gastroenterology training program accredited by the ACGME.

2. Modern facilities to accomplish the overall educational program must be available and functioning at the primary training site. Specifically, there must be an interventional radiology facility capable of performing balloon angioplasty and Transplant Intrahepatic Portal Systemic Shunt. Additional supporting services must include pathology, diagnostic radiology, medical imaging and nuclear imaging, general surgery, and oncology.

3. Facilities for the intensive care of critically ill patients with hepatology/transplant disorders must be provided, including a working relationship with surgery, oncology, pediatrics, radiology, and pathology services.

4. The fellows and faculty in the program must share patient co-management responsibilities with transplant surgeons from the preoperative phase to the outpatient period.

5. The program must incorporate a multidisciplinary team to approach issues in donor selection and evaluation, and in recipient criteria.

6. For programs with one fellow, the transplant program must perform at least 25 liver transplants per year.
**Graduation of Fellows**
All residents/fellows enter into annual contracts with the University of Minnesota, regardless of the expected duration of their training program. Fellows will be graduated from the program after satisfying all requirements of the program, with the following exceptions:

1. They are dismissed or their contracts terminated based on academic performance that is below satisfactory
2. They are dismissed or their contracts are not renewed based on nonacademic behavioral violations
3. They are ineligible for a continued appointment based on failure to satisfy licensure, visa, immunization, registration, or other eligibility requirements for training
4. The fellowship program is reduced in size or closed

It is unlikely that existing fellows will be displaced by program closure; however, if this occurs, the Medical School will make every effort to assist the fellow in locating another training program from which to continue their education.

Fellows are allowed to implement the medical school and/or university's grievance procedures if they have received a written notice of intent not to renew their agreement.

**TRAINEE LEARNING OUTCOMES**
Upon completion of the 1 year Transplant/Hepatology Training Program, it is expected that the trainee will:

1. Be competent to Dr. LAKE TO COMPLETE
2. Be competent to DR. LAKE TO COMPLETE

Effectively educate and communicate with medical colleagues and patients

Practice in a professional manner; demonstrate respect for patients and patient privacy, as well as for professional peers

Have completed a scholarly project and developed skills, which enable the trainee to review and evaluate the medical literature

Have developed skills and desire to continue life-long medical education, evidence-based medicine and reflective practice, to maintain excellence in cognitive and procedural medical practice

Understand the contexts and systems in which health care is provided, and use this knowledge to optimize health care

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**Duty Hours/Days Off**
When averaged over any four-week rotation or assignment, fellows must not spend more than 80 hours per week in patient care duties. Duty hours generally are 8:00 a.m. to 4:30 or 5:00 p.m. weekdays. If duty time exceeds 80 hours in any one-week period, the fellow is expected to leave the hospital. Note: transplant/hepatology fellows do not participate in evening/weekend call.

In compliance with ACGME guidelines, fellows must take one day off per week, on average, on all rotations. This policy applies to all fellows. This means that fellows will not have any responsibility to be available on that day. Off duty days are almost always weekend days. This day off should not occur on a scheduled continuity clinic day. It is the responsibility of the individual fellow, in cooperation with his/her attending staff, to determine the most appropriate day off.

**Monitoring of Resident Well-being/Adequate Rest** (See Part B Manual)
The GI division chief and training program director are available to discuss transplant/hepatology fellow well-being issues and to direct assistance.

**Chart Documentation and Order Writing**
The transplant/hepatology consult team typically consists of medical/surgical attending staff, fellow, one or two residents, and at times, medical students. At UMMC, attending staff includes a Nurse Practitioner. The resident, fellow, or student is responsible for writing a focused GI consult note. The consult note should address relevant history and a physical exam. A concise differential diagnosis should be generated and diagnostic/therapeutic recommendations should be made. References should be provided, as appropriate. Consult follow-up is necessary until issues are resolved. The consult team should take consults between 8:00 am and 4:30 pm. Consults received before or after these times should be held over until the next day or referred to the on-call staff, as indicated by level of urgency.

Fellows supervise resident and student consultations insofar as the consult load permits, supervise follow-up, and coordinate rounds. A consult log should be maintained. If there is no resident on the consult service or the resident is unable to perform a consult, the fellow is expected to write the consult note. Consults take precedence over procedures, but fellows should attempt to participate in procedures on consult patients.

In compliance with ACGME requirements, fellows may be asked to write orders on certain patients. Orders written on general medicine ward patients must be countersigned by the inpatient housestaff. All orders should be dated and timed to provide better patient care and to protect the fellow.

**Evaluation Policy/E*Value** (See Part B Manual)
GI and Transplant/Hepatology Fellows are required to use E*value to evaluate each three-month rotation, the rotation experience, and faculty. E*value may be accessed via [http://www.e-value.net](http://www.e-value.net), using a password (your first initial followed by the first five letters of your last name) and a code provided to you.

**On-Call Schedules**
The transplant/hepatology fellow will not participate in evening/weekend call.

**Conference Attendance Policy**
Transplant/hepatology fellows are expected to attend at least 70% of scheduled transplant / pathology and city-wide conferences. Attendance is taken.
Moonlighting Policy
In addition to the Moonlighting Policy set forth in the Institution Policy of this manual, fellows must adhere to the following guidelines specific to the internal medicine residency program.

Moonlighting may NOT conflict with duties assigned in the training program. This includes (but is not limited to) leaving the hospital early in order to go to a moonlighting location, or using vacation or sick days or other days off in order to moonlight.

Hours spent moonlighting must not exceed mandated guidelines of the ACGME for consecutive hours on call or otherwise engaged in patient care during residency/fellowship. Similarly, hours spent moonlighting and hours with fellowship duties must not cumulatively exceed these guidelines. The ACGME weekly limit on duty hours, including moonlighting, is 80 hours.

Fellows holding J1 visas under sponsorship of the ECFMG may NOT moonlight.

The training program director must be informed in writing of moonlighting activities, or changes in such activities, on a yearly basis. Negative reports are required. Moonlighting request forms can be obtained through the program director or site administrators.

Procedure Documentation Policy
The American Board of Internal Medicine requires that each fellow complete certain procedures during their training. The fellow should maintain a procedure log, either a copy of each procedure or access and enumeration from computer report archives.

If there is no resident on the consult service or the resident is unable to perform a consult, the fellow is expected to write consult notes. Consults take precedence over procedures, but fellows should attempt to participate in procedures on consult patients.

With staff supervision, the fellow evaluates the procedure indication and the suitability of the patient for its performance. The indication is documented in writing. The patient evaluation should include relevant history and physical findings, as well as a determination of patient health status, such as ASA score.

The critical elements of procedure performance are directly supervised, assisted, or undertaken by transplant/hepatology staff supervisors. The concept of "graded levels of competency" recognizes that the definition of "critical elements" will differ during the development of an individual fellow's experience and abilities. Each fellow's individual level of competence at a given time is determined by staff supervisors and is communicated to the training director.
POLICY ON RECRUITMENT, APPOINTMENT, ELIGIBILITY, SELECTION AND PROMOTION OF TRANSPLANT/HEPATOLOGY FELLOW

1. Candidates must have completed their categorical residency in internal medicine or med-pediatrics, in an accredited U.S. residency program, and they must be ABIM board eligible.

2. Candidates must have completed a three-year gastroenterology fellowship in an accredited U.S. program.

3. Candidates must complete and submit the University of Minnesota fellowship application form or the universal fellowship application, which includes three letters of reference and documentation of relevant fellowship, medical school and residency information (including personal statement). Applications must be submitted by March 31st sixteen months prior to the year that the resident wishes to begin their transplant/hepatology training.

4. Residents' application materials will undergo initial review by the University of Minnesota transplant/hepatology Training Program Director, the GI division chief, and the GI Executive Committee. This review will take into consideration the applicant's undergraduate and medical school qualifications, work experience, publications, letters of reference, and written personal statement.

5. Based upon initial review, fellow will be invited for interviews with University of Minnesota transplant/hepatology faculty members. Interviews will be held between November and May.

6. Transplant/Hepatology fellows are selected by a vote of faculty members after interviews have occurred. Factors that enter into the decision include the applicant's educational qualifications, honors and accomplishments, scholarly activities and potential, personal qualities as communicated in letters of reference and through the interview process, and the degree of fit between the applicant's personal goals and the ability of the University of Minnesota training program to meet the applicant's needs.

POLICY ON EVALUATIONS AND FEEDBACK

Clinical Rotations
It is important for fellows to meet with faculty at the start of each clinical activity to discuss goals. Faculty members are responsible for providing verbal feedback to fellows at the midpoint of each clinical activity. On a quarterly basis, faculty evaluate fellows' clinical and procedural skills, as well as the ACGME six competencies, using E*value. Fellows also must formally evaluate attending physicians, other residents and students, and the activities of the UMMC training site.

Research Rotations
The fellow's research mentor is expected to provide frequent evaluation and advice during the research period, as well as preparing a written summary of progress for the training director quarterly.

Training Program Director Feedback
The training program director will meet with each fellow every six months in order to review and assess progress. Procedure performance is reviewed on a yearly basis.
SECTION V. GENERAL AND ADMINISTRATIVE INFORMATION

Please refer to Institution Policy Manual for Medical School Policy on the following: University of Minnesota Physicians; GME Administration Contact List; GME Administration by Job Duty.

Work Environment & Site Specific General Information – parking, office locations, labcoats, nametags, pagers etc.

University of Minnesota Medical Center – Fairview (UMMC-F)

Parking: Parking for fellows is available. See Administrative Director for parking card.

All fellows who will be participating in evening call at UMMC-F should obtain an off-hours parking card. Call the Parking Office at 612-273-6674 to check if they have your information in their system before going to the office located in Mayo B340. Another place to obtain off-hours parking is the Riverside Parking Office, 612-273-7278, again call first to check before going to the office. If the parking office does not have you in their system, contact the GI Admin and a letter will be faxed over to the Parking Office to verify that you are in good standing in the Tx/Hep Fellowship program. Then you can complete a parking application and submit a $25.00 deposit (which will be refunded upon return of the card). Parking will be available in the Patient/Visitor ramp on Delaware.

Parking questions should be directed to Bao Moua at 612-626-0419.

GI Office Locale: VFW Cancer Research Center, V366

Where fellows report on 1st day:
Report to the U of MN GI Office, room V366. Then report to the Transplant Clinic, located on the 2nd floor of the Phillips-Wangesteen Building (PWB). The phone number at the front desk is 612-626-7002.

Lab coats, nametags, pagers:
Office staff will provide a lab coat, pager, and nametag.

Location of Clinics:

University of Minnesota Medical Center-Fairview
Transplant Clinic 2A
516 Delaware St. SE
MMC 88
Minneapolis, MN 55455

Fellow office location, phone number, computer, and mail:
Fellow’s office is located in VFW, room V371 with a computer available and phone line, 612-625-7680. Fellows will have a mailbox by all of the faculty/staff mailboxes. Please check your box.

Important Phone Numbers:
FUMC Clinic 612-626-7002
Staff Physicians available by pager
Procedure Room 612 624 6448
Administrative Office

University of Minnesota Medical Center
Chief, GI/Hepatology/Nutrition Division: Martin Freeman, M.D.
Key Faculty:
  John (Jack) Lake, M.D.
  Charmaine Stewart, M.D.
  Mohamed Hassan, M.D.
  Clifford Steer, M.D. (Research)
  Alex Khoruts, M.D.
Program Coordinator
  Bao Moua

Key Faculty – Liver Transplantation
  Timothy Pruett, M.D.
  William Payne, M.D.
Department of Medicine
Fellowship Program Directory

Linda Burns, M.D.  Zhac Rahkonen  Ben Bornsztein, PhD
Senior Fellowship Director  Lead Fellowship Coordinator  Edu/Accreditation Consultant
612-624-8144  612-626-0400  612-626-2787
burns019@umn.edu  rahko023@umn.edu  borns001@umn.edu

Cardiology  290 VCRC  MMC 508  Fax: 6-4411
Daniel J. Garry, M.D., Division Director  612-626-2178  garry@umn.edu

Program:
Cardiovascular Disease Fellowship [#1412621139]
Marc Pritzker, M.D., Program Dir.  612-626-4416  pritz001@umn.edu
Meghan Murray, Program Coordinator  612-626-2451  cvfellow@umn.edu

Clinical Cardiac Electrophysiology Fellowship [#1542621037]
Scott Sakaguchi, M.D., Program Dir.  612-625-4401  sakag001@umn.edu
Meghan Murray, Program Coordinator  612-626-2451  cvfellow@umn.edu

Interventional Cardiology Fellowship [#1522621038]
Robert Wilson, M.D., Program Dir.  612-625-9159  wilso008@umn.edu
Ganesh Raveendran, M.D., Assoc. P.D.  612-626-4283  ravee001@umn.edu
Meghan Murray, Program Coordinator  612-626-2451  cvfellow@umn.edu

Endocrinology and Diabetes  6-124 PWB  MMC 101  Fax: 6-3133
John Bantle, M.D., Interim Division Dir.  612-626-0462  bantl001@umn.edu

Program:
Endocrinology and Diabetes Fellowship [#1432621096]
Bruce Redmon, M.D., Prog. Dir.  612-625-2154  redmo001@umn.edu
Jo Belvedere, Program Coordinator  612-626-9943  belve003@umn.edu
Tanya Doble, Administrative Contact  612-624-5150  tdoble@umn.edu

Gastroenterology  V366 VFW  MMC 36  Fax: 5-5620
Martin Freeman, M.D., Interim Div. Dir.  612-625-5493  freem020@umn.edu

Program:
Gastroenterology Fellowship [#1442621117]
John Lake, M.D., Prog. Dir.  612-625-0684  lakex009@umn.edu
Aasma Shaukat, M.D., Assistant PD  612-818-7385  aasma.shaukat@va.gov
Bao Moua, Program Coordinator  612-625-8999  mouax029@umn.edu
Sheryl Broad, Admin. Contact  612-626-2636  broad002@umn.edu

Transplant Hepatology [#1582614017]
Charmaine Stewart, M.D., Prog. Dir.  612-626-2514  stewa560@umn.edu
Bao Moua, Program Coordinator  612-625-8999  mouax029@umn.edu
<table>
<thead>
<tr>
<th>Program</th>
<th>Address</th>
<th>Phone</th>
<th>Fax</th>
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<tbody>
<tr>
<td>Hematology/Oncology/Transplant</td>
<td>14-142 PWB</td>
<td>612-624-5422</td>
<td><a href="mailto:mcgla001@umn.edu">mcgla001@umn.edu</a></td>
</tr>
<tr>
<td>Hematology/Medical Oncology Fellowship</td>
<td>14-154 Moos Tower</td>
<td>612-624-8144</td>
<td><a href="mailto:burns019@umn.edu">burns019@umn.edu</a></td>
</tr>
<tr>
<td>Infectious Disease</td>
<td>D416 Mayo</td>
<td>612-625-7679</td>
<td><a href="mailto:bohja001@umn.edu">bohja001@umn.edu</a></td>
</tr>
<tr>
<td>Nephrology</td>
<td>717 Delaware St. SE, Suite 353, Deliver Code 1932</td>
<td>612-624-9444</td>
<td><a href="mailto:ibrah007@umn.edu">ibrah007@umn.edu</a></td>
</tr>
<tr>
<td>Pulmonary, Allergy &amp; Critical Care</td>
<td>350 VCRC</td>
<td>612-624-0999</td>
<td><a href="mailto:ingba001@umn.edu">ingba001@umn.edu</a></td>
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