

Hepatology Fellowship Curriculum

Center for Digestive Health



**HEPATOLOGY FELLOWSHIP
AT THE CENTER FOR DIGESTIVE HEALTH**

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Introduction

Built on the foundation of Virginia Mason's internationally renowned Digestive Disease Institute, which was established to bring our accomplished group of digestive disease specialists and investigators together in a highly collaborative environment, the Center for Digestive Health at Virginia Mason Franciscan Health has an active, state-of-the-art hepatology service located at Virginia Mason Medical Center that conducts 3,500 patient visits every year for all aspects of liver disease management outside of immediate pre- and post-transplant care. In alignment with the Institute's mission of advancing knowledge of digestive disease through teaching and research, the Hepatology Fellowship provides training on inpatient and outpatient consultations, ongoing hepatology patient follow-up, and pathology, with protected time for clinical research. It is an outstanding opportunity for residents interested in future hepatology-focused internal medicine, hospitalist, or gastroenterology practice.

The aim of the program is to train hepatologists who possess a range of attributes, including a broad knowledge base related to hepatic disease, differential diagnosis based on history and physical examination, an understanding of indications and contraindications of therapeutic procedures and medications, including liver biopsy, proficiency with assessment of pathology, and ability to provide comprehensive care in consultative practice of patients with a broad range of liver diseases in inpatient and outpatient settings. The fellow will also be part of an active clinical trials unit studying therapies for patients with liver disease, participate in research, and gain an appreciation of the humanistic and ethical aspects of medicine. Faculty member expertise includes hepatology, gastroenterology, surgery, interventional radiology, advanced endoscopy, oncology, and pathology.

Number of Positions

Virginia Mason currently trains one fellow in hepatology yearly with time divided equally between inpatient and outpatient settings, with protected research and educational time. The fellowship is one year in length.

Prerequisites for Training

Hepatology fellows must have completed an ACGME-approved internal medicine residency program and be eligible for full Washington State medical licensure such that they can obtain privileges to perform routine gastroenterology/hepatology procedures at Virginia Mason.

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Eligibility

Candidates' residency program director must provide a written attestation that the candidate is competent and qualified to practice basic internal medicine at an independent level. **Applicants with H-1B or J1 visa status cannot be considered.**

Duration of Training

The planned duration of training is one year. A two-year position may be considered depending on the prior experience and career goals of the fellow, availability of training faculty, and patient volume.

Faculty

There are two full-time hepatologists and one nurse practitioner. Under the leadership of Asma Siddique, MD, Hepatology Fellowship Program Director, the fellow will train with multidisciplinary providers in the Center for Digestive Health who treat hepatology patients, including hepatologists, gastroenterologists, surgeons, interventional radiologists, advanced endoscopists, oncologists and pathologists. The Hepatology Fellowship Program Director will guide training, provide feedback, evaluate performance, and coordinate schedules for the fellow. (See **Appendix 2** for Faculty Biographies.)

Training Institution

Hands-on training will be limited to Virginia Mason Franciscan Health with the possibility of rotation to suburban satellite clinics. The fellow will also be able to spend time at the University of Washington and/or Swedish Medical Center liver transplant centers in the inpatient and outpatient service to learn basic principles of liver transplantation.

Salary

The Hepatology Fellow will receive a competitive salary and benefits at the regionally determined PGY level appropriate to his/her level of training.

Experience

Hepatology fellows will spend the majority of their time learning how to manage hepatology patients before,

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during, and after diagnosis of liver disease in the outpatient setting. In addition to seeing patients with an attending hepatologist, fellows have one to two half days of independent continuity clinic where they see new consults, schedule their own follow-ups, and manage further testing for longitudinal outpatient care. Fellows will independently perform FibroScans (transient elastography) in both the attending MD’s and their own clinics and will observe faculty in interventional radiology performing liver biopsies. Additionally, fellows have one half day of protected research time and daily rounding on hepatology inpatients.

Sample Schedule

	Monday	Tuesday	Wednesday	Thursday	Friday
7:30 – 8:30 am			GI section meeting or M&M	Liver tumor boards or GI journal club	Grand Rounds
8:30 – 10:00	Inpatient rounds	Inpatient rounds	Inpatient rounds	Inpatient rounds	Inpatient rounds
10:00 – 12:00	Clinic	Clinic	Research	Clinic	Clinic
Noon			Didactics		
1:00 – 4:30 pm	Clinic	Continuity Clinic	Pathology Conf Research Meeting	Continuity Clinic	Research
3:00 – 4:40	Inpatient rounds		Inpatient rounds		Inpatient rounds
		Liver tumor board			

Didactics and Conferences

The fellow is required to attend and actively participate in the following regular conferences at Virginia Mason Franciscan Health: 1) Weekly didactic meetings with hepatology faculty (alternating case based discussion and core curriculum lecture), 2) GI Radiology Conference, 3) Hepatology Pathology Conference, 4) GI Morbidity and Mortality Conference, 5) Liver Tumor Board/Cancer Conference, and 6) Bariatric Care Conference, and (7) GI Journal Club. Additionally, the fellow is welcome to attend the GI Pathology Conference, the GI and Thoracic Tumor Boards/Cancer Conferences, and Grand Rounds, particularly when topics are related to gastroenterology and hepatology. Joint conferences with Swedish Liver Center, such as monthly hepatology lecture series and a liver transplant selection conference, are also available to trainees.

Core Curriculum Didactic Topics

- 1) Liver Anatomy (surgeon)

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- 2) Liver Pathology (GI pathologist)
- 3) Diagnostic Tools in Hepatology
- 4) Liver Biopsy: Indications, Contraindications, Techniques, and Complications
- 5) Liver Transplant: Principles of Evaluation and Selection
- 6) Liver Transplant: Basics of Post-Operative Care & Immune Suppression, Longer-Term Management
- 7) Management of Acute Liver Failure
- 8) Drug-induced Liver Injury
- 9) Symptom Management and End-Of-Life Care in ESLD (Mark Beiter, DO)
- 10) Basic Principles of Outpatient Cirrhosis Management
- 11) Management of Portal Hypertension
- 12) Renal Disease in Cirrhosis
- 13) Portal Hypertensive GI Bleeding
- 14) Portal Vein Thrombosis: Acute and Chronic
- 15) Principles of Hepatocellular Carcinoma (HCC) Management: Screening and Therapy
- 16) Management of Hepatitis C
- 17) Management of Hepatitis B
- 18) Autoimmune Liver Diseases: AIH, PSC, PBC
- 19) Alcoholic Hepatitis and Liver Disease
- 20) NAFLD and NASH
- 21) Nutrition and Cirrhosis
- 22) Inherited Liver Diseases: Hemochromatosis and Wilsons
- 23) Principles of Donor Selection and Rejection
- 24) Transplant Immunology
- 25) Logistical and Organizational Aspects of Liver Transplant including Organ Allocation

Call Schedule

Call responsibility will be no more than one weekend per month and one weeknight per week.

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Program Goal

The goal of the Hepatology Fellowship is to teach requisite cognitive and technical aspects of hepatology, including: understanding relevant disease processes, their presentation and management; analysis and interpretation of serologic and radiographic data; understanding the indications and contraindications for treatment; recognition and management of diseases and their complications; appropriate documentation and reporting; and appropriate communication with the patient and the multidisciplinary team. There will be a focus on hepatology research, with goals for both presentation and publication.

Overview of Educational Objectives

The fellow will be mentored and directly supervised by hepatology faculty toward achievement of patient care goals, increasing medical knowledge, conducting research and teaching, and meeting interpersonal and communication objectives. Progress toward these objectives will be monitored throughout the program.

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Patient Care Objectives

Digestive Disease Institute patients include the entire spectrum of adult patients with medical, surgical, and psychiatric illnesses managed in an outpatient and inpatient setting. Patients originate from tertiary care referrals, the emergency room, and from community-based physicians. The fellow will encounter patients from each of these groups and in all stages of illness, ensuring experience with a comprehensive range of conditions managed by practicing hepatologists. In this context, the fellow will apply clinical, epidemiologic and internal medicine knowledge to the care of hepatology patients, demonstrate analytical thinking in his/her approach to clinical situations, consistently teach and support team members, and provide compassionate, appropriate, and effective care of patients with liver disease. Objectives include:

1. Develop and implement treatment plans by analyzing and interpreting relevant data and imaging, and by utilizing appropriate resources to help manage liver patients. Discuss new cases and clinical problems with an attending physician and/or consultant within an appropriate time interval. Formalize a management strategy.
2. Provide sophisticated, concise, lucid and well-referenced written consultations of acutely and chronically ill adult patients with liver conditions, including history and physical exam and interpretation of lab and radiologic data.
3. Demonstrate effective oral communication with the patient and his/her family, and oral and written communication with other health care providers.
4. Advocate for quality patient care, assist patients in dealing with health care complexity, and prioritize patient preferences when selecting care options.
5. Use systematic approaches to reduce errors, practice effective health care allocation that does not compromise quality of care, and be knowledgeable about varying types of medical practices and health care delivery systems.
6. Demonstrate humanistic treatment of patients in the context of cultural, socioeconomic, ethical, environmental, and behavioral factors affecting their care.
7. Participate in the evaluation and management of inpatients who require further care, including management of disease complications and potential referral for transplant.

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Medical Knowledge Objectives

Recognize symptoms/signs, complete a differential diagnosis, propose and implement a plan of care demonstrating a variety of treatment options, and manage patient care, including appropriate utilization and interpretation of imaging and laboratory tests, for patients with a variety of acute and chronic liver diagnoses, including:

1. Acute Hepatitis: viral, drug, toxic
2. Acute Liver Failure
3. Chronic Viral Hepatitis
4. Non-Alcoholic Fatty Liver Disease including NASH
5. Alcoholic Liver Disease including Alcoholic Hepatitis and Cirrhosis
6. Autoimmune Liver Disease including PBC and PSC
7. Cirrhosis
8. Portal Hypertension and Its Complications
9. Hepatocellular Carcinoma (HCC)
10. Liver Masses, including adenomas
11. Pre-Transplant Selection and Evaluation

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Research Objectives

The fellow will demonstrate ongoing commitment to self-directed learning; choose an independent research project relevant to hepatology by the end of the first quarter of fellowship training; complete/submit at least one abstract by the abstract submission deadline for the annual DDW, AASLD, and/or EASL meetings; and author/submit at least one manuscript for publication by the end of fellowship. The fellow will have one-half day a week dedicated to research. If deemed necessary, the Program Director, Section Head and/or Digestive Disease Institute Executive Director will allow extra time for research in order to help expedite the fellow's research project and publication. Research objectives include:

1. Review evidence-based literature to answer specific clinical questions arising from patient care.
2. Review and present current literature, including medical trial data.
3. Organize clinical data of complicated liver patients, compare personal practice patterns to larger populations, and analyze personal practice patterns systematically for possible means of improvement.
4. Develop research skills, including generating study designs, including hypotheses and methods suitable for IRB and grant applications, basic and advanced data acquisition, statistical analysis, and manuscript preparation suitable for presentation and publication. Statistical analysis skill building is encouraged through the use of free, online learning such as the Open Learning Ohio State Channel:

Applied Regression Analysis

<https://www.youtube.com/playlist?list=PLE3uzGh7FZRnYmLLYiPxFF8xIDvBXKYVR>

Applied Logistic Regression

<https://www.youtube.com/playlist?list=PLE3uzGh7FZRnfbyAtNQIwM0dIGWHnKhI3>

5. Develop and submit a minimum of one manuscript, book chapter, or review article.

In the **first quarter**, the fellow will:

1. Complete CITI GPC/Ethics Training course.
2. Develop study; submit/modify IRB.
3. Attend the Wilske Research Symposium in September.

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In the **second quarter**, the fellow will:

1. Complete data collection and present to Fellowship Director.
2. Attend AASLD in November.
3. Analyze data and develop abstract.
4. Submit abstract to Digestive Disease Week by December.
5. Present research findings at DDI Director's Meeting in December.

In the **third quarter**, the fellow will:

1. Finalize analysis; write, edit, and distribute new manuscripts.
2. Finalize approval of manuscript and submit.
3. Present at University of Washington Frontiers in GI in March/April.

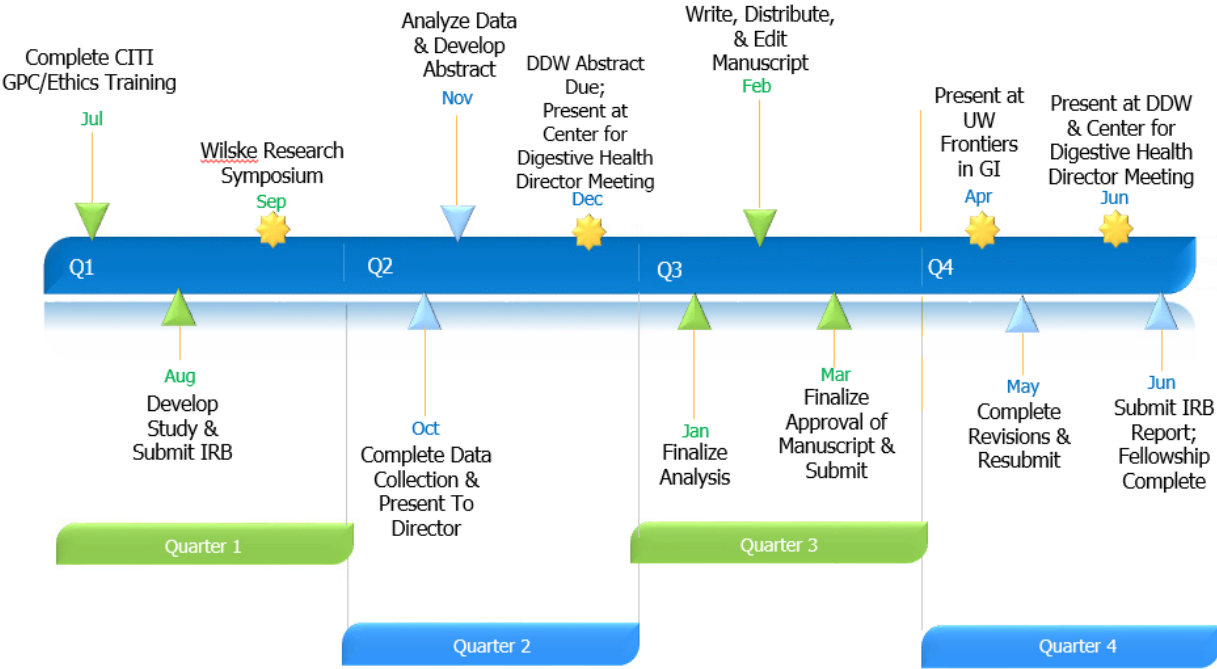
In the **fourth quarter**, the fellow will:

1. Complete all revisions and resubmit; AASLD Abstract Due.
2. Present research findings at Digestive Disease Week and DDI Director's Meeting in May/June.
3. Submit report for all IRB studies.

All research data must be stored on a secured, shared drive. No PHI may be placed on a flash drive or moved from the secured, shared drive in any manner.

If the fellow is unable to complete a manuscript prior to completion of appointment as a Virginia Mason Franciscan Health Fellow, authorship may change. Access to Virginia Mason Franciscan Health's electronic medical record, including for the purpose of research, concludes when the fellowship appointment ends.

Hepatology Fellowship Research Timeline



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Interpersonal and Communication Objectives

1. Communicate effectively with patients and families in a compassionate, culturally and gender-sensitive manner, including diagnosis, treatment plan, and follow-up care.
2. Appropriately notify supervising attending physicians of changes in the clinical status of patients and request consultations appropriately.
3. Effectively discuss end-of-life care with patients and their families.
4. Maintain communication with the administrative team, nurse practitioner, inpatient schedulers, attending physicians, nurses, and all team members regarding patients and the clinic or procedure schedule.
5. Supervise and lead the team appropriately, demonstrating commitment to ethical principles pertaining to the provision or withholding of care, patient confidentiality, and informed consent.

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Teaching Methods

The principal teaching methods of the fellowship are case-based discussions and instruction led by the attending physician. A majority of teaching will involve direct instruction in the performance of clinical care under supervision of attending physicians and may also include:

1. Modeling by attending physician
2. Direct 1:1 instruction by attending physician
3. Observation of biopsy
4. Participation in regularly scheduled clinical conferences, meetings, and grand rounds
5. Attendance at annual conferences and meetings
6. Use of scientific literature and information technology
7. Recommended reading

Teaching will be supplemented by multidisciplinary conferences, journal club, tumor board meetings, etc. Teaching will also take place during daily management of patients on the service. The fellow will plan and facilitate four GI journal club sessions per year and take part in teaching internal medicine residents in the Gastroenterology Section.

Evaluation and Feedback

The fellow will meet with the Program Director and will receive verbal and written evaluations at least quarterly. The fellow will be expected to provide confidential assessment and feedback about the program and faculty. Assessment of fellow competencies and evaluative content about the fellow will be received via direct observation by the team during procedures, rounds, clinics, and conferences; attending physician evaluation of fellow; and program director observation.

Competency Assessment

Educational achievement will be based on the objectives described above, with monthly benchmarks determined by the program director as needed. The fellow's competence is assessed by the program director with input from the faculty and care team. The fellow will meet monthly with the program director to assess competence and performance, and to set additional shared goals to be achieved by the end of fellowship.

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Career Development

Each fellow will meet monthly with the program director to review progress, career goals, and future plans, and to access mentorship and feedback. Meetings with other faculty who may aid in career development within and outside of VMMC can be arranged.

Appendix 1: Recommended Hepatology Fellowship Reading & Resources

Key Websites

- Recommended AASLD reading list with quarterly benchmarks:
<https://www.aasld.org/sites/default/files/2017-NPPACurriculum.pdf>
- AASLD Practice Guidelines: <http://www.aasld.org/practiceguidelines/Pages/guidelinelisting.aspx>
- EASL Practice Guidelines: <http://www.aasld.org/practiceguidelines/Pages/guidelinelisting.aspx>
- Liver Learning: www.liverlearning.org
- AASLD-IDSA HCV Guidance: Recommendations for Testing, Managing, and Treating Hepatitis C:
<https://www.hcvguidelines.org/>

Key Hepatology Journals

- *Hepatology*
- *Liver Transplantation*
- *Clinical Liver Disease*
- *American Journal of Gastroenterology*
- *Gastroenterology*
- *Gut*
- *Journal of Hepatology*
- *Gastroenterology & Hepatology*
- *Clinical Gastroenterology and Hepatology*
- *Digestive Disease Sciences*
- *Transplantation*

Appendix 2: Faculty Biographies

Core Hepatology Faculty

Asma Siddique, MD. Dr. Siddique is a hepatologist who received her medical degree from Ramaiah School of Medicine, India, and received both internal medicine residency and hepatology fellowship training at Virginia Mason. She serves as the Hepatology Fellowship Director and a principal investigator on multiple clinical trials. Her research interest is in fatty liver disease and viral hepatitis.

Blaire Burman, MD, MAS. Dr. Burman is a board-certified gastroenterologist and hepatologist who received her medical training at University of Washington, internal medicine residency at Columbia Presbyterian, New York, and gastroenterology and hepatology fellowship training at UCSF prior to joining Virginia Mason in 2014. She serves as the Section Head, Director of Multidisciplinary Liver Tumor Board, Director of the Hepatitis C Treatment Clinic, and as the DDI Director of Education and Training. Her research interests are in underserved populations with liver disease, palliative care for cirrhosis, viral hepatitis, and hepatocellular carcinoma.

Erin Forsythe, ARNP. Erin joined the Virginia Mason Hepatology team in 2020. She completed her Doctor of Nursing Practice to be a Family Nurse Practitioner at University of Washington in 2013. Prior to this, she completed her undergraduate education at St Olaf College in Nursing and Health Psychology. Erin's clinical interests include liver disease, hepatitis B, hepatitis C, fatty liver, and liver cancer.

Core Multidisciplinary Faculty

Scott Helton, MD, FACS. Dr. Helton is the Director of Liver, Biliary and Pancreas Surgery Center of Excellence, and current Clinical Professor of Surgery, University of Washington Department of Surgery. He is a co-Director of Liver Tumor Board.

Mehran Fotoohi, MD. Dr. Fotoohi is an Interventional Radiologist, serves as Chief for the Section of Radiology Imaging Informatics at Virginia Mason, and is Teaching Coordinator for Interventional Radiology

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Robert Crane, MD. Dr. Crane is an Interventional Radiologist with special interests in angiography, tumor chemoembolization, Y-90 radioembolization, and minimally invasive thermal ablation.

Patrick Marcin, MD. Dr. Marcin is an Interventional Radiologist specializing in interventional oncology, including chemoembolization, Y-90 radioembolization, radiofrequency ablation, microwave ablation, and cryoablation.

David Coy, MD, PhD. Dr. Coy is the Chief of Diagnostic Radiology with a special interest in gastrointestinal and hepatobiliary radiology, including MR elastography. He is an Assistant Clinical Professor of Radiology, University of Washington.

Bruce Lin, MD. Dr. Lin is a board-certified medical Oncologist and Hematologist with special interest and expertise in gastrointestinal and hepatobiliary cancers. He is the principal investigator on several clinical trials.

Christopher Gault, MD, PhD. Dr. Gault is a board-certified anatomic/clinical pathologist with general surgical pathology training, specialized training in gastrointestinal pathology, and an interest in molecular alterations in cancer. He has extensive experience in teaching and is always interested in improving communication between clinicians and pathologists to improve patient care.

Russell Dorer, MD, PhD. Dr. Dorer is an anatomic pathologist with specialized training and interest in gastrointestinal and hepatobiliary pathology. He serves as the Chair of the Hepatology Pathology Conference.

Richard Kozarek, MD, FACP, FAGA, FASGE. Dr. Kozarek is a world-renowned gastroenterologist with a focus on advanced endoscopy and special interest in pancreaticobiliary disorders. He is Faculty Emeritus, the Founding Executive Director of the Digestive Disease Institute, and prior Chief of Gastroenterology. He has a faculty appointment at University of Washington. Dr. Kozarek is a tireless researcher, has been principal investigator for numerous studies, and has well over 400 peer-reviewed publications.

Andrew Ross, MD. Dr. Ross is the Medical Director of the Center for Digestive Health at Virginia Mason Franciscan Health, acting Executive Director, Digestive Disease Institute, and prior DDI Director of Research and Therapeutic Endoscopy Center of Excellence. He is also the Medical Director of Strategic Growth at Virginia Mason. He is

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trained in therapeutic endoscopy, has broad research interests, and numerous peer-reviewed publications.

Mark Beiter, DO. Dr. Beiter is a board-certified specialist in Palliative Care and Hospice Medicine. His team supports our inpatient and outpatient consultation for end-stage liver disease.