

OVERVIEW OF THE FELLOWSHIP

The goal of the NP/PA Clinical Hepatology Fellowship is to provide a 1-year postgraduate hepatology training program for nurse practitioners and physician assistants in a clinical outpatient setting, so that participants can develop a specialization in clinical hepatology. The training program has been designed to help each Fellow achieve the following objectives:

- Establish a significant fund of knowledge about the basic biology and pathobiology of the liver and biliary systems.
- Establish an understanding of the diagnosis and treatment of a broad range of hepatobiliary disorders.
- Develop an appreciation of the indications and use of a number of diagnostic and therapeutic procedures that are needed to manage hepatobiliary disorders.
- Acquire necessary clinical skills to care for patients with infectious hepatitis, including those with chronic hepatitis infection.
- Recognize the indications for liver transplantation.
- Acquire sufficient understanding of experimental design, clinical biostatistics, and epidemiology to be able to critically appraise and interpret medical literature.
- Encourage critical thinking and effective communication with all members of the healthcare team.

Fellows will be exposed to a number of clinical issues faced in the daily healthcare of patients with liver disease. By the end of the Fellowship year, the participant will be familiar with the main clinical manifestations, causes, and the differential diagnosis of the major types of liver diseases and their complications, to include:

- Effects of systemic diseases on the liver
- Viral hepatitis
- Jaundice
- Toxic and drug-induced hepatitis
- Alcoholic hepatitis
- Autoimmune hepatitis
- Nonalcoholic fatty liver disease (NAFLD)
- Cirrhosis
- Portal hypertension
- Hepatic encephalopathy
- Primary biliary cirrhosis (AMA + and AMA -)
- Sclerosing cholangitis
- Congenital disorders of bilirubin metabolism
- Hemochromatosis
- Wilson's disease
- Liver neoplasms and management of hepatocellular carcinoma

The training program includes a 1-year curriculum consisting of self-study learning activities that complement the daily clinical experiences of the Fellow. The curriculum will provide the Fellow with the background information necessary to successfully diagnose and treat patients at various stages of liver and biliary disease. The learning activities have been organized throughout the four quarters of the fellowship period.

REQUIRED COMPONENTS

Training Modalities

Clinical experience is the core of this Fellowship year, and independent study is required as well. Each participant is required to attend at least three conferences or seminars per week, and to spend a minimum of 4 hours per week in self-study. Both library and internet resources can be used to fulfil the self-study requirements, and a list of required and suggested readings is included in this Curriculum.

Conferences and seminars should include:

- GI grand rounds (weekly)
- Tumor conference (weekly)
- Medical grand rounds (weekly)
- Hepatology grand rounds (weekly)
- Hepatic pathology conference (biweekly)
- Hepatic imaging conference (biweekly)
- Patient care conference (weekly)
- Attendance at major hepatology/GI national meetings
- Hepatology journal club (monthly)

Assessment of Completion and Competence

All Fellows will track their progress in a log document to ensure that the sponsoring institution and mentor are providing appropriate training and support. This log will be submitted to AASLD every quarter. Fellows and their mentors may also agree to a monthly assessment, to assess progress and define goals for the next month.

CORE CURRICULUM OUTLINE

First Quarter

The goal of the first quarter is to familiarize the Fellow with the procedures used in the initial evaluation of patients presenting with signs of liver disease. Fellows will learn how to identify and counsel symptomatic and asymptomatic patients at-risk of hepatic disease. The Fellow will gain an understanding of the appropriate diagnosis and treatment of a broad range of hepatobiliary disorders, while establishing a significant fund of knowledge about the basic biology and pathobiology of the liver and biliary systems. Competencies will be achieved upon

completion of the required learning activities. Learning activities include selected text from reference manuals, relevant primary literature, disease management guidelines, and real-world case studies. Additionally, Fellows will enroll and complete the online interactive modules in Fundamentals of Liver Disease (formerly ACT-First). Fellows will apply the information learned in self-study to their daily clinical experiences.

Competencies

- Obtain a complete hepatology-directed history and perform a complete hepatology-directed physical examination.
- Identify and describe liver and biliary-disease-related signs and symptoms.
- Recognize and discuss risk factors for various liver diseases.
- Counsel patients with liver or biliary disease regarding lifestyle modifications and the natural history of the disease.
- Be familiar with the blood tests and imaging procedures indicated in the initial evaluation of patients with signs of hepatic disease.
- Know the appropriate diagnostic and therapeutic plan for various liver diseases—describe treatment indications, contraindications, risks, efficacy, side-effect profiles, and side-effect management.
- Describe the use of alternative and complementary therapies in treating liver disease.

Second Quarter

The goal of the second quarter is to understand the implications of diagnostic test results on disease progression and treatment recommendations. Fellows will develop a greater appreciation of the indications and use of a number of diagnostic and therapeutic procedures that are needed to manage hepatobiliary disorders. The learning activities will familiarize the Fellow with the radiologic, laboratory, and pathophysiologic aspects of all forms of liver disease. Fellows will also gain an appreciation for the psychosocial issues faced by patients with liver disease. Competencies will be achieved upon completion of the required learning activities. Learning activities include selected text from reference manuals, relevant primary literature, disease management guidelines, and real-world case studies. Fellows will apply the information learned in self-study to their daily clinical experiences.

Competencies

- Compare and contrast the indications and limitations of various imaging technologies.
- Recognize liver test abnormalities without mentor supervision and formulate a differential diagnosis based on the history, physical examination, and laboratory findings.
- List the indications for a liver biopsy and discuss the procedure, alternatives, and possible complications with patients. Describe the clinical implications of liver biopsy findings.
- Discuss with patients the different treatment options for their liver disease, expected efficacy, and side effects.
- Manage common side effects of therapy without mentor supervision.

- Discuss the pathophysiology and natural history of portal hypertension and hepatic insufficiency.
- Address the psychosocial issues of acute, chronic, and end-stage liver disease.

Third Quarter

The goal of the third quarter is for the Fellow to be able to independently diagnose and treat patients with liver disease. The Fellow is expected to evaluate and care for patients with minimal mentor supervision. Fellows will also learn how to manage patients with advanced liver disease, including the treatment and prevention of complications. In addition, the curriculum in this quarter provides Fellows with the necessary information to properly care for patients requiring liver transplantation, including those on waiting lists as well as transplant recipients. There is a greater emphasis on clinical practice in the second half of the fellowship period. Learning activities will go beyond clinical practice and introduce the Fellow to the field of clinical research. Fellows will acquire a sufficient understanding of experimental design, clinical biostatistics, and epidemiology to be able to critically appraise and interpret medical literature. Activities will encourage critical thinking and effective communication with all members of the healthcare team.

Competencies

- Evaluate a new patient with liver disease, obtain a complete history, perform a physical examination, and establish a differential diagnosis and management plan.
- Care for patients on therapy with minimal mentor supervision.
- Manage outpatients with advanced liver disease and cirrhosis, including general medical care and preventive care.
- Routinely read, understand, and discuss medical literature on liver disease and gain an appreciation for commonly used outcome measures.
- Describe clinical research protocols.
- Discuss issues of pre- and postoperative care in liver transplantation, including managing alcohol intake, supportive care, the mechanisms of action, and use of immunosuppressive therapy.

Fourth Quarter

The goal of the fourth quarter is for the Fellow to establish their role as an independent healthcare professional with a specialization in clinical hepatology. The fellow will have gained a significant fund of knowledge in the first three quarters of the fellowship period. In the curriculum of the fourth quarter, the Fellow is given the option of completing learning activities in at least one of five elective areas. These activities will give the Fellow a greater understanding of specific clinical issues in the field of hepatology, including the diagnosis and treatment of acute and chronic infectious hepatitis, the diagnosis and treatment of nonalcoholic fatty liver

and steatohepatitis, the diagnosis and treatment of alcoholic liver disease, the care of special populations at high risk of hepatic disease, and the management of liver transplant patients. The electives curriculum allows the Fellow to develop additional competency in a specialized aspect of hepatology by reading the results and conclusions of specific clinical trials and literature reviews.

Competencies

- Evaluate outpatients with chronic liver disease with minimal mentor supervision.
- Become familiar with a specialized area of clinical hepatology.

ELECTIVE CURRICULUM

Acute and Chronic Infectious Hepatitis

Hepatitis B virus and hepatitis C virus are major causes of acute and chronic liver disease worldwide. This elective will present Fellows with an in-depth knowledge of the assessment and management of patients with hepatitis B and hepatitis C. Fellows will gain a greater understanding of the biochemical, histologic, and serologic tests used to diagnose, monitor disease progression, and assess treatment efficacy. Furthermore, greater detail is provided on the appropriate treatment for different stages and circumstances of these diseases. The implications of hepatitis B and C coinfection will also be discussed. In addition, Fellows will learn more about appropriate preventive measures and vaccination recommendations to prevent hepatitis in high-risk individuals.

Topics

- Diagnosis and management of hepatitis B
- Diagnosis and management of hepatitis C
- Diagnosis and management of hepatitis B and C coinfection
- Vaccination and other preventive measures for patients at-risk for hepatitis B and C

Nonalcoholic Fatty Liver and Steatohepatitis

Nonalcoholic fatty liver disease (NAFLD) is currently considered the leading cause of abnormal liver enzyme levels in the US. NAFLD incorporates a spectrum of disease that ranges from simple hepatic steatosis to non-alcoholic steatohepatitis (NASH) and finally cirrhosis. This elective will present Fellows with an in-depth knowledge of the assessment and management of patients with NAFLD and NASH. Upon completion of this curriculum, the Fellow will know the criteria for confirming NAFLD and NASH, as well as the causes and pathogenesis of these diseases. Fellows will also be familiar with the available treatment options for NAFLD and NASH and the importance of counseling patients regarding lifestyle modification and risk reduction. In addition, the role of diabetes, obesity, and the metabolic syndrome will be discussed.

Topics

- Definition of NASH
- The role of diabetes and obesity in NAFLD and NASH
- Causes and pathogenesis of NAFLD and NASH
- Diagnosis, natural history, and treatment of NAFLD and NASH
- Long-term outcome in NAFLD and NASH

Care of Special Populations at High Risk of Hepatic Disease

Epidemiologic studies have identified a number of groups that have a higher risk of hepatic disease than the general population. This elective will help Fellows identify high-risk groups and will highlight the special needs of these groups. Fellows will understand the implications of liver disease in patients with drug addiction, in correctional facilities, in ethnic diverse groups, and in patients with HCV/HIV coinfection. Effects on disease progression and treatment efficacy in these special populations will be discussed.

Topics

- Influence of ethnicity on liver disease
 - Hispanic Americans
 - African Americans
 - Asian Americans
 - Native Americans
- Hepatic disease in drug addicts
- Prevention and control in the prison population
- Implications of HCV/HIV coinfection

Diagnosis and Treatment of Alcoholic Liver Disease

Alcohol-related liver disease is a major cause of morbidity and mortality in the United States. While fatty liver is typically benign and reversible, progression to alcoholic hepatitis and cirrhosis is life-threatening, and the only curative therapy for advanced alcoholic cirrhosis is liver transplantation. This elective will present Fellows with an in-depth knowledge of the proper assessment and treatment of patients with alcoholic liver disease. Fellows will learn how to identify and effectively manage both abstinent and active alcoholics. The effects of alcoholic liver disease will also be discussed in the context of other conditions and hepatic diseases. The importance of cultural and psychosocial issues surrounding alcoholism and liver disease is also emphasized.

Topics

- Active and abstinent alcoholics

- Diagnosis and management of alcoholic liver disease
- Special issues in patients with co-morbid disease
- Cultural and psychosocial issues of alcoholism and liver disease

Management of Liver Transplant Patients

. Understanding of the proper pre- and posttransplantation needs of patients requiring liver transplantation is crucial to their overall survival. This elective presents the Fellow with guidelines for the indication and expectations of liver transplant in patients with hepatocellular carcinoma, alcoholic liver disease, autoimmune liver disease, hepatitis B infection and hepatitis C infection. In particular, there is a focus on the risk of recurrence and the appropriate preventive and treatment measures. Fellows will also be introduced to the special considerations involving living donor versus cadaver allograft transplantation and the immunologic and nutritional support required by these patients. The ethical issues surrounding liver transplantation will also be reviewed. Notably, this elective is to be studied at a UNOS-approved transplant center.

Topics

- Care of patients with hepatocellular carcinoma
- Care of patients with alcoholism
- Care of patients with autoimmune liver disease
- Care of patients with hepatitis C infection
- Care of patients with hepatitis B infection
- Living donor vs cadaver allografts
- Transplant immunology and management
- Nutritional support
- Ethical considerations
- Postop care

RESOURCES AND MEETINGS

The curriculum is intended to provide a comprehensive introduction to the field of hepatology. Fellows are encouraged to expand the knowledge gained from this curriculum through clinical experience and further self-study. Ongoing scientific research is continually adding to our current understanding of hepatic disease and providing new information regarding the diagnosis and treatment of these diseases. Moreover, Fellows may encounter special cases and issues that are not covered in the curriculum that they wish to learn more about. AASLD has therefore compiled a list of resources that can provide detailed and up-to-date information on a wide range of hepatology topics. Access to these materials through either a medical library or personal purchase is highly recommended.

NP/PA Clinical Hepatology Fellowship Curriculum Year-Long Summary

These resources include online and print reference manuals, the Fundamentals of Liver Disease (formerly ACT-First) Curriculum, Society Web sites, research journals, government resources, online news and medical education Web sites, clinical trial Web sites, industry support, advocacy and support groups, and specific disease information Web sites. A number of these resources are also helpful tools for counseling patients about their disease, and may be useful for the patients as well. Attendance at national meetings and conferences is another valuable means of learning the most current guidelines and advancements in the field of hepatology.