

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. Fellows will apply the information learned in self-study to their daily clinical experiences.

Q1 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.

Q1 Curriculum Learning Activities/Reading

REQUIRED TEXT READING	Greenberger NJ. History taking and physical examination for the patient with liver disease. Chapter 1. In: Schiff E, Sorrell MF, Maddrey WC (Eds.). Schiff's Diseases of the Liver. 11th edition. Philadelphia: Lippincott Williams and Wilkins, 2011.
REQUIRED PRACTICE GUIDELINE	AASLD Practice Guideline- HCC http://www.aasld.org/practiceguidelines/Pages/guidelinelisting.aspx
REQUIRED PRACTICE GUIDELINE	AASLD Practice Guideline- Non-Alcoholic Fatty Liver Disease http://www.aasld.org/practiceguidelines/Pages/guidelinelisting.aspx
REQUIRED PRACTICE GUIDELINE	AASLD Practice Guideline- Alcoholic Liver Disease http://www.aasld.org/practiceguidelines/Pages/guidelinelisting.aspx
REQUIRED PRACTICE GUIDELINE	AASLD Practice Guideline- Primary Biliary Cirrhosis http://www.aasld.org/practiceguidelines/Pages/guidelinelisting.aspx
REQUIRED PRACTICE GUIDELINE	AASLD Practice Guideline- Primary Sclerosing Cholangitis http://www.aasld.org/practiceguidelines/Pages/guidelinelisting.aspx
REQUIRED PRACTICE GUIDELINE	AASLD Practice Guideline- NASH/NAFLD

	http://www.aasld.org/practiceguidelines/Pages/guidelinelisting.aspx
REQUIRED PRACTICE GUIDELINE	AASLD Practice Guideline- Wilson Disease, Diagnosis and Treatment http://www.aasld.org/practiceguidelines/Pages/guidelinelisting.aspx
REQUIRED PRACTICE GUIDELINE	AASLD Practice Guideline- Hemochromatosis, Management http://www.aasld.org/practiceguidelines/Pages/guidelinelisting.aspx
REQUIRED PRACTICE GUIDELINE	AASLD Practice Guideline- HCV : Diagnosis, Management, and Treatment of Hepatitis C http://www.aasld.org/practiceguidelines/Pages/guidelinelisting.aspx
REQUIRED CDC/GOV GUIDELINES	CENTERS FOR DISEASE CONTROL AND PREVENTION- Hepatitis C FAQ's for Health Professionals http://www.cdc.gov/hepatitis/HCV/HCVfaq.htm
REQUIRED PRACTICE GUIDELINE	AASLD Practice Guideline- HBV http://www.aasld.org/practiceguidelines/Pages/guidelinelisting.aspx
REQUIRED CDC/GOV GUIDELINES	CENTERS FOR DISEASE CONTROL AND PREVENTION- Hepatitis B FAQ's for Health Professionals http://www.cdc.gov/hepatitis/hbv/HBVfaq.htm
REQUIRED CDC/GOV GUIDELINES	CENTERS FOR DISEASE CONTROL AND PREVENTION- Hepatitis A FAQ's for Health Professionals http://www.cdc.gov/hepatitis/HAV/HAVfaq.htm
REQUIRED CDC/GOV GUIDELINES	CENTERS FOR DISEASE CONTROL AND PREVENTION - HAV Exposure http://www.cdc.gov/mmwr/preview/mmwrhtml/mm5641a3.htm http://www.cdc.gov/mmwr/preview/mmwrhtml/rr5304a1.htm http://www.cdc.gov/hepatitis/PDFs/fiore_ha_transmitted_by_food.pdf
REQUIRED CDC/GOV GUIDELINES	CENTERS FOR DISEASE CONTROL AND PREVENTION - Sexually Transmitted Diseases Treatment Guidelines, 2010 http://www.cdc.gov/mmwr/preview/mmwrhtml/rr5912a1.htm?s_cid=rr5912a1_e
REQUIRED CDC/GOV GUIDELINES	CENTERS FOR DISEASE CONTROL AND PREVENTION- Occupational Exposures (HCV & HBV) http://www.cdc.gov/mmwr/PDF/RR/RR5011.pdf http://www.cdc.gov/mmwr/preview/mmwrhtml/rr5011a1.htm
REQUIRED CDC/GOV GUIDELINES	CENTERS FOR DISEASE CONTROL AND PREVENTION- Hemodialysis http://www.cdc.gov/mmwr/PDF/rr/rr5005.pdf
REQUIRED JOURNAL READING	Aday AW, Mitchell MC, Casey LC. Alcoholic Hepatitis: Current Trends and Management. <i>Curr Opin Gastroenterol</i> 2017;33:142-48
REQUIRED JOURNAL READING	Excess alcohol greatly increases the prevalence of cirrhosis in hereditary hemochromatosis. <i>Gastroenterology</i> 2000(2);122(2):281-289.
REQUIRED JOURNAL READING	Pimental CFMG, Lai M. Nutritional Interventions for chronic liver diseases and NAFLD. <i>Med Clin N Am</i> 2016;100:1303-1327

REQUIRED JOURNAL READING	Plauth M et.al. ESPEN guidelines on enteral nutrition: liver disease. <i>Clinical Nutrition</i> 2006;25:285-294
REQUIRED JOURNAL READING	Chao A et.al. Malnutrition and nutritional support in alcoholic liver disease: a review. <i>Curr Gastroenterol Rep</i> 2016;18:65
REQUIRED TEXT READING	Herlong, HF & Mitchell MC. Laboratory Tests. Chapter 2. In: Schiff E, Sorrell MF, Maddrey WC (Eds.). <i>Schiff's Diseases of the Liver</i> . 11 edition. Philadelphia: Lippincott Williams and Wilkins, 2011.
REQUIRED TEXT READING	Jajoo K, Mennitt, K, & Jacobson, I. Non-Invasive and Invasive Imaging of the Liver and Biliary Tract. Chapter 4. In: Schiff E, Sorrell MF, Maddrey WC (Eds.). <i>Schiff's Diseases of the Liver</i> . 11 edition. Philadelphia: Lippincott Williams and Wilkins,
REQUIRED JOURNAL READING	Tran T, Lee WM. DILI: New Insights into Diagnosis and Management. <i>Curr Hepat Rep</i> . 2013 Mar 1;12(1):53-58.
REQUIRED JOURNAL READING	Wheatley M & Heilpern, K. Jaundice: An Emergency Department Approach to Diagnosis and Management. <i>Emergency Medicine Practice</i> . March 2008; Vol 10, Number 3.
REQUIRED UP TO DATE READING	Friedman LS. Approach to the patient with abnormal liver biochemical and function tests. Up To Date, 2013. http://www.uptodate.com/contents/approach-to-the-patient-with-abnormal-liver-biochemical-and-function-tests?source=search_result&search=liver+enzyme+elevation&selectedTitle=1%7E150
REQUIRED UP TO DATE READING	Roy-Chowdhury, N & Roy-Chowdhury, J. Diagnostic approach to the patient with jaundice or asymptomatic hyperbilirubinemia. Up To Date, 2013 http://www.uptodate.com/contents/diagnostic-approach-to-the-patient-with-jaundice-or-asymptomatic-hyperbilirubinemia?source=search_result&search=asymptomatic+hyperbilirubinemia&selectedTitle=1%7E150
REQUIRED ACTIVITY	Tavill, AS. Cleveland Clinic Center for Continuing Education. <ul style="list-style-type: none"> • Alpha1- Antitrysin Deficiency • Hemachromatosis • Wilson's Disease http://www.clevelandclinicmeded.com/medicalpubs/diseasemanagement/hepatology/inherited-metabolic-liver-diseases/
REQUIRED ACTIVITY	Enroll and Complete all Fundamentals of Liver Disease Modules (can be completed over the course of the fellowship) https://liverlearning.aasld.org/aasld/#!*listing=3*browseby=6*sortby=1*media=40*c_id=178989
REQUIRED ACTIVITY	http://www.immunologyclinic.com/case.asp?chap=14&case=5
REQUIRED JOURNAL READING	Complementary and Alternative Medicine Use in Chronic Liver Disease Patients. Ferrucci, Leah M. M. <i>Journal of clinical gastroenterology</i> . Volume: 44 Issue: 2 Starting page number: e40-e45.
REQUIRED JOURNAL READING	Fogden E, Neuberger J. Alternative medicines and the liver. <i>Liver Int</i> 2003;23(4):213-220.
REQUIRED JOURNAL READING	Molloy, J. W., Calcagno, C. J., Williams, C. D., Jones, F. J., Torres, D. M., & Harrison, S. A. (2012). Association of coffee and caffeine consumption with fatty liver disease, nonalcoholic steatohepatitis, and degree of hepatic fibrosis. <i>Hepatology</i> , 2012 55 (2), 429-436.

REQUIRED JOURNAL READING	Hernández-Alvarez N, Pascasio Acevedo JM, Quintero E, et al. Effect of season and sunlight on viral kinetics during hepatitis C virus therapy. <i>BMJ Open Gastro</i> 2017;4:e000115. doi:10.1136/bmjgast-2016- 000115
REQUIRED JOURNAL READING	Hézode, C., Roudot-Thoraval, F., Nguyen, S., Grenard, P., Julien, B., Zafrani, E. S., & Mallat, A. (2005). Daily cannabis smoking as a risk factor for progression of fibrosis in chronic hepatitis C. <i>Hepatology</i> , 42(1), 63-71.
REQUIRED JOURNAL READING	Marzio, D. L. H.-D., & Fenkel, J. M. (2014). Complementary and alternative medications in hepatitis C infection. <i>World Journal of Hepatology</i> , 6(1), 9–16. http://doi.org/10.4254/wjh.v6.i1.9

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.

Q2 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.

Q2 Curriculum Learning Activities/Reading

REQUIRED TEXT READING	Fox, AN, Jeffers, LJ, & Reddy, KR. Liver Biopsy and Laparoscopy. Chapter 2. In: Schiff E, Sorrell MF, Maddrey WC (Eds.). Schiff's Diseases of the Liver. 11 edition. Philadelphia: Lippincott Williams and Wilkins, 2011.
REQUIRED PRACTICE GUIDELINE	AASLD Practice Guideline- Liver Biopsy http://www.aasld.org/practiceguidelines/Pages/guidelinelisting.aspx
REQUIRED JOURNAL READING	Riley TR 3rd, Ruggiero FM. The effect of processing on liver biopsy core size. Dig Dis Sci 2008;53:2775-2777.
REQUIRED JOURNAL READING	Czaja AJ, Carpenter HA. Optimizing diagnosis from the medical liver biopsy. Clin Gastroenterol Hepatol 2007;5:898-907.
REQUIRED JOURNAL READING	"Liver biopsy diagnosis of hepatitis: clues to clinically-meaningful reporting." https://www.ncbi.nlm.nih.gov/pubmed/20446518
REQUIRED JOURNAL READING	Elphick DA, Dube AK, McFarlane E, Jones J, Gleeson D. Spectrum of liver histology in presumed decompensated alcoholic liver disease. Am J Gastroenterol 2007;102:780-788
REQUIRED TEXT READING	Goodman ZD. Hepatic Histopathology. Chapter 7. In: Schiff E, Sorrell MF, Maddrey WC (Eds.). Schiff's Diseases of the Liver. 11 edition. Philadelphia: Lippincott Williams and Wilkins, 2011.
GENERAL REFERENCE RESOURCE:	Kanel GC, Korula J (Eds.). Atlas of liver pathology. Philadelphia: W.B. Saunders, 1992

GENERAL REFERENCE RESOURCE:	Orfei E. Review of pathology of the liver. Loyola University of Chicago. Department of Pathology http://www.meddean.luc.edu/lumen/MedED/orfpath/pthcntnt.htm
GENERAL REFERENCE RESOURCE:	The Internet Pathology Laboratory for Medical Education. Hepatic Pathology images. http://library.med.utah.edu/WebPath/LIVEHTML/LIVERIDX.html
REQUIRED JOURNAL READING	Marrero JA, Ahn J, Rajender Reddy K. ACG clinical guideline: the diagnosis and management of focal liver lesions. American College of Gastroenterology. Am J Gastroenterol. 2014 Sep;109(9):1328-47;
REQUIRED JOURNAL READING	Perrillo RP, Gish R, Falck-Ytter YT. American Gastroenterological Association Institute technical review on prevention and treatment of hepatitis B virus reactivation during immunosuppressive drug therapy. Gastroenterology. 2015 Jan;148(1):221-244
REQUIRED JOURNAL READING	Bonder A, Tapper EB, Afdhal NH. Contemporary assessment of hepatic fibrosis. Clin Liver Dis. 2015 Feb;19(1):123-34
REQUIRED JOURNAL READING	Kwo PY, Cohen SM, Lim JK. ACG Clinical Guideline: Evaluation of Abnormal Liver Chemistries. Am J Gastroenterol. 2017 Jan;112(1):18-35
REQUIRED JOURNAL READING	Green RM, Flamm S. American Gastroenterological Association technical review on the evaluation of liver chemistry tests. Gastroenterology 2002;123(4):1367-1384.
REQUIRED JOURNAL READING	American Gastroenterological Association medical position statement: evaluation of liver chemistry tests. Gastroenterology 2002;123(4):1364-1366.
REQUIRED TEXT READING	Fox, AN, Jeffers, LJ, & Reddy, KR. Liver Biopsy and Laparoscopy. Chapter 2. In: Schiff E, Sorrell MF, Maddrey WC (Eds.). Schiff's Diseases of the Liver. 11 edition. Philadelphia: Lippincott Williams and Wilkins, 2011.
REQUIRED JOURNAL READING	Brunt EM. Liver biopsy interpretation for the gastroenterologist. Curr Gastroenterol Rep 2000;2(1):27-32.
REQUIRED TEXT READING	Maruyama H & Sanyal AJ. Portal Hypertension: Non-Surgical and Surgical Management. Chapter 14. In: Schiff E, Sorrell MF, Maddrey WC (Eds.). Schiff's Diseases of the Liver. 11 edition. Philadelphia: Lippincott Williams and Wilkins, 2011.
REQUIRED TEXT READING	Runyon BA. Ascites and Spontaneous Bacterial Peritonitis. Chapter 17. In: Schiff E, Sorrell MF, Maddrey WC (Eds.). Schiff's Diseases of the Liver. 11 edition. Philadelphia: Lippincott Williams and Wilkins, 2011.
REQUIRED TEXT READING	Prakash RK & Mullen KD. Hepatic Encephalopathy. Chapter 18. In: Schiff E, Sorrell MF, Maddrey WC (Eds.). Schiff's Diseases of the Liver. 11 edition. Philadelphia: Lippincott Williams and Wilkins, 2011.
REQUIRED TEXT READING	Larson AM. Acute Liver Failure. Chapter 19. In: Schiff E, Sorrell MF, Maddrey WC (Eds.). Schiff's Diseases of the Liver. 11 edition. Philadelphia: Lippincott Williams and Wilkins, 2011.
REQUIRED PRACTICE GUIDELINE	AASLD Practice Guideline- Gastroesophageal Varices and Variceal Hemorrhage in Cirrhosis, Management http://www.aasld.org/practiceguidelines/Pages/guidelinelisting.aspx
REQUIRED PRACTICE GUIDELINE	AASLD Practice Guideline- TIPS, Management of Portal Hypertension http://www.aasld.org/practiceguidelines/Pages/guidelinelisting.aspx

REQUIRED PRACTICE GUIDELINE	AASLD Practice Guideline- Ascites due to cirrhosis, Management http://www.aasld.org/practiceguidelines/Pages/guidelinelisting.aspx
REQUIRED JOURNAL READING	Stewart B, Mikocka-Walus A, Harley , Andrews J. Help-seeking and coping with the psychosocial burden of chronic hepatitis C: a qualitative study of patient, hepatologist, and counsellor perspectives. Int Journal of Nurs Studies. 2012
REQUIRED JOURNAL READING	Silberbogen A, Ulloa E, Janke E, Mori D. Psychosocial issues and mental health treatment recommendations for patients with hepatitis C. Psychosomatics. 2009 Mar-Apr;50(2):114-22. http://www.ncbi.nlm.nih.gov/pubmed/19377019
REQUIRED JOURNAL READING	Loria A, Escheik C, Gerber N, Younossi Z. Quality of life in cirrhosis. Curr Gastroenterol Rep. 2013 Jan;15(1):301
REQUIRED JOURNAL READING	Kemmer N, Hua L, Andersen JW, Chung RT, Butt AA, Sherman KE; ACTG 5178 Study Team. Health-related quality of life in subjects with HCV/HIV coinfection: results from ACTG 5178 study. J Viral Hepat. 2012 Nov;19(11):792-800.
REQUIRED JOURNAL READING	El Khoury AC, Vietri J, Prajapati G. The burden of untreated hepatitis C virus infection: a US patients' perspective. Dig Dis Sci. 2012 Nov;57(11):2995-3003.
REQUIRED JOURNAL READING	The patient's journey with chronic hepatitis C from interferonplus ribavirin to interferon- and ribavirin-free regimens: a study of health-related quality of lifeZ. M. Younossi*,†, M. Stepanova*,†, F. Nader*,†, B. Lam*,†& S. Hunt* Update- Yau A
REQUIRED JOURNAL READING	Neff GW, Duncan CW, Schiff ER. The current economic burden of cirrhosis. Gastroenterol Hepatol (N Y). 2011 Oct;7(10):661-
REQUIRED JOURNAL READING	Bajaj JS, et al. PROMIS computerised adaptive tests are dynamic instruments to measure health-related quality of life in patients with cirrhosis. Aliment Pharmacol Ther. 2011 Nov;34(9):1123-32.

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.

Q3 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

Q3 Curriculum Learning Activities/Reading

REFERENCE PRACTICE GUIDELINES	<i>EASL Practice Guidelines- Utilize Any Guideline as needed</i> http://www.easl.eu/_clinical-practice-guideline
REFERENCE PRACTICE GUIDELINES	<i>AASLD Practice Guideline- Utilize Any Guideline as needed</i> http://www.aasld.org/practiceguidelines/Pages/guidelinelisting.aspx
REQUIRED JOURNAL READING	Moore CM, Van Thiel DH. Cirrhotic ascites review: Pathophysiology, diagnosis and management. World J Hepatol. 2013 May 27;5(5):251-63.
REQUIRED JOURNAL READING	Poh Z. and Chang PEJ. A Current Review of the Diagnostic and Treatment Strategies of Hepatic Encephalopathy. International Journal of Hepatology 2012
REQUIRED JOURNAL READING	Hepatic encephalopathy--definition, nomenclature, diagnosis, and quantification: final report of the working party at the 11th World Congresses of Gastroenterology, Vienna, 1998. Ferenci P, Lockwood A, Mullen K, Tarter R, Weissenborn K, Blei AT Hepatology. 2002;35(3):716.
REQUIRED ACTIVITY	Choose a liver disease-related topic from your planned Q4 elective and search PubMed (www.pubmed.org) to find the relevant studies published in this area. Read at least 3 recent articles in this area and note the outcome measurements used in the analysis.
TEXT REFERENCE	Foundations of Clinical Research : Applications to Practice - 3rd edition Authors: Leslie Gross Portney. 2009. Publisher: Prentice Hall, Inc.

REQUIRED ACTIVITY	Review the study design and protocols of ongoing trials of various liver diseases at www.clinicaltrials.gov .
REQUIRED JOURNAL READING	Fitzpatrick R, Davey C, Buxton MJ, & Jones DR. Evaluating patient-based outcome measures for use in clinical trials. Health Technology Assessment 1998; Vol. 2: No. 14 http://www.hta.ac.uk/fullmono/mon214.pdf
REQUIRED JOURNAL READING	Gluud C, Brok J, Gong Y, Koretz RL. Hepatology may have problems with putative surrogate outcome measures. J Hepatol. 2007 Apr;46(4):734-42.
REQUIRED TEXT READING	Freeman, RB. Selection and Timing of Liver Transplantation. Chapter 42. In: Schiff E, Sorrell MF, Maddrey WC (Eds.). Schiff's Diseases of the Liver. 11 edition. Philadelphia: Lippincott Williams and Wilkins, 2011.
REQUIRED TEXT READING	Wiesner, RH. Immunosuppression: The Global Picture. Chapter 43. In: Schiff E, Sorrell MF, Maddrey WC (Eds.). Schiff's Diseases of the Liver. 11 edition. Philadelphia: Lippincott Williams and Wilkins, 2011.
REQUIRED TEXT READING	Reddy, R & Mendizabal, M. The First Six Months Following Liver Transplantation. Chapter 43. In: Schiff E, Sorrell MF, Maddrey WC (Eds.). Schiff's Diseases of the Liver. 11 edition. Philadelphia: Lippincott Williams and Wilkins, 2011.
REQUIRED JOURNAL READING	Rodríguez-Perálvarez M, Germani G, Papastergiou V, et al. Early tacrolimus exposure after liver transplantation: relationship with moderate/severe acute rejection and long-term outcome. J Hepatol 2013; 58:262.
REQUIRED JOURNAL READING	"Overview of immunosuppression in liver transplantation" Pillai et al 2009 https://www.ncbi.nlm.nih.gov/pmc/articles/PMC2744178/
REQUIRED JOURNAL READING	"Review on immunosuppression in liver transplantation" Moini 2015 . https://www.ncbi.nlm.nih.gov/pmc/articles/PMC4450199/

FOURTH QUARTER (Choose at least 1 elective area of further study)

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 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

Competency

Evaluate outpatients with chronic liver disease with minimal mentor supervision.

Become familiar with a specialized area of clinical hepatology.

Q4 Elective Curriculum Learning Activities/Reading

Elective Areas:

DIAGNOSIS AND TREATMENT OF ACUTE AND CHRONIC INFECTIOUS HEPATITIS

NONALCOHOLIC FATTY LIVER AND STEATOHEPATITIS

CARE OF SPECIAL POPULATIONS AT RISK OF HEPATIC DISEASE

DIAGNOSIS AND TREATMENT OF ALCOHOLIC LIVER DISEASE

MANAGEMENT OF LIVER TRANSPLANT PATIENTS

DIAGNOSIS AND TREATMENT OF ACUTE AND CHRONIC INFECTIOUS HEPATITIS

Hepatitis B

REQUIRED PRACTICE GUIDELINE *EASL Practice Guidelines- Management of Chronic Hepatitis B virus infection.*

http://www.easl.eu/assets/application/files/ef520780b91cf4f_file.pdf

REQUIRED PRACTICE GUIDELINE *AASLD Practice Guideline- HBV*

<http://www.aasld.org/practiceguidelines/Pages/guidelinelisting.aspx>

REQUIRED TEXT READING

Lok, AS & Negro, F. Hepatitis B and D. Chapter 24. In: Schiff E, Sorrell MF, Maddrey WC (Eds.). Schiff's Diseases of the Liver. 11 edition. Philadelphia: Lippincott Williams and Wilkins, 2011.

REQUIRED JOURNAL READING

Congly SE, Wong P, Al-Busafi SA, Doucette K, Fung SK, Ghali P, Fonseca K, Myers RP, Osiowy C, Coffin CS. Characterization of hepatitis B virus genotypes and quantitative hepatitis B surface antigen titres in North American tertiary referral liver centres. Liver Int. 2013 May 17.

REQUIRED JOURNAL READING

Abu-Amara M, Feld JJ. Does antiviral therapy for chronic hepatitis B reduce the risk of hepatocellular carcinoma? Semin Liver Dis. 2013 May;33(2):157-66.

REQUIRED JOURNAL READING	Reddy KR, Beavers KL, Hammoud SP, Lim JK, Falck-Yttr YT. American Gastroenterological Association Institute guideline on the prevention and treatment of hepatitis B virus reactivation during immunosuppressive drug therapy. <i>Gastroenterology</i> . 2015 Jan;148(1):215-9
REQUIRED JOURNAL READING	Pan CQ, Lee HM. Antiviral therapy for chronic hepatitis B in pregnancy. <i>Semin Liver Dis</i> . 2013 May;33(2):138-46
REQUIRED JOURNAL READING	Gordon SC, Krastev Z, Horban A, Petersen J, Sperl J, Dinh P, Martins EB, Yee LJ, Flaherty JF, Kitrinis KM, Rustgi VK, Marcellin P. Efficacy of tenofovir disoproxil fumarate at 240 weeks in patients with chronic hepatitis B with high baseline viral load. <i>Hepatology</i> . 2013 Jan 30.
REQUIRED JOURNAL READING	Lampertico P, Viganò M, Colombo M. Why do I treat HBeAg-negative chronic hepatitis B patients with pegylated interferon? <i>Liver Int</i> . 2013 Feb;33 Suppl 1:157-63.
REQUIRED JOURNAL READING	Papatheodoridis GV. Why do I treat HBeAg-negative chronic hepatitis B patients with nucleos(t)ide analogues? <i>Liver Int</i> . 2013 Feb;33 Suppl 1:151-6.
REQUIRED JOURNAL READING	Marcellin P, et al. Regression of cirrhosis during treatment with tenofovir disoproxil fumarate for chronic hepatitis B: a 5-year open-label follow-up study. <i>Lancet</i> . 2013 Feb 9;381(9865):468-75.
REQUIRED JOURNAL READING	Kuo A, Gish R. Chronic hepatitis B infection. <i>Clin Liver Dis</i> . 2012 May;16(2):347-69.
Hepatitis C	
REQUIRED PRACTICE GUIDELINE	AASLD Practice Guideline- HCV : Diagnosis, Management, and Treatment of Hepatitis C - all links http://www.aasld.org/practiceguidelines/Pages/guidelinelisting.aspx
REQUIRED CDC/GOV Recommendation	Recommendations for the identification of chronic hepatitis C virus infection among persons born during 1945-1965. Division of Viral Hepatitis, National Center for HIV/AIDS, Viral Hepatitis, STD, and TB Prevention Recomm Rep. 2012 Aug; 61(RR-4):1-32. http://www.cdc.gov/mmwr/preview/mmwrhtml/rr6104a1.htm
REQUIRED CDC/GOV Recommendation	https://www.uspreventiveservicestaskforce.org/Page/Document/UpdateSummaryFinal/hepatitis-c-screening
REQUIRED JOURNAL READING	Chou R, Cottrell EB, Wasson N, Rahman B, & Guise JM. Bottom of Form Screening for Hepatitis C Virus Infection in Adults: A Systematic Review for the U.S. Preventive Services Task Force. <i>Ann Intern Med</i> . 2013;158(2):101-108.
REQUIRED JOURNAL READING	Pawlotsky JM. Use and interpretation of hepatitis C virus diagnostic assays. <i>Clin Liver Dis</i> 2003;7(1):127-137.
REQUIRED JOURNAL READING	Jacobson IM. The HCV treatment revolution continues: resistance considerations, pangenotypic efficacy and advances in challenging populations. <i>Gastroenterology and Hepatology</i> October 2016;12 (10): Supp 4.
REQUIRED JOURNAL READING	Vermehren J, Sarrazin C. The role of resistance in HCV treatment. <i>Best Pract Res Clin Gastroenterol</i> . 2012 Aug;26(4):487-
REQUIRED JOURNAL READING	Chevaliez S, Rodriguez C, Pawlotsky JM.. New virologic tools for management of chronic hepatitis B and C.. <i>Gastroenterology</i> . 2012 May;142(6):1303-1313.e1.

REQUIRED JOURNAL READING	Chevaliez S, Bouvier-Alias M, Brillet R, Pawlotsky JM. Hepatitis C virus (HCV) genotype 1 subtype identification in new HCV drug development and future clinical practice. PLoS One. 2009 Dec 8;4(12):e8209.
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REQUIRED JOURNAL READING	Loomba R, Yang HI, Su J, Brenner D, Barrett-Connor E, Ilse U, Chen CJ. Synergism between obesity and alcohol in increasing the risk of hepatocellular carcinoma: a prospective cohort study. <i>Am J Epidemiol</i> . 2013 Feb 15;177(4):333-42.
REQUIRED CDC/GOV GUIDELINES	National Institute on Alcohol Abuse and Alcoholism. Helping patients who drink too much, A clinicians guide, 2005 edition http://pubs.niaaa.nih.gov/publications/Practitioner/CliniciansGuide2005/clinicians_guide.htm
REQUIRED CDC/GOV GUIDELINES	National Institute on Alcohol Abuse and Alcoholism. A Pocket Guide: Alcohol Screening and Brief Intervention. http://www.niaaa.nih.gov/Publications/EducationTrainingMaterials/Pages/YouthGuide.aspx
REQUIRED JOURNAL READING	Faure S, Herrero A, Jung B, Dunny Y, Daures JP, Mura T, Assenat E, Bismuth M, Bouyabrine H, Donnadiou-Rigole H, Navarro F, Jaber S, Larrey D, Pageaux GP. Excessive alcohol consumption after liver transplantation impacts on long-term survival, whatever the primary indication. <i>Journal of Hepatology</i> . 2012 Aug;57(2):306-12.

MANAGEMENT OF LIVER TRANSPLANT PATIENTS

REQUIRED READING	<p>The UNOS OPTN/SRTR Annual Report includes analysis of transplant data, explanation of analysis methods frequently raised by physicians, patients, policy makers and administrators, trends in waitlist patient counts, analysis of transplants by organ, including patient outcome predictors and more. Read the 2011 OPTN & SRTR Annual Data Report for LIVER (linked). The FULL report link is also provided but is not required reading.</p> <p>http://srtr.transplant.hrsa.gov/annual_reports/2011/flash/03_liver/index.html http://srtr.transplant.hrsa.gov/annual_reports/2011/flash/12_full/index.html</p>
CARE OF PATIENTS WITH HEPATOCELLULAR CARCINOMA- Transplant	
REQUIRED JOURNAL READING	<p>Clavien PA, Lesurtel M, Bossuyt PM, Gores GJ, Langer B, Perrier A; OLT for HCC Consensus Group. Recommendations for liver transplantation for hepatocellular carcinoma: an international consensus conference report. Lancet Oncol. 2012 Jan;13(1):e11-22</p>
REQUIRED JOURNAL READING	<p>Cabrera R, Nelson DR. Review article: the management of hepatocellular carcinoma. Aliment Pharmacol Ther. 2010 Feb 15;31(4):461-76.</p>
REQUIRED JOURNAL READING	<p>Cucchetti A, Cescon M, Bigonzi E, Piscaglia F, Golfieri R, Ercolani G, Cristina Morelli M, Ravaioli M, Daniele Pinna A. Priority of candidates with hepatocellular carcinoma awaiting liver transplantation can be reduced after successful bridge therapy. Liver Transpl. 2011 Nov;17(11):1344-54</p>
CARE OF PATIENTS WITH ALCOHOLISM- Transplant	
REQUIRED JOURNAL READING	<p>Mathurin P, Ehrhard F. Management of alcohol dependence in transplant candidate: We are far away from the objective line. Liver Transplantation. 2011;17(5): 492-93.</p>
REQUIRED JOURNAL READING	<p>Weinrieb RM, Van Horn DHA, Lynch KG, Lucey MR. A randomized controlled study of treatment for alcohol dependence in patients awaiting liver transplantation. 2011; 17(5): 539-47.</p>
REQUIRED JOURNAL READING	<p>Singal AK, et al. Nutritional status of patients with alcoholic cirrhosis undergoing liver transplantation: time trends and impact on survival. Transpl Int. 2013 May 3.</p>
REQUIRED PRACTICE GUIDELINE	<p>AASLD Practice Guideline- Long-Term Management of the Successful Adult Liver Transplant- ALCOHOLIC LIVER DISEASE (p. 21-22)</p> <p>http://www.aasld.org/practiceguidelines/Pages/guidelinelisting.aspx</p>
CARE OF PATIENTS WITH AUTOIMMUNE LIVER DISEASE- Transplant	
REQUIRED JOURNAL READING	<p>Bhanji RA, Mason AL, Girgis S, Montano-Loza AJ. Liver transplantation for overlap syndromes of autoimmune liver diseases. Liver Int. 2013 Feb;33(2):210-9.</p>
REQUIRED JOURNAL READING	<p>Della Corte C, Sartorelli MR, Comparcola D, Alterio A, Giorgio V, Papadatou B, Nobili V. Autoimmune liver diseases. Minerva Pediatr. 2012 Dec;64(6):595-606.</p>

REQUIRED JOURNAL READING	Gómez Cabeza de Vaca V, Bernal Bellido C, Alamo Martínez JN, Suárez Artacho G, Marín Gómez LM, Serrano Díaz-Canedo J, Padillo Ruiz FJ, Gómez Bravo MA. Liver transplantation due to fulminant hepatic failure. <i>Transplant Proc.</i> 2012 Sep;44(7):2076-7.
REQUIRED JOURNAL READING	Montano-Loza AJ, Vargas-Vorackova F, Ma M, Bain VG, Burak K, Kumar T, Mason AL. Incidence and risk factors associated with de novo autoimmune hepatitis after liver transplantation. <i>Liver Int.</i> 2012 Oct;32(9):1426-33.
REQUIRED JOURNAL READING	Czaja AJ. Diagnosis, pathogenesis, and treatment of autoimmune hepatitis after liver transplantation. <i>Dig Dis Sci.</i> 2012 Sep;57(9):2248-66.
REQUIRED JOURNAL READING	Dbouk N, Parekh S. Impact of pretransplant antinuclear antibody and antismooth muscle antibody titers on disease recurrence and graft survival following liver transplantation in autoimmune hepatitis patients. <i>J Gastroenterol Hepatol.</i> 2013 Mar;28(3):537-42.
REQUIRED JOURNAL READING	Liberal R, Grant CR, Mieli-Vergani G, Vergani D. Autoimmune hepatitis: a comprehensive review. <i>J Autoimmun.</i> 2013 Mar;41:126-39.
REQUIRED JOURNAL READING	Burra P, De Martin E, Gitto S, Villa E. Influence of age and gender before and after liver transplantation. <i>Liver Transpl.</i> 2013 Feb;19(2):122-34
REQUIRED JOURNAL READING	Carbone M, Neuberger J. Liver transplantation in PBC and PSC: indications and disease recurrence. <i>Clin Res Hepatol Gastroenterol.</i> 2011 Jun;35(6-7):446-54
CARE OF PATIENTS WITH HEPATITIS C- Transplant	
REQUIRED JOURNAL READING	Roche B, Samuel D. Hepatitis C virus treatment pre- and post-liver transplantation. <i>Liver Int.</i> 2012 Feb;32 Suppl 1:120-8.
REQUIRED JOURNAL READING	Gallegos-Orozco JF, Yosephy A, Noble B, Aqel BA, Byrne TJ, Carey EJ, Douglas DD, Mulligan D, Moss A, de Petris G, Williams JW, Rakela J, Vargas HE. Natural history of post-liver transplantation hepatitis C: A review of factors that may influence its course. <i>Liver Transpl.</i> 2009 Dec;15(12):1872-81.
REQUIRED JOURNAL READING	Terrault NA, McCaughan GW, Curry MP, Gane E, Fagioli S, Fung JYY, Agarwal K, Lilly L, Strasser SI, Brown KA, Gadano A, Kwo PY, Burra P, Samuel D, Charlton M, Pessoa MG, Berenguer M. International Liver Transplantation Society Consensus Statement on Hepatitis C Management in Liver Transplant Candidates. <i>Transplantation.</i> 2017 May;101(5):945-955.
REQUIRED JOURNAL READING	Terrault NA, Berenguer M, Strasser SI, Gadano A, Lilly L, Samuel D, Kwo PY, Agarwal K, Curry MP, Fagioli S, Fung JYY, Gane E, Brown KA, Burra P, Charlton M, Pessoa MG, McCaughan GW. International Liver Transplantation Society Consensus Statement on Hepatitis C Management in Liver Transplant Recipients. <i>Transplantation.</i> 2017 May;101(5):956-
REQUIRED JOURNAL READING	Verna EC, Abdelmessih R, Salomao MA, Lefkowitz J, Moreira RK, Brown RS Jr. Cholestatic hepatitis C following liver transplantation: an outcome-based histological definition, clinical predictors, and prognosis. <i>Liver Transpl.</i> 2013 Jan;19(1):78-88.
CARE OF PATIENTS WITH HEPATITIS B- Transplant	

REQUIRED JOURNAL READING	Chang MS, Olsen SK, Pichardo EM, Stiles JB, Rosenthal-Cogan L, Brubaker WD, Guarrera JV, Emond JC, Brown RS Jr. Prevention of de novo hepatitis B in recipients of core antibody-positive livers with lamivudine and other nucleos(t)ides: a 12-year experience. <i>Transplantation</i> . 2013 Apr 15;95(7):960-5.
REQUIRED JOURNAL READING	Bohorquez HE, Cohen AJ, Girgrah N, Bruce DS, Carmody IC, Joshi S, Reichman TW, Therapondos G, Mason AL, Loss GE.. Liver transplantation in hepatitis B core-negative recipients using livers from hepatitis B core-positive donors: A 13-year experience. <i>Liver Transpl</i> . 2013 Jun;19(6):611-8.
REQUIRED JOURNAL READING	Teperman LW, et al. Randomized trial of emtricitabine/tenofovir disoproxil fumarate after hepatitis B immunoglobulin withdrawal after liver transplantation. <i>Liver Transpl</i> . 2013 Jun;19(6):594-601.
REQUIRED JOURNAL READING	Xie F, et al. Effects of nucleoside analogue on patients with chronic hepatitis B-associated liver failure: meta-analysis. <i>PLoS One</i> . 2013;8(1):e54773.
REQUIRED JOURNAL READING	Cholongitas E, Papatheodoridis GV. High genetic barrier nucleos(t)ide analogue(s) for prophylaxis from hepatitis B virus recurrence after liver transplantation: a systematic review. <i>Am J Transplant</i> . 2013 Feb;13(2):353-62.
REQUIRED JOURNAL READING	Fung J, et al. Oral Nucleoside/Nucleotide Analogs Without Hepatitis B Immune Globulin After Liver Transplantation for Hepatitis B. <i>Am J Gastroenterol</i> 2013; 108:942–948.
REQUIRED JOURNAL READING	Terrault N. Editorial: Prophylaxis in HBV-Infected Liver Transplant Patients: End of the HBIG Era? <i>Am J Gastroenterol</i> . 2013 Jun;108(6):949-51.
LIVING DONOR VS CADAVER ALLOGRAFTS- Transplant	
REQUIRED JOURNAL READING	Reichman TW, et al. Living donor versus deceased donor liver transplantation: a surgeon-matched comparison of recipient morbidity and outcomes. <i>Transpl Int</i> . 2013 May 11.
REQUIRED JOURNAL READING	Lobritto S, Kato T, Emond J. Living-donor liver transplantation: current perspective. <i>Semin Liver Dis</i> . 2012 Nov;32(4):333-
REQUIRED JOURNAL READING	Uemura T, Ramprasad V, Hollenbeak CS, Bezinover D, Kadry Z. Liver transplantation for hepatitis C from donation after cardiac death donors: an analysis of OPTN/UNOS data. <i>Am J Transplant</i> . 2012 Apr;12(4):984-91.
REQUIRED JOURNAL READING	Deroose JP, Kazemier G, Zondervan P, Ijzermans JN, Metselaar HJ, Alwayn IP. Hepatic steatosis is not always a contraindication for cadaveric liver transplantation. <i>PB (Oxford)</i> . 2011 Jun;13(6):417-25.
REQUIRED JOURNAL READING	Kulik LM, et al. Outcomes of living and deceased donor liver transplant recipients with hepatocellular carcinoma: results of the A2ALL cohort. <i>Am J Transplant</i> . 2012 Nov;12(11):2997-3007.
REQUIRED JOURNAL READING	Sher L, et al. Results of live donor liver transplantation in patients with hepatitis C virus infection: the HCV 3 trial experience. <i>Clin Transplant</i> . 2012 May-Jun;26(3):502-9.
REQUIRED JOURNAL READING	Anand AC. Potential Liver Transplant Recipients with Hepatitis C: Should They Be Treated Before or After Transplantation? <i>Journal of Clinical and Experimental Hepatology</i> . 2017;7(1):42-54.

REQUIRED JOURNAL READING	Ladner DP, Dew MA, Forney S, Gillespie BW, Brown Jr RS, Merion RM, Freise CE, Hayashi PH, Hong JC, Ashworth A, et al. Long-term quality of life after liver donation in the adult to adult living donor liver transplantation cohort study (A2ALL). <i>J</i>
REQUIRED JOURNAL READING	Kim PTW, and Testa G. Living donor liver transplantation in the USA. <i>Hepatobiliary Surgery and Nutrition</i> . 2015;5(2):133-
REQUIRED JOURNAL READING	Wan P, Yu X, and Xia Q. Operative outcomes of adult living donor liver transplantation and deceased donor liver transplantation: A systematic review and meta-analysis. <i>Liver Transplantation</i> . 2014;20(4):425-36.
REQUIRED JOURNAL READING	Saxena V, et al. Recipient-donor race mismatch for African American liver transplant patients with chronic hepatitis C. <i>Liver Transpl</i> . 2012 May;18(5):524-31.
TRANSPLANT IMMUNOLOGY AND MANAGEMENT- Transplant	
REQUIRED JOURNAL READING	Trotter JF, Grafals M, Alsina AE. Early use of renal-sparing agents in liver transplantation: A closer look. <i>Liver Transpl</i> . 2013 May 21.
REQUIRED JOURNAL READING	O'Leary JG, Levitsky J et.al. Protecting the kidney in liver transplant candidates: practice-based recommendations from the American Society of Transplantation Liver and Intestine Community of Practice. <i>Am J Transplant</i> 2016;16(9):2516-31.
REQUIRED JOURNAL READING	Dhanasekaran R. Management of Immunosuppression in Liver Transplantation. <i>Clin Liver Dis</i> 2017;21(2):337-353.
REQUIRED JOURNAL READING	Turner AP, Knechtle SJ. Induction immunosuppression in liver transplantation: a review. <i>Transpl Int</i> . 2013 Jul;26(7):673- 83
REQUIRED JOURNAL READING	Ramirez CB, Doria C, Frank AM, Armenti ST, Marino IR. Completely steroid-free immunosuppression in liver transplantation: a randomized study. <i>Clin Transplant</i> . 2013 May;27(3):463-71.
REQUIRED JOURNAL READING	Rao V, Haywood S, Abecassis M, Levitsky J. A non-induction renal sparing approach after liver transplantation: high dose mycophenolate mofetil with delayed, low-dose tacrolimus. <i>Transplant Proc</i> . 2013 Jan-Feb;45(1):320-2.
REQUIRED JOURNAL READING	Garcia-Saenz-de-Sicilia M, Mukherjee S. The adverse pharmacology of calcineurin inhibitors and their impact on hepatitis C recurrence after liver transplantation: implications for clinical practice. <i>Expert Rev Clin Pharmacol</i> . 2012 Sep;5(5):587- 93.
NUTRITIONAL SUPPORT- Transplant	
REQUIRED JOURNAL READING	Weber ML, Ibrahim HN, Lake JR. Renal dysfunction in liver transplant recipients: evaluation of the critical issues. <i>Liver Transpl</i> . 2012 Nov;18(11):1290-301.
REQUIRED JOURNAL READING	Sanchez, A. J., & Aranda-Michel, J. (2006). Nutrition for the liver transplant patient. <i>Liver transplantation</i> , 12 (9), 1310-1316
REQUIRED JOURNAL READING	Stickel, F., Inderbitzin, D., & Candinas, D. (2007). Role of nutrition in liver transplantation for end-stage chronic liver disease. <i>Nutrition Reviews</i> , 66 (1), 47-54
ETHICAL CONSIDERATIONS- Transplant	
REQUIRED JOURNAL READING	Colardyn F. Organizational and ethical aspects of living donor liver transplantation. <i>Liver Transpl</i> 2003;9:S2-S5.
REQUIRED JOURNAL READING	Donor Safety in Living Donor Liver Transplantation: A Single-Center Analysis of 300 cases. Jianyoung Lei, Lunan Yan, Wentao Wang.

	https://www.ncbi.nlm.nih.gov/pmc/articles/PMC3636234/
REQUIRED JOURNAL READING	Shapiro RS, Adams M. Ethical issues surrounding adult-to-adult living donor liver transplantation. <i>Liver Transpl</i> 2000;6:S77-S80.
REQUIRED JOURNAL READING	Singal, A. K., & Duchini, A. (2011). Liver transplantation in acute alcoholic hepatitis: Current status and future development. <i>World journal of hepatology</i> , 3 (8), 215.
REQUIRED JOURNAL READING	Benjamin M. Transplantation for alcoholic liver disease: The Ethical Issues. <i>Liver Transpl</i> 997;3(3):337-342.
REQUIRED JOURNAL READING	"Ethical considerations regarding early liver transplantation in patients with severe alcoholic hepatitis not responding to medical therapy." <i>J Hepatology</i> 2014 https://www.ncbi.nlm.nih.gov/pubmed/?term=ethical+considerations+of+transplant+in+alcoholics
REQUIRED JOURNAL READING	Ubel PA. Transplantation in alcoholics: separating prognosis and responsibility from social biases. <i>Liver Transpl</i> 1997;3(3):343-346.
REQUIRED JOURNAL READING	Saab S, Bownik H, Ayoub N, Younossi Z, Durazo F, Han S, Hong JC, Farmer D, Busuttil RW. Differences in health-related quality of life scores after orthotopic liver transplantation with respect to selected socioeconomic factors. <i>Liver Transpl</i> . 2011 May;17(5):580-90.
REQUIRED JOURNAL READING	Cowling T, Jennings LW, Goldstein RM, Sanchez EQ, Chinnakotla S, Klintmalm GB, Levy MF. Societal reintegration after liver transplantation: findings in alcohol-related and non-alcohol-related transplant recipients. <i>Ann Surg</i> 2004;239(1):93- 98.
POST-OP CARE- Transplant	
REQUIRED JOURNAL READING	AASLD Guideline https://www.aasld.org/sites/default/files/guideline_documents/141022_Guideline_Adult-LT_Management_4UFb.pdf
REQUIRED JOURNAL READING	Reuben A. Long-term management of the liver transplant patient: diabetes, hyperlipidemia, and obesity. <i>Liver Transpl</i> 2001;7:S13-S21.
REQUIRED JOURNAL READING	Pagadala, M., Dasarathy, S., Egthesad, B., & McCullough, A. J. (2009). Posttransplant metabolic syndrome: an epidemic waiting to happen. <i>Liver transplantation</i> , 15(12), 1662-1670.
REQUIRED JOURNAL READING	Crippin JS. Bone Disease After Liver Transplantation. <i>Liver Transpl</i> 2001;7:S27-S35.