

**2004 AASLD NP/PA Clinical Hepatology Fellowship Program  
CURRICULUM**

<b>Milestones/Competencies</b> <b>NP/PA fellows will learn to...</b>	<b>Sequential Learning Activities/Reading</b>	<b>Expected Completion Date</b>
Obtain a complete hepatology-directed history and perform a complete hepatology-directed physical examination	<p><b>Required Activities</b> 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. 9<sup>th</sup> edition. Philadelphia: Lippincott Williams and Wilkins, 2003.</p> <p>Koff RS. History and physical examination. Chapter 2. In: Bacon BR, Di Bisceglie A (Eds.). Liver Disease: Diagnosis and Management. First Edition. Philadelphia: Churchill Livingstone, 2000:19-23.</p> <p><b>Optional Activity</b> Dr. Tarkan Dural and Dr. Richard Goodgame. Case Study: Approach to chronic liver disease. Baylor College of Medicine. Gastroenterology Grand Rounds. The Virtual GI Clinic and Classroom. <a href="http://www.bcm.tmc.edu/gastro/VGICC/GI-D0119/INDEX.HTM">http://www.bcm.tmc.edu/gastro/VGICC/GI-D0119/INDEX.HTM</a></p>	End of first quarter
Identify and describe liver and biliary disease-related signs and symptoms	<p><b>Required Activities</b> McIntyre N. Symptoms and signs of liver disease. In: Bircher J, Benhamou JP, McIntyre N, Rizzetto M, Rodes J (Eds.). Oxford Textbook of Clinical Hepatology. 2<sup>nd</sup> Edition. New York: Oxford University Press, 1999:479-499.</p> <p>Online Medical Encyclopedia-Medline Plus <a href="http://www.nlm.nih.gov/medlineplus/encyclopedia.html">http://www.nlm.nih.gov/medlineplus/encyclopedia.html</a></p> <p><b>Optional Activity</b> Dr. Greg Shannon and Dr. Reem Ghalib. Case study: evaluation of chronic liver disease. Baylor College of Medicine. Gastroenterology Grand Rounds. The Virtual GI Clinic and</p>	End of first quarter

<p>Recognize and discuss risk factors for various liver diseases and be aware of immunization recommendations for at-risk individuals</p>	<p>Classroom. <a href="http://www.bcm.tmc.edu/gastro/VGICC/GI-D0103/INDEX.HTM">http://www.bcm.tmc.edu/gastro/VGICC/GI-D0103/INDEX.HTM</a></p> <p><b>General Resources</b>  Online Medical Encyclopedia-Medline Plus. Topic: Liver Disease  <a href="http://www.nlm.nih.gov/medlineplus/encyclopedia.html">http://www.nlm.nih.gov/medlineplus/encyclopedia.html</a></p> <p><b>Specific Resources</b>  Nissen NN, Martin P. Hepatocellular carcinoma: the high-risk patient. J Clin Gastroenterol 2002;35(5 Suppl 2):S79-85.</p> <p>McCullough AJ, O'Connor JFB. Alcoholic liver disease: proposed recommendations for the American College of Gastroenterology. Am J Gastroenterol 1998;93:2026–2027.</p> <p>Alter MJ. Prevention of spread of hepatitis C. Hepatology 2002;36:S93-S98.</p> <p>Terrault NA. Sexual activity as a risk factor for hepatitis C. Hepatology 2002;36:S99-105.</p> <p>Mast EE, Williams IT, Alter MJ, Margolis HS. Hepatitis B vaccination of adolescent and adult high-risk groups in the United States. Vaccine 1998;16 (Suppl):S27-29.</p> <p>Trepka MJ, Weisbord JS, Zhang G, Brewer T. Hepatitis B virus infection risk factors and immunity among sexually transmitted disease clinic clients. Sex Transm Dis 2003;30(12): 914-918.</p> <p>Centers for Disease Control and Prevention. Prevention of hepatitis A through active or passive immunization: Recommendations of the Advisory Committee on Immunization Practices (ACIP). MMWR Recomm Rep 1999;48(RR-12):1-37.</p> <p>Ratziu V, Giral P, Charlotte F, et al. Liver fibrosis in overweight patients. Gastroenterology 2000;118:1117–1123.</p> <p>Angulo P, Keach JC, Batts KP, et al. Independent predictors of liver fibrosis in patients with nonalcoholic steatohepatitis. Hepatology 1999;30:1356–1362.</p>	<p>End of first quarter</p>
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	<p>Buchner AM, Sonnenberg A. Factors influencing the prevalence of gallstones in liver disease: the beneficial and harmful influences of alcohol. <i>Am J Gastroenterol</i> 2002;97(4):905-909.</p> <p><b>Optional Activities</b>          CDC Hepatitis C Prevention and Control Recommendations:  <a href="http://www.cdc.gov/ncidod/diseases/hepatitis/c_training/edu/6/default.htm">http://www.cdc.gov/ncidod/diseases/hepatitis/c_training/edu/6/default.htm</a></p>	
<p>Counsel patients with liver or biliary disease regarding lifestyle modifications and the natural history of the disease</p>	<p><b><u>Lifestyle Modification Activities</u></b>          Morgan MY. Nutritional aspects of liver and biliary disease. In: Bircher J, Benhamou JP, McIntyre N, Rizzetto M, Rodes J (Eds.). <i>Oxford Textbook of Clinical Hepatology</i>. 2<sup>nd</sup> Edition. New York: Oxford University Press, 1999:1963-1981.</p> <p>AASLD: Lok AS, McMahon BJ. Chronic hepatitis B. <i>Hepatology</i> 2001;34(6):1228-1231.</p> <p>Management of hepatitis C: 2002. <i>NIH Consens State Sci Statements</i> 2002 Jun 10-12;19(3):27-29.</p> <p>Peters MG, Terrault NA. Alcohol use and hepatitis. <i>Hepatology</i> 2002;36:S220-225.</p> <p>McCullough AJ, O'Connor JFB. Alcoholic liver disease: proposed recommendations for the American College of Gastroenterology. <i>Am J Gastroenterol</i> 1998;93:2028-2029.</p> <p>Roberts EA, Schilsky ML. A practice guideline on Wilson disease. <i>Hepatology</i> 2003;37:1486.</p> <p>Fletcher LM, et al. Excess alcohol greatly increases the prevalence of cirrhosis in hereditary hemochromatosis. <i>Gastroenterology</i> 200(2);122(2):281-289.</p> <p>Ueno T, et al. Therapeutic effects of restricted diet and exercise in obese patients with fatty liver. <i>J Hepatol</i> 1997;27:103-107.</p>	<p>End of first quarter</p>

	<p><b><u>Natural History Activities</u></b></p> <p><b>General Resource</b> Zakim D, Boyer TD (Ed): Hepatology. A Textbook of Liver Disease. WB Saunders, Philadelphia 2003.</p> <p><b>Specific Resources</b> AASLD: Lok AS, McMahon BJ. Chronic hepatitis B. Hepatology 2001;34(6):1226-1228.</p> <p>Management of hepatitis C: 2002. NIH Consens State Sci Statements. 2002 Jun 10-12; 19(3):8-11.</p> <p>Sanyal AJ. AGA technical review on nonalcoholic fatty liver disease. Gastroenterology 2002;123(5):1712-1713.</p> <p>Perrillo RP. Acute flares in chronic hep B: the natural and unnatural history of an immunologically mediated liver disease. Gastroenterology 2001;120:1009-1022.</p> <p>Sama C, et al. Epidemiology and natural history of gallstone disease. Semin Liv Dis 1990;10:149-158.</p>	
<p>List the indications for a liver biopsy and discuss the procedure, alternatives, and possible complications with patients</p>	<p><b>Required Activities</b> Bravo AA, Sheth SG, Chopra S. Liver biopsy. N Engl J Med 2001;344:495-500.</p> <p>Degos F, Benhamou JP. Liver biopsy. In: Bircher J, Benhamou JP, McIntyre N, Rizzetto M, Rodes J (Eds.). Oxford Textbook of Clinical Hepatology. 2<sup>nd</sup> Edition. New York: Oxford University Press, 1999:541-545.</p> <p>Reddy KR, Mallat DB, Jeffers LJ. Evaluation of the liver: liver biopsy and laparoscopy. In: Schiff E, Sorrell MF, Maddrey WC (Eds.). Schiff's Diseases of the Liver. 9<sup>th</sup> edition. Philadelphia: Lippincott Williams and Wilkins, 2003:258-275.</p> <p>Dienstag JL. The role of liver biopsy in chronic hepatitis C. Hepatology 2002;36(5 Suppl 1):S152-160.</p>	<p>End of first quarter</p>

	<p>Afdhal NH. Diagnosing fibrosis in hepatitis C: is the pendulum swinging from biopsy to blood tests? <i>Hepatology</i> 2003;37(5):972-974.</p> <p>Forns X, Ampurdanes S, Llovet JM, Aponte J, Quinto L, Martinez-Bauer E, et al. Identification of chronic hepatitis C patients without hepatic fibrosis by a simple predictive model. <i>Hepatology</i> 2002;36:986-992.</p> <p>Imbert-Bismut F, Ratziu V, Pieroni L, Charlotte F, Benhamou Y, Poynard T. Biochemical markers of liver fibrosis in patients with hepatitis C virus infection: a prospective study. <i>Lancet</i> 2001;357:1069-1075.</p> <p>Myers RP, Tainturier MH, Ratziu V, Piton A, Thibault V, Imbert-Bismut F, et al. Prediction of liver histological lesions with biochemical markers in patients with chronic hepatitis B. <i>J Hepatol</i> 2003;39(2):222-230.</p> <p>Phillips MG, Preedy VR, Hughes RD. Assessment of prognosis in alcoholic liver disease: can serum hyaluronate replace liver biopsy? <i>Eur J Gastroenterol Hepatol</i> 2003;15(9):941-944.</p> <p><b>Optional Activities</b>  Dr. Tarkan Dural and Dr. Atilla Ertan. Case Study: GI bleeding and pancreatitis after liver biopsy. Baylor College of Medicine. Gastroenterology Grand Rounds. The Virtual GI Clinic and Classroom. <a href="http://www.bcm.tmc.edu/gastro/DDC/grandrounds/vgicc-caselist.html">http://www.bcm.tmc.edu/gastro/DDC/grandrounds/vgicc-caselist.html</a></p> <p>The Hepatitis Information network: Liver Biopsy <a href="http://www.hepnet.com/liver/biopsy.html">http://www.hepnet.com/liver/biopsy.html</a></p>	
<p>Be familiar with the blood tests and imaging procedures indicated in the evaluation of patients with signs of hepatic disease</p>	<p><b>Required Activities</b>  Rosen HR, Keeffe EB. Laboratory evaluation of the patient with signs and symptoms of liver disease. In: Brandt LJ, ed. <i>Clinical practice of gastroenterology</i>. Vol 2. Philadelphia: Churchill Livingstone, 1998:812-20.</p>	<p>End of first quarter</p>

	<p>Pratt DS, Kaplan MM. Evaluation of abnormal liver enzyme results in asymptomatic patients. N Engl J Med 2000;342:1266–1271.</p> <p>Balfe DM, Ralls PW, Bree RL, DiSantis DJ, Glick SN, Levine MS, et al. Imaging strategies in the initial evaluation of the jaundiced patient. American College of Radiology. ACR Appropriateness Criteria. Radiology 2000;215(Suppl):125-133.  <a href="http://www.acr.org/dyna/?id=appcrit&amp;pdf=0125-134_jaundice_ac">http://www.acr.org/dyna/?id=appcrit&amp;pdf=0125-134_jaundice_ac</a></p> <p>Ferenci P. How to identify the genetic basis of gastrointestinal and liver diseases? Gut 2003;52(Suppl 2):ii6-9.</p> <p><b>Optional Activities</b>  Case study: diagnostic tests in suspected Wilson's disease. Baylor College of Medicine. Gastroenterology Grand Rounds. The Virtual GI Clinic and Classroom.  <a href="http://www.bcm.tmc.edu/gastro/DDC/grandrounds/vgicc-caselist.html">http://www.bcm.tmc.edu/gastro/DDC/grandrounds/vgicc-caselist.html</a></p>	
<p>Know the appropriate diagnostic and therapeutic plan for various liver diseases - describe treatment indications, contraindications, risks, efficacy, side-effect profiles, and side effect management</p>	<p><b>Required Activities</b>  Koff, RS. Hepatitis A and E. In: Zakim D, Boyer TD (Ed): Hepatology. A Textbook of Liver Disease. WB Saunders, Philadelphia 2003, chapter 31, pp 939-949.</p> <p>AASLD: Lok AS, McMahon BJ. Chronic hepatitis B. Hepatology 2001;34(6):1225-1241.</p> <p>Treatment updates: Conjeevaram HS, Lok AS. Management of chronic hepatitis B. J Hepatol. 2003;38 (Suppl 1):S90-103.</p> <p>Management of hepatitis C: 2002. NIH Consens State Sci Statements.2002 Jun 10-12; 19(3):12-26.</p> <p>Fried MW. Side effects of therapy of hepatitis C and their management. Hepatology 2002; 36:S237-244.</p> <p>Czaja AJ, Freese DK. Diagnosis and treatment of autoimmune hepatitis. Hepatology 2002;36(2):479-497.</p>	<p>End of first quarter</p>

	<p>Sanyal AJ. AGA technical review on nonalcoholic fatty liver disease. <i>Gastroenterology</i> 2002;123(5):1705-1725.</p> <p>American Gastroenterological Association medical position statement: nonalcoholic fatty liver disease. <i>Gastroenterology</i> 2002;123(5):1702-1704.</p> <p>McCullough AJ, O'Connor JFB. Alcoholic liver disease: proposed recommendations for the American College of Gastroenterology. <i>Am J Gastroenterol</i> 1998;93:2022-2036.</p> <p>Treatment updates: Arteel G, Marsano L, Mendez C, Bentley F, McClain CJ. Advances in alcoholic liver disease. <i>Best Pract Res Clin Gastroenterol</i>. 2003;17(4):635-640.</p> <p>Roberts EA, Schilsky ML. A practice guideline on Wilson disease. <i>Hepatology</i> 2003;37:1475-1492.</p> <p>Heathcote EJ. Management of primary biliary cirrhosis. The American Association for the Study of Liver Diseases practice guidelines. <i>Hepatology</i> 2000;31(4):1005-1009.</p> <p>Tavill AS. Diagnosis and management of hemochromatosis. The American Association for the Study of Liver Diseases practice guidelines. <i>Hepatology</i> 2001;33(5):1321-28.</p> <p>Harrison SA, Kadam S, Lang KA, Schenker S. Nonalcoholic steatohepatitis: what we know in the new millennium. <i>Am J Gastroenterol</i> 2002;97(11):2714-2724.</p> <p>Treatment updates: Nonalcoholic steatohepatitis: summary of an AASLD Single Topic Conference. <i>Hepatology</i> 2003;37(5):1202-1219.</p> <p>Arteaga VA, Fromm H. The medical management of gallstones. In: Zakim D, Boyer TD (Ed): <i>Hepatology. A Textbook of Liver Disease</i>. WB Saunders, Philadelphia 2003, chapter 60, pp 1745-1750.</p>	
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	<p><b>Optional Activities</b></p> <p>McKiernan PJ. Neonatal cholestasis. Semin Neonatol 2002;7(2):153-165.</p> <p>Liver disease primarily of children. In: Zakim D, Boyer TD (Ed): Hepatology. A Textbook of Liver Disease. WB Saunders, Philadelphia;2003:1383-1536.</p> <p>Riely CA. Liver disease in the pregnant patient. Practice guidelines. Am J Gastroenterol 1999;94:1728-1732.</p> <p>Fontaine H. Effect of pregnancy on chronic hep C: a case control study. Lancet 2000;356(9238):1328-1329.</p> <p>Read the following case studies In: Chapel H, Haeney M, Misbah S, Snowden N. Essentials in Clinical Immunology. 4th edition. Available online at:  <a href="http://www.immunologyclinic.com/case.asp?chap=14&amp;case=5">http://www.immunologyclinic.com/case.asp?chap=14&amp;case=5</a></p> <p>Case 14.5 Hepatitis A  Case 14.6 Hepatitis C-induced liver disease  Case 14.7 Autoimmune hepatitis  Case 14.8 Primary biliary cirrhosis</p> <p>Case study: acute alcoholic hepatitis. Baylor College of Medicine. Gastroenterology Grand Rounds. The Virtual GI Clinic and Classroom.  <a href="http://www.bcm.tmc.edu/gastro/DDC/grandrounds/vgicc-caselist.html">http://www.bcm.tmc.edu/gastro/DDC/grandrounds/vgicc-caselist.html</a></p> <p>Case study: hepatocellular cancer: treatment options. Baylor College of Medicine. Gastroenterology Grand Rounds. The Virtual GI Clinic and Classroom.  <a href="http://www.bcm.tmc.edu/gastro/DDC/grandrounds/vgicc-caselist.html">http://www.bcm.tmc.edu/gastro/DDC/grandrounds/vgicc-caselist.html</a></p>	
Describe the use of alternative and complementary therapies in	<p><b>Required Activities</b></p> <p>Seeff LB, Lindsay KL, Bacon BR, et al. Complementary and alternative medicine in chronic liver disease. Hepatology 2001;34(3):595-603.</p>	End of First Quarter

treating liver disease	<p>National Center for Complementary and Alternative Medicine. Hepatitis C and complementary and alternative medicine: 2003 update. Focus on pages 6-10.  <a href="http://nccam.nih.gov/health/hepatitisc/">http://nccam.nih.gov/health/hepatitisc/</a></p> <p><b>Optional Activities</b>  Fogden E, Neuberger J. Alternative medicines and the liver. Liver Int 2003;23(4):213-220.</p> <p>Sarin SK. Management of hepatitis C: what should we advise about adjunctive therapies, including herbal medicines, for hepatitis C? J Gastroenterol Hepatol 2000;15(Suppl): E164-E171.</p>	
Compare and contrast the indications and limitations of various imaging technologies	<p><b>Required Activities</b>  Reddy SI, Grace ND. Liver imaging: a hepatologist's perspective. Clinics in Liver Disease 2002;6(1):297-310.</p> <p>Fidler JL, Stark DD. Imaging of the liver. In: Bacon BR, Di Bisceglie (Eds.). Liver Disease: Diagnosis and Management. First Edition. Churchill Livingstone; Philadelphia:2000:405-407.</p> <p>Friedman LS, Martin P, Munoz SJ. Hepatic imaging. In: Zakim D, Boyer TD (Ed): Hepatology. A Textbook of Liver Disease. WB Saunders, Philadelphia 2003, chapter 60, pp 683-687.</p> <p>Bree RL, Greene FL, Ralls PW, Balfe DM, DiSantis DJ, Glick SN, Kidd R, Levine MS, Megibow AJ, Mezwa DG, Saini S, Shuman WP, Laine LA, Lillemoe K. Suspected liver metastases. American College of Radiology. ACR Appropriateness Criteria. Radiology 2000;215(Suppl):213-224. <a href="http://www.acr.org/dyna/?id=appcrit&amp;pdf=0213-224_suspected_liver_metastases_ac">http://www.acr.org/dyna/?id=appcrit&amp;pdf=0213-224_suspected_liver_metastases_ac</a></p> <p>Ralls PW, Heiken JP, Bree RL, Glick SN, Huprich JE, Levine MS, et al. Liver lesion characterization. American College of Radiology. ACR Appropriateness Criteria. Radiology 2002. <a href="http://www.acr.org/dyna/?id=appcrit&amp;pdf=0193-200_liver_lesion-ac">http://www.acr.org/dyna/?id=appcrit&amp;pdf=0193-200_liver_lesion-ac</a></p>	End of 2nd Quarter

<p>Recognize liver test abnormalities without mentor supervision and formulate a differential diagnosis based on the history, physical examination, and laboratory findings</p>	<p><b>Required Activities</b>  Dufour DR, Lott JA, Nolte FS, Gretch DR, Koff RS, Seeff LB. Diagnosis and monitoring of hepatic injury. II. Recommendations for use of laboratory tests in screening, diagnosis, and monitoring. Clin Chem 2000;46(12):2050-2068.</p> <p>Laboratory guidelines for screening, diagnosis, and monitoring of hepatic injury developed by the American Association for the Study of Liver Diseases and the National Academy of Clinical Biochemistry. Also available online at <a href="http://www.nacb.org/lmpg/Hepatic_LMPG_PDF.stm">http://www.nacb.org/lmpg/Hepatic_LMPG_PDF.stm</a>.</p> <p>Green RM, Flamm S. American Gastroenterological Association technical review on the evaluation of liver chemistry tests. Gastroenterology 2002;123(4):1367–1384.</p> <p>American Gastroenterological Association medical position statement: evaluation of liver chemistry tests. Gastroenterology 2002;123(4):1364-1366.</p> <p><b>Optional activities</b>  Friedman LS, Martin P, Munoz SJ. Evaluation of the patients with LFT abnormalities: Illustrative cases. In: Zakim D, Boyer TD (Eds.). Hepatology: a textbook of liver disease. 4<sup>th</sup> edition. Philadelphia: WB Saunders, 2003:689-708.</p> <p>Dr. Raouf Hilal. Case study: evaluation of abnormal transaminases. Baylor College of Medicine. Gastroenterology Grand Rounds. The Virtual GI Clinic and Classroom. <a href="http://www.bcm.tmc.edu/gastro/VGICC">http://www.bcm.tmc.edu/gastro/VGICC</a></p> <p>Dr. Ed LeVert. Case study: abnormal LFTs in a patient with a broken ankle. Baylor College of Medicine. Gastroenterology Grand Rounds. The Virtual GI Clinic and Classroom. <a href="http://www.bcm.tmc.edu/gastro/VGICC">http://www.bcm.tmc.edu/gastro/VGICC</a></p>	<p>End of 2nd Quarter</p>
<p>Describe the clinical implications of liver biopsy findings</p>	<p><b>Required Activities</b>  Brunt EM. Liver biopsy interpretation for the gastroenterologist. Curr Gastroenterol Rep 2000;2(1):27-32.</p>	<p>End of 2nd Quarter</p>

	<p><b>General Reference Resources</b>  Kanel GC, Korula J (Eds.). Atlas of liver pathology. Philadelphia: W.B. Saunders, 1992.</p> <p>Goodman ZD, et al. Hepatic histopathology. In: Schiff ER, (Eds.): Schiff's Diseases of the Liver, 9<sup>th</sup> Edition. Lippincott-Williams &amp; Wilkins, Philadelphia, 2003:69-134.</p> <p><b>Optional Activities</b>  Orfei E. Review of pathology of the liver. Loyola University of Chicago. Department of Pathology. <a href="http://www.meddean.luc.edu/lumen/MedED/orfpath/pathtitl.htm">http://www.meddean.luc.edu/lumen/MedED/orfpath/pathtitl.htm</a></p> <p>The Internet Pathology Laboratory for Medical Education. Hepatic Pathology images. <a href="http://www-medlib.med.utah.edu/WebPath/LIVEHTML/LIVERIDX.html">http://www-medlib.med.utah.edu/WebPath/LIVEHTML/LIVERIDX.html</a></p>	
<p>Discuss the pathophysiology and natural history of portal hypertension and hepatic insufficiency</p>	<p><b>Required Activities</b>  Portal hypertension. In: Beers MH, Berkow R (Eds.). The Merck Manual of Diagnosis and Therapy. 17th Edition. Rahway: Merck, 1999. Chapter 38: Clinical Features Of Liver Disease.</p> <p>Sherlock S, Dooley J. The portal venous system and portal hypertension. In: Diseases of the liver and biliary system. 11<sup>th</sup> Edition. Oxford: Blackwell Science, 2002:147-186.</p>	<p>End of 2nd Quarter</p>
<p>Address the psychosocial issues of acute, chronic, and endstage liver disease</p>	<p><b>Required Activities</b>  Martin LM, Sheridan MJ, Younossi ZM. The impact of liver disease on health-related quality of life: a review of the literature. Curr Gastroenterol Rep 2002;4(1):79-83.</p> <p>Schomerus H, Hamster W. Quality of life in cirrhotics with minimal hepatic encephalopathy. Metab Brain Dis 2001;16(1-2):37-41.</p> <p>Heitkemper M, Jarrett M, Kurashige EM, Carithers R. Chronic hepatitis C. Implications for health-related quality of life. Gastroenterol Nurs 2001;24(4):169-175; quiz 176-177.</p>	<p>End of 2nd Quarter</p>

	<p>Wainwright SP. Transcending chronic liver disease: a qualitative study. <i>J Clin Nurs</i> 1997;6(1):43-45.</p> <p>O'Carroll RE, Couston M, Cossar J, Masterton G, Hayes PC. Psychological outcome and quality of life following liver transplantation: a prospective, national, single-center study. <i>Liver Transpl</i> 2003;9(7):712-720.</p> <p>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.</p> <p>Fontana RJ, Hussain KB, Schwartz SM, Moyer CA, Su GL, Lok AS. Emotional distress in chronic hepatitis C patients not receiving antiviral therapy. <i>J Hepatol</i> 2002;36(3):401-407.</p> <p>McDonald J, Jayasuriya J, Bindley P, Gonsalvez C, Gluseska S. Fatigue and psychological disorders in chronic hepatitis C. <i>J Gastroenterol Hepatol</i> 2002;17(2):171-176.</p> <p><b>Optional activities</b></p> <p>Coughlan B, Sheehan J, Hickey A, Crowe J. Psychological well-being and quality of life in women with an iatrogenic hepatitis C virus infection. <i>Br J Health Psychol</i> 2002; 7(Part 1):105-116.</p> <p>Grassi L, Satriano J, Serra A, Biancosino B, Zotos S, Sighinolfi L, Ghinelli F. Emotional stress, psychosocial variables and coping associated with hepatitis C virus and human immunodeficiency virus infections in intravenous drug users. <i>Psychother Psychosom</i> 2002;71(6):342-349.</p> <p>Lehman CL, Cheung RC. Depression, anxiety, post-traumatic stress, and alcohol-related problems among veterans with chronic hepatitis C. <i>Am J Gastroenterol</i> 2002;97(10): 2640-2646.</p>	
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<p>Evaluate a new patient with liver disease, obtain a complete history, perform a physical examination, and establish a differential diagnosis and management plan</p>	<p><b>General Activities</b>  Consult the following resources for a comprehensive understanding of all liver diseases.</p> <p>Zakim D, Boyer TD (Ed): Hepatology. A Textbook of Liver Disease. WB Saunders, Philadelphia 2003.</p> <p>Schiff E, Sorrell MF, Maddrey WC (Eds.). Schiff's Diseases of the Liver. 9<sup>th</sup> edition. Philadelphia: Lippincott Williams and Wilkins, 2003.</p> <p>Online: Best Practice of Medicine-Professional resource <a href="http://merck.praxis.md">http://merck.praxis.md</a> (Click Hepatology).</p> <p><b>Specific Activities</b>  Health and Age Disease Digest on Cirrhosis  <a href="http://www.healthandage.com/html/well_connected/pdf/doc75.pdf">http://www.healthandage.com/html/well_connected/pdf/doc75.pdf</a>  Health and Age Disease Digest on Hepatitis  <a href="http://www.healthandage.com/html/well_connected/pdf/doc59.pdf">http://www.healthandage.com/html/well_connected/pdf/doc59.pdf</a>  Health and Age Disease Digest on Gallstones and Gallbladder Disease  <a href="http://www.healthandage.com/html/well_connected/pdf/doc10.pdf">http://www.healthandage.com/html/well_connected/pdf/doc10.pdf</a></p>	<p>End of 3<sup>rd</sup> Quarter</p>
<p>Manage outpatients with chronic liver disease and cirrhosis, including general medical care and preventive care</p>	<p><b>Required Activities</b>  Gines P, Arroyo V, Rodes J. Complications of cirrhosis: ascites, hyponatremia, hepatorenal syndrome, and spontaneous bacterial peritonitis. In: Bacon BR, Di Bisceglie (Eds.). Liver Disease: Diagnosis and Management. First Edition. Philadelphia: Churchill Livingstone, 2000:238-250.</p> <p>Joist JH, Eby CS. Complications of cirrhosis: hemostatic failure. In: Bacon BR, Di Bisceglie (Eds.). Liver Disease: Diagnosis and Management. First Edition. Philadelphia: Churchill Livingstone, 2000:261-268.</p> <p>Heathcote EJ. Management of primary biliary cirrhosis. The American Association for the Study of Liver Diseases practice guidelines. Hepatology 2000;31(4):1009-1011.</p>	<p>End of 3<sup>rd</sup> Quarter</p>

<p>Runyon BA. Management of adult patients with ascites caused by cirrhosis. <i>Hepatology</i> 1998;27(1):264-272. Sponsored by The American Association for the Study of Liver Diseases.</p> <p>Blei AT and Córdoba J. American College of Gastroenterology Guidelines: Hepatic encephalopathy. <i>Am J Gastroenterol</i> 2001;96:1968-1976.</p> <p>Grace ND. American College of Gastroenterology treatment guideline: diagnosis &amp; treatment of gastrointestinal bleeding secondary to portal hypertension. <i>Am J Gastroenterol</i>. 1997;92(7):1081-1091.</p> <p>Riley TR, Smith JP. Preventive care in chronic liver disease. <i>J Gen Intern Med</i>. 1999;14(11):699-704.</p> <p>Chu CM, et al. Fulminant hepatic failure in acute hepatitis C: increased risk in chronic carriers of hep B virus. <i>Gut</i> 1999;45:613-617.</p> <p>Serfaty L, et al. Risk factors for cirrhosis in patients with chronic HCV infection: results of a case control study. <i>Hepatology</i> 1997;26(3):776-779.</p> <p>Merli M, Nicolini G, Angeloni S, Riggio O. Malnutrition is a risk factor in cirrhotic patients undergoing surgery. <i>Nutrition</i> 2002;18(11-12):978-986.</p> <p>AGA medical position statement: osteoporosis in hepatic disorders. <i>Gastroenterology</i> 2003;125:937-940.</p> <p>Bernstein CN, Leslie WD, Leboff MS. AGA technical review on osteoporosis in gastrointestinal diseases. <i>Gastroenterology</i> 2003;124:961. Figure 1.</p> <p><b>Optional Activities</b></p> <p>Habib A, Bond WM, Heuman DM. Long-term management of cirrhosis. Appropriate supportive care is both critical and difficult. <i>Postgrad Med</i> 2001;109(3):101-113.</p>	
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	<p>Case Study: Fulminant hepatic failure from Wilson's. Baylor College of Medicine. Gastroenterology Grand Rounds. The Virtual GI Clinic and Classroom. <a href="http://www.bcm.tmc.edu/gastro/DDC/grandrounds/vgicc-caselist.html">http://www.bcm.tmc.edu/gastro/DDC/grandrounds/vgicc-caselist.html</a></p> <p>The American Gastroenterological Association. Clinical Resources for Cirrhosis of the Liver. <a href="http://www.gastro.org/clinicalRes/brochures/cirrhosis.html">http://www.gastro.org/clinicalRes/brochures/cirrhosis.html</a></p>	
<p>Routinely read, understand, and discuss medical literature on liver disease and gain an appreciation for commonly used outcome measures</p>	<p><b>Required Activities</b> Lindsay KL. Introduction to therapy of hepatitis C. Hepatology 2002; 36:S114-120.</p> <p>Choose a liver disease-related topic from your chosen electives and search PubMed (<a href="http://www.pubmed.org">www.pubmed.org</a>) 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.</p> <p>Visit the Gastroenterology Medscape website regularly to read the latest news stories. <a href="http://www.medscape.com/gastroenterologyhome">http://www.medscape.com/gastroenterologyhome</a>. Obtain the primary literature and read up on the study.</p> <p><b>Optional Activity</b> Invite colleagues to a journal club to discuss these studies.</p>	<p>End of 3rd Quarter</p>
<p>Describe clinical research protocols</p>	<p><b>Required Activity</b> Learn the basic terminology and how to design and conduct a clinical trial. National Cancer Institute. Cancer Clinical Trials: In Depth Program</p> <ul style="list-style-type: none"> <li>View as text at <a href="http://www.nci.nih.gov/clinicaltrials/resources/in-depth-program">http://www.nci.nih.gov/clinicaltrials/resources/in-depth-program</a> or as a power point presentation at <a href="http://www.ncipoet.org/docs/InDepthInformation.ppt">http://www.ncipoet.org/docs/InDepthInformation.ppt</a></li> </ul> <p>Review the study design and protocols of ongoing trials of various liver diseases at <a href="http://www.clinicaltrials.gov">www.clinicaltrials.gov</a>.</p>	<p>End of 3rd Quarter</p>

	<p><b>Optional Activity</b>          Take the online/video course "Introduction to the Principles and Practice of Clinical Research" sponsored by the National Institutes of Health throughout the final quarter.  <a href="http://www.nihtraining.com/cc/ippcr/archive03s/menu.html">http://www.nihtraining.com/cc/ippcr/archive03s/menu.html</a></p>	
<p>Discuss issues of pre- and post-operative care in liver transplantation, including managing alcohol intake, supportive care, the mechanisms of action, and use of immunosuppressive therapy</p>	<p><b>Required Activities</b>          Carithers RL Jr. Liver transplantation. American Association for the Study of Liver Diseases. Liver Transpl 2000;6(1):122-135.</p> <p>Wiesner RH, Rakela J, Ishitani MB, Mulligan DC, Spivey JR, Steers JL, Krom RA. Recent advances in liver transplantation. Mayo Clin Proc 2003;78(2):197-210.</p> <p>Prince MI, Hudson M. Liver transplantation for chronic liver disease: advances and controversies in an era of organ shortages. Postgrad Med J 2002;78(917):135-141.</p> <p>Nunes FA, Olthoff KM, Lucey MR. Liver Transplantation: indications, pre-transplant evaluation, and short-term post-transplant management. In: Bacon BR, Di Bisceglie (Eds.). Liver Disease: Diagnosis and Management. First Edition. Philadelphia: Churchill Livingstone, 2000:383-391.</p> <p>Hebert MI, Davis CL, Limaye AP, Kowdley KV, Carithers RL. Liver Transplantation: long-term post-transplant management. In: Bacon BR, Di Bisceglie (Eds.). Liver Disease: Diagnosis and Management. First Edition. Philadelphia: Churchill Livingstone, 2000: 238-250.</p> <p>Sherlock S, Dooley J. Hepatic transplantation. In: Diseases of the liver and biliary system. 11<sup>th</sup> Edition. Oxford: Blackwell Science, 2002:664-679.</p>	<p>End of 3rd Quarter</p>

**ELECTIVE CURRICULUM**

<p>Diagnosis and treatment of acute and chronic infectious hepatitis</p>	<p><b>Hepatitis B</b>          Badur S, Akgun A. Diagnosis of hepatitis B infections and monitoring of treatment. J Clin Virol 2001;21(3):229-237.</p>	<p>End of 4<sup>th</sup> Quarter</p>
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Heathcote J. Treatment of HBe antigen–positive chronic hepatitis B. Semin Liver Dis 2003;23(1):69-79.

Hadziyannis SJ, Papatheodoridis GV, Vassilopoulos D. Treatment of HBeAg–Negative Chronic Hepatitis B. Semin Liver Dis 2003;23(1):81-88.

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### **Hepatitis C**

Brooks CL, Rosenberg WM. Assessment and management of chronic hepatitis C infection. Clin Med 2002;2(4):302-306.

Pawlotsky JM. Use and interpretation of hepatitis C virus diagnostic assays. Clin Liver Dis 2003;7(1):127-137.

	<p>Carey W. Tests and screening strategies for the diagnosis of hepatitis C. <i>Cleve Clin J Med</i> 2003;70(Suppl 4):S7-13.</p> <p>McHutchison JG, Fried MW. Current therapy for hepatitis C: pegylated interferon and ribavirin. <i>Clin Liver Dis</i> 2003;7(1):149-161.</p> <p>Di Bisceglie AM and Hoofnagle JH. Optimal therapy of hepatitis C. <i>Hepatology</i> 2002; 36:S121-127.</p> <p>Russo MW, Zacks SL, Fried MW. Management of newly diagnosed hepatitis C virus infection. <i>Cleve Clin J Med</i> 2003;70(Suppl 4):S14-20.</p> <p>Bacon BR. Treatment of patients with hepatitis C and normal serum aminotransferase levels. <i>Hepatology</i> 2002;36:S179-184.</p> <p>Alberti A, Boccatto S, Vario A, Benvegno L. Therapy of acute hepatitis C. <i>Hepatology</i> 2002; 36:S195-200.</p> <p>Wright TL. Treatment of patients with hepatitis C and cirrhosis. <i>Hepatology</i> 2002; 36:S185-194.</p> <p>Lee SP. Chronic hepatitis C. Treatment and side effect management. <i>Adv Nurse Pract</i> 2003; 11(7):73-78.</p> <p><b>Hepatitis B and C co-infection</b>  Coppola N, Marrocco C, Di Caprio D, Coviello G, Scolastico C, Filippini P, Sagnelli E. Acute hepatitis B and C virus coinfection: a virological and clinical study of 3 cases. <i>Clin Infect Dis</i> 2003;36(4):528-32. Epub 2003 Jan 28.</p> <p>Villa E, Grottola A, Buttafoco P, Colantoni A, Bagni A, Ferretti I, Cremonini C, et al. High doses of alpha-interferon are required in chronic hepatitis due to coinfection with hepatitis B virus and hepatitis C virus: long term results of a prospective randomized trial. <i>Am J Gastroenterol</i> 2001;96(10):2973-2977.</p>	
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	<p>Koff RS. Risks associated with hepatitis A and hepatitis B in patients with hepatitis C. J Clin Gastroenterol 2001;33(1):20-26.</p> <p>Chlabicz S, Grzeszczuk A. Hepatitis B virus vaccine for patients with hepatitis C virus infection. Infection. 2000;28(6):341-345.</p> <p><b>Vaccination and Other Preventive Measures</b></p> <p>Mast EE, Alter MJ, Margolis HS. Strategies to prevent and control hepatitis B and C virus infections: a global perspective. Vaccine 1999;17:1730-1733.</p> <p>Alter MJ. Epidemiology and prevention of hepatitis B. Semin Liver Dis 2003;23(1):39-46.</p> <p>Centers for Disease Control and Prevention. Hepatitis B virus: a comprehensive strategy for eliminating transmission through universal childhood vaccination: recommendations of the Immunization Practices Advisory Committee (ACIP). MMWR 1991;40(no. RR-13):1-20.</p> <p>Centers for Disease Control and Prevention. Update: recommendations to prevent hepatitis B virus transmission--United States. MMWR Recomm Rep 1999 Jan 22;48(2):33-34.</p> <p>Centers for Disease Control and Prevention. Update: recommendations to prevent hepatitis B virus transmission. United States. MMWR 1995;44:574-575.</p> <p>Centers for Disease Control and Prevention. Recommendations for prevention and control of hepatitis C virus (HCV) infection and HCV-related chronic disease. MMWR Recomm Rep 1998;47(RR-19):16-30.</p>	
<p>Diagnosis and treatment of nonalcoholic fatty liver and steatohepatitis</p>	<p><b>Definition of NASH</b></p> <p>Brunt EM. Nonalcoholic steatohepatitis: definition and pathology. Semin Liv Dis 2001;21(1):3-16.</p>	<p>End of 4<sup>th</sup> Quarter</p>

	<p><b>Role of diabetes and obesity</b></p> <p>Li Z, Clark J, Diehl AM. The liver in obesity and type 2 diabetes mellitus. <i>Clin Liver Dis</i> 2002;6(4):867-877.</p> <p>Malnick SDH, Beergabel M, Knobler H. Non-alcoholic fatty liver: a common manifestation of a metabolic disorder. <i>Q J Med</i> 2003;96:699–709.</p> <p>Luyckx FH, Lefebvre PJ, Scheen AJ. Non-alcoholic steatohepatitis: association with obesity and insulin resistance, and influence of weight loss. <i>Diabetes Metab.</i> 2000 ;26(2):98-106.</p> <p>Pagano G, Pacini G, Musso G, Gambino R, Mecca F, Depetris N, Cassader M, et al. Nonalcoholic steatohepatitis, insulin resistance and metabolic syndrome: further evidence for an etiological association. <i>Hepatology</i> 2002;35:367-372.</p> <p>Marchesini G, Forlani G. NASH: from liver diseases to metabolic disorders and back to clinical hepatology. <i>Hepatology</i> 2002;35(2):497-499.</p> <p>Youssef WI, McCullough AJ. Steatohepatitis in obese individuals. <i>Best Pract Res Clin Gastroenterol</i> 2002;16(5):733-747.</p> <p><b>Causes and Pathogenesis</b></p> <p>Lee RG, Keeffe EB. Non-alcoholic fatty liver: causes and complications. In: J Bircher, JP Benhamou, M McIntyre, et al, (Eds.). <i>Oxford Textbook of Clinical Hepatology</i>, 2nd ed. Oxford, UK: Oxford University Press; 1999:1251–1257.</p> <p>Chitturi S, Farrell GC. Etiopathogenesis of nonalcoholic steatohepatitis. <i>Semin Liv Dis</i> 2001;21(1):27-34.</p> <p>Allard JP. Other disease associations with nonalcoholic fatty liver disease. <i>Best Pract Res Clin Gastroenterol</i> 2002;16(5):783-795.</p> <p><b>Reviews of Diagnosis, Natural History and Treatment</b></p>	
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	<p>Falck-Ytter Y, Younossi ZM, Marchesini G, McCullough AJ. Clinical features and natural history of nonalcoholic steatosis syndromes. <i>Semin Liv Dis</i> 2001;21(1):17-26.</p> <p>Siegelman ES, Rosen MA. Imaging of hepatic steatosis. <i>Semin Liv Dis</i> 2001;21(1):71-80.</p> <p>Mofrad P, Contos MJ, Haque M, Sargeant C, Fisher RA, Luketic VA, Sterling RK, et al. Clinical and histologic spectrum of nonalcoholic fatty liver disease associated with normal ALT values. <i>Hepatology</i> 2003;37(6):1286-1292.</p> <p>Mezey E. Clinical features and management of non-alcoholic steatohepatitis. In: Zakim D, Boyer TD (Ed): <i>Hepatology. A Textbook of Liver Disease</i>. WB Saunders, Philadelphia 2003; 30:932-936.</p> <p>Harrison SA, Di Bisceglie AM. Advances in the understanding and treatment of nonalcoholic fatty liver disease. <i>Drugs</i> 2003;63(22):2379-2394.</p> <p>Younossi ZM, Diehl AM, Ong JP. Nonalcoholic fatty liver disease: an agenda for clinical research. <i>Hepatology</i>. 2002;35(4):746-752.</p> <p>Angulo, P. Medical progress: Nonalcoholic fatty liver disease. <i>New England Journal of Medicine</i> 2002;346(16):1221–1231.</p> <p>McCullough AJ. Update on nonalcoholic fatty liver disease. <i>J Clin Gastroenterol</i> 2002; 34(3):255-262.</p> <p>Yu AS, Keeffe EB. Nonalcoholic fatty liver disease. <i>Rev Gastroenterol Disord</i> 2002; 2(1):11-19.</p> <p>Mehta K, Van Thiel DH, Shah N, Mobarhan S. Nonalcoholic fatty liver disease: pathogenesis and the role of antioxidants. <i>Nutr Rev</i> 2002;60(9):289-293.</p> <p>Jorgensen RA. Nonalcoholic fatty liver disease. <i>Gastroenterol Nurs</i> 2003;26(4):150-4; quiz</p>	
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	<p>154-155.</p> <p>Angulo P, Lindor KD. Treatment of non-alcoholic steatohepatitis. <i>Best Pract Res Clin Gastroenterol</i> 2002;16(5):797-810.</p> <p>Reid AE. Nonalcoholic steatohepatitis. <i>Gastroenterology</i> 2001;121(3):710-723.</p> <p><b>Long-term Outcome.</b>  Selzner M, Clavien PA. Fatty liver in liver transplantation and surgery. <i>Semin Liv Dis</i> 2001;21(1):105-113.</p> <p>Hui JM, Kench JG, Chitturi S, Sud A, Farrell GC, Byth K, Hall P, et al. Long-term outcomes of cirrhosis in nonalcoholic steatohepatitis compared with hepatitis C. <i>Hepatology</i> 2003;38:420-427.</p> <p><b>Optional Activity</b>  Harrison SA, Ramrakhiani S, Brunt EM, Anbari MA, Cortese C, Bacon BR. Orlistat in the treatment of NASH: a case series. <i>Am J Gastroenterol</i> 2003;98(4):926-930.</p>	
<p>Care of special populations at high risk of hepatic disease</p>	<p>Martagon J, Gordon SM. Special management challenges in hepatitis C. <i>Cleve Clin J Med</i> 2003;70(Suppl 4):S27-33.</p> <p>Di Bisceglie AM, Lyra AC, Schwartz M, Reddy RK, Martin P, Gores G, Lok AS, et al; Liver Cancer Network. Hepatitis C-related hepatocellular carcinoma in the United States: influence of ethnic status. <i>Am J Gastroenterol</i> 2003;98(9):2060-2063.</p> <p><b>Hispanic Americans</b>  Bonacini M, Groshen MD, Yu MC, Govindarajan S, Lindsay KL. Chronic hepatitis C in ethnic minority patients evaluated in Los Angeles County. <i>Am J Gastroenterol</i> 2001;96(8):2438-2441.</p> <p>Stinson FS, Grant BF, Dufour MC. The critical dimension of ethnicity in liver cirrhosis</p>	<p>End of 4<sup>th</sup> Quarter</p>

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**African Americans**

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Mallat DB, Jeffers L. The natural history of HCV infection in African Americans. Am J Gastroenterol 2002;97(3):520-522.

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Stewart SH. Racial and ethnic differences in alcohol-associated aspartate aminotransferase and gamma-glutamyltransferase elevation. *Arch Intern Med* 2002;162(19):2236-2239.

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#### **Asian Americans**

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Tong MJ, Hwang SJ. Hepatitis B virus infection in Asian Americans. *Gastroenterol Clin North Am* 1994;23(3):523-536.

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**Native Americans**

Singh GK, Hoyert DL. Social epidemiology of chronic liver disease and cirrhosis mortality in the United States, 1935-1997: trends and differentials by ethnicity, socioeconomic status, and alcohol consumption. *Hum Biol* 2000;72(5):801-820.

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**Drug Addicts**

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	<p>Backmund M, Meyer K, Von Zielonka M, Eichenlaub D. Treatment of hepatitis C infection in injection drug users. <i>Hepatology</i> 2001;34(1):188-193.</p> <p>Van Thiel DH, Anantharaju A, Creech S. Response to treatment of hepatitis C in individuals with a recent history of intravenous drug abuse. <i>Am J Gastroenterol</i> 2003;98(10):2281-2288.</p> <p>Dalgard O, Bjoro K, Hellum K, Myrvang B, Skaug K, Gutigard B, Bell H; Construct Group. Treatment of chronic hepatitis C in injecting drug users: 5 years' follow-up. <i>Eur Addict Res</i> 2002;8(1):45-49.</p> <p>Thorpe LE, Ouellet LJ, Hershov R, Bailey SL, Williams IT, Williamson J, Monterroso ER, et al. Risk of hepatitis C virus infection among young adult injection drug users who share injection equipment. <i>Am J Epidemiol</i> 2002;155(7):645-653.</p> <p>Kwiatkowski CF, Fortuin Corsi K, Booth RE. The association between knowledge of hepatitis C virus status and risk behaviors in injection drug users. <i>Addiction</i> 2002;97(10):1289-1294.</p> <p>Hahn JA, Page-Shafer K, Lum PJ, Bourgois P, Stein E, Evans JL, Busch MP, et al. Hepatitis C virus seroconversion among young injection drug users: relationships and risks. <i>J Infect Dis</i> 2002;186(11):1558-1564. Epub 2002 Nov 04.</p> <p><b>Prison Population</b></p> <p>Pallas JR, Farinas-Alvarez C, Prieto D, Delgado-Rodriguez M. Coinfections by HIV, hepatitis B and hepatitis C in imprisoned injecting drug users. <i>Eur J Epidemiol</i> 1999;15(8):699-704.</p> <p>Centers for Disease Control and Prevention. Weinbaum C, Lyerla R, Margolis HS. Prevention and control of infections with hepatitis viruses in correctional settings. <i>MMWR</i> 2003;52(No. RR-1):1-36. plus CM2003 Jan 24;52(RR-1):1-36; quiz CE1-4.</p> <p>Zalumas JC, Rose CD. Hepatitis C and HIV in incarcerated populations: fights, bites, searches, and syringes! <i>J Assoc Nurses AIDS Care</i> 2003;14(5 Suppl):108S-115S.</p>	
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