

# Transplant Hepatology

## Certification Examination (CERT)



High Relevance: Topics are very likely to appear on the assessment.

Medium Relevance: Topics are moderately likely to appear on the assessment.

Low Relevance: Topics will not appear on the assessment.

Blueprint Code and Topic	Assessment Percentage	Diagnosis/Testing 30%	Treatment/Care Decisions 45%	Risk Assessment /Prognosis /Epidemiology 18%	Pathophysiology /Basic Science 7%
<b>1 Advanced Hepatology and Pretransplant</b>	55%				
<b>1.1 Biliary atresia</b>	<2%	LOW	MEDIUM	MEDIUM	LOW
<b>1.2 Genetic liver disease</b>	4%	HIGH	HIGH	MEDIUM	MEDIUM
1.2.1 Cholestatic syndromes, including progressive familial intrahepatic cholestasis, benign recurrent intrahepatic cholestasis, and Alagille syndrome					
1.2.2 Hereditary hemorrhagic telangiectasia					
1.2.3 Wilson disease					
1.2.4 Alpha-1 antitrypsin deficiency					
1.2.5 Iron overload syndromes					
1.2.6 Mitochondrial hepatopathy					
1.2.7 Urea cycle disorders					
1.2.8 Cystic fibrosis					
1.2.9 Fibrocystic diseases, including Caroli disease and choledochal cysts					
1.2.10 Familial amyloid polyneuropathy					
1.2.11 Disorders of bilirubin metabolism, including Gilbert syndrome, Crigler-Najjar syndrome,Rotor syndrome, Dubin-Johnson syndrome, bile acid synthesis disorders					
1.2.12 Porphyria, including erythropoietic protoporphyrina and acute hepatic porphyria					
1.2.13 Glycogen storage diseases					
<b>1.3 Autoimmune disorders</b>	7%	HIGH	HIGH	HIGH	MEDIUM
1.3.1 Primary biliary cholangitis					
1.3.2 Autoimmune hepatitis					
1.3.3 Primary sclerosing cholangitis					
1.3.4 Overlap syndromes					
1.3.5 Autoimmune cholangiopathy and IgG4 cholangiopathy					
1.3.6 Sarcoidosis					
1.3.7 Celiac disease					
<b>1.4 Viral hepatitis</b>	3%	HIGH	HIGH	HIGH	MEDIUM
1.4.1 Hepatitis A (HAV) including vaccination and prevention strategies					
1.4.2 Hepatitis B (HBV) including vaccination and prevention strategies					
1.4.3 Hepatitis C (HCV)					
1.4.4 Hepatitis D (HDV)					
1.4.5 Hepatitis E (HEV)					
1.4.6 Nonhepatotropic viruses, including Epstein-Barr virus, herpes simplex virus, cytomegalovirus, and SARS-CoV-2					
<b>1.5 Congestive hepatopathy, including Budd-Chiari syndrome, sinusoidal obstruction syndrome, Fontan-associated liver disease, and sickle cell hepatopathy</b>	3%	HIGH	HIGH	MEDIUM	MEDIUM
1.5.1 Budd-Chiari syndrome					

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1.5.2 Sinusoidal obstruction syndrome					
1.5.3 Congestive hepatopathy due to underlying cardiac disease, including Fontan-associated liver disease, right heart failure, and constrictive/restrictive cardiomyopathy					
1.5.4 Sickle cell hepatopathy					
<b>1.6 Portosinusoidal vascular disease, including nodular regenerative hyperplasia</b>	<2%	MEDIUM	MEDIUM	MEDIUM	MEDIUM
<b>1.7 Splanchnic vascular disorders, including portal vein thrombosis and portosystemic shunts</b>	2%	HIGH	HIGH	HIGH	MEDIUM
<b>1.8 Portal hypertension complications</b>	7%	HIGH	HIGH	HIGH	HIGH
1.8.1 Varices					
1.8.2 Ascites					
1.8.3 Encephalopathy					
1.8.4 Spontaneous bacterial peritonitis					
1.8.5 Coagulopathy					
1.8.6 Hepatic hydrothorax					
1.8.7 Hepatopulmonary syndrome and portopulmonary hypertension					
1.8.8 Kidney injury in the setting of portal hypertension, including <i>HRS-acute kidney injury and HRS-chronic kidney disease</i>					
1.8.9 Cirrhotic cardiomyopathy					
1.8.10 Hyponatremia					
<b>1.9 Liver tumors</b>	5%	HIGH	HIGH	HIGH	MEDIUM
1.9.1 Hepatocellular carcinoma, including fibrolamellar					
1.9.2 Hepatoblastoma					
1.9.3 Cholangiocarcinoma					
1.9.4 Metastatic, including neuroendocrine and colorectal tumors					
1.9.5 Hepatic adenomas					
1.9.6 Focal nodular hyperplasia					
1.9.7 Hemangioma					
1.9.8 Hepatic epithelioid hemangioendothelioma					
<b>1.10 Selection and evaluation for transplantation</b>	3%	HIGH	HIGH	HIGH	MEDIUM
1.10.1 Pediatric End-Stage Liver Disease model (PELD) and Model for End-Stage Liver Disease (MELD)					
1.10.2 Psychosocial issues					
1.10.3 Living-donor selection					
1.10.4 Impact of active infection and malignancy					
1.10.5 Simultaneous liver-kidney transplant and related policies					
1.10.6 Co-morbidities, including human immunodeficiency virus [HIV] infection					
1.10.7 Frailty and malnutrition					
<b>1.11 Acute liver failure</b>	4%	HIGH	HIGH	HIGH	HIGH
1.11.1 Toxic injury					
1.11.2 Drug-induced					
1.11.3 Viral					
1.11.4 Indeterminant					
1.11.5 Hypoperfusion syndromes					
1.11.6 Immune-mediated, including autoimmune hepatitis, hemophagocytic lymphohistiocytosis					
1.11.7 Genetic (metabolic)					

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1.11.8 Pregnancy-related acute liver failure					
1.11.9 Infiltrative malignancy					
<b>1.12 Alcohol-associated liver disease, including complications and liver transplantation</b>	3%	<b>HIGH</b>	<b>HIGH</b>	<b>HIGH</b>	<b>MEDIUM</b>
<b>1.13 Metabolic dysfunction-associated steatotic liver disease, including metabolic dysfunction-associated steatohepatitis and metabolic dysfunction- and alcohol-associated liver disease</b>	4%	<b>HIGH</b>	<b>HIGH</b>	<b>HIGH</b>	<b>HIGH</b>
<b>1.14 Liver diseases of pregnancy</b>	<2%	<b>HIGH</b>	<b>HIGH</b>	<b>MEDIUM</b>	<b>MEDIUM</b>
<b>1.15 Drug-induced liver injury</b>	<2%	<b>HIGH</b>	<b>HIGH</b>	<b>HIGH</b>	<b>MEDIUM</b>
<b>1.16 Acute-on-chronic liver failure</b>	<2%	<b>HIGH</b>	<b>HIGH</b>	<b>HIGH</b>	<b>MEDIUM</b>
<b>1.17 Palliative care</b>	2%	<b>MEDIUM</b>	<b>MEDIUM</b>	<b>MEDIUM</b>	<b>LOW</b>
<b>1.18 Health maintenance, including vaccination, cancer screening, metabolic health, and reproductive health</b>	3%	<b>HIGH</b>	<b>HIGH</b>	<b>HIGH</b>	<b>LOW</b>
1.18.1 Vaccination					
1.18.2 Preventive screening					
1.18.3 Transition of care					
1.18.4 Reproductive health					
1.18.5 Bone health					
1.18.6 Quality of life					
<b>2 Peritransplant</b>	14%				
<b>2.1 Deceased-donor selection</b>	3%	<b>HIGH</b>	<b>HIGH</b>	<b>HIGH</b>	<b>MEDIUM</b>
2.1.1 Steatosis					
2.1.2 Viral infection					
2.1.3 Donor type (brain versus circulatory death)					
2.1.4 Machine perfusion					
<b>2.2 Living-donor selection</b>	2%	<b>HIGH</b>	<b>HIGH</b>	<b>HIGH</b>	<b>LOW</b>
2.2.1 Donor evaluation, including size					
2.2.2 Donor complications					
<b>2.3 Donor considerations, including split-graft, vascular, and ABO compatibility</b>	2%	<b>HIGH</b>	<b>HIGH</b>	<b>MEDIUM</b>	<b>MEDIUM</b>
2.3.1 Split-graft					
2.3.2 Vascular					
2.3.3 ABO incompatibility					
<b>2.4 Perioperative complications</b>	5%	<b>HIGH</b>	<b>HIGH</b>	<b>HIGH</b>	<b>MEDIUM</b>
2.4.1 Early allograft dysfunction, including primary nonfunction					
2.4.2 Early vascular complications					
2.4.3 Small-for-size syndrome					
2.4.4 Infection prophylaxis, including cytomegalovirus, Epstein-Barr virus, <i>Pneumocystis jirovecii</i> pneumonia, other fungal					
2.4.5 Hepatitis B and C antiviral therapy					
2.4.6 Drug toxicity, including neurotoxicity and nephrotoxicity					
<b>2.5 Donor transmission of infectious and noninfectious diseases</b>	2%	<b>HIGH</b>	<b>HIGH</b>	<b>MEDIUM</b>	<b>MEDIUM</b>
<b>3 Post-transplant</b>	20%				
<b>3.1 Immune complications</b>	4%	<b>HIGH</b>	<b>HIGH</b>	<b>HIGH</b>	<b>MEDIUM</b>
3.1.1 Rejection, including acute T cell-mediated, plasma cell-rich, antibody-mediated, and chronic rejection					
3.1.2 Alloimmune and autoimmune diseases ( <i>de novo</i> )					
3.1.3 Graft-versus-host disease					
<b>3.2 Nonimmune graft complications</b>	2%	<b>HIGH</b>	<b>HIGH</b>	<b>HIGH</b>	<b>MEDIUM</b>

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3.2.1 Biliary					
3.2.2 Vascular					
<b>3.3 Extrahepatic complications</b>	5%	<b>HIGH</b>	<b>HIGH</b>	<b>MEDIUM</b>	<b>MEDIUM</b>
3.3.1 Metabolic, including diabetes mellitus and obesity					
3.3.2 Renal					
3.3.3 Bone					
3.3.4 Nutrition					
3.3.5 Cardiovascular					
3.3.6 Post-transplant <i>de novo</i> malignancy, including post-transplantation lymphoproliferative disorder, surveillance strategies					
<b>3.4 Infectious complications</b>	3%	<b>HIGH</b>	<b>HIGH</b>	<b>HIGH</b>	<b>MEDIUM</b>
3.4.1 Viral infections, including cytomegalovirus, Epstein-Barr virus, hepatitis B, hepatitis C, and hepatitis E					
3.4.2 Bacterial infections					
3.4.3 Fungal infections					
3.4.4 Emerging infections					
<b>3.5 Recurrence of disease, including immune, infectious, cancer, metabolic, and lifestyle-related</b>	3%	<b>HIGH</b>	<b>HIGH</b>	<b>MEDIUM</b>	<b>MEDIUM</b>
<b>3.6 Health maintenance, including vaccination, cancer screening, metabolic health, and reproductive health</b>	3%	<b>HIGH</b>	<b>HIGH</b>	<b>MEDIUM</b>	<b>LOW</b>
3.6.1 Vaccination					
3.6.2 Preventive screening					
3.6.3 Transition of care					
3.6.4 Reproductive health					
3.6.5 Bone health					
3.6.6 Quality of life					
<b>4 Transplant Immunology</b>	6%				
<b>4.1 Clinically relevant immunology</b>	<2%	<b>MEDIUM</b>	<b>MEDIUM</b>	<b>MEDIUM</b>	<b>MEDIUM</b>
<b>4.2 Immunosuppressive medications, including mechanism of action, pharmacokinetics, adverse effects, and drug-drug interactions</b>	5%	<b>HIGH</b>	<b>HIGH</b>	<b>HIGH</b>	<b>HIGH</b>
4.2.1 Cyclosporine and tacrolimus					
4.2.2 Mycophenolate mofetil (MMF), mycophenolic acid (MPA), and azathioprine					
4.2.3 Sirolimus and everolimus					
4.2.4 Antibody therapy, including interleukin-2 receptor, antithymocyte globulin T-cell depleting					
4.2.5 Corticosteroids					
<b>5 Ethics and Regulatory Issues</b>	5%				
<b>5.1 Ethics</b>	2%	<b>MEDIUM</b>	<b>MEDIUM</b>	<b>MEDIUM</b>	<b>LOW</b>
5.1.1 Psychosocial evaluation					
5.1.1.1 Substance use disorders					
5.1.1.2 Adherence					
5.1.2 Living-donor transplantation					
5.1.3 Disparities in care, including social determinants of health					
5.1.4 Clinical trials					
<b>5.2 Organ transplant policy</b>	3%	<b>MEDIUM</b>	<b>MEDIUM</b>	<b>MEDIUM</b>	<b>LOW</b>
5.2.1 Organ Procurement and Transplantation Network, including structure and oversight					
5.2.2 Final rule					

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5.2.3 Organ allocation					
5.2.4 Standard and nonstandard exceptions to MELD system, including tumor, hepatopulmonary syndrome, metabolic liver disease					
5.2.5 Outcome metrics					