

REFERENCES

1. WHO. Hepatitis B: Fact sheet No.204, revised August 2008.
2. Lee WM. Hepatitis B virus infection. *N Engl J Med*. 1997; **337**:1733-1745.
3. Lai CL, Ratziu V, Yuen MF, Poynard T. Viral hepatitis B. *Lancet*. 2003; **362**:2089-2094.
4. Dienstag JL. Hepatitis B virus infection. *N Engl J Med*. 2008; **359**:1486-1500.
5. Rizzetto M, Ciancio A. Chronic HBV-related liver disease. *Mol Aspects Med*. 2008; **29**:72-84.
6. Shepard CW, Simard EP, Finelli L, Fiore AE, Bell BP. Hepatitis B virus infection: epidemiology and vaccination. *Epidemiol Rev*. 2006; **28**:112-125.
7. Kew MC. Epidemiology of chronic hepatitis B virus infection, hepatocellular carcinoma, and hepatitis B virus-induced hepatocellular carcinoma. *Pathol Biol (Paris)*. 2010; **58**:273-277.
8. Mahtab MA, Rahman S, Khan M, Karim F. Hepatitis B virus genotypes: an overview. *Hepatobiliary Pancreat Dis Int*. 2008; **7**:457-464.
9. Newell ML, Peckham C. Mother-to-child transmission of hepatitis B infection. *Fetal and Maternal Medicine Review*. 1998:109-119.
10. Ganem D, Prince AM. Hepatitis B virus infection--natural history and clinical consequences. *N Engl J Med*. 2004; **350**:1118-1129.
11. Lok AS. The maze of treatments for hepatitis B. *N Engl J Med*. 2005; **352**:2743-2746.

12. Lavanchy D. Hepatitis B virus epidemiology, disease burden, treatment, and current and emerging prevention and control measures. *J Viral Hepat.* 2004; **11**:97-107.
13. Merican I, Guan R, Amarapuka D, Alexander MJ, Chutaputti A, Chien RN, et al. Chronic hepatitis B virus infection in Asian countries. *J Gastroenterol Hepatol.* 2000; **15**:1356-1361.
14. World Health Organization (WHO). Global HIV/AIDS Response - Epidemic update and health sector progress towards universal access - Progress report 2011.
15. Konopnicki D, Mocroft A, de Wit S, Antunes F, Ledergerber B, Katlama C, et al. Hepatitis B and HIV: prevalence, AIDS progression, response to highly active antiretroviral therapy and increased mortality in the EuroSIDA cohort. *Aids.* 2005; **19**:593-601.
16. Thio C. Hepatitis B virus infection in HIV-infected persons. *Current Hepatitis Reports.* 2004; **3**:91-97.
17. Poovorawan Y, Theamboonlers A, Vimolket T, Sinlaparatsamee S, Chaiear K, Siraprasari T, et al. Impact of hepatitis B immunisation as part of the EPI. *Vaccine.* 2001; **19**:943-949.
18. Jutavijittum P, Jiviriyawat Y, Yousukh A, Hayashi S, Toriyama K. Evaluation of a hepatitis B vaccination program in Chiang Mai, Thailand. *Southeast Asian J Trop Med Public Health.* 2005; **36**:207-212.

19. Wang Z, Zhang J, Yang H, Li X, Wen S, Guo Y, et al. Quantitative analysis of HBV DNA level and HBeAg titer in hepatitis B surface antigen positive mothers and their babies: HBeAg passage through the placenta and the rate of decay in babies. *J Med Virol.* 2003; **71**:360-366.
20. Theamboonlers A, Chongsrisawat V, Jantaradsamee P, Poovorawan Y. Variants within the "a" determinant of HBs gene in children and adolescents with and without hepatitis B vaccination as part of Thailand's Expanded Program on Immunization (EPI). *Tohoku J Exp Med.* 2001; **193**:197-205.
21. Poovorawan Y, Theamboonlers A, Chongsrisawat V, Sanpavat S. Molecular analysis of the a determinant of HBsAg in children of HBeAg-positive mothers upon failure of postexposure prophylaxis. *Int J Infect Dis.* 1998; **2**:216-220.
22. Yamamoto K, Horikita M, Tsuda F, Itoh K, Akahane Y, Yotsumoto S, et al. Naturally occurring escape mutants of hepatitis B virus with various mutations in the S gene in carriers seropositive for antibody to hepatitis B surface antigen. *J Virol.* 1994; **68**:2671-2676.
23. Torresi J, Earnest-Silveira L, Deliyannis G, Edgton K, Zhuang H, Locarnini SA, et al. Reduced antigenicity of the hepatitis B virus HBsAg protein arising as a consequence of sequence changes in the overlapping polymerase gene that are selected by lamivudine therapy. *Virology.* 2002; **293**:305-313.
24. Hollinger FB. Hepatitis B virus genetic diversity and its impact on diagnostic assays. *J Viral Hepat.* 2007; **14 Suppl 1**:11-15.
25. Raimondo G, Pollicino T, Cacciola I, Squadrito G. Occult hepatitis B virus infection. *J Hepatol.* 2007; **46**:160-170.

26. Dore GJ, Cooper DA, Barrett C, Goh LE, Thakrar B, Atkins M. Dual efficacy of lamivudine treatment in human immunodeficiency virus/hepatitis B virus-coinfected persons in a randomized, controlled study (CAESAR). The CAESAR Coordinating Committee. *J Infect Dis.* 1999; **180**:607-613.
27. Benhamou Y, Bochet M, Thibault V, Di Martino V, Caumes E, Bricaire F, et al. Long-term incidence of hepatitis B virus resistance to lamivudine in human immunodeficiency virus-infected patients. *Hepatology.* 1999; **30**:1302-1306.
28. Clements CJ, Coghlan B, Creati M, Locarnini S, Tedder RS, Torresi J. Global control of hepatitis B virus: does treatment-induced antigenic change affect immunization? *Bull World Health Organ.* 2010; **88**:66-73.
29. Kann M, Gerlich WH. Hepatitis B. In *Topley & Wilson's Microbiology and microbial infections.* 1998.
30. Blumberg BS, Alter HJ, Visnich S. A "New" Antigen in Leukemia Sera. *Jama.* 1965; **191**:541-546.
31. Dane DS, Cameron CH, Briggs M. Virus-like particles in serum of patients with Australia-antigen-associated hepatitis. *Lancet.* 1970; **1**:695-698.
32. Gerlich WH, Bremer C, Saniewski M, Schuttler CG, Wend UC, Willems WR, et al. Occult hepatitis B virus infection: detection and significance. *Dig Dis.* 2010; **28**:116-125.
33. Seeger C, Mason WS. Hepatitis B virus biology. *Microbiol Mol Biol Rev.* 2000; **64**:51-68.
34. Lusebrink J, Schildgen V, Schildgen O. Hepatitis B virus. In *Hepatology a clinical textbook 2010.*

35. Ganem D. Hepadnaviridae and their replication. In: Fields BN, editor. *Fields VIROLOGY. Third ed.* New York: Lippincotte-Raven Publishers; 1996. p. 2703 - 37.
36. Lok AS, Heathcote EJ, Hoofnagle JH. Management of hepatitis B: 2000--summary of a workshop. *Gastroenterology*. 2001; **120**:1828-1853.
37. Sureau C. The role of the HBV envelope proteins in the HDV replication cycle. *Curr Top Microbiol Immunol*. 2006; **307**:113-131.
38. Kew MC. Hepatitis B virus x protein in the pathogenesis of hepatitis B virus-induced hepatocellular carcinoma. *J Gastroenterol Hepatol*. 2011; **26 Suppl 1**:144-152.
39. Xie Y, Zhai J, Deng Q, Tiollais P, Wang Y, Zhao M. Entry of hepatitis B virus: mechanism and new therapeutic target. *Pathol Biol (Paris)*. 2010; **58**:301-307.
40. Locarnini S, Mason WS. Cellular and virological mechanisms of HBV drug resistance. *J Hepatol*. 2006; **44**:422-431.
41. Guidotti LG, Chisari FV. Immunobiology and pathogenesis of viral hepatitis. *Annu Rev Pathol*. 2006; **1**:23-61.
42. Beck J, Nassal M. Hepatitis B virus replication. *World J Gastroenterol*. 2007; **13**:48-64.
43. Rehermann B, Nascimbeni M. Immunology of hepatitis B virus and hepatitis C virus infection. *Nat Rev Immunol*. 2005; **5**:215-229.
44. Hunt CM, McGill JM, Allen MI, Condey LD. Clinical relevance of hepatitis B viral mutations. *Hepatology*. 2000; **31**:1037-1044.

45. Francois G, Kew M, Van Damme P, Mphahlele MJ, Meheus A. Mutant hepatitis B viruses: a matter of academic interest only or a problem with far-reaching implications? *Vaccine*. 2001; **19**:3799-3815.
46. Carman WF. The clinical significance of surface antigen variants of hepatitis B virus. *J Viral Hepat*. 1997; **4 Suppl 1**:11-20.
47. Cooreman MP, Leroux-Roels G, Paulij WP. Vaccine- and hepatitis B immune globulin-induced escape mutations of hepatitis B virus surface antigen. *J Biomed Sci*. 2001; **8**:237-247.
48. Kay A, Zoulim F. Hepatitis B virus genetic variability and evolution. *Virus Res*. 2007; **127**:164-176.
49. Lacombe K, Boyd A, Gozlan J, Lavocat F, Girard PM, Zoulim F. Drug-resistant and immune-escape HBV mutants in HIV-infected hosts. *Antivir Ther*. 2010; **15**:493-497.
50. Weber B. Genetic variability of the S gene of hepatitis B virus: clinical and diagnostic impact. *J Clin Virol*. 2005; **32**:102-112.
51. Kramvis A, Kew M, Francois G. Hepatitis B virus genotypes. *Vaccine*. 2005; **23**:2409-2423.
52. Olinger CM, Jutavijittum P, Hubschen JM, Yousukh A, Samountry B, Thammavong T, et al. Possible new hepatitis B virus genotype, southeast Asia. *Emerg Infect Dis*. 2008; **14**:1777-1780.
53. Tran TT, Trinh TN, Abe K. New complex recombinant genotype of hepatitis B virus identified in Vietnam. *J Virol*. 2008; **82**:5657-5663.

54. Tatematsu K, Tanaka Y, Kurbanov F, Sugauchi F, Mano S, Maeshiro T, et al. A genetic variant of hepatitis B virus divergent from known human and ape genotypes isolated from a Japanese patient and provisionally assigned to new genotype J. *J Virol.* 2009; **83**:10538-10547.
55. Chauhan R, Kazim SN, Kumar M, Bhattacharjee J, Krishnamoorthy N, Sarin SK. Identification and characterization of genotype A and D recombinant hepatitis B virus from Indian chronic HBV isolates. *World J Gastroenterol.* 2008; **14**:6228-6236.
56. Suwannakarn K, Tangkijvanich P, Theamboonlers A, Abe K, Poovorawan Y. A novel recombinant of Hepatitis B virus genotypes G and C isolated from a Thai patient with hepatocellular carcinoma. *J Gen Virol.* 2005; **86**:3027-3030.
57. Miyakawa Y, Mizokami M. Classifying hepatitis B virus genotypes. *Intervirology.* 2003; **46**:329-338.
58. Norder H, Hammas B, Lee SD, Bile K, Courouce AM, Mushahwar IK, et al. Genetic relatedness of hepatitis B viral strains of diverse geographical origin and natural variations in the primary structure of the surface antigen. *J Gen Virol.* 1993; **74** (Pt 7):1341-1348.
59. Stuyver L, De Gendt S, Van Geyt C, Zoulim F, Fried M, Schinazi RF, et al. A new genotype of hepatitis B virus: complete genome and phylogenetic relatedness. *J Gen Virol.* 2000; **81**:67-74.
60. Kato H, Orito E, Gish RG, Sugauchi F, Suzuki S, Ueda R, et al. Characteristics of hepatitis B virus isolates of genotype G and their phylogenetic differences from the other six genotypes (A through F). *J Virol.* 2002; **76**:6131-6137.

61. Vieth S, Manegold C, Drosten C, Nippraschk T, Gunther S. Sequence and phylogenetic analysis of hepatitis B virus genotype G isolated in Germany. *Virus Genes*. 2002; **24**:153-156.
62. Westland C, Delaney Wt, Yang H, Chen SS, Marcellin P, Hadziyannis S, et al. Hepatitis B virus genotypes and virologic response in 694 patients in phase III studies of adefovir dipivoxil. *Gastroenterology*. 2003; **125**:107-116.
63. Arauz-Ruiz P, Norder H, Robertson BH, Magnius LO. Genotype H: a new Amerindian genotype of hepatitis B virus revealed in Central America. *J Gen Virol*. 2002; **83**:2059-2073.
64. Sanchez LV, Maldonado M, Bastidas-Ramirez BE, Norder H, Panduro A. Genotypes and S-gene variability of Mexican hepatitis B virus strains. *J Med Virol*. 2002; **68**:24-32.
65. Theamboonlers A, Tangkijvanich P, Pramoolsinsap C, Poovorawan Y. Genotypes and subtypes of hepatitis B virus in Thailand. *Southeast Asian J Trop Med Public Health*. 1998; **29**:786-791.
66. Theamboonlers A, Jantaradsamee P, Kaew-In N, Tangkijvanich P, Hirsch P, Poovorawan Y. The predominant genotypes of hepatitis B virus in Thailand. *Ann Trop Med Parasitol*. 1999; **93**:737-743.
67. Suwannakarn K, Tangkijvanich P, Thawornsuk N, Theamboonlers A, Tharmaphornpilas P, Yoocharoen P, et al. Molecular epidemiological study of hepatitis B virus in Thailand based on the analysis of pre-S and S genes. *Hepatology Res*. 2008; **38**:244-251.

68. Tangkijvanich P, Mahachai V, Komolmit P, Fongsarun J, Theamboonlers A, Poovorawan Y. Hepatitis B virus genotypes and hepatocellular carcinoma in Thailand. *World J Gastroenterol*. 2005; **11**:2238-2243.
69. Kumar A, Kumar SI, Pandey R, Naik S, Aggarwal R. Hepatitis B virus genotype A is more often associated with severe liver disease in northern India than is genotype D. *Indian J Gastroenterol*. 2005; **24**:19-22.
70. Mayerat C, Mantegani A, Frei PC. Does hepatitis B virus (HBV) genotype influence the clinical outcome of HBV infection? *J Viral Hepat*. 1999; **6**:299-304.
71. Sanchez-Tapias JM, Costa J, Mas A, Bruguera M, Rodes J. Influence of hepatitis B virus genotype on the long-term outcome of chronic hepatitis B in western patients. *Gastroenterology*. 2002; **123**:1848-1856.
72. Livingston SE, Simonetti JP, McMahon BJ, Bulkow LR, Hurlburt KJ, Homan CE, et al. Hepatitis B virus genotypes in Alaska Native people with hepatocellular carcinoma: preponderance of genotype F. *J Infect Dis*. 2007; **195**:5-11.
73. Tangkijvanich P, Mahachai V, Komolmit P, Fongsarun J, Theamboonlers A, Poovorawan Y. Clinical and virological differences between hepatitis B virus genotypes B and C: a case-control study. *J Med Assoc Thai*. 2004; **87** Suppl 2:S223-227.
74. Duong TN, Horiike N, Michitaka K, Yan C, Mizokami M, Tanaka Y, et al. Comparison of genotypes C and D of the hepatitis B virus in Japan: a clinical and molecular biological study. *J Med Virol*. 2004; **72**:551-557.

75. Kao JH, Chen PJ, Lai MY, Chen DS. Hepatitis B genotypes correlate with clinical outcomes in patients with chronic hepatitis B. *Gastroenterology*. 2000; **118**:554-559.
76. Kao JH, Wu NH, Chen PJ, Lai MY, Chen DS. Hepatitis B genotypes and the response to interferon therapy. *J Hepatol*. 2000; **33**:998-1002.
77. Chu CJ, Hussain M, Lok AS. Hepatitis B virus genotype B is associated with earlier HBeAg seroconversion compared with hepatitis B virus genotype C. *Gastroenterology*. 2002; **122**:1756-1762.
78. Chu CM, Hung SJ, Lin J, Tai DI, Liaw YF. Natural history of hepatitis B e antigen to antibody seroconversion in patients with normal serum aminotransferase levels. *Am J Med*. 2004; **116**:829-834.
79. Janssen HL, van Zonneveld M, Senturk H, Zeuzem S, Akarca US, Cakaloglu Y, et al. Pegylated interferon alfa-2b alone or in combination with lamivudine for HBeAg-positive chronic hepatitis B: a randomised trial. *Lancet*. 2005; **365**:123-129.
80. Kobayashi M, Arase Y, Ikeda K, Tsubota A, Suzuki Y, Saitoh S, et al. Viral genotypes and response to interferon in patients with acute prolonged hepatitis B virus infection of adulthood in Japan. *J Med Virol*. 2002; **68**:522-528.
81. Wai CT, Chu CJ, Hussain M, Lok AS. HBV genotype B is associated with better response to interferon therapy in HBeAg(+) chronic hepatitis than genotype C. *Hepatology*. 2002; **36**:1425-1430.
82. Thakur V, Sarin SK, Rehman S, Guptan RC, Kazim SN, Kumar S. Role of HBV genotype in predicting response to lamivudine therapy in patients with chronic hepatitis B. *Indian J Gastroenterol*. 2005; **24**:12-15.

83. Kao JH, Liu CJ, Chen DS. Hepatitis B viral genotypes and lamivudine resistance. *J Hepatol.* 2002; **36**:303-304.
84. Suzuki F, Tsubota A, Arase Y, Suzuki Y, Akuta N, Hosaka T, et al. Efficacy of lamivudine therapy and factors associated with emergence of resistance in chronic hepatitis B virus infection in Japan. *Intervirology.* 2003; **46**:182-189.
85. Yuen MF, Tanaka Y, Lai CL. Hepatitis B genotypes in chronic hepatitis B and lamivudine therapy. *Intervirology.* 2003; **46**:373-376.
86. Zollner B, Petersen J, Schroter M, Laufs R, Schoder V, Feucht HH. 20-fold increase in risk of lamivudine resistance in hepatitis B virus subtype adw. *Lancet.* 2001; **357**:934-935.
87. Zollner B, Petersen J, Puchhammer-Stockl E, Kletzmayer J, Sterneck M, Fischer L, et al. Viral features of lamivudine resistant hepatitis B genotypes A and D. *Hepatology.* 2004; **39**:42-50.
88. Sheldon J, Ramos B, Garcia-Samaniego J, Rios P, Bartholomeusz A, Romero M, et al. Selection of hepatitis B virus (HBV) vaccine escape mutants in HBV-infected and HBV/HIV-coinfected patients failing antiretroviral drugs with anti-HBV activity. *J Acquir Immune Defic Syndr.* 2007; **46**:279-282.
89. Ramos B, Nunez M, Martin-Carbonero L, Sheldon J, Rios P, Labarga P, et al. Hepatitis B virus genotypes and lamivudine resistance mutations in HIV/hepatitis B virus-coinfected patients. *J Acquir Immune Defic Syndr.* 2007; **44**:557-561.
90. Akuta N, Suzuki F, Kobayashi M, Tsubota A, Suzuki Y, Hosaka T, et al. The influence of hepatitis B virus genotype on the development of lamivudine resistance during long-term treatment. *J Hepatol.* 2003; **38**:315-321.

91. Purdy MA. Hepatitis B virus S gene escape mutants. *Asian Journal of Transfusion Science*. 2007; **1**:62-70.
92. Echevarria JM, Avellon A. Hepatitis B virus genetic diversity. *J Med Virol*. 2006; **78 Suppl 1**:S36-42.
93. Buckwold VE, Xu Z, Chen M, Yen TS, Ou JH. Effects of a naturally occurring mutation in the hepatitis B virus basal core promoter on precore gene expression and viral replication. *J Virol*. 1996; **70**:5845-5851.
94. Baptista M, Kramvis A, Kew MC. High prevalence of 1762(T) 1764(A) mutations in the basic core promoter of hepatitis B virus isolated from black Africans with hepatocellular carcinoma compared with asymptomatic carriers. *Hepatology*. 1999; **29**:946-953.
95. Kramvis A, Kew MC. The core promoter of hepatitis B virus. *J Viral Hepat*. 1999; **6**:415-427.
96. Kao JH. Hepatitis B virus genotypes and hepatocellular carcinoma in Taiwan. *Intervirology*. 2003; **46**:400-407.
97. Ogata N, Miller RH, Ishak KG, Purcell RH. The complete nucleotide sequence of a pre-core mutant of hepatitis B virus implicated in fulminant hepatitis and its biological characterization in chimpanzees. *Virology*. 1993; **194**:263-276.
98. Takahashi K, Ohta Y, Kanai K, Akahane Y, Iwasa Y, Hino K, et al. Clinical implications of mutations C-to-T1653 and T-to-C/A/G1753 of hepatitis B virus genotype C genome in chronic liver disease. *Arch Virol*. 1999; **144**:1299-1308.

99. Gunther S, Piwon N, Will H. Wild-type levels of pregenomic RNA and replication but reduced pre-C RNA and e-antigen synthesis of hepatitis B virus with C(1653) --> T, A(1762) --> T and G(1764) --> A mutations in the core promoter. *J Gen Virol.* 1998; **79** (Pt 2):375-380.
100. Kidd-Ljunggren K, Oberg M, Kidd AH. Hepatitis B virus X gene 1751 to 1764 mutations: implications for HBeAg status and disease. *J Gen Virol.* 1997; **78** (Pt 6):1469-1478.
101. Kramvis A, Kew MC, Bukofzer S. Hepatitis B virus precore mutants in serum and liver of Southern African Blacks with hepatocellular carcinoma. *J Hepatol.* 1998; **28**:132-141.
102. Veazjalali M, Norder H, Magnus L, Jazayeri SM, Alavian SM, Mokhtari-Azad T. A new core promoter mutation and premature stop codon in the S gene in HBV strains from Iranian patients with cirrhosis. *J Viral Hepat.* 2009; **16**:259-264.
103. Sallam TA, Tong CY. Two distinct types of hepatitis B virus core promoter variants in Yemeni blood donors. *J Med Virol.* 2002; **68**:328-334.
104. Lindh M, Andersson AS, Gusdal A. Genotypes, nt 1858 variants, and geographic origin of hepatitis B virus--large-scale analysis using a new genotyping method. *J Infect Dis.* 1997; **175**:1285-1293.
105. Tong S, Kim KH, Chante C, Wands J, Li J. Hepatitis B Virus e Antigen Variants. *Int J Med Sci.* 2005; **2**:2-7.
106. Hadziyannis SJ, Vassilopoulos D. Hepatitis B e antigen-negative chronic hepatitis B. *Hepatology.* 2001; **34**:617-624.

107. Theamboonlers A, Tangkijvanich P, Jantaradsamee P, Hirsch P, Poovorawan Y. Prevalence of core promoter and precore mutants of hepatitis B virus in Thailand by RFLP and sequencing. *Southeast Asian J Trop Med Public Health*. 1999; **30**:750-755.
108. Tangkijvanich P, Theamboonlers A, Jantaradsamee P, Hirsch P, Mahachai V, Suwangool P, et al. Core promoter and precore mutants of hepatitis B virus: prevalence and clinical relevance in chronic hepatitis patients. *Southeast Asian J Trop Med Public Health*. 2000; **31**:627-635.
109. Akarca US, Lok AS. Naturally occurring core-gene-defective hepatitis B viruses. *J Gen Virol*. 1995; **76 (Pt 7)**:1821-1826.
110. Ehata T, Omata M, Chuang WL, Yokosuka O, Ito Y, Hosoda K, et al. Mutations in core nucleotide sequence of hepatitis B virus correlate with fulminant and severe hepatitis. *J Clin Invest*. 1993; **91**:1206-1213.
111. Ni YH, Chang MH, Hsu HY, Chen HL. Long-term follow-up study of core gene deletion mutants in children with chronic hepatitis B virus infection. *Hepatology*. 2000; **32**:124-128.
112. Uchida T, Saitoh T, Shinzawa H. Mutations of the X region of hepatitis B virus and their clinical implications. *Pathol Int*. 1997; **47**:183-193.
113. Okamoto H, Tsuda F, Akahane Y, Sugai Y, Yoshida M, Moriyama K, et al. Hepatitis B virus with mutations in the core promoter for an e antigen-negative phenotype in carriers with antibody to e antigen. *J Virol*. 1994; **68**:8102-8110.
114. Mun HS, Lee SA, Kim H, Hwang ES, Kook YH, Kim BJ. Novel F141L pre-S2 mutation in hepatitis B virus increases the risk of hepatocellular carcinoma in patients with chronic genotype C infections. *J Virol*. 2010; **85**:123-132.

115. Cheng H, Su H, Wang S, Shao Z, Men K, Li M, et al. Association between genomic heterogeneity of hepatitis B virus and intrauterine infection. *Virology*. 2009; **387**:168-175.
116. Carman WF, Van Deursen FJ, Mimms LT, Hardie D, Coppola R, Decker R, et al. The prevalence of surface antigen variants of hepatitis B virus in Papua New Guinea, South Africa, and Sardinia. *Hepatology*. 1997; **26**:1658-1666.
117. Carman WF. Molecular variants of hepatitis B virus. *Clin Lab Med*. 1996; **16**:407-428.
118. Carman WF, Trautwein C, van Deursen FJ, Colman K, Dornan E, McIntyre G, et al. Hepatitis B virus envelope variation after transplantation with and without hepatitis B immune globulin prophylaxis. *Hepatology*. 1996; **24**:489-493.
119. Carman WF, Zanetti AR, Karayiannis P, Waters J, Manzillo G, Tanzi E, et al. Vaccine-induced escape mutant of hepatitis B virus. *Lancet*. 1990; **336**:325-329.
120. Cariani E, Ravaggi A, Tanzi E, Romano L, Fiordalisi G, Bellati G, et al. Emergence of hepatitis B virus S gene mutant in a liver transplant recipient. *J Med Virol*. 1995; **47**:410-415.
121. Kajiwara E, Tanaka Y, Ohashi T, Uchimura K, Sadoshima S, Kinjo M, et al. Hepatitis B caused by a hepatitis B surface antigen escape mutant. *J Gastroenterol*. 2008; **43**:243-247.
122. Mimms L. Hepatitis B virus escape mutants: "pushing the envelope" of chronic hepatitis B virus infection. *Hepatology*. 1995; **21**:884-887.

123. Oon CJ, Lim GK, Ye Z, Goh KT, Tan KL, Yo SL, et al. Molecular epidemiology of hepatitis B virus vaccine variants in Singapore. *Vaccine*. 1995; **13**:699-702.
124. Kohno H, Inoue T, Tsuda F, Okamoto H, Akahane Y. Mutations in the envelope gene of hepatitis B virus variants co-occurring with antibody to surface antigen in sera from patients with chronic hepatitis B. *J Gen Virol*. 1996; **77** (Pt 8):1825-1831.
125. Sayiner AA, Agca H, Sengonul A, Celik A, Akarsu M. A new hepatitis B virus vaccine escape mutation in a renal transplant recipient. *J Clin Virol*. 2007; **38**:157-160.
126. Hou J, Wang Z, Cheng J, Lin Y, Lau GK, Sun J, et al. Prevalence of naturally occurring surface gene variants of hepatitis B virus in nonimmunized surface antigen-negative Chinese carriers. *Hepatology*. 2001; **34**:1027-1034.
127. Santantonio T, Gunther S, Sterneck M, Rendina M, Messner M, Launois B, et al. Liver graft infection by HBV S-gene mutants in transplant patients receiving long-term HBIg prophylaxis. *Hepatogastroenterology*. 1999; **46**:1848-1854.
128. Roznovsky L, Harrison TJ, Fang ZL, Ling R, Lochman I, Orsagova I, et al. Unusual hepatitis B surface antigen variation in a child immunised against hepatitis B. *J Med Virol*. 2000; **61**:11-14.
129. Lee KM, Kim YS, Ko YY, Yoo BM, Lee KJ, Kim JH, et al. Emergence of vaccine-induced escape mutant of hepatitis B virus with multiple surface gene mutations in a Korean child. *J Korean Med Sci*. 2001; **16**:359-362.

130. Chong-Jin O, Wei Ning C, Shiuan K, Gek Keow L. Identification of hepatitis B surface antigen variants with alterations outside the "a" determinant in immunized Singapore infants. *J Infect Dis.* 1999; **179**:259-263.
131. Ngui SL, O'Connell S, Eglin RP, Heptonstall J, Teo CG. Low detection rate and maternal provenance of hepatitis B virus S gene mutants in cases of failed postnatal immunoprophylaxis in England and Wales. *J Infect Dis.* 1997; **176**:1360-1365.
132. Candotti D, Grabarczyk P, Ghiazza P, Roig R, Casamitjana N, Iudicone P, et al. Characterization of occult hepatitis B virus from blood donors carrying genotype A2 or genotype D strains. *J Hepatol.* 2008; **49**:537-547.
133. Wallace LA, Echevarria JE, Echevarria JM, Carman WF. Molecular characterization of envelope antigenic variants of hepatitis B virus from Spain. *J Infect Dis.* 1994; **170**:1300-1303.
134. Ireland JH, O'Donnell B, Basuni AA, Kean JD, Wallace LA, Lau GK, et al. Reactivity of 13 in vitro expressed hepatitis B surface antigen variants in 7 commercial diagnostic assays. *Hepatology.* 2000; **31**:1176-1182.
135. Velu V, Saravanan S, Nandakumar S, Dhevahi E, Shankar EM, Murugavel KG, et al. Transmission of "a" determinant variants of hepatitis B virus in immunized babies born to HBsAg carrier mothers. *Jpn J Infect Dis.* 2008; **61**:73-76.
136. Chang MH. Breakthrough HBV infection in vaccinated children in Taiwan: surveillance for HBV mutants. *Antivir Ther.* 2010; **15**:463-469.

137. He C, Nomura F, Itoga S, Isobe K, Nakai T. Prevalence of vaccine-induced escape mutants of hepatitis B virus in the adult population in China: a prospective study in 176 restaurant employees. *J Gastroenterol Hepatol*. 2001; **16**:1373-1377.
138. von Weizsacker F, Pult I, Geiss K, Wirth S, Blum HE. Selective transmission of variant genomes from mother to infant in neonatal fulminant hepatitis B. *Hepatology*. 1995; **21**:8-13.
139. Oon CJ, Tan KL, Harrison T, Zuckerman A. Natural history of hepatitis B surface antigen mutants in children. *Lancet*. 1996; **348**:1524.
140. Moerman B, Moons V, Sommer H, Schmitt Y, Stetter M. Evaluation of sensitivity for wild type and mutant forms of hepatitis B surface antigen by four commercial HBsAg assays. *Clin Lab*. 2004; **50**:159-162.
141. Ho M, Mau Y, Lu C, Huang S, Hsu L, Lin S, et al. Patterns of circulating hepatitis B surface antigen variants among vaccinated children born to hepatitis B surface antigen carrier and non-carrier mothers. A population-based comparative study. *J Biomed Sci*. 1998; **5**:355-362.
142. Coleman PF, Chen YC, Mushahwar IK. Immunoassay detection of hepatitis B surface antigen mutants. *J Med Virol*. 1999; **59**:19-24.
143. Brind A, Jiang J, Samuel D, Gigou M, Feray C, Brechot C, et al. Evidence for selection of hepatitis B mutants after liver transplantation through peripheral blood mononuclear cell infection. *J Hepatol*. 1997; **26**:228-235.
144. Seddigh-Tonekaboni S, Lim WL, Young B, Hou JL, Waters J, Luo KX, et al. Hepatitis B surface antigen variants in vaccinees, blood donors and an interferon-treated patient. *J Viral Hepat*. 2001; **8**:154-158.

145. Harrison TJ, Hopes EA, Oon CJ, Zanetti AR, Zuckerman AJ. Independent emergence of a vaccine-induced escape mutant of hepatitis B virus. *J Hepatol.* 1991; **13 Suppl 4**:S105-107.
146. Protzer-Knolle U, Naumann U, Bartenschlager R, Berg T, Hopf U, Meyer zum Buschenfelde KH, et al. Hepatitis B virus with antigenically altered hepatitis B surface antigen is selected by high-dose hepatitis B immune globulin after liver transplantation. *Hepatology.* 1998; **27**:254-263.
147. Wiseman E, Fraser MA, Holden S, Glass A, Kidson BL, Heron LG, et al. Perinatal transmission of hepatitis B virus: an Australian experience. *Med J Aust.* 2009; **190**:489-492.
148. Araujo NM, Branco-Vieira M, Silva AC, Pilotto JH, Grinsztejn B, de Almeida AJ, et al. Occult hepatitis B virus infection in HIV-infected patients: Evaluation of biochemical, virological and molecular parameters. *Hepatol Res.* 2008.
149. Ghany M, Liang TJ. Drug targets and molecular mechanisms of drug resistance in chronic hepatitis B. *Gastroenterology.* 2007; **132**:1574-1585.
150. Seta T, Yokosuka O, Imazeki F, Tagawa M, Saisho H. Emergence of YMDD motif mutants of hepatitis B virus during lamivudine treatment of immunocompetent type B hepatitis patients. *J Med Virol.* 2000; **60**:8-16.
151. Torresi J, Earnest-Silveira L, Civitico G, Walters TE, Lewin SR, Fyfe J, et al. Restoration of replication phenotype of lamivudine-resistant hepatitis B virus mutants by compensatory changes in the "fingers" subdomain of the viral polymerase selected as a consequence of mutations in the overlapping S gene. *Virology.* 2002; **299**:88-99.

152. Kwon H, Lok AS. Hepatitis B therapy. *Nat Rev Gastroenterol Hepatol*. 2011; **8**:275-284.
153. Bartholomeusz A, Locarnini S. Hepatitis B virus mutations associated with antiviral therapy. *J Med Virol*. 2006; **78 Suppl 1**:S52-55.
154. Torresi J. The virological and clinical significance of mutations in the overlapping envelope and polymerase genes of hepatitis B virus. *J Clin Virol*. 2002; **25**:97-106.
155. Cooley L, Ayres A, Bartholomeusz A, Lewin S, Crowe S, Mijch A, et al. Prevalence and characterization of lamivudine-resistant hepatitis B virus mutations in HIV-HBV co-infected individuals. *Aids*. 2003; **17**:1649-1657.
156. Jemal A, Bray F, Center MM, Ferlay J, Ward E, Forman D. Global cancer statistics. *CA Cancer J Clin*. 2011; **61**:69-90.
157. Hyams KC. Risks of chronicity following acute hepatitis B virus infection: a review. *Clin Infect Dis*. 1995; **20**:992-1000.
158. Milich DR, Jones JE, Hughes JL, Price J, Raney AK, McLachlan A. Is a function of the secreted hepatitis B e antigen to induce immunologic tolerance in utero? *Proc Natl Acad Sci U S A*. 1990; **87**:6599-6603.
159. Reifenberg K, Deuschle T, Wild J, Hanano R, Gastrock-Balitsch I, Schirmbeck R, et al. The hepatitis B virus e antigen cannot pass the murine placenta efficiently and does not induce CTL immune tolerance in H-2b mice in utero. *Virology*. 1998; **243**:45-53.
160. Sinha S, Kumar M. Pregnancy and chronic hepatitis B virus infection. *Hepatol Res*. 2010; **40**:31-48.

161. Chimparlee N, Oota S, Phikulsood S, Tangkijvanich P, Poovorawan Y. Hepatitis B and hepatitis C virus in Thai blood donors. *Southeast Asian J Trop Med Public Health*. 2011; **42**:609-615.
162. Ishida T, Takao S, Settheetham-Ishida W, Tiwawech D. Prevalence of hepatitis B and C virus infection in rural ethnic populations of Northern Thailand. *J Clin Virol*. 2002; **24**:31-35.
163. Louisirootchanakul S, Myint KS, Srimee B, Kanoksinsombat C, Khamboonruang C, Kunstadter P, et al. The prevalence of viral hepatitis among the Hmong people of northern Thailand. *Southeast Asian J Trop Med Public Health*. 2002; **33**:837-844.
164. Sa-Nguanmoo P, Tangkijvanich P, Thawornsuk N, Vichaiwattana P, Prianantathavorn K, Theamboonlers A, et al. Molecular epidemiological study of hepatitis B virus among migrant workers from Cambodia, Laos, and Myanmar to Thailand. *J Med Virol*. 2010; **82**:1341-1349.
165. Pradutkanchana S, Nasongkla K, Pradutkanchana J, Heembai U. A ten-year trend of the prevalence of hepatitis B surface antigen in pregnant women at Songklanagarind hospital. *J Infect Dis Antimicrob Agents*. 2005; **22**:111-114.
166. Alter MJ. Epidemiology of viral hepatitis and HIV co-infection. *J Hepatol*. 2006; **44**:S6-9.
167. Fix OK, Locarnini SA, Peter MG. Virology and clinical management of hepatitis B and HIV coinfection. *In The PRN notebook*. 2007.
168. Thio CL. Hepatitis B in the human immunodeficiency virus-infected patient: epidemiology, natural history, and treatment. *Semin Liver Dis*. 2003; **23**:125-136.

169. Burnett RJ, Francois G, Kew MC, Leroux-Roels G, Meheus A, Hoosen AA, et al. Hepatitis B virus and human immunodeficiency virus co-infection in sub-Saharan Africa: a call for further investigation. *Liver Int.* 2005; **25**:201-213.
170. Zhou J, Dore GJ, Zhang F, Lim PL, Chen YM. Hepatitis B and C virus coinfection in The TREAT Asia HIV Observational Database. *J Gastroenterol Hepatol.* 2007; **22**:1510-1518.
171. Law WP, Duncombe CJ, Mahanontharit A, Boyd MA, Ruxrungham K, Lange JM, et al. Impact of viral hepatitis co-infection on response to antiretroviral therapy and HIV disease progression in the HIV-NAT cohort. *Aids.* 2004; **18**:1169-1177.
172. Sungkanuparph S, Vibhagool A, Manosuthi W, Kiertiburanakul S, Atamasirikul K, Aumkhyan A, et al. Prevalence of hepatitis B virus and hepatitis C virus co-infection with human immunodeficiency virus in Thai patients: a tertiary-care-based study. *J Med Assoc Thai.* 2004; **87**:1349-1354.
173. He N, Chen L, Lin HJ, Zhang M, Wei J, Yang JH, et al. Multiple viral coinfections among HIV/AIDS patients in China. *Biosci Trends.* 2011; **5**:1-9.
174. Shibayama T, Masuda G, Ajisawa A, Hiruma K, Tsuda F, Nishizawa T, et al. Characterization of seven genotypes (A to E, G and H) of hepatitis B virus recovered from Japanese patients infected with human immunodeficiency virus type 1. *J Med Virol.* 2005; **76**:24-32.
175. Jain M, Chakravarti A, Verma V, Bhalla P. Seroprevalence of hepatitis viruses in patients infected with the human immunodeficiency virus. *Indian J Pathol Microbiol.* 2009; **52**:17-19.

176. Saravanan S, Velu V, Kumarasamy N, Nandakumar S, Murugavel KG, Balakrishnan P, et al. Coinfection of hepatitis B and hepatitis C virus in HIV-infected patients in south India. *World J Gastroenterol.* 2007; **13**:5015-5020.
177. Saha K, Firdaus R, Santra P, Pal J, Roy A, Bhattacharya MK, et al. Recent pattern of Co-infection amongst HIV seropositive individuals in tertiary care hospital, Kolkata. *Virol J.* 2011; **8**:116.
178. Mohammadi M, Talei G, Sheikhian A, Ebrahimzade F, Pournia Y, Ghasemi E, et al. Survey of both hepatitis B virus (HBsAg) and hepatitis C virus (HCV-Ab) coinfection among HIV positive patients. *Virol J.* 2009; **6**:202.
179. Sun HY, Ko WC, Tsai JJ, Lee HC, Liu CE, Wong WW, et al. Seroprevalence of chronic hepatitis B virus infection among taiwanese human immunodeficiency virus type 1-positive persons in the era of nationwide hepatitis B vaccination. *Am J Gastroenterol.* 2009; **104**:877-884.
180. Ngo-Giang-Huong N, Sirirungsi W, Boonprasit W, Khamduang W, Suwannachat B, Achalong J, et al. Transmission of Hepatitis B Virus from HIV Co-infected Mothers to their Infants in Thailand. *15th International AIDS Conference.* 11-16th July 2004 2004, Bangkok, Thailand.
181. Heng BH, Goh KT, Chan R, Chew SK, Doraisingham S, Quek GH. Prevalence of hepatitis B virus (HBV) infection in Singapore men with sexually transmitted diseases and HIV infection: role of sexual transmission in a city state with intermediate HBV endemicity. *J Epidemiol Community Health.* 1995; **49**:309-313.

182. Chu FY, Chiang SC, Su FH, Chang YY, Cheng SH. Prevalence of human immunodeficiency virus and its association with hepatitis B, C, and D virus infections among incarcerated male substance abusers in Taiwan. *J Med Virol.* 2009; **81**:973-978.
183. Padmapriyadarsini C, Chandrabose J, Victor L, Hanna LE, Arunkumar N, Swaminathan S. Hepatitis B or hepatitis C co-infection in individuals infected with human immunodeficiency virus and effect of anti-tuberculosis drugs on liver function. *J Postgrad Med.* 2006; **52**:92-96.
184. Thio CL, Seaberg EC, Skolasky R, Jr., Phair J, Visscher B, Munoz A, et al. HIV-1, hepatitis B virus, and risk of liver-related mortality in the Multicenter Cohort Study (MACS). *Lancet.* 2002; **360**:1921-1926.
185. Hoffmann CJ, Thio CL. Clinical implications of HIV and hepatitis B co-infection in Asia and Africa. *Lancet Infect Dis.* 2007; **7**:402-409.
186. Hatzakis A, Magiorkinis E, Haida C. HBV virological assessment. *J Hepatol.* 2006; **44**:S71-76.
187. Bodsworth NJ, Cooper DA, Donovan B. The influence of human immunodeficiency virus type 1 infection on the development of the hepatitis B virus carrier state. *J Infect Dis.* 1991; **163**:1138-1140.
188. Gilson RJ, Hawkins AE, Beecham MR, Ross E, Waite J, Briggs M, et al. Interactions between HIV and hepatitis B virus in homosexual men: effects on the natural history of infection. *Aids.* 1997; **11**:597-606.
189. Levine OS, Vlahov D, Koehler J, Cohn S, Spronk AM, Nelson KE. Seroepidemiology of hepatitis B virus in a population of injecting drug users. Association with drug injection patterns. *Am J Epidemiol.* 1995; **142**:331-341.

190. Puoti M, Bruno R, Soriano V, Donato F, Gaeta GB, Quinzan GP, et al. Hepatocellular carcinoma in HIV-infected patients: epidemiological features, clinical presentation and outcome. *Aids*. 2004; **18**:2285-2293.
191. Nikolopoulos GK, Paraskevis D, Hatzitheodorou E, Moschidis Z, Sypsa V, Zavitsanos X, et al. Impact of hepatitis B virus infection on the progression of AIDS and mortality in HIV-infected individuals: a cohort study and meta-analysis. *Clin Infect Dis*. 2009; **48**:1763-1771.
192. Gomez-Gonzalo M, Carretero M, Rullas J, Lara-Pezzi E, Aramburu J, Berkhout B, et al. The hepatitis B virus X protein induces HIV-1 replication and transcription in synergy with T-cell activation signals: functional roles of NF-kappaB/NF-AT and SP1-binding sites in the HIV-1 long terminal repeat promoter. *J Biol Chem*. 2001; **276**:35435-35443.
193. Noppornpanth S, Sathirapongsasuti N, Chongsrisawat V, Poovorawan Y. Detection of HbsAg and HBV DNA in serum and saliva of HBV carriers. *Southeast Asian J Trop Med Public Health*. 2000; **31**:419-421.
194. Knutsson M, Kidd-Ljunggren K. Urine from chronic hepatitis B virus carriers: implications for infectivity. *J Med Virol*. 2000; **60**:17-20.
195. Alter HJ, Purcell RH, Gerin JL, London WT, Kaplan PM, McAuliffe VJ, et al. Transmission of hepatitis B to chimpanzees by hepatitis B surface antigen-positive saliva and semen. *Infect Immun*. 1977; **16**:928-933.
196. Komatsu H, Inui A, Sogo T, Tateno A, Shimokawa R, Fujisawa T. Tears from children with chronic hepatitis B virus (HBV) infection are infectious vehicles of HBV transmission: experimental transmission of HBV by tears, using mice with chimeric human livers. *J Infect Dis*. 2012; **206**:478-485.

197. Ouattara H, Siransy-Bogui L, Fretz C, Diane KM, Konate S, Koidio A, et al. Residual risk of HIV, HVB and HCV transmission by blood transfusion between 2002 and 2004 at the Abidjan National Blood Transfusion Center. *Transfus Clin Biol.* 2006; **13**:242-245.
198. Dickson RC, Everhart JE, Lake JR, Wei Y, Seaberg EC, Wiesner RH, et al. Transmission of hepatitis B by transplantation of livers from donors positive for antibody to hepatitis B core antigen. The National Institute of Diabetes and Digestive and Kidney Diseases Liver Transplantation Database. *Gastroenterology.* 1997; **113**:1668-1674.
199. Natov SN, Pereira BJ. Transmission of viral hepatitis by kidney transplantation: donor evaluation and transplant policies (Part 1: hepatitis B virus). *Transpl Infect Dis.* 2002; **4**:117-123.
200. Limentani AE, Elliott LM, Noah ND, Lamborn JK. An outbreak of hepatitis B from tattooing. *Lancet.* 1979; **2**:86-88.
201. Kent GP, Brondum J, Keenlyside RA, LaFazia LM, Scott HD. A large outbreak of acupuncture-associated hepatitis B. *Am J Epidemiol.* 1988; **127**:591-598.
202. Khan AJ, Luby SP, Fikree F, Karim A, Obaid S, Dellawala S, et al. Unsafe injections and the transmission of hepatitis B and C in a periurban community in Pakistan. *Bull World Health Organ.* 2000; **78**:956-963.
203. Quale JM, Landman D, Wallace B, Atwood E, Ditore V, Fruchter G. Deja vu: nosocomial hepatitis B virus transmission and fingerstick monitoring. *Am J Med.* 1998; **105**:296-301.

204. Hutin YJ, Goldstein ST, Varma JK, O'Dair JB, Mast EE, Shapiro CN, et al. An outbreak of hospital-acquired hepatitis B virus infection among patients receiving chronic hemodialysis. *Infect Control Hosp Epidemiol.* 1999; **20**:731-735.
205. Hutin YJ, Harpaz R, Drobeniuc J, Melnic A, Ray C, Favorov M, et al. Injections given in healthcare settings as a major source of acute hepatitis B in Moldova. *Int J Epidemiol.* 1999; **28**:782-786.
206. Rosenheim M, Cadranel JF, Stuyver L, Dorent R, Golliot F, Astagneau P, et al. Nosocomial transmission of hepatitis B virus associated with endomyocardial biopsy. *Gastroenterol Clin Biol.* 2006; **30**:1274-1280.
207. Tarantola A, Abiteboul D, Rachline A. Infection risks following accidental exposure to blood or body fluids in health care workers: a review of pathogens transmitted in published cases. *Am J Infect Control.* 2006; **34**:367-375.
208. Mahoney FJ. Update on diagnosis, management, and prevention of hepatitis B virus infection. *Clin Microbiol Rev.* 1999; **12**:351-366.
209. Zarski JP, Ganem D, Wright T eds. *Hepatitis B virus.* 2002. Washington, DC: ASM press.
210. Wright TL. Introduction to chronic hepatitis B infection. *Am J Gastroenterol.* 2006; **101 Suppl 1**:S1-6.
211. Vranckx R, Alisjahbana A, Meheus A. Hepatitis B virus vaccination and antenatal transmission of HBV markers to neonates. *J Viral Hepat.* 1999; **6**:135-139.

212. Xu DZ, Yan YP, Choi BC, Xu JQ, Men K, Zhang JX, et al. Risk factors and mechanism of transplacental transmission of hepatitis B virus: a case-control study. *J Med Virol.* 2002; **67**:20-26.
213. Guo Y, Liu J, Meng L, Meina H, Du Y. Survey of HBsAg-positive pregnant women and their infants regarding measures to prevent maternal-infantile transmission. *BMC Infect Dis.* 2010; **10**:26.
214. Pol S, Corouge M, Fontaine H. Hepatitis B virus infection and pregnancy. *Clin Res Hepatol Gastroenterol.* 2011.
215. Yu H, Zhu QR, Gu SQ, Fei LE. Relationship between IFN-gamma gene polymorphism and susceptibility to intrauterine HBV infection. *World J Gastroenterol.* 2006; **12**:2928-2931.
216. Zhu QR, Ge YL, Gu SQ, Yu H, Wang JS, Gu XH, et al. Relationship between cytokines gene polymorphism and susceptibility to hepatitis B virus intrauterine infection. *Chin Med J (Engl).* 2005; **118**:1604-1609.
217. Wang S, Peng G, Li M, Xiao H, Jiang P, Zeng N, et al. Identification of hepatitis B virus vertical transmission from father to fetus by direct sequencing. *Southeast Asian J Trop Med Public Health.* 2003; **34**:106-113.
218. Jonas MM. Hepatitis B and pregnancy: an underestimated issue. *Liver Int.* 2009; **29 Suppl 1**:133-139.
219. Yang J, Zeng XM, Men YL, Zhao LS. Elective caesarean section versus vaginal delivery for preventing mother to child transmission of hepatitis B virus--a systematic review. *Virol J.* 2008; **5**:100.
220. Yogeswaran K, Fung SK. Chronic hepatitis B in pregnancy: unique challenges and opportunities. *Korean J Hepatol.* 2011; **17**:1-8.

221. Hill JB, Sheffield JS, Kim MJ, Alexander JM, Sercely B, Wendel GD. Risk of hepatitis B transmission in breast-fed infants of chronic hepatitis B carriers. *Obstet Gynecol.* 2002; **99**:1049-1052.
222. Juszczak J. Clinical course and consequences of hepatitis B infection. *Vaccine.* 2000; **18 Suppl 1**:S23-25.
223. Hoofnagle JH, Di Bisceglie AM. Serologic diagnosis of acute and chronic viral hepatitis. *Semin Liver Dis.* 1991; **11**:73-83.
224. Hoofnagle JH. Reactivation of hepatitis B. *Hepatology.* 2009; **49**:S156-165.
225. World Health Organization (WHO). HIV/AIDS treatment and care: Clinical protocols for the WHO european region. 2012 Revisions. *In Protocol 7: Management of hepatitis B and HIV coinfection.*
226. McMahon BJ. The natural history of chronic hepatitis B virus infection. *Hepatology.* 2009; **49**:S45-55.
227. Fattovich G, Bortolotti F, Donato F. Natural history of chronic hepatitis B: special emphasis on disease progression and prognostic factors. *J Hepatol.* 2008; **48**:335-352.
228. Rehermann B, Ferrari C, Pasquinelli C, Chisari FV. The hepatitis B virus persists for decades after patients' recovery from acute viral hepatitis despite active maintenance of a cytotoxic T-lymphocyte response. *Nat Med.* 1996; **2**:1104-1108.
229. Blackberg J, Kidd-Ljunggren K. Occult hepatitis B virus after acute self-limited infection persisting for 30 years without sequence variation. *J Hepatol.* 2000; **33**:992-997.

230. Conjeevaram HS,Lok AS. Occult hepatitis B virus infection: a hidden menace? *Hepatology*. 2001; **34**:204-206.
231. Funk ML, Rosenberg DM,Lok AS. World-wide epidemiology of HBeAg-negative chronic hepatitis B and associated precore and core promoter variants. *J Viral Hepat*. 2002; **9**:52-61.
232. Chang JJ,Lewin SR. Immunopathogenesis of hepatitis B virus infection. *Immunol Cell Biol*. 2007; **85**:16-23.
233. Sobao Y, Sugi K, Tomiyama H, Saito S, Fujiyama S, Morimoto M, et al. Identification of hepatitis B virus-specific CTL epitopes presented by HLA-A*2402, the most common HLA class I allele in East Asia. *J Hepatol*. 2001; **34**:922-929.
234. Bertoletti A,Gehring AJ. The immune response during hepatitis B virus infection. *J Gen Virol*. 2006; **87**:1439-1449.
235. Liaw YF, Lin DY, Chen TJ,Chu CM. Natural course after the development of cirrhosis in patients with chronic type B hepatitis: a prospective study. *Liver*. 1989; **9**:235-241.
236. Lo KJ, Tong MJ, Chien MC, Tsai YT, Liaw YF, Yang KC, et al. The natural course of hepatitis B surface antigen-positive chronic active hepatitis in Taiwan. *J Infect Dis*. 1982; **146**:205-210.
237. de Jongh FE, Janssen HL, de Man RA, Hop WC, Schalm SW,van Blankenstein M. Survival and prognostic indicators in hepatitis B surface antigen-positive cirrhosis of the liver. *Gastroenterology*. 1992; **103**:1630-1635.
238. Huang CF, Lin SS, Ho YC, Chen FL,Yang CC. The immune response induced by hepatitis B virus principal antigens. *Cell Mol Immunol*. 2006; **3**:97-106.

239. Sulkowski MS. Viral hepatitis and HIV coinfection. *J Hepatol.* 2008; **48**:353-367.
240. Lin CL, Kao JH. Hepatitis B viral factors and clinical outcomes of chronic hepatitis B. *J Biomed Sci.* 2008; **15**:137-145.
241. Gripon P, Rumin S, Urban S, Le Seyec J, Glaise D, Cannie I, et al. Infection of a human hepatoma cell line by hepatitis B virus. *Proc Natl Acad Sci U S A.* 2002; **99**:15655-15660.
242. Nakabayashi H, Taketa K, Miyano K, Yamane T, Sato J. Growth of human hepatoma cells lines with differentiated functions in chemically defined medium. *Cancer Res.* 1982; **42**:3858-3863.
243. Guha C, Mohan S, Roy-Chowdhury N, Roy-Chowdhury J. Cell culture and animal models of viral hepatitis. Part I: hepatitis B. *Lab Anim (NY).* 2004; **33**:37-46.
244. Valsamakis A. Molecular testing in the diagnosis and management of chronic hepatitis B. *Clin Microbiol Rev.* 2007; **20**:426-439, table of contents.
245. Chevaliez S, Pawlotsky JM. Diagnostic tools in hepatitis B. *Hot Topics in Viral Hepatitis.* 2007; **4**:7-14.
246. Bowden DS, Thompson AJ. New developments in HBV molecular diagnostics and quantitative serology. *Hepatol Int.* 2008; **2**:3-11.
247. Kao JH. Diagnosis of hepatitis B virus infection through serological and virological markers. *Expert Rev Gastroenterol Hepatol.* 2008; **2**:553-562.
248. Lok AS, Zoulim F, Locarnini S, Bartholomeusz A, Ghany MG, Pawlotsky JM, et al. Antiviral drug-resistant HBV: standardization of nomenclature and assays and recommendations for management. *Hepatology.* 2007; **46**:254-265.

249. Stuyver LJ, Locarnini SA, Lok A, Richman DD, Carman WF, Dienstag JL, et al. Nomenclature for antiviral-resistant human hepatitis B virus mutations in the polymerase region. *Hepatology*. 2001; **33**:751-757.
250. Ali MM, Hasan F, Ahmad S, Al-Nakib W. Comparative evaluation of INNO-LiPA HBV assay, direct DNA sequencing and subtractive PCR-RFLP for genotyping of clinical HBV isolates. *Virology*. 2010; **7**:111.
251. Niesters HG, Zoulim F, Pichoud C, Buti M, Shapiro F, D'Heuvaert N, et al. Validation of the INNO-LiPA HBV DR assay (version 2) in monitoring hepatitis B virus-infected patients receiving nucleoside analog treatment. *Antimicrob Agents Chemother*. 2010; **54**:1283-1289.
252. Yang R, Cong X, Xu Z, Xu D, Huang W, Maertens R, et al. INNO-LiPA HBV genotyping is highly consistent with direct sequencing and sensitive in detecting B/C mixed genotype infection in Chinese chronic hepatitis B patients and asymptomatic HBV carriers. *Clin Chim Acta*. 2010; **411**:1951-1956.
253. Tran N, Berne R, Chann R, Gauthier M, Martin D, Armand MA, et al. European multicenter evaluation of high-density DNA probe arrays for detection of hepatitis B virus resistance mutations and identification of genotypes. *J Clin Microbiol*. 2006; **44**:2792-2800.
254. Kim HS, Han KH, Ahn SH, Kim EO, Chang HY, Moon MS, et al. Evaluation of methods for monitoring drug resistance in chronic hepatitis B patients during lamivudine therapy based on mass spectrometry and reverse hybridization. *Antivir Ther*. 2005; **10**:441-449.

255. Lindstrom A, Odeberg J, Albert J. Pyrosequencing for detection of lamivudine-resistant hepatitis B virus. *J Clin Microbiol.* 2004; **42**:4788-4795.
256. Ferir G, Kaptein S, Neyts J, De Clercq E. Antiviral treatment of chronic hepatitis B virus infections: the past, the present and the future. *Rev Med Virol.* 2008; **18**:19-34.
257. Zoulim F. Hepatitis B virus resistance to antiviral drugs: where are we going? *Liver Int.* 2011; **31 Suppl 1**:111-116.
258. Wong DK, Cheung AM, O'Rourke K, Naylor CD, Detsky AS, Heathcote J. Effect of alpha-interferon treatment in patients with hepatitis B e antigen-positive chronic hepatitis B. A meta-analysis. *Ann Intern Med.* 1993; **119**:312-323.
259. Cooksley WG, Piratvisuth T, Lee SD, Mahachai V, Chao YC, Tanwandee T, et al. Peginterferon alpha-2a (40 kDa): an advance in the treatment of hepatitis B e antigen-positive chronic hepatitis B. *J Viral Hepat.* 2003; **10**:298-305.
260. Lok AS, McMahon BJ. Chronic hepatitis B: update 2009. *Hepatology.* 2009; **50**:661-662.
261. Fried MW, Shiffman ML, Reddy KR, Smith C, Marinos G, Goncales FL, Jr., et al. Peginterferon alfa-2a plus ribavirin for chronic hepatitis C virus infection. *N Engl J Med.* 2002; **347**:975-982.
262. Leung N. Clinical experience with lamivudine. *Semin Liver Dis.* 2002; **22 Suppl 1**:15-21.
263. Dienstag JL, Schiff ER, Wright TL, Perrillo RP, Hann HW, Goodman Z, et al. Lamivudine as initial treatment for chronic hepatitis B in the United States. *N Engl J Med.* 1999; **341**:1256-1263.

264. Conjeevaram HS, Lok AS. Management of chronic hepatitis B. *J Hepatol.* 2003; **38 Suppl 1**:S90-103.
265. Fontana RJ. Side effects of long-term oral antiviral therapy for hepatitis B. *Hepatology.* 2009; **49**:S185-195.
266. Lai CL, Chien RN, Leung NW, Chang TT, Guan R, Tai DI, et al. A one-year trial of lamivudine for chronic hepatitis B. Asia Hepatitis Lamivudine Study Group. *N Engl J Med.* 1998; **339**:61-68.
267. Hoa PT, Huy NT, Thu le T, Nga CN, Nakao K, Eguchi K, et al. Randomized controlled study investigating viral suppression and serological response following pre-S1/pre-S2/S vaccine therapy combined with lamivudine treatment in HBeAg-positive patients with chronic hepatitis B. *Antimicrob Agents Chemother.* 2009; **53**:5134-5140.
268. Chang TT, Lai CL, Chien RN, Guan R, Lim SG, Lee CM, et al. Four years of lamivudine treatment in Chinese patients with chronic hepatitis B. *J Gastroenterol Hepatol.* 2004; **19**:1276-1282.
269. Leung NW, Lai CL, Chang TT, Guan R, Lee CM, Ng KY, et al. Extended lamivudine treatment in patients with chronic hepatitis B enhances hepatitis B e antigen seroconversion rates: results after 3 years of therapy. *Hepatology.* 2001; **33**:1527-1532.
270. Liaw YF, Leung NW, Chang TT, Guan R, Tai DI, Ng KY, et al. Effects of extended lamivudine therapy in Asian patients with chronic hepatitis B. Asia Hepatitis Lamivudine Study Group. *Gastroenterology.* 2000; **119**:172-180.

271. Yao GB, Zhu M, Cui ZY, Wang BE, Yao JL, Zeng MD. A 7-year study of lamivudine therapy for hepatitis B virus e antigen-positive chronic hepatitis B patients in China. *J Dig Dis*. 2009; **10**:131-137.
272. Yuen MF, Seto WK, Chow DH, Tsui K, Wong DK, Ngai VW, et al. Long-term lamivudine therapy reduces the risk of long-term complications of chronic hepatitis B infection even in patients without advanced disease. *Antivir Ther*. 2007; **12**:1295-1303.
273. European Association for the Study of the Liver. EASL Clinical Practice Guidelines: management of chronic hepatitis B. *J Hepatol*. 2009; **50**:227-242.
274. Allen MI, Deslauriers M, Andrews CW, Tipples GA, Walters KA, Tyrrell DL, et al. Identification and characterization of mutations in hepatitis B virus resistant to lamivudine. Lamivudine Clinical Investigation Group. *Hepatology*. 1998; **27**:1670-1677.
275. Ono SK, Kato N, Shiratori Y, Kato J, Goto T, Schinazi RF, et al. The polymerase L528M mutation cooperates with nucleotide binding-site mutations, increasing hepatitis B virus replication and drug resistance. *J Clin Invest*. 2001; **107**:449-455.
276. Villet S, Pichoud C, Billioud G, Barraud L, Durantel S, Trepo C, et al. Impact of hepatitis B virus rtA181V/T mutants on hepatitis B treatment failure. *J Hepatol*. 2008; **48**:747-755.
277. Rijckborst V, Sonneveld MJ, Janssen HL. Review article: chronic hepatitis B - anti-viral or immunomodulatory therapy? *Aliment Pharmacol Ther*. 2011; **33**:501-513.

278. Liaw YF, Leung N, Kao JH, Piratvisuth T, Gane E, Han KH, et al. Asian-Pacific consensus statement on the management of chronic hepatitis B: a 2008 update. *Hepatol Int.* 2008; **2**:263-283.
279. van Bommel F, Wunsche T, Mauss S, Reinke P, Bergk A, Schurmann D, et al. Comparison of adefovir and tenofovir in the treatment of lamivudine-resistant hepatitis B virus infection. *Hepatology.* 2004; **40**:1421-1425.
280. Soriano V, Vispo E, Labarga P, Medrano J, Barreiro P. Viral hepatitis and HIV co-infection. *Antiviral Res.* 2010; **85**:303-315.
281. Lim SG, Ng TM, Kung N, Krastev Z, Volfova M, Husa P, et al. A double-blind placebo-controlled study of emtricitabine in chronic hepatitis B. *Arch Intern Med.* 2006; **166**:49-56.
282. Avihingsanon A, Lewin SR, Kerr S, Chang JJ, Piyawat K, Napissanant N, et al. Efficacy of tenofovir disoproxil fumarate/emtricitabine compared with emtricitabine alone in antiretroviral-naïve HIV-HBV coinfection in Thailand. *Antivir Ther.* 2010; **15**:917-922.
283. Fung J, Lai CL, Seto WK, Yuen MF. Nucleoside/nucleotide analogues in the treatment of chronic hepatitis B. *J Antimicrob Chemother.* 2011; **66**:2715-2725.
284. Bhattacharya D, Thio CL. Review of hepatitis B therapeutics. *Clin Infect Dis.* 2010; **51**:1201-1208.
285. Marcellin P, Chang TT, Lim SG, Sievert W, Tong M, Arterburn S, et al. Long-term efficacy and safety of adefovir dipivoxil for the treatment of hepatitis B e antigen-positive chronic hepatitis B. *Hepatology.* 2008; **48**:750-758.

286. Lampertico P, Vigano M, Manenti E, Iavarone M, Lunghi G, Colombo M. Adefovir rapidly suppresses hepatitis B in HBeAg-negative patients developing genotypic resistance to lamivudine. *Hepatology*. 2005; **42**:1414-1419.
287. Angus P, Vaughan R, Xiong S, Yang H, Delaney W, Gibbs C, et al. Resistance to adefovir dipivoxil therapy associated with the selection of a novel mutation in the HBV polymerase. *Gastroenterology*. 2003; **125**:292-297.
288. Schildgen O, Sirma H, Funk A, Olotu C, Wend UC, Hartmann H, et al. Variant of hepatitis B virus with primary resistance to adefovir. *N Engl J Med*. 2006; **354**:1807-1812.
289. Wang G-F, Shi L-P, Zuo J-P. Anti-hepatitis B virus drugs in clinical and preclinical development. *Virologica Sinica*. 2008; **23**:137-145.
290. Chang TT, Gish RG, de Man R, Gadano A, Sollano J, Chao YC, et al. A comparison of entecavir and lamivudine for HBeAg-positive chronic hepatitis B. *N Engl J Med*. 2006; **354**:1001-1010.
291. Gish RG, Lok AS, Chang TT, de Man RA, Gadano A, Sollano J, et al. Entecavir therapy for up to 96 weeks in patients with HBeAg-positive chronic hepatitis B. *Gastroenterology*. 2007; **133**:1437-1444.
292. Chang TT, Lai CL, Kew Yoon S, Lee SS, Coelho HS, Carrilho FJ, et al. Entecavir treatment for up to 5 years in patients with hepatitis B e antigen-positive chronic hepatitis B. *Hepatology*. 2010; **51**:422-430.
293. Lai CL, Shouval D, Lok AS, Chang TT, Cheinquer H, Goodman Z, et al. Entecavir versus lamivudine for patients with HBeAg-negative chronic hepatitis B. *N Engl J Med*. 2006; **354**:1011-1020.

294. Tenney DJ, Rose RE, Baldick CJ, Pokornowski KA, Eggers BJ, Fang J, et al. Long-term monitoring shows hepatitis B virus resistance to entecavir in nucleoside-naïve patients is rare through 5 years of therapy. *Hepatology*. 2009; **49**:1503-1514.
295. Lai CL, Gane E, Liaw YF, Hsu CW, Thongsawat S, Wang Y, et al. Telbivudine versus lamivudine in patients with chronic hepatitis B. *N Engl J Med*. 2007; **357**:2576-2588.
296. Liaw YF, Gane E, Leung N, Zeuzem S, Wang Y, Lai CL, et al. 2-Year GLOBE trial results: telbivudine is superior to lamivudine in patients with chronic hepatitis B. *Gastroenterology*. 2009; **136**:486-495.
297. Marcellin P, Heathcote EJ, Buti M, Gane E, de Man RA, Krastev Z, et al. Tenofovir disoproxil fumarate versus adefovir dipivoxil for chronic hepatitis B. *N Engl J Med*. 2008; **359**:2442-2455.
298. Heathcote EJ, Gane EJ, Man RAD, Lee SS, Flisiak R, Manns MP, et al. Three years of tenofovir disoproxil (TDF) treatment in HBeAg-positive patients (HBeAg+) with chronic hepatitis B (study103), preliminary analysis. *The 60th Annual Meeting of the American Association for the Study of Liver Diseases: The Liver Meeting 2009* 2009, Boston, Massachusetts.
299. Marcellin P, Buti M, Krastev Z, Germanidis G, Kaita KD, Kotzev I, et al. Three years of tenofovir disoproxil fumarate (TDF) treatment in HBeAg-negative patients with chronic hepatitis B (study102), preliminary analysis. *The 60th Annual Meeting of the American Association for the Study of Liver Diseases: The Liver Meeting 2009* 2009, Boston, Massachusetts.

300. van Bommel F, de Man RA, Wedemeyer H, Deterding K, Petersen J, Buggisch P, et al. Long-term efficacy of tenofovir monotherapy for hepatitis B virus-monoinfected patients after failure of nucleoside/nucleotide analogues. *Hepatology*. 2010; **51**:73-80.
301. Sung JJ, Lai JY, Zeuzem S, Chow WC, Heathcote EJ, Perrillo RP, et al. Lamivudine compared with lamivudine and adefovir dipivoxil for the treatment of HBeAg-positive chronic hepatitis B. *J Hepatol*. 2008; **48**:728-735.
302. Hui CK, Zhang HY, Bowden S, Locarnini S, Luk JM, Leung KW, et al. 96 weeks combination of adefovir dipivoxil plus emtricitabine vs. adefovir dipivoxil monotherapy in the treatment of chronic hepatitis B. *J Hepatol*. 2008; **48**:714-720.
303. Soriano V, Puoti M, Peters M, Benhamou Y, Sulkowski M, Zoulim F, et al. Care of HIV patients with chronic hepatitis B: updated recommendations from the HIV-Hepatitis B Virus International Panel. *Aids*. 2008; **22**:1399-1410.
304. Martin-Carbonero L, Teixeira T, Poveda E, Plaza Z, Vispo E, Gonzalez-Lahoz J, et al. Clinical and virological outcomes in HIV-infected patients with chronic hepatitis B on long-term nucleos(t)ide analogues. *Aids*. 2011; **25**:73-79.
305. Di Martino V, Thevenot T, Colin JF, Boyer N, Martinot M, Degos F, et al. Influence of HIV infection on the response to interferon therapy and the long-term outcome of chronic hepatitis B. *Gastroenterology*. 2002; **123**:1812-1822.

306. Ingiliz P, Valantin MA, Thibault V, Duvivier C, Dominguez S, Katlama C, et al. Efficacy and safety of adefovir dipivoxil plus pegylated interferon-alpha2a for the treatment of lamivudine-resistant hepatitis B virus infection in HIV-infected patients. *Antivir Ther.* 2008; **13**:895-900.
307. Matthews GV, Bartholomeusz A, Locarnini S, Ayres A, Sasaduesz J, Seaberg E, et al. Characteristics of drug resistant HBV in an international collaborative study of HIV-HBV-infected individuals on extended lamivudine therapy. *Aids.* 2006; **20**:863-870.
308. Thio CL, Locarnini S. Treatment of HIV/HBV coinfection: clinical and virologic issues. *AIDS Rev.* 2007; **9**:40-53.
309. Marcellin P, Chang TT, Lim SG, Tong MJ, Sievert W, Shiffman ML, et al. Adefovir dipivoxil for the treatment of hepatitis B e antigen-positive chronic hepatitis B. *N Engl J Med.* 2003; **348**:808-816.
310. Hadziyannis SJ, Tassopoulos NC, Heathcote EJ, Chang TT, Kitis G, Rizzetto M, et al. Long-term therapy with adefovir dipivoxil for HBeAg-negative chronic hepatitis B. *N Engl J Med.* 2005; **352**:2673-2681.
311. Pessoa MG, Gazzard B, Huang AK, Brandao-Mello CE, Casseti I, Mendes-Correa MC, et al. Efficacy and safety of entecavir for chronic HBV in HIV/HBV coinfecting patients receiving lamivudine as part of antiretroviral therapy. *Aids.* 2008; **22**:1779-1787.
312. Ruiz-Sancho A, Sheldon J, Soriano V. Telbivudine: a new option for the treatment of chronic hepatitis B. *Expert Opin Biol Ther.* 2007; **7**:751-761.
313. Low E, Cox A, Atkins M, Nelson M. Telbivudine has activity against HIV-1. *Aids.* 2009; **23**:546-547.

314. Milazzo L, Caramma I, Lai A, Violin M, De Maddalena C, Cesari M, et al. Telbivudine in the treatment of chronic hepatitis B: experience in HIV type-1-infected patients naive for antiretroviral therapy. *Antivir Ther.* 2009; **14**:869-872.
315. Lin K, Karwowska S, Lam E, Limoli K, Evans TG, Avila C. Telbivudine exhibits no inhibitory activity against HIV-1 clinical isolates in vitro. *Antimicrob Agents Chemother.* 2010; **54**:2670-2673.
316. van Maarseveen NM, Wensing AM, de Jong D, Beilhartz GL, Obikhod A, Tao S, et al. Telbivudine exerts no antiviral activity against HIV-1 in vitro and in humans. *Antivir Ther.* 2011; **16**:1123-1130.
317. Ristig MB, Crippin J, Aberg JA, Powderly WG, Lisker-Melman M, Kessels L, et al. Tenofovir disoproxil fumarate therapy for chronic hepatitis B in human immunodeficiency virus/hepatitis B virus-coinfected individuals for whom interferon-alpha and lamivudine therapy have failed. *J Infect Dis.* 2002; **186**:1844-1847.
318. Benhamou Y, Tubiana R, Thibault V. Tenofovir disoproxil fumarate in patients with HIV and lamivudine-resistant hepatitis B virus. *N Engl J Med.* 2003; **348**:177-178.
319. Lacombe K, Gozlan J, Boelle PY, Serfaty L, Zoulim F, Valleron AJ, et al. Long-term hepatitis B virus dynamics in HIV-hepatitis B virus-co-infected patients treated with tenofovir disoproxil fumarate. *Aids.* 2005; **19**:907-915.
320. Benhamou Y, Fleury H, Trimoulet P, Pellegrin I, Urbinelli R, Katlama C, et al. Anti-hepatitis B virus efficacy of tenofovir disoproxil fumarate in HIV-infected patients. *Hepatology.* 2006; **43**:548-555.

321. Dore GJ, Cooper DA, Pozniak AL, DeJesus E, Zhong L, Miller MD, et al. Efficacy of tenofovir disoproxil fumarate in antiretroviral therapy-naive and -experienced patients coinfecting with HIV-1 and hepatitis B virus. *J Infect Dis.* 2004; **189**:1185-1192.
322. Matthews GV, Avihingsanon A, Lewin SR, Amin J, Rerknimitr R, Petcharapirat P, et al. A randomized trial of combination hepatitis B therapy in HIV/HBV coinfecting antiretroviral naive individuals in Thailand. *Hepatology.* 2008; **48**:1062-1069.
323. Sungkanuparph S, Anekthananon T, Hiransuthikul N, Bowonwatanuwong C, Supparatpinyo K, Mootsikapun P, et al. Guidelines for antiretroviral therapy in HIV-1 infected adults and adolescents: the recommendations of the Thai AIDS Society (TAS) 2008. *J Med Assoc Thai.* 2008; **91**:1925-1935.
324. Sungkanuparph S, Techasathit W, Utaipiboon C, Chasombat S, Bhakeecheep S, Leechawengwongs M, et al. Thai national guidelines for antiretroviral therapy in HIV-1 infected adults and adolescents 2010. *Asian Biomedicine.* 2010; **4**:515-528.
325. Tse KY, Ho LF, Lao T. The impact of maternal HBsAg carrier status on pregnancy outcomes: a case-control study. *J Hepatol.* 2005; **43**:771-775.
326. Shiraki K. Perinatal transmission of hepatitis B virus and its prevention. *J Gastroenterol Hepatol.* 2000; **15 Suppl**:E11-15.
327. Lee C, Gong Y, Brok J, Boxall EH, Gluud C. Effect of hepatitis B immunisation in newborn infants of mothers positive for hepatitis B surface antigen: systematic review and meta-analysis. *BMJ.* 2006; **332**:328-336.

328. Ranger-Rogez S, Denis F. Hepatitis B mother-to-child transmission. *Expert Rev Anti Infect Ther.* 2004; **2**:133-145.
329. Xiao XM, Li AZ, Chen X, Zhu YK, Miao J. Prevention of vertical hepatitis B transmission by hepatitis B immunoglobulin in the third trimester of pregnancy. *Int J Gynaecol Obstet.* 2007; **96**:167-170.
330. Xu Q, Xiao L, Lu XB, Zhang YX, Cai X. A randomized controlled clinical trial: interruption of intrauterine transmission of hepatitis B virus infection with HBIG. *World J Gastroenterol.* 2006; **12**:3434-3437.
331. van Zonneveld M, van Nunen AB, Niesters HG, de Man RA, Schalm SW, Janssen HL. Lamivudine treatment during pregnancy to prevent perinatal transmission of hepatitis B virus infection. *J Viral Hepat.* 2003; **10**:294-297.
332. Xu WM, Cui YT, Wang L, Yang H, Liang ZQ, Li XM, et al. Lamivudine in late pregnancy to prevent perinatal transmission of hepatitis B virus infection: a multicentre, randomized, double-blind, placebo-controlled study. *J Viral Hepat.* 2009; **16**:94-103.
333. Han GR, Cao MK, Zhao W, Jiang HX, Wang CM, Bai SF, et al. A prospective and open-label study for the efficacy and safety of telbivudine in pregnancy for the prevention of perinatal transmission of hepatitis B virus infection. *J Hepatol.* 2011; **55**:1215-1221.
334. Pan CQ, Mi LJ, Bunchorntavakul C, Karsdon J, Huang WM, Singhvi G, et al. Tenofovir Disoproxil Fumarate for Prevention of Vertical Transmission of Hepatitis B Virus Infection by Highly Viremic Pregnant Women: A Case Series. *Dig Dis Sci.* 2012.

335. ter Borg MJ, Leemans WF, de Man RA, Janssen HL. Exacerbation of chronic hepatitis B infection after delivery. *J Viral Hepat.* 2008; **15**:37-41.
336. Reddy PA, Gupta I, Ganguly NK. Hepatitis-B vaccination in pregnancy: safety and immunogenic response in mothers and antibody transfer to neonates. *Asia Oceania J Obstet Gynaecol.* 1994; **20**:361-365.
337. Terrault NA, Jacobson IM. Treating chronic hepatitis B infection in patients who are pregnant or are undergoing immunosuppressive chemotherapy. *Semin Liver Dis.* 2007; **27 Suppl 1**:18-24.
338. Nguyen G, Garcia RT, Nguyen N, Trinh H, Keeffe EB, Nguyen MH. Clinical course of hepatitis B virus infection during pregnancy. *Aliment Pharmacol Ther.* 2009; **29**:755-764.
339. Kwon SY, Lee CH. Epidemiology and prevention of hepatitis B virus infection. *Korean J Hepatol.* 2011; **17**:87-95.
340. Seeff LB, Zimmerman HJ, Wright EC, Finkelstein JD, Garcia-Pont P, Greenlee HB, et al. A randomized, double blind controlled trial of the efficacy of immune serum globulin for the prevention of post-transfusion hepatitis. A Veterans Administration cooperative study. *Gastroenterology.* 1977; **72**:111-121.
341. Beasley RP, Hwang LY, Stevens CE, Lin CC, Hsieh FJ, Wang KY, et al. Efficacy of hepatitis B immune globulin for prevention of perinatal transmission of the hepatitis B virus carrier state: final report of a randomized double-blind, placebo-controlled trial. *Hepatology.* 1983; **3**:135-141.

342. Grady GF, Lee VA, Prince AM, Gitnick GL, Fawaz KA, Vyas GN, et al. Hepatitis B immune globulin for accidental exposures among medical personnel: final report of a multicenter controlled trial. *J Infect Dis.* 1978; **138**:625-638.
343. Redeker AG, Mosley JW, Gocke DJ, McKee AP, Pollack W. Hepatitis B immune globulin as a prophylactic measure for spouses exposed to acute type B hepatitis. *N Engl J Med.* 1975; **293**:1055-1059.
344. Maupas P, Goudeau A, Coursaget P, Drucker J, Bagros P. Immunisation against hepatitis B in man. *Lancet.* 1976; **1**:1367-1370.
345. Barin F, Goudeau A, Denis F, Yvonnet B, Chiron JP, Coursaget P, et al. Immune response in neonates to hepatitis B vaccine. *Lancet.* 1982; **1**:251-253.
346. Seeger C, Zoulim F, Mason WS. Hepadnaviruses. In: Knipe DM, Howley PM, editors. *Fields VIROLOGY. Fifth ed.* Philadelphia: Lippincotte Williams & Wilkins; 2007. p. 2977 - 3030.
347. Hellstrom UB, Madalinski K, Sylvan SP. PreS1 epitope recognition in newborns after vaccination with the third-generation Sci-B-Vac vaccine and their relation to the antibody response to hepatitis B surface antigen. *Virology.* 2009; **6**:7.
348. Schumann A, Fiedler M, Dahmen U, Grosse-Wilde H, Roggendorf M, Lindemann M. Cellular and humoral immune response to a third generation hepatitis B vaccine. *J Viral Hepat.* 2007; **14**:592-598.
349. Guan ZJ, Guo B, Huo YL, Guan ZP, Wei YH. Overview of expression of hepatitis B surface antigen in transgenic plants. *Vaccine.* 2010; **28**:7351-7362.

350. Zanetti AR, Mariano A, Romano L, D'Amelio R, Chironna M, Coppola RC, et al. Long-term immunogenicity of hepatitis B vaccination and policy for booster: an Italian multicentre study. *Lancet*. 2005; **366**:1379-1384.
351. Fitzsimons D, Francois G, Hall A, McMahon B, Meheus A, Zanetti A, et al. Long-term efficacy of hepatitis B vaccine, booster policy, and impact of hepatitis B virus mutants. *Vaccine*. 2005; **23**:4158-4166.
352. Poovorawan Y, Chongsrisawat V, Theamboonlers A, Leroux-Roels G, Kuriyakose S, Leyssen M, et al. Evidence of protection against clinical and chronic hepatitis B infection 20 years after infant vaccination in a high endemicity region. *J Viral Hepat*. 2010; **18**:369-375.
353. Mast EE, Weinbaum CM, Fiore AE, Alter MJ, Bell BP, Finelli L, et al. A comprehensive immunization strategy to eliminate transmission of hepatitis B virus infection in the United States: recommendations of the Advisory Committee on Immunization Practices (ACIP) Part II: immunization of adults. *MMWR Recomm Rep*. 2006; **55**:1-33; quiz CE31-34.
354. Smith PJ, Singleton JA. County-level trends in vaccination coverage among children aged 19-35 months - United States, 1995-2008. *MMWR Surveill Summ*. 2011; **60**:1-86.
355. Mast EE, Margolis HS, Fiore AE, Brink EW, Goldstein ST, Wang SA, et al. A comprehensive immunization strategy to eliminate transmission of hepatitis B virus infection in the United States: recommendations of the Advisory Committee on Immunization Practices (ACIP) part 1: immunization of infants, children, and adolescents. *MMWR Recomm Rep*. 2005; **54**:1-31.

356. Chen DS. Toward elimination and eradication of hepatitis B. *J Gastroenterol Hepatol.* 2010; **25**:19-25.
357. Hsu HY, Chang MH, Ni YH, Chen HL. Survey of hepatitis B surface variant infection in children 15 years after a nationwide vaccination programme in Taiwan. *Gut.* 2004; **53**:1499-1503.
358. Chunsuttiwat S, Biggs BA, Maynard J, Thamapalo S, Laoboripat S, Bovornsins S, et al. Integration of hepatitis B vaccination into the expanded programme on immunization in Chonburi and Chiangmai provinces, Thailand. *Vaccine.* 1997; **15**:769-774.
359. Poovorawan Y, Theamboonlers A, Vimolket T, Sinlaparatsamee S, Chaiear K, Siraprapasiri T, et al. Impact of hepatitis B immunisation as part of the EPI. *Vaccine.* 2000; **19**:943-949.
360. Chub-uppakarn S, Panichart P, Theamboonlers A, Poovorawan Y. Impact of the hepatitis B mass vaccination program in the southern part of Thailand. *Southeast Asian J Trop Med Public Health.* 1998; **29**:464-468.
361. Lolekha S, Warachit B, Hirunyachote A, Bowonkiratikachorn P, West DJ, Poerschke G. Protective efficacy of hepatitis B vaccine without HBIG in infants of HBeAg-positive carrier mothers in Thailand. *Vaccine.* 2002; **20**:3739-3743.
362. Tharmaphornpilas P, Rasdjarmrearnsook AO, Plianpanich S, Sa-nguanmoo P, Poovorawan Y. Increased risk of developing chronic HBV infection in infants born to chronically HBV infected mothers as a result of delayed second dose of hepatitis B vaccination. *Vaccine.* 2009; **27**:6110-6115.

363. Chunsuttiwat S, Biggs BA, Maynard JE, Thammapornpilas P, M OP. Comparative evaluation of a combined DTP-HB vaccine in the EPI in Chiangrai Province, Thailand. *Vaccine*. 2002; **21**:188-193.
364. Pediatric Infectious Disease Society of Thailand. HBV immunization schedule recommendations in Thailand. 2012
365. Song YM, Sung J, Yang S, Choe YH, Chang YS, Park WS. Factors associated with immunoprophylaxis failure against vertical transmission of hepatitis B virus. *Eur J Pediatr*. 2007; **166**:813-818.
366. Chen HL, Lin LH, Hu FC, Lee JT, Lin WT, Yang YJ, et al. Effects of maternal screening and universal immunization to prevent mother-to-infant transmission of HBV. *Gastroenterology*. 2012; **142**:773-781 e772.
367. Kim HN, Harrington RD, Van Rompaey SE, Kitahata MM. Independent clinical predictors of impaired response to hepatitis B vaccination in HIV-infected persons. *Int J STD AIDS*. 2008; **19**:600-604.
368. Pasricha N, Datta U, Chawla Y, Singh S, Arora SK, Sud A, et al. Poor responses to recombinant HBV vaccination in patients with HIV infection. *Trop Gastroenterol*. 2005; **26**:178-182.
369. Cornejo-Juarez P, Volkow-Fernandez P, Escobedo-Lopez K, Vilar-Compte D, Ruiz-Palacios G, Soto-Ramirez LE. Randomized controlled trial of Hepatitis B virus vaccine in HIV-1-infected patients comparing two different doses. *AIDS Res Ther*. 2006; **3**:9.

370. Ungulkraiwit P, Jongjirawisan Y, Atamasirikul K, Sungkanuparph S. Factors for predicting successful immune response to hepatitis B vaccination in HIV-1 infected patients. *Southeast Asian J Trop Med Public Health*. 2007; **38**:680-685.
371. Siriaksorn S, Puthanakit T, Sirisanthana T, Sirisanthana V. Prevalence of protective antibody against hepatitis B virus in HIV-infected children with immune recovery after highly active antiretroviral therapy. *Vaccine*. 2006; **24**:3095-3099.
372. Lao-araya M, Puthanakit T, Aурpibul L, Sirisanthana T, Sirisanthana V. Antibody response to hepatitis B re-vaccination in HIV-infected children with immune recovery on highly active antiretroviral therapy. *Vaccine*. 2007; **25**:5324-5329.
373. Lao-Araya M, Puthanakit T, Aурpibul L, Taecharoenkul S, Sirisanthana T, Sirisanthana V. Prevalence of protective level of hepatitis B antibody 3 years after revaccination in HIV-infected children on antiretroviral therapy. *Vaccine*. 2011; **29**:3977-3981.
374. Cohen Stuart JW, Velema M, Schuurman R, Boucher CA, Hoepelman AI. Occult hepatitis B in persons infected with HIV is associated with low CD4 counts and resolves during antiretroviral therapy. *J Med Virol*. 2009; **81**:441-445.
375. Samal J, Kandpal M, Vivekanandan P. Molecular mechanisms underlying occult hepatitis B virus infection. *Clin Microbiol Rev*. 2012; **25**:142-163.
376. Torbenson M, Thomas DL. Occult hepatitis B. *Lancet Infect Dis*. 2002; **2**:479-486.

377. Louisirootchanaikul S, Oota S, Khuponsarb K, Chalermchan W, Phikulsod S, Chongkolwatana V, et al. Occult hepatitis B virus infection in Thai blood donors. *Transfusion*. 2011; **51**:1532-1540.
378. Pogany K, Zaaijer HL, Prins JM, Wit FW, Lange JM, Beld MG. Occult hepatitis B virus infection before and 1 year after start of HAART in HIV type 1-positive patients. *AIDS Res Hum Retroviruses*. 2005; **21**:922-926.
379. Sengupta S, Rehman S, Durgapal H, Acharya SK, Panda SK. Role of surface promoter mutations in hepatitis B surface antigen production and secretion in occult hepatitis B virus infection. *J Med Virol*. 2007; **79**:220-228.
380. Guido M, Thung SN, Fattovich G, Cusinato R, Leandro G, Cecchetto A, et al. Intrahepatic expression of hepatitis B virus antigens: effect of hepatitis C virus infection. *Mod Pathol*. 1999; **12**:599-603.
381. Amini-Bavil-Olyae S, Sheldon J, Lutz T, Trautwein C, Tacke F. Molecular analysis of an HBsAg-negative hepatitis B virus mutant selected in a tenofovir-treated HIV-hepatitis B virus co-infected patient. *Aids*. 2009; **23**:268-272.
382. Thedja MD, Roni M, Harahap AR, Siregar NC, Ie SI, Muljono DH. Occult hepatitis B in blood donors in Indonesia: altered antigenicity of the hepatitis B virus surface protein. *Hepatol Int*. 2010; **4**:608-614.
383. Martin CM, Welge JA, Shire NJ, Rouster SD, Shata MT, Sherman KE, et al. Genomic variability associated with the presence of occult hepatitis B virus in HIV co-infected individuals. *J Viral Hepat*. 2010; **17**:588-597.

384. Larsen J, Hetland G, Skaug K. Posttransfusion hepatitis B transmitted by blood from a hepatitis B surface antigen-negative hepatitis B virus carrier. *Transfusion*. 1990; **30**:431-432.
385. Chazouilleres O, Mamish D, Kim M, Carey K, Ferrell L, Roberts JP, et al. "Occult" hepatitis B virus as source of infection in liver transplant recipients. *Lancet*. 1994; **343**:142-146.
386. Lok AS, Liang RH, Chiu EK, Wong KL, Chan TK, Todd D. Reactivation of hepatitis B virus replication in patients receiving cytotoxic therapy. Report of a prospective study. *Gastroenterology*. 1991; **100**:182-188.
387. Altfeld M, Rockstroh JK, Addo M, Kupfer B, Pult I, Will H, et al. Reactivation of hepatitis B in a long-term anti-HBs-positive patient with AIDS following lamivudine withdrawal. *J Hepatol*. 1998; **29**:306-309.
388. Squadrito G, Pollicino T, Cacciola I, Caccamo G, Villari D, La Masa T, et al. Occult hepatitis B virus infection is associated with the development of hepatocellular carcinoma in chronic hepatitis C patients. *Cancer*. 2006; **106**:1326-1330.
389. Fukuda R, Ishimura N, Hamamoto S, Moritani M, Uchida Y, Ishihara S, et al. Co-infection by serologically-silent hepatitis B virus may contribute to poor interferon response in patients with chronic hepatitis C by down-regulation of type-I interferon receptor gene expression in the liver. *J Med Virol*. 2001; **63**:220-227.
390. Sagnelli E, Coppola N, Scolastico C, Mogavero AR, Stanzione M, Filippini P, et al. Isolated anti-HBc in chronic hepatitis C predicts a poor response to interferon treatment. *J Med Virol*. 2001; **65**:681-687.

391. Ramezani A, Banifazl M, Mohraz M, Rasoolinejad M, Aghakhani A. Occult hepatitis B virus infection: A major concern in HIV-infected patients: Occult HBV in HIV. *Hepat Mon.* 2011; **11**:7-10.
392. Filippini P, Coppola N, Pisapia R, Scolastico C, Marrocco C, Zaccariello A, et al. Impact of occult hepatitis B virus infection in HIV patients naive for antiretroviral therapy. *Aids.* 2006; **20**:1253-1260.
393. Tsui JI, French AL, Seaberg EC, Augenbraun M, Nowicki M, Peters M, et al. Prevalence and long-term effects of occult hepatitis B virus infection in HIV-infected women. *Clin Infect Dis.* 2007; **45**:736-740.
394. Landrum ML, Roediger MP, Fieberg AM, Weintrob AC, Okulicz JF, Crum-Cianflone NF, et al. Development of chronic hepatitis B virus infection in hepatitis B surface antigen negative HIV/HBV co-infected adults: a rare opportunistic illness. *J Med Virol.* 2011; **83**:1537-1543.
395. Piroth L, Carrat F, Larrat S, Goderel I, Martha B, Payan C, et al. Prevalence and impact of GBV-C, SEN-V and HBV occult infections in HIV-HCV co-infected patients on HCV therapy. *J Hepatol.* 2008; **49**:892-898.
396. Rodriguez-Torres M, Gonzalez-Garcia J, Brau N, Sola R, Moreno S, Rockstroh J, et al. Occult hepatitis B virus infection in the setting of hepatitis C virus (HCV) and human immunodeficiency virus (HIV) co-infection: clinically relevant or a diagnostic problem? *J Med Virol.* 2007; **79**:694-700.
397. Raffa G, Maimone S, Cargnel A, Santantonio T, Antonucci G, Massari M, et al. Analysis of occult hepatitis B virus infection in liver tissue of HIV patients with chronic hepatitis C. *Aids.* 2007; **21**:2171-2175.

398. Piroth L, Lafon ME, Biquet C, Bertillon P, Gervais A, Looftvoet E, et al. Occult hepatitis B in HIV-HCV coinfecting patients. *Scand J Infect Dis.* 2008; **40**:835-839.
399. Cooper C, Kilby D. Clinical significance of hepatitis B core antibody positivity in HCV-infected and HCV/HIV coinfecting individuals. *Clin Infect Dis.* 2004; **38**:1335-1337.
400. Sanchez-Quijano A, Jauregui JI, Leal M, Pineda JA, Castilla A, Abad MA, et al. Hepatitis B virus occult infection in subjects with persistent isolated anti-HBc reactivity. *J Hepatol.* 1993; **17**:288-293.
401. Grob P, Jilg W, Bornhak H, Gerken G, Gerlich W, Gunther S, et al. Serological pattern "anti-HBc alone": report on a workshop. *J Med Virol.* 2000; **62**:450-455.
402. Douglas DD, Taswell HF, Rakela J, Rabe D. Absence of hepatitis B virus DNA detected by polymerase chain reaction in blood donors who are hepatitis B surface antigen negative and antibody to hepatitis B core antigen positive from a United States population with a low prevalence of hepatitis B serologic markers. *Transfusion.* 1993; **33**:212-216.
403. Hennig H, Puchta I, Luhm J, Schlenke P, Goerg S, Kirchner H. Frequency and load of hepatitis B virus DNA in first-time blood donors with antibodies to hepatitis B core antigen. *Blood.* 2002; **100**:2637-2641.
404. Asim M, Ali R, Khan LA, Husain SA, Singla R, Kar P. Significance of anti-HBc screening of blood donors & its association with occult hepatitis B virus infection: Implications for blood transfusion. *Indian J Med Res.* 2010; **132**:312-317.

405. Kang SY, Kim MH, Lee WI. The prevalence of "anti-HBc alone" and HBV DNA detection among anti-HBc alone in Korea. *J Med Virol.* 2010; **82**:1508-1514.
406. Seo DH, Whang DH, Song EY, Kim HS, Park Q. Prevalence of antibodies to hepatitis B core antigen and occult hepatitis B virus infections in Korean blood donors. *Transfusion.* 2011; **51**:1840-1846.
407. Jongjirawisan Y, Ungulkraiwit P, Sungkanuparph S. Isolated antibody to hepatitis B core antigen in HIV-1 infected patients and a pilot study of vaccination to determine the anamnestic response. *J Med Assoc Thai.* 2006; **89**:2028-2034.
408. French AL, Operskalski E, Peters M, Strickler HD, Tien PC, Sharp GB, et al. Isolated hepatitis B core antibody is associated with HIV and ongoing but not resolved hepatitis C virus infection in a cohort of US women. *J Infect Dis.* 2007; **195**:1437-1442.
409. Cacciola I, Pollicino T, Squadrito G, Cerenzia G, Orlando ME, Raimondo G. Occult hepatitis B virus infection in patients with chronic hepatitis C liver disease. *N Engl J Med.* 1999; **341**:22-26.
410. Liang SH, Chen TJ, Lee SS, Tseng FC, Huang CK, Lai CH, et al. Risk factors of isolated antibody against core antigen of hepatitis B virus: association with HIV infection and age but not hepatitis C virus infection. *J Acquir Immune Defic Syndr.* 2010; **54**:122-128.

411. Piroth L, Biquet C, Vergne M, Minello A, Livry C, Bour JB, et al. The evolution of hepatitis B virus serological patterns and the clinical relevance of isolated antibodies to hepatitis B core antigen in HIV infected patients. *J Hepatol.* 2002; **36**:681-686.
412. Gandhi RT, Wurcel A, Lee H, McGovern B, Boczanowski M, Gerwin R, et al. Isolated antibody to hepatitis B core antigen in human immunodeficiency virus type-1-infected individuals. *Clin Infect Dis.* 2003; **36**:1602-1605.
413. Gandhi RT, Wurcel A, McGovern B, Lee H, Shopis J, Corcoran CP, et al. Low prevalence of ongoing hepatitis B viremia in HIV-positive individuals with isolated antibody to hepatitis B core antigen. *J Acquir Immune Defic Syndr.* 2003; **34**:439-441.
414. Neau D, Winnock M, Galperine T, Jouvencel AC, Castera L, Legrand E, et al. Isolated antibodies against the core antigen of hepatitis B virus in HIV-infected patients. *HIV Med.* 2004; **5**:171-173.
415. Huo TI, Wu JC, Lee PC, Chau GY, Lui WY, Tsay SH, et al. Sero-clearance of hepatitis B surface antigen in chronic carriers does not necessarily imply a good prognosis. *Hepatology.* 1998; **28**:231-236.
416. Paterlini P, Driss F, Nalpas B, Pisi E, Franco D, Berthelot P, et al. Persistence of hepatitis B and hepatitis C viral genomes in primary liver cancers from HBsAg-negative patients: a study of a low-endemic area. *Hepatology.* 1993; **17**:20-29.

417. Avelino-Silva VI, D'Albuquerque LA, Bonazzi PR, Song AT, Miraglia JL, De Brito Neves A, et al. Liver transplant from Anti-HBc-positive, HBsAg-negative donor into HBsAg-negative recipient: is it safe? A systematic review of the literature. *Clin Transplant*. 2010; **24**:735-746.
418. Yuen MF, Wong DK, Lee CK, Tanaka Y, Allain JP, Fung J, et al. Transmissibility of hepatitis B virus (HBV) infection through blood transfusion from blood donors with occult HBV infection. *Clin Infect Dis*. 2011; **52**:624-632.
419. Osborn MK, Guest JL, Rimland D. Hepatitis B virus and HIV coinfection: relationship of different serological patterns to survival and liver disease. *HIV Med*. 2007; **8**:271-279.
420. Sheng WH, Kao JH, Chen PJ, Huang LM, Chang SY, Sun HY, et al. Evolution of hepatitis B serological markers in HIV-infected patients receiving highly active antiretroviral therapy. *Clin Infect Dis*. 2007; **45**:1221-1229.
421. Sheldon J, Soriano V. Hepatitis B virus escape mutants induced by antiviral therapy. *J Antimicrob Chemother*. 2008; **61**:766-768.
422. Ponde RA, Cardoso DD, Ferro MO. The underlying mechanisms for the 'anti-HBc alone' serological profile. *Arch Virol*. 2010; **155**:149-158.
423. Allain JP, Belkhir D, Vermeulen M, Crookes R, Cable R, Amiri A, et al. Characterization of occult hepatitis B virus strains in South African blood donors. *Hepatology*. 2009; **49**:1868-1876.
424. Candotti D, Danso K, Allain JP. Maternofetal transmission of hepatitis B virus genotype E in Ghana, west Africa. *J Gen Virol*. 2007; **88**:2686-2695.

425. Ramezani A, Banifazl M, Eslamifar A, Aghakhani A. Serological pattern of anti-HBc alone infers occult hepatitis B virus infection in high-risk individuals in Iran. *J Infect Dev Ctries*. 2010; **4**:658-661.
426. Jilg W, Hottentrager B, Weinberger K, Schlottmann K, Frick E, Holstege A, et al. Prevalence of markers of hepatitis B in the adult German population. *J Med Virol*. 2001; **63**:96-102.
427. Kleinman SH, Kuhns MC, Todd DS, Glynn SA, McNamara A, DiMarco A, et al. Frequency of HBV DNA detection in US blood donors testing positive for the presence of anti-HBc: implications for transfusion transmission and donor screening. *Transfusion*. 2003; **43**:696-704.
428. Alhababi F, Sallam TA, Tong CY. The significance of 'anti-HBc only' in the clinical virology laboratory. *J Clin Virol*. 2003; **27**:162-169.
429. Garcia-Montalvo BM, Farfan-Ale JA, Acosta-Viana KY, Puerto-Manzano FI. Hepatitis B virus DNA in blood donors with anti-HBc as a possible indicator of active hepatitis B virus infection in Yucatan, Mexico. *Transfus Med*. 2005; **15**:371-378.
430. Knoll A, Hartmann A, Hamoshi H, Weismaier K, Jilg W. Serological pattern "anti-HBc alone": characterization of 552 individuals and clinical significance. *World J Gastroenterol*. 2006; **12**:1255-1260.
431. Banerjee A, Chandra PK, Datta S, Biswas A, Bhattacharya P, Chakraborty S, et al. Frequency and significance of hepatitis B virus surface gene variant circulating among 'antiHBc only' individuals in Eastern India. *J Clin Virol*. 2007; **40**:312-317.

432. El-Zaatari M, Kazma H, Naboulsi-Majzoub M, Haidar M, Ramlawi F, Mahfoud Z, et al. Hepatitis B virus DNA in serum of 'anti-HBc only'-positive healthy Lebanese blood donors: significance and possible implications. *J Hosp Infect.* 2007; **66**:278-282.
433. Vitale F, Tramuto F, Orlando A, Vizzini G, Meli V, Cerame G, et al. Can the serological status of anti-HBc alone be considered a sentinel marker for detection of occult HBV infection? *J Med Virol.* 2008; **80**:577-582.
434. Yuen MF, Lee CK, Wong DK, Fung J, Hung I, Hsu A, et al. Prevalence of occult hepatitis B infection in a highly endemic area for chronic hepatitis B: a study of a large blood donor population. *Gut.* 2010; **59**:1389-1393.
435. Altunay H, Kosan E, Birinci I, Aksoy A, Kirali K, Saribas S, et al. Are isolated anti-HBc blood donors in high risk group? The detection of HBV DNA in isolated anti-HBc cases with nucleic acid amplification test (NAT) based on transcription-mediated amplification (TMA) and HBV discrimination. *Transfus Apher Sci.* 2010; **43**:265-268.
436. Nunez M, Rios P, Perez-Olmeda M, Soriano V. Lack of 'occult' hepatitis B virus infection in HIV-infected patients. *Aids.* 2002; **16**:2099-2101.
437. Di Lello FA, Macias J, Cifuentes CC, Vargas J, Palomares JC, Pineda JA. Low prevalence of occult HBV infection among HIV-infected patients in southern Spain. *Enferm Infecc Microbiol Clin.* 2011.
438. Neau D, Winnock M, Jouvencel AC, Faure M, Castera L, Legrand E, et al. Occult hepatitis B virus infection in HIV-infected patients with isolated antibodies to hepatitis B core antigen: Aquitaine cohort, 2002-2003. *Clin Infect Dis.* 2005; **40**:750-753.

439. Goncales FL, Jr., Pereira JS, Da Silva C, Thomaz GR, Pavan MH, Fais VC, et al. Hepatitis B virus DNA in sera of blood donors and of patients infected with hepatitis C virus and human immunodeficiency virus. *Clin Diagn Lab Immunol.* 2003; **10**:718-720.
440. Lo Re V, 3rd, Frank I, Gross R, Dockter J, Linnen JM, Giachetti C, et al. Prevalence, risk factors, and outcomes for occult hepatitis B virus infection among HIV-infected patients. *J Acquir Immune Defic Syndr.* 2007; **44**:315-320.
441. Shire NJ, Rouster SD, Rajcic N, Sherman KE. Occult hepatitis B in HIV-infected patients. *J Acquir Immune Defic Syndr.* 2004; **36**:869-875.
442. Shire NJ, Rouster SD, Stanford SD, Blackard JT, Martin CM, Fichtenbaum CJ, et al. The prevalence and significance of occult hepatitis B virus in a prospective cohort of HIV-infected patients. *J Acquir Immune Defic Syndr.* 2007; **44**:309-314.
443. Santos EA, Yoshida CF, Rolla VC, Mendes JM, Vieira IF, Arabe J, et al. Frequent occult hepatitis B virus infection in patients infected with human immunodeficiency virus type 1. *Eur J Clin Microbiol Infect Dis.* 2003; **22**:92-98.
444. Wagner AA, Denis F, Weinbreck P, Loustaud V, Autophage F, Rogez S, et al. Serological pattern 'anti-hepatitis B core alone' in HIV or hepatitis C virus-infected patients is not fully explained by hepatitis B surface antigen mutants. *Aids.* 2004; **18**:569-571.

445. Hofer M, Joller-Jemelka HI, Grob PJ, Luthy R, Opravil M. Frequent chronic hepatitis B virus infection in HIV-infected patients positive for antibody to hepatitis B core antigen only. Swiss HIV Cohort Study. *Eur J Clin Microbiol Infect Dis.* 1998; **17**:6-13.
446. Bloquel B, Jeulin H, Burty C, Letranchant L, Rabaud C, Venard V. Occult hepatitis B infection in patients infected with HIV: report of two cases of hepatitis B reactivation and prevalence in a hospital cohort. *J Med Virol.* 2010; **82**:206-212.
447. Azadmanesh K, Mohraz M, Aghakhani A, Edalat R, Jam S, Eslamifar A, et al. Occult hepatitis B virus infection in HIV-infected patients with isolated hepatitis B core antibody. *Intervirology.* 2008; **51**:270-274.
448. N'Dri-Yoman T, Anglaret X, Messou E, Attia A, Polneau S, Toni T, et al. Occult HBV infection in untreated HIV-infected adults in Cote d'Ivoire. *Antivir Ther.* 2010; **15**:1029-1034.
449. Sun HY, Lee HC, Liu CE, Yang CL, Su SC, Ko WC, et al. Factors associated with isolated anti-hepatitis B core antibody in HIV-positive patients: impact of compromised immunity. *J Viral Hepat.* 2010; **17**:578-587.
450. Michel ML, Tiollais P. Hepatitis B vaccines: protective efficacy and therapeutic potential. *Pathol Biol (Paris).* 2010; **58**:288-295.
451. Yao JL. Perinatal transmission of hepatitis B virus infection and vaccination in China. *Gut.* 1996; **38 Suppl 2**:S37-38.
452. Chang MH. Hepatitis B virus infection. *Semin Fetal Neonatal Med.* 2007; **12**:160-167.

453. Burk RD, Hwang LY, Ho GY, Shafritz DA, Beasley RP. Outcome of perinatal hepatitis B virus exposure is dependent on maternal virus load. *J Infect Dis.* 1994; **170**:1418-1423.
454. Beasley RP, Trepo C, Stevens CE, Szmuness W. The e antigen and vertical transmission of hepatitis B surface antigen. *Am J Epidemiol.* 1977; **105**:94-98.
455. Lallemand M, Jourdain G, Le Coeur S, Kim S, Koetsawang S, Comeau AM, et al. A trial of shortened zidovudine regimens to prevent mother-to-child transmission of human immunodeficiency virus type 1. Perinatal HIV Prevention Trial (Thailand) Investigators. *N Engl J Med.* 2000; **343**:982-991.
456. Lallemand M, Jourdain G, Le Coeur S, Mary JY, Ngo-Giang-Huong N, Koetsawang S, et al. Single-dose perinatal nevirapine plus standard zidovudine to prevent mother-to-child transmission of HIV-1 in Thailand. *N Engl J Med.* 2004; **351**:217-228.
457. Villeneuve JP, Durantel D, Durantel S, Westland C, Xiong S, Brosgart CL, et al. Selection of a hepatitis B virus strain resistant to adefovir in a liver transplantation patient. *J Hepatol.* 2003; **39**:1085-1089.
458. Tamura K, Dudley J, Nei M, Kumar S. MEGA4: Molecular Evolutionary Genetics Analysis (MEGA) software version 4.0. *Mol Biol Evol.* 2007; **24**:1596-1599.
459. Purdy MA, Talekar G, Swenson P, Araujo A, Fields H. A new algorithm for deduction of hepatitis B surface antigen subtype determinants from the amino acid sequence. *Intervirology.* 2007; **50**:45-51.

460. Piya-Anant M, Jamjun B, Praktikvonchai A, Tienthai C, Chandanabodhi S. Prevalence of hepatitis B carriers in pregnant women. *Siriraj Hos Gaz.* 1998; **50**:100-104.
461. Tanjatham S, Luppanakul P, Toenchana T, Balachandra K. Hepatitis B virus carriers among Thai pregnant women. *J Med Technol Assoc Thai.* 2004; **32**:561-569.
462. Thaewpia W, Mitchai M, Jinathongthai S. Hepatitis B virus (HBV) and Human Immunodeficiency virus (HIV) co-infection in pregnant women at Khon Kaen Hospital during 2000-2003 *Khon Kaen Hospital Medical Journal.* 2005; **29**:109-115.
463. Lin CC, Hsieh HS, Huang YJ, Huang YL, Ku MK, Hung HC. Hepatitis B virus infection among pregnant women in Taiwan: comparison between women born in Taiwan and other southeast countries. *BMC Public Health.* 2008; **8**:49.
464. World Health Organization (WHO). Preventing mother-to-child transmission of hepatitis B: operational field guidelines for delivery of the birth dose of hepatitis B vaccine. 2006.
465. Jutavijittum P, Yousukh A, Jiviriyawat Y, Kunachiwa W, Toriyama K. Genotypes of hepatitis B virus among children in Chiang Mai, Thailand. *Southeast Asian J Trop Med Public Health.* 2008; **39**:394-397.
466. Mele A, Tancredi F, Romano L, Giuseppone A, Colucci M, Sangiuolo A, et al. Effectiveness of hepatitis B vaccination in babies born to hepatitis B surface antigen-positive mothers in Italy. *J Infect Dis.* 2001; **184**:905-908.

467. Ren F, Tsubota A, Hirokawa T, Kumada H, Yang Z, Tanaka H. A unique amino acid substitution, T126I, in human genotype C of hepatitis B virus S gene and its possible influence on antigenic structural change. *Gene*. 2006; **383**:43-51.
468. del Canho R, Grosheide PM, Schalm SW, de Vries RR, Heijntink RA. Failure of neonatal hepatitis B vaccination: the role of HBV-DNA levels in hepatitis B carrier mothers and HLA antigens in neonates. *J Hepatol*. 1994; **20**:483-486.
469. Ngui SL, Andrews NJ, Underhill GS, Heptonstall J, Teo CG. Failed postnatal immunoprophylaxis for hepatitis B: characteristics of maternal hepatitis B virus as risk factors. *Clin Infect Dis*. 1998; **27**:100-106.
470. Ogata N, Cote PJ, Zanetti AR, Miller RH, Shapiro M, Gerin J, et al. Licensed recombinant hepatitis B vaccines protect chimpanzees against infection with the prototype surface gene mutant of hepatitis B virus. *Hepatology*. 1999; **30**:779-786.
471. Nainan OV, Khristova ML, Byun K, Xia G, Taylor PE, Stevens CE, et al. Genetic variation of hepatitis B surface antigen coding region among infants with chronic hepatitis B virus infection. *J Med Virol*. 2002; **68**:319-327.
472. Brechot C, Thiers V, Kremsdorf D, Nalpas B, Pol S, Paterlini-Brechot P. Persistent hepatitis B virus infection in subjects without hepatitis B surface antigen: clinically significant or purely "occult"? *Hepatology*. 2001; **34**:194-203.
473. Jain M, Chakravarti A, Kar P. Clinical significance of isolated anti-hbc positivity in cases of chronic liver disease in new delhi, India. *J Glob Infect Dis*. 2009; **1**:29-32.

474. Satake M, Taira R, Yugi H, Hino S, Kanemitsu K, Ikeda H, et al. Infectivity of blood components with low hepatitis B virus DNA levels identified in a lookback program. *Transfusion*. 2007; **47**:1197-1205.
475. de Villa VH, Chen YS, Chen CL. Hepatitis B core antibody-positive grafts: recipient's risk. *Transplantation*. 2003; **75**:S49-53.
476. De Feo TM, Poli F, Mozzi F, Moretti MP, Scalamogna M. Risk of transmission of hepatitis B virus from anti-HBc positive cadaveric organ donors: a collaborative study. *Transplant Proc*. 2005; **37**:1238-1239.
477. Descos B, Scotto J, Fayol V, Huet JY, Pichoud C, Hermier M, et al. Anti-HBc screening for the prevention of perinatal transmission of hepatitis B virus in France. *Infection*. 1987; **15**:434-439.
478. Saito T, Shinzawa H, Uchida T, Kawamata O, Honma S, Watanabe H, et al. Quantitative DNA analysis of low-level hepatitis B viremia in two patients with serologically negative chronic hepatitis B. *J Med Virol*. 1999; **58**:325-331.
479. Thiers V, Nakajima E, Kremsdorf D, Mack D, Schellekens H, Driss F, et al. Transmission of hepatitis B from hepatitis-B-seronegative subjects. *Lancet*. 1988; **2**:1273-1276.
480. Chamorro AJ, Casado JL, Bellido D, Moreno S. Reactivation of hepatitis B in an HIV-infected patient with antibodies against hepatitis B core antigen as the only serological marker. *Eur J Clin Microbiol Infect Dis*. 2005; **24**:492-494.
481. Allain JP. Occult hepatitis B virus infection: implications in transfusion. *Vox Sang*. 2004; **86**:83-91.

482. Silva AE, McMahon BJ, Parkinson AJ, Sjogren MH, Hoofnagle JH, Di Bisceglie AM. Hepatitis B virus DNA in persons with isolated antibody to hepatitis B core antigen who subsequently received hepatitis B vaccine. *Clin Infect Dis.* 1998; **26**:895-897.
483. Weber B, Melchior W, Gehrke R, Doerr HW, Berger A, Rabenau H. Hepatitis B virus markers in anti-HBc only positive individuals. *J Med Virol.* 2001; **64**:312-319.
484. Lok AS, Lai CL, Wu PC. Prevalence of isolated antibody to hepatitis B core antigen in an area endemic for hepatitis B virus infection: implications in hepatitis B vaccination programs. *Hepatology.* 1988; **8**:766-770.
485. Bernvil SS, Andrews V, Kuhns MC, McNamara AL. Hepatitis B core antigen antibody as an indicator of a low grade carrier state for hepatitis B virus in a Saudi Arabian blood donor population. *Transfus Sci.* 1997; **18**:49-53.
486. Kaplan JE, Benson C, Holmes KH, Brooks JT, Pau A, Masur H. Guidelines for prevention and treatment of opportunistic infections in HIV-infected adults and adolescents: recommendations from CDC, the National Institutes of Health, and the HIV Medicine Association of the Infectious Diseases Society of America. *MMWR Recomm Rep.* 2009; **58**:1-207; quiz CE201-204.
487. Laukamm-Josten U, Muller O, Bienzle U, Feldmeier H, Uy A, Guggenmoos-Holzmann I. Decline of naturally acquired antibodies to hepatitis B surface antigen in HIV-1 infected homosexual men. *Aids.* 1988; **2**:400-401.
488. Manzini P, Giroto M, Borsotti R, Giachino O, Guaschino R, Lanteri M, et al. Italian blood donors with anti-HBc and occult hepatitis B virus infection. *Haematologica.* 2007; **92**:1664-1670.

489. Berger A, Doerr HW, Rabenau HF, Weber B. High frequency of HCV infection in individuals with isolated antibody to hepatitis B core antigen. *Intervirology*. 2000; **43**:71-76.
490. Chen SY, Kao CF, Chen CM, Shih CM, Hsu MJ, Chao CH, et al. Mechanisms for inhibition of hepatitis B virus gene expression and replication by hepatitis C virus core protein. *J Biol Chem*. 2003; **278**:591-607.
491. Schuttler CG, Fiedler N, Schmidt K, Repp R, Gerlich WH, Schaefer S. Suppression of hepatitis B virus enhancer 1 and 2 by hepatitis C virus core protein. *J Hepatol*. 2002; **37**:855-862.
492. Allain JP. Occult hepatitis B virus infection. *Transfus Clin Biol*. 2004; **11**:18-25.
493. Walz A, Wirth S, Hucke J, Gerner P. Vertical transmission of hepatitis B virus (HBV) from mothers negative for HBV surface antigen and positive for antibody to HBV core antigen. *J Infect Dis*. 2009; **200**:1227-1231.
494. Puoti M, Airoidi M, Bruno R, Zanini B, Spinetti A, Pezzoli C, et al. Hepatitis B virus co-infection in human immunodeficiency virus-infected subjects. *AIDS Rev*. 2002; **4**:27-35.
495. Hsu YS, Chien RN, Yeh CT, Sheen IS, Chiou HY, Chu CM, et al. Long-term outcome after spontaneous HBeAg seroconversion in patients with chronic hepatitis B. *Hepatology*. 2002; **35**:1522-1527.
496. Mommeja-Marin H, Mondou E, Blum MR, Rousseau F. Serum HBV DNA as a marker of efficacy during therapy for chronic HBV infection: analysis and review of the literature. *Hepatology*. 2003; **37**:1309-1319.

497. Hoff J, Bani-Sadr F, Gassin M, Raffi F. Evaluation of chronic hepatitis B virus (HBV) infection in coinfecting patients receiving lamivudine as a component of anti-human immunodeficiency virus regimens. *Clin Infect Dis.* 2001; **32**:963-969.
498. Locarnini S, Zoulim F. Molecular genetics of HBV infection. *Antivir Ther.* 2010; **15 Suppl 3**:3-14.
499. Kim HN, Scott J, Cent A, Cook L, Morrow RA, Richardson B, et al. HBV lamivudine resistance among hepatitis B and HIV coinfecting patients starting lamivudine, stavudine and nevirapine in Kenya. *J Viral Hepat.* 2011; **18**.
500. Pillay D, Cane PA, Ratcliffe D, Atkins M, Cooper D. Evolution of lamivudine-resistant hepatitis B virus and HIV-1 in co-infected individuals: an analysis of the CAESAR study. CAESAR co-ordinating committee. *Aids.* 2000; **14**:1111-1116.
501. de Vries-Sluijs TE, van der Eijk AA, Hansen BE, Osterhaus AD, de Man RA, van der Ende ME. Wild type and YMDD variant of hepatitis B virus: no difference in viral kinetics on lamivudine/tenofovir therapy in HIV-HBV co-infected patients. *J Clin Virol.* 2006; **36**:60-63.
502. Kiertiburanakul S, Khongnorasat S, Rattanasiri S, Sungkanuparph S. Efficacy of a generic fixed-dose combination of stavudine, lamivudine and nevirapine (GPO-VIR) in Thai HIV-infected patients. *J Med Assoc Thai.* 2007; **90**:237-243.
503. Ford N, Gray A, Venter WDF. Tough choices: tenofovir, tenders and treatment. *Southern African Journal of HIV Medicine.* 2008:8-10.

504. World Health Organization (WHO). Rapid advice: antiretroviral therapy for HIV infection in adults and adolescents. 2009; 21.
505. Sungkanuparph S, Wongprasit P, Manosuthi W, Atamasirikul K. Compliance with hepatitis B and hepatitis C virus infection screening among HIV-1 infected patients in a resource-limited setting. *Southeast Asian J Trop Med Public Health*. 2008; **39**:863-866.
506. Ott JJ, Stevens GA, Groeger J, Wiersma ST. Global epidemiology of hepatitis B virus infection: new estimates of age-specific HBsAg seroprevalence and endemicity. *Vaccine*. 2012; **30**:2212-2219.
507. Wu JC, Chen PJ, Kuo MY, Lee SD, Chen DS, Ting LP. Production of hepatitis delta virus and suppression of helper hepatitis B virus in a human hepatoma cell line. *J Virol*. 1991; **65**:1099-1104.
508. Salisse J, Sureau C. A function essential to viral entry underlies the hepatitis B virus "a" determinant. *J Virol*. 2009; **83**:9321-9328.