Huong, H.F.L. Wertheim); National Hospital for Tropical Diseases, Hanoi (D.T. Trinh, N.V. Kinh,); Nuffield Department of Clinical Medicine, Oxford, UK (N.T. Hoa, H.F.L. Wertheim, J.I. Campbell, J. Farrar, S. Baker, J.E. Bryant); and Hospital for Tropical Diseases, Ho Chi Minh City (N.V.V. Chau)

References

1. Gottschalk M, Xu J, Calzas C, Segura M. *Streptococcus suis*: a new emerging or an old neglected zoonotic pathogen? Future Microbiol. 2010;5:371–91. http://dx.doi.org/10.2217/fmb.10.2
2. Mai NT, Hoa NT, Nga TV, Linh le D, Chau TT, Sinh DX, et al. *Streptococcus suis* meningitis in adults in Vietnam. Clin Infect Dis. 2008;46:659–67. http://dx.doi.org/10.1086/527385
3. Nghia HD, Tu le TP, Wolbers M, Thai CQ, Hoang NV, Nga TV, et al. Risk factors of *Streptococcus suis* infection in Vietnam. A case–control study PLoS One. 2011;6:e17604. PubMed http://dx.doi.org/10.1371/journal.pone.0017604
4. Ngo TH, Tran TB, Tran TT, Nguyen VD, Campbell J, Pham HA, et al. Slaughterhouse pigs are a major reservoir of *Streptococcus suis* serotype 2 capable of causing human infection in southern Vietnam. PLoS One. 2011;6:e17943. http://dx.doi.org/10.1371/journal.pone.0017943
5. Xu M, Wang S, Li L, Lei L, Liu Y, Shi W, et al. Secondary infection with *Streptococcus suis* serotype 7 increases the virulence of highly pathogenic porcine reproductive and respiratory syndrome virus in pigs. Virol J. 2010;7:184. http://dx.doi.org/10.1186/1743-422X-7-184
6. Tien NN. Situation of blue ear pig diseases in Vietnam and the outbreak control activities [in Vietnamese]. Veterinary Sciences and Techniques. 2011;18:12–20.
7. Xiao XL, Wu H, Yu YG, Cheng BZ, Yang XQ, Chen G, et al. Rapid detection of a highly virulent Chinese-type isolate of porcine reproductive and respiratory syndrome virus by real-time reverse transcriptase PCR. J Virol Methods. 2008;149:49–55. http://dx.doi.org/10.1016/j.jviromet.2008.01.009
8. Palmieri C, Varaldo PE, Facinelli B. *Streptococcus suis*, an emerging drug-resistant animal and human pathogen. Front Microbiol. 2011;2:235.
9. Clinical and Laboratory Standards Institute. Performance standards for antimicrobial disk and dilution susceptibility tests for bacteria isolated from animals; approved standard. 3rd ed. (document M31–A3). Wayne (PA): The Institute: 2008.
10. Marois C, Bougeard S, Gottschalk M, Kobisch M. Multiplex PCR assay for detection of *Streptococcus suis* species and serotypes 2 and 1/2 in tonsils of live and dead pigs. J Clin Microbiol. 2004;42:3169–75. http://dx.doi.org/10.1128/JCM.42.7.3169-3175.2004

Address for correspondence: Ngo Thi Hoa, Centre for Tropical Medicine, Oxford University Clinical Research Unit, Hospital for Tropical Diseases. 764 Vo Van Kiet St, District 5, Ho Chi Minh City, Vietnam; email: hoant@oucru.org

Hepatitis E Virus Seroprevalence among Men Who Have Sex with Men, United Kingdom

To the Editor: Immunosuppression might be associated with chronic carriage of hepatitis E virus (HEV) (*1*,*2*). HIV-infected persons could be at increased risk for HEV acquisition (*3*). If HIV infection is a risk factor for HEV, the risk will probably be mediated by associated behavioral factors. Men who have sex with men (MSM) are known to be at risk for transmission of enteric infection (*4*). Because of increasing prevalence of chronic liver disease induced by various causes among HIV-infected persons, it is necessary to determine whether these patients are at risk for HEV acquisition and possible hepatic decompensation (*5*).

We aimed to establish the contribution of HIV infection and MSM to seroprevalence of HEV among banked serum specimens. We used an unlinked, anonymous HIV seroprevalence survey of sexual health clinic attendees in England, Wales, and Northern Ireland, compared results from testing of residual serum samples collected for routine syphilis testing from sentinel clinics, and analyzed basic epidemiologic data (*6*). We exam-ined serum samples collected during a 3-year period (2006–2008) and stored at −80°C. All samples were from male patients, 20–44 years of age. IgG against HEV was measured by using ELISA (Wantai; Fortress Diagnostics, Antrim, UK). To further increase the specificity for a seroprevalence analysis, and in accordance with previous work (*7*), we defined only samples with an optical density/cutoff value ≥1.5 as reactive and those in the range 1.0–1.5 as weakly reactive.

We analyzed 422 serum samples collected during 2008, comprising 146 samples from MSM with positive HIV test results, 135 from MSM with negative HIV test results, and 141 from heterosexual men with negative HIV test results. Thirty (7.1%) serum samples showed IgG reactivity against HEV and 3 (0.7%) additional samples showed weak reactivity. We examined the effect of HIV infection on prevalence of IgG against HEV by comparing samples from HIV-infected MSM with those from HIV-negative MSM . Seroprevalence rates did not differ significantly (HIV-positive MSM 7.5%; HIV-negative MSM 10.4%; p = 0.4).

We then examined the effect of being MSM as a risk factor for HEV infection. Prevalence of IgG against HEV among HIV-negative heterosexual men was 3.5%, significantly lower than that among MSM (odds ratio 3.1, p = 0.025, for comparison with non-HIV–infected MSM). We examined the relationship of status of IgG against HEV among MSM to the presence of an acute non-HIV sexually transmitted infection (STI) at the time of serum sampling. No association was found (acute STI, 14 [9.1%] of 154 vs. no acute STI, 11 [8.7%] of 127; p = 0.9). Similarly, no statistical association was found between HEV antibody status and the location of the clinic that provided the serum sample (London, 21 [10.0%] of 211; United Kingdom excluding London, 4 [5.7%]) of 70; p = 0.3). As has been observed for the general UK population (*7*), we

observed a trend toward increasing prevalence of antibodies against HEV with patient age (20–34 y, 9 [6.3%] of 142; 35–44 y, 16 [11.5%] of 139), although this trend did not reach significance (p = 0.13). Our samples were from persons who were younger than the previously described cohort of UK persons with increased prevalence of antibodies against HEV (born before approximately1960) (7). Multivariate analysis with the above variables showed that MSM (p = 0.044) and age group (p = 0.026) were independently associated with HEV seroprevalence. To explore recent temporal trends in HEV seroprevalence among MSM, we examined serum samples from 977 MSM collected during the 3-year study period. We observed an unexpected association between antibody prevalence and year of serum collection (2006, 4 [2.1%] of195; 2007, 26 [5.2%] of 501; 2008, 26 [9.3%] of 281; p = 0.003 (Figure).

We provide evidence that MSM might be at risk for HEV acquisition and confirm that HIV infection does not appear to be a risk factor. Although our study is of moderate size, and we have limited epidemiologic data owing to its unlinked, anonymized nature, the fact that patient groups are drawn from the same clinics should minimize the effect of unrecognized confounding factors. The pathologic mechanisms for HEV acquisition among MSM may plausibly include oro–anal sexual practices, which have been implicated in recent outbreaks of *Shigella flexneri* infection in this group (8). That ano–genital transmission of HEV is unlikely is supported by our finding that prevalence of antibodies against HEV was not more common among patients with an acute STI.

The shift in prevalence of antibodies against HEV among MSM occurred while HEV activity in the United Kingdom was increasing (9,10). The routes of transmission of indigenously acquired HEV infection in industrialized countries remain a subject of investigation, but our observations suggest that activity among MSM could expose this group to increased transmission. Thus, the putative combination of increased exposure in the general UK population and increased transmission among MSM suggests that HEV incidence and seroprevalence could increase for this group in the near future and couldbecome a substantial public health problem.
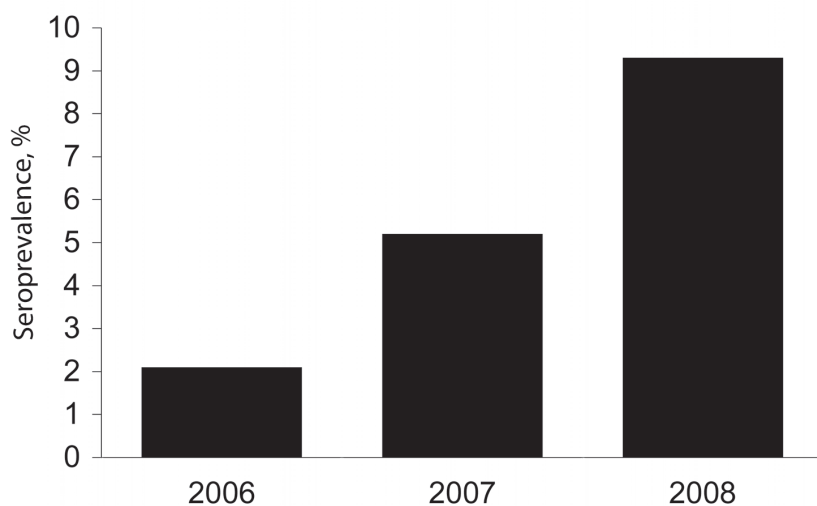
**Brendan A.I. Payne,
Manjul Medhi, Samreen Ijaz,
Manoj Valappil,
Emma J. Savage, O. Noel Gill,
Richard Tedder, and
Ulrich Schwab**

Author affiliations: Newcastle-upon-Tyne Hospitals, Newcastle-upon-Tyne, UK (B.A.I. Payne, M. Medhi, M. Valappil, U. Schwab); Newcastle University, Newcastle-upon-Tyne (B.A.I. Payne); and Health Protection Agency, London, UK (S. Ijaz, E.J. Savage, O.N. Gill, R. Tedder)

References

1. Kamar N, Selves J, Mansuy JM, Ouezzani L, Peron JM, Guitard J, et al. Hepatitis E virus and chronic hepatitis in organ-transplant recipients. N Engl J Med. 2008;358:811–7. http://dx.doi.org/10.1056/NEJMoa0706992
2. Dalton HR, Bendall RP, Keane FE, Tedder RS, Ijaz S. Persistent carriage of hepatitis E virus in patients with HIV infection. N Engl J Med. 2009;361:1025–7. http://dx.doi.org/10.1056/NEJMc0903778
3. Montella F, Rezza G, Di Sora F, Pezzotti P, Recchia O. Association between hepatitis E virus and HIV infection in homosexual men. Lancet. 1994;344:1433. http://dx.doi.org/10.1016/S0140-6736(94)90598-3
4. Corey L, Holmes KK. Sexual transmission of hepatitis A in homosexual men: incidence and mechanism. N Engl J Med. 1980;302:435–8. http://dx.doi.org/10.1056/NEJM198002213020804
5. Ramachandran J, Eapen CE, Kang G, Abraham P, Hubert DD, Kurian G, et al. Hepatitis E superinfection produces severe decompensation in patients with chronic liver disease. J Gastroenterol Hepatol. 2004;19:134–8. http://dx.doi.org/10.1111/j.1440-1746.2004.03188.x

Figure. Hepatitis E virus seroprevalence among men who have sex with men, United Kingdom, 2006–2008.

6. Catchpole MA, McGarrigle CA, Rogers PA, Jordan LF, Mercey D, Gill ON. Serosurveillance of prevalence of undiagnosed HIV-1 infection in homosexual men with acute sexually transmitted infection. BMJ. 2000;321:1319–20. http://dx.doi.org/10.1136/bmj.321.7272.1319

7. Ijaz S, Vyse AJ, Morgan D, Pebody RG, Tedder RS, Brown D. Indigenous hepatitis E virus infection in England: more common than it seems. J Clin Virol. 2009;44:272–6. http://dx.doi.org/10.1016/j.jcv.2009.01.005

8. Borg ML, Modi A, Tostmann A, Gobin M, Cartwright J, Quigley C, et al. Ongoing outbreak of *Shigella flexneri* serotype 3a in men who have sex with men in England and Wales, data from 2009–2011. Euro Surveill. 2012;17:pii:20137.

9. United Kingdom Health Protection Agency. Hepatitis E, surveillance,2011 7 Sep [cited 2012 Aug 1]. http://www.hpa.org.uk/Topics/InfectiousDiseases/InfectionsAZ/HepatitisE/Surveillance/

10. Berto A, Martelli F, Grierson S, Banks M. Hepatitis E virus in pork food chain, United Kingdom, 2009–2010. Emerg Infect Dis.18:1358-60.

Address for correspondence: Brendan A. I. Payne, HPA Molecular Virology Laboratory, Level 3 Leazes Wing, Royal Victoria Infirmary, Newcastle-upon-Tyne NE1 4LP, UK; email: brendan.payne@ncl.ac.uk

Imported Hepatitis E Virus, Central African Republic, 2011

To the Editor: Hepatitis E virus (HEV) is endemic to India (*1,2*) and Central African Republic (*3,4*), although different strains circulate in the countries. In May 2011, a case of jaundice and fever in an expatriate Indian worker (a 33-year-old man) was reported to Institut Pasteur de Bangui, Bangui, Central African Republic. HEV RNA and IgM were detected in serum samples from the patient, and liver enzyme levels were raised (alanine aminotransferase 840 U/L, reference value 11–66 U/L). Symptoms lasted for ≈10 days and resolved without specific treatment. The patient was working and living at a construction site in Central African Republic with 51 other men (22–62 years of age) from India.

We investigated this case to determine whether it was linked to an outbreak and whether disease-control measures were needed. The protocol for surveillance and investigation was approved by the national ethical and scientific committee in Central African Republic.

Background information and blood and stool samples were obtained from the patient's coworkers. The Bioelisa HEV IgM 3.0 kit (Biokit, Barcelona, Spain), which has sensitivity >98%, was used to test serum samples for HEV IgM; real-time reverse transcription PCR (rRT-PCR) was used to test serum and stool samples for viral RNA (*5*). Test results provided evidence of early HEV infection. Liver enzymes (aspartate aminotransferase and alanine aminotransferase) were measured in serum by using an ABX Pentra 400 benchtop analyzer (Horiba Medical, Montpellier, France).

For genetic analysis of HEV strains from viremic study participants, we performed nested RT-PCR on serum and stool samples to amplify a 348-bp portion of the open reading frame 2 region (*6*). We directly sequenced the purified amplicons and compared the resulting sequences with HEV sequences in GenBank (*7*) and those from autochthonous HEV cases from 2008–2011. ClustalW2 (www.ebi.ac.uk/Tools/msa/clustalw2/) was used to align sequences. MEGA5 (*8*) was used to construct a phylogenetic tree (300-nt sequences) by the neighbor-joining method. The genotypes and subtypes were identified as described (*7*).

The 52 men arrived in Central African Republic in several groups during July 2010–June 2011. During May–July 2011, a total of 40 (77%) men had a febrile illness; 9 illnesses were accompanied by digestive signs or symptoms, such as nausea and vomiting (Technical Appendix Table, wwwnc.cdc.gov/EID/article/12-0670-Techapp1.pdf). Only the patient whose case was reported was jaundice. Early HEV infection was biologically confirmed for 11 (21%) men, including the -patient whose case was reported; 8 of the 11 men had IgM only, 1 was HEV positive according to rRT-PCR and IgM negative, and 2 were HEV positive according to rRT-PCR and IgM positive. The 2 other men with viremia were asymptomatic, but liver enzyme levels were elevated in 1 of them.

Illnesses in infected and noninfected men did not differ, and, except for the notified case, we cannot say with certainty that the illnesses were caused by HEV. We found IgG against HEV in 14 (34%) uninfected men, which is close to the prevalence for the general population in India (*2*).

HEV subtype 1a isolates from the notified case-patient (serum-derived isolate) and a co-worker (stool-derived isolate) were sequenced (GenBank accession nos. JN863908 and JQ074213, respectively) and found to be 100% similar and to share 97%– 99% similarity with other HEV strains in India and Nepal (Technical Appendix Figure). The sequences obtained from persons with autochthonous HEV (GenBank accession nos. JN863909, JN863910, and JQ740782) clustered with HEV subtype 1e and type 2 strains and were closely related to strains from Africa and Mexico (93% and 82% similarity, respectively). Similarity between strains was not as high for the strain from the notified case-patient and those from persons with autochthonous infection (87% similarity with the subtype 1e strain and 77% similarity with the type 2 strain).

IgM titers typically rise after the incubation period, which is >3 weeks for HEV (*9*). Thus, for the purpose of this study, we assumed that men who