8. Currie BJ, Haslem A, Pearson T, Hornstra H, Leadem B, Mayo M, et al. Identification of melioidosis outbreak by multilocus variable number tandem repeat analysis. Emerg Infect Dis. 2009;15:169–74. http://dx.doi.org/10.3201/eid1502.081036
9. Tuanyok A, Auerbach RK, Brettin TS, Bruce DC, Munk AC, Dette JC, et al. A horizontal gene transfer event defines two distinct groups within *Burkholderia pseudomallei* that have dissimilar geographic distributions. J Bacteriol. 2007;189:9044–9. http://dx.doi.org/10.1128/JB.01264-07
10. Baker A, Pearson T, Price EP, Dale J, Keim P, Hornstra H, et al. Molecular phylogeny of *Burkholderia pseudomallei* from a remote region of Papua New Guinea. PLoS ONE. 2011;6:e18343. http://dx.doi.org/10.1371/journal.pone.0018343

Address for correspondence: Xiao Zheng, National Institute for Communicable Disease Control and Prevention, Chinese Center for Disease Control and Prevention, PO Box 5, Changping, Beijing 102206, People’s Republic of China; email: zhengxiao@icdc.cn

**Hemolytic Uremic Syndrome Associated with *Escherichia coli* O8:H19 and Shiga Toxin 2f Gene**

Ingrid H.M. Friesema, Mandy G. Keijzer-Veen, Marja Koppejan, Henk S. Schipper, Arjanne J. van Griethuysen, Max E.O.C. Heck, and Wilfrid van Pelt

Author affiliations: National Institute for Public Health and the Environment, Bilthoven, the Netherlands (I.H.M. Friesema, M.E.O.C. Heck, W. van Pelt); University Medical Center Utrecht, Utrecht, the Netherlands (M. G. Keijzer-Veen, H.S. Schipper); and Gelderse Vallei Hospital, Ede, the Netherlands (M. Koppejan, H.S. Schipper, A.J. van Griethuysen)

DOI: http://dx.doi.org/10.3201/eid21001.140515

**To the Editor:** Gastroenteritis caused by Shiga toxin–producing *Escherichia coli* (STEC), associated with hemorrhagic colitis and hemolytic uremic syndrome (HUS), has been identified as a major health problem ([1]). Shiga toxin is essential for the development of HUS ([2]). Shiga toxin can be distinguished into Shiga toxin 1 (Stx1) and Shiga toxin 2 (Stx2). The Stx2, STEC variant is a distinct group within STEC (regarding virulence genes) and is known to cause relatively mild disease, although reports of human illness are scarce ([3]).

During autumn 2013, a healthy 9-year-old boy in the Netherlands experienced fever, vomiting, and bloody diarrhea which persisted for days; he was admitted to the pediatric ward of a local hospital because of clinical signs of HUS with renal insufficiency: serum creatinine level 439 µmol/L (reference range 31–68 µmol/L); blood urea nitrogen concentration 34.1 mmol/L (reference range 3.3–5.6 mmol/L); thrombocytopenia (46 platelets/nL); reference range 150–450/nL), and low haptoglobin level. Hemoglobin levels decreased within 48 hours from 7.4 mmol/L to 5.5 mmol/L (reference range 6.9–8.4 mmol/L). His blood pressure was 127/82 (99th percentile for age and height). Renal insufficiency worsened over time, evidenced by maximum urea levels of 57.3 mmol/L and maximum creatinine levels of 744 µmol/L. Vomiting increased, and feeding became difficult. The boy was transferred to an academic nephrology center, where he received erythrocyte and thrombocyte infusions, then peritoneal dialysis. He received 1 prophylactic dose of cefazolin during insertion of the dialysis catheter. After 2 days, he entered a polyuric phase of renal failure; renal function normalized within a few weeks, however. To improve proteinuria, physicians prescribed a 3-month course of angiotensin-converting enzyme inhibitors after discharge.

A fecal sample tested positive for STEC by PCR in a local laboratory. Five isolates were sent to the National Institute for Public Health and the Environment (RIVM) as part of the national STEC surveillance. By using PCR, 1 of the 5 tested positive for the *stx* 2f gene and the attaching and effacing gene (*eae*), and negative for the genes *stx* 1, *stx* 2a-e, *hly*, O157, and enterohemorrhagic *E. coli* hemolysin (*hly*). Serotyping identified O8:H19. The other 4 isolates tested negative for all of the above-mentioned genes and were not serotyped.

The family had stayed in a hotel in Turkey and returned to the Netherlands 5 days before onset of illness. The only reported contact with animals was with a parrot in the hotel. On return to the Netherlands, the boy had eaten filet américain, a sandwich spread made of raw beef. The day before disease onset, he attended a party where barbecue was served by a catering company.

Since 2007, besides this reported case, 8 cases of STEC O8 were registered within the STEC surveillance system in the Netherlands: O8:H– (4 cases), O8:H19 (2 cases), O8:H8 (1 case), and O8:H9 (1 case). All 8 isolates were *stx*2a-e-positive and *stx*1-, *stx* 2f-, *eae*-, and *hly*-negative. Disease associated with these cases was relatively mild. During 2007–2010, a total of 13,545 human STEC infections were reported in Europe: 20 were registered as STEC O8; HUS did not develop in these case-patients ([4]). HUS developed in 2 patients infected with STEC O8 (O8:H2, O8:H19) in Germany during 1996–2000 ([5]); these isolates and all other isolates from HUS and non-HUS case-patients in this period tested negative for *stx* 2f. During 2008–2011, 87 *stx*2f STEC infections were registered in the Netherlands ([3]). These infections were relatively mild; no HUS cases were registered. The virulence genes seen in the isolate of the described case, *stx*2f and *eae*, but no *hly* or other toxin genes, were also seen in 97% of *stx*2f STEC infections reported in the Netherlands ([3]). Besides being detected in humans, *stx*2f STEC has only been detected in pigeons ([6]).
The cause of the severity of disease in this stx2 STEC case and the source of the infection could not be determined. The parrot in the hotel in Turkey could have been the source if birds are a reservoir of stx2 STEC. Conversely, the uncooked beef and barbecue cannot be ruled out, because O8:H19 has been found in cattle, pigs, and sheep (7). This case shows that STEC subgroups known to cause relatively mild disease can occasionally cause severe disease and that surveillance based upon a small group of serotypes underestimates the number of severe STEC infections and increases the chance of missing emerging serotypes.

References

1. Karmali MA, Gannon V, Sargeant JM. Verocytotoxin-producing Escherichia coli (VTec). Vet Microbiol. 2010;140:360–70. http://dx.doi.org/10.1016/j.vetmic.2009.04.011
2. Prager R, Annemuller S, Tschape H. Diversity of virulence patterns among Shiga toxin–producing Escherichia coli from human clinical cases—need for more detailed diagnostics. Int J Med Microbiol. 2005;295:29–38. http://dx.doi.org/10.1016/j.ijmm.2004.12.009
3. Friesema I, van der Zwaluw K, Schuurman T, Kooistra-Smid M, van Dun TPP, van der Zwaluw K, Schroen M, van der Zwaluw K, Schroen M, van der Zwaluw K, Schroen M, van der Zwaluw K, Schroen M, van der Zwaluw K, Schroen M, van der Zwaluw K, Schroen M, van der Zwaluw K, Schroen M, van der Zwaluw K, Schroen M, van der Zwaluw K, Schroen M, van der Zwaluw K, Schroen M, van der Zwaluw K, Schroen M, van der Zwaluw K, Schroen M, van der Zwaluw K, Schroen M, van der Zwaluw K, Schroen M, van der Zwaluw K, Schroen M, van der Zwaluw K, Schroen M, van der Zwaluw K, Schroen M, van der Zwaluw K, Schroen M, van der Zwaluw K, Schroen M, van der Zwaluw K, Schroen M, van der Zwaluw K, Schroen M, van der Zwaluw K, Schroen M, van der Zwaluw K, Schroen M, van der Zwaluw K, Schroen M, van der Zwaluw K, Schroen M, van der Zwaluw K, Schroen M, van der Zwaluw K, Schroen M, van der Zwaluw K, Schroen M, van der Zwaluw K, Schroen M, van der Zwaluw K, Schroen M, van der Zwaluw K, Schroen M, van der Zwaluw K, Schroen M, van der Zwaluw K, Schroen M, van der Zwaluw K, Schroen M, van der Zwaluw K, Schroen M, van der Zwaluw K, Schroen M, van der Zwaluw K, Schroen M, van der Zwaluw K, Schroen M, van der Zwaluw K, Schroen M, van der Zwaluw K, Schroen M, van der Zwaluw K, Schroen M, van der Zwaluw K, Schroen M, van der Zwaluw K, Schroen M, van der Zwaluw K, Schroen M, van der Zwaluw K, Schroen M, van der Zwaluw K, Schroen M, van der Zwaluw K, Schroen M, van der Zwaluw K, Schroen M, van der Zwaluw K, Schroen M, van der Zwaluw K, Schroen M, van der Zwaluw K, Schroen M, van der Zwaluw K, Schroen M, van der Zwaluw K, Schroen M, van der Zwaluw K, Schroen M, van der Zwaluw K, Schroen M, van der Zwaluw K, Schroen M, van der Zwaluw K, Schroen M, van der Zwaluw K, Schroen M, van der Zwaluw K, Schroen M, van der Zwaluw K, Schroen M, van der Zwaluw K, Schroen M, van der Zwaluw K, Schroen M, van der Zwaluw K, Schroen M, van der Zwaluw K, Schroen M, van der Zwaluw K, Schroen M, van der Zwaluw K, Schroen M, van der Zwaluw K, Schroen M, van der Zwaluw K, Schroen M, van der Zwaluw K, Schroen M, van der Zwaluw K, Schroen M, van der Zwaluw K, Schroen M, van der Zwaluw K, Schroen M, van der Zwaluw K, Schroen M, van der Zwaluw K, Schroen M, van der Zwaluw K, Schroen M, van der Zwaluw K, Schroen M, van der Zwaluw K, Schroen M, van der Zwaluw K, Schroen M, van der Zwaluw K, Schroen M, van der Zwaluw K, Schroen M, van der Zwaluw K, Schroen M, van der Zwaluw K, Schroen M, van der Zwaluw K, Schroen M, van der Zwaluw K, Schroen M, van der Zwaluw K, Schroen M, van der Zwaluw K, Schroen M, van der Zwaluw K, Schroen M, van der Zwaluw K, Schroen M, van der Zwaluw K, Schroen M, van der Zwaluw K, Schroen M, van der Zwaluw K, Schroen M, van der Zwaluw K, Schroen M, van der Zwaluw K, Schroen M, van der Zwaluw K, Schroen M, van der Zwaluw K, Schroen M, van der Zwaluw K, Schroen M, van der Zwaluw K, Schroen M, van der Zwaluw K, Schroen M, van der Zwaluw K, Schroen M, van der Zwaluw K, Schroen M, van der Zwaluw K, Schroen M, van der Zwaluw K, Schroen M, van der Zwaluw K, Schroen M, van der Zwaluw K, Schroen M, van der Zwaluw K, Schroen M, van der Zwaluw K, Schroen M, van der Zwaluw K, Schroen M, van der Zwaluw K, Schroen M, van der Zwaluw K, Schroen M, van der Zwaluw K, Schroen M, van der Zwaluw K, Schroen M, van der Zwaluw K, Schroen M, van der Zwaluw K, Schroen M, van der Zwaluw K, Schroen M, van der Zwaluw K, Schroen M, van der Zwaluw K, Schroen M, van der Zwaluw K, Schroen M, van der Zwaluw K, Schroen M, van der Zwaluw K, Schroen M, van der Zwaluw K, Schroen M, van der Zwaluw K, Schroen M, van der Zwaluw K, Schroen M, van der Zwaluw K, Schroen M, van der Zwaluw K, Schroen M, van der Zwaluw K, Schroen M, van der Zwaluw K, Schroen M, van der Zwaluw K, Schroen M, van der Zwaluw K, Schroen M, van der Zwaluw K, Schroen M, van der Zwaluw K, Schroen M, van der Zwaluw K, Schroen M, van der Zwaluw K, Schroen M, van der Zwaluw K, Schroen M, van der Zwaluw K, Schroen M, van der Zwaluw K, Schroen M, van der Zwaluw K, Schroen M, van der Zwaluw K, Schroen M, van der Zwaluw K, Schroen M, van der Zwaluw K, Schroen M, van der Zwaluw K, Schroen M, van der Zwaluw K, Schroen M, van der Zwalu