

Thousands sickened, dozens dead in E. coli outbreak in Germany

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In the world's worst outbreak of a deadly E. coli infection, at least 25 people have died and more than 2,600 fallen ill, mainly in northern Germany. Of those sickened, some 689 have been diagnosed with haemolytic uremic syndrome (HUS), a dreaded, potentially life-threatening complication that causes kidney failure and neurological damage.

The infection was first detected in early May in the Hamburg area, where the bulk of cases have occurred. Numerous cases have been reported in neighboring parts of northern Germany and in a dozen European countries and the United States, nearly all among people who recently travelled to Hamburg.

At an emergency conference of health officials in Berlin Wednesday, German Health Minister Daniel Bahr tried to put the best face on the outbreak, saying, "There is much to suggest that we have put the worst behind us."

But the Robert Koch Institute, Germany's disease control agency, said in a statement, "There is a declining trend in new cases, but it is not clear that it is because the outbreak is really waning or whether it is because the population are being more careful in what they eat."

Intensive investigation by German health and agricultural agencies have so far failed to pinpoint the original source of the infection. Initially, German officials suggested that Spanish cucumbers were to blame, sparking a reaction that undermined Spanish agricultural exports and provoked bitter recriminations from Madrid.

Then Russia, a leading buyer of European fruits and vegetables, banned all such imports from the European Union, spreading the economic damage throughout the continent. A meeting of EU agricultural ministers in Luxembourg agreed to set aside €150 million to compensate vegetable farmers, an amount that will fall far short of the need.

The E. coli outbreak involves a different strain than the meat-borne version, E. coli O157, that killed four children and sickened hundreds in the United States two decades ago, or the infection spread through radishes that killed 17 people in Japan in 1996, and sickened 10,000.

On June 5 German officials said that domestically grown sprouts were the source of the bacteria, and Gert Lindemann, agriculture minister of Lower Saxony, said that Germans should not eat sprouts until further notice. But subsequent testing of the farm that produced the sprouts proved inconclusive.

The subtype O104:H4, the cause of the current outbreak, is a quite rare strain of E. coli. Only eight cases have been reported in the European Union since 2008 until the current outbreak, according to the European Center for Disease Control and Prevention.

The bacteria belongs to the class enterohaemorrhagic Escherichia Coli, or E. coli for short, which have been known since 1977. Bacteria of this type are found in the intestines of ruminants (cattle, sheep and goats). Transfer to humans is by ingestion, and is usually due to contamination of food or beverages by animal feces.

The ingestion of *E. coli* does not automatically lead to symptoms of illness. If a person does fall ill, the customary symptoms displayed are of a gastrointestinal infection: nausea, vomiting, diarrhoea. The actions of bacterial toxins that attack the intestinal wall cause bloody stools — referred to as “enterohaemorrhagic colitis,” a bloody infection of the large intestine.

If bacterial toxins move from the intestine into the bloodstream it can lead to the terrible complications of haemolytic uremic syndrome (HUS). This leads to the disintegration of red blood cells and platelets with a subsequent “clogging” of blood vessels by the decay products; it affects the brain and kidney vascular systems, and is likely to cause acute renal failure.

That bacteria of different strains “exchange” genes with each other, and that this produces new pathogens for humans is a known phenomenon and is not in itself unusual. Probably, the gene transfer is combined with certain properties of the new EHEC strain and this may explain some of the characteristics of the course of the disease in affected patients.

One particularly troubling feature of the current outbreak is the severity among adult patients. HUS usually occurs in children, but in the current case it is primarily young adults, mainly women, who are affected.

Several aspects of this health crisis are noteworthy. First, it is focused in Germany, long regarded internationally as a world leader in disease prevention and sanitation—an indication suggesting that even in the most advanced countries, declining investment in essential services and infrastructure is having a serious impact.

The crisis also raises serious questions about the current state of the German health system. The hospitals in the cities and regions affected are working at their very limits, with staff volunteering to give up time off and even sleep in to take care of the flood of patients. The stretching of resources “at their limit” is not merely a result of the events of recent weeks, but is the norm in many places and has been for many years, as a result of constant cuts in personnel and material

resources.



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