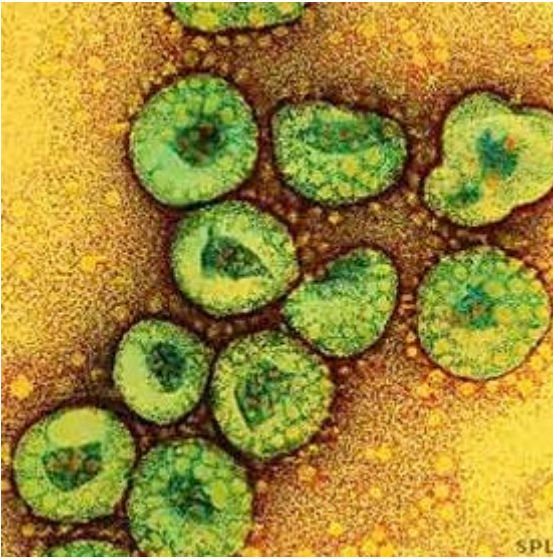


# Outbreak Specialists Track Down Recent Coronavirus

By Helen Branswell



Health officials are trying to figure out if the virus is moving from person to person

Maria Zambon was having déjà vu. Earlier this fall, she **found out about a new coronavirus that had come seemingly from nowhere to kill a Saudi man in Jeddah in June** and seriously sicken another. The survivor had been flown from Qatar to a London hospital. His **lungs were overwhelmed with infection, his kidneys failing**. Virologists at Erasmus Medical Center (EMC), in Rotterdam, the Netherlands, were already working on an isolate from the Saudi man to decode the virus's genetic sequence. They named the virus HCoV-EMC, short for human coronavirus and the institution's initials.

The situation reminded Zambon, director of reference microbiology for Britain's Health Protection Agency, of the **SARS outbreak of 2003, which spread from China to as far as Toronto and killed 916 people**. Fortunately, the recent coronavirus appears to be emerging more slowly than SARS did (also a coronavirus). **To date, only seven cases have been reported—five in Saudi Arabia and two in Qatar. Three of the infections have been fatal.** The fear, however, is that the virus will start spreading from person to person, fanning out more broadly to infect people around the globe.

A recently discovered cluster of illnesses in Saudi Arabia has **raised concerns that the virus may be able to move from person to person**. Four men who lived in the same household in Riyadh became sick with similar symptoms within a short period of time. Three of the men tested positive for the virus. The fourth is currently classified as probable case and his infection status may remain ambiguous. With the **source of the infection unknown** and the **incubation period unclear**, authorities may never get a definitive answer about whether these family members were all infected from a common source, or whether one of them got sick and infected the others, says Anthony Mounts,

the World Health Organization's technical expert for the outbreak. "It sure raises your concern. But it's not definitive." If the virus spread from person to person in that Riyadh household, it has apparently since sputtered and died out.

Still, the discovery of additional cases, some in a cluster, has prompted WHO to cast a wider net in its search for other cases. The Geneva-based global health agency had initially warned countries to be on the lookout for cases of severe and unexplained respiratory illness in people who had visited or were residents of Saudi Arabia and Qatar. Now it is convinced that whatever the source of the virus is, it is probably not unique to those countries. By getting health authorities around the world to look harder for possible cases, it hopes to answer another question that people like MOUNTS and ZAMBON have been asking themselves: **Is this virus actually new, or has it just newly come into view?** If it is the former, then worries about what the virus might do will remain high. But if it has been infecting people for years but was only spotted because two severe cases brought it to light, then the virus may seem like less of a threat.

"There's always a question of 'Well, actually, has it been around forever and a day and we just missed it because we haven't tested?'" ZAMBON notes. *It is commonly accepted that medical science has not identified all the bugs that make people sick. In fact, before the SARS outbreak, only two viruses in the coronavirus family were known to infect people. In the years after SARS became the third, the human coronaviruses NL63 and HKU1 were added to that list.*

Finding the answer means testing more patients with similar symptoms to see if they too are infected with the EMC virus. Some countries—Britain among them—have been **testing sick pilgrims returning from this year's Hajj, the world's largest annual pilgrimage that brings roughly three million Muslims to Mecca every year.** So far there have been no reports of additional cases among the returning Hajjis. And as time passes, concerns about the pilgrimage as a disease-amplification opportunity are starting to wane. "The government of Saudi Arabia does quite extensive surveillance during the Hajj and was particularly vigilant during this season. They have reassured us that nothing unusual happened," MOUNTS says.

In addition to testing in real time, some health authorities are interested in exploring collections of stored specimens taken from previous respiratory infection cases to see if the new coronavirus is hiding in some of them. Qatar has over 300 samples it has collected in the past few years as part of a sentinel surveillance project for influenza. MOUNTS says researchers will be looking both for virus particles in respiratory samples such as from nasal swabs and antibodies to the virus in stored blood samples.

But the latter work requires a serological test for this virus, and to date there is none available. That should soon change. ZAMBON says HPA scientists are close to completing work on a blood test for the virus; they hope to have it ready for use by Christmas.

The other possibility, of course, is that this is indeed a virus that is new to humans, one that very likely comes from an animal source. When Ron A. M. Fouchier and his

colleagues at EMC compared the virus's genetic sequence to those of other known coronaviruses, they concluded it probably comes from bats. The genetic code cannot illuminate whether the virus would have come to humans directly from the winged mammals—through fruit contaminated with bat saliva or urine, for instance—or indirectly, with the virus moving from bats to other animals and through them to people. Why it would suddenly start finding its way from its reservoir species to people now is another question without an answer at this point.