

Super Bacteria in Rio de Janeiro's Olympic Arenas

By Sigrid Jørgensen,

Research Associate at the Council on Hemispheric Affairs

Brazil has already faced criticism for the increased violence in the favelas surrounding Rio de Janeiro, its lack of concern with the Zika virus, and the eviction of thousands of locals to make room for the Olympic Games.¹ Now, two unpublished studies obtained by Reuters take center stage because they report the existence of “super bacteria”, identified as *Klebsiella pneumoniae carbapenemase* (Klebsiella or KPC), off the beaches in Rio, where rowing, canoeing, and swimming events will be taking place during the 2016 Olympics. These super bacteria are caused by improper treatment of sewage and wastewater, which can find their way to the waterways. Rio officials have failed to meet the water sanitation target for the water used in the Olympic Arenas, which was to collect and treat 80 percent of Rio's sewage water.² Sanitation of Rio's waterways was one of the major promises made in Brazil's official 2009 bid to become the first South American country to host the Olympic Games.³ According to a study funded by the Associated Press, this promise has not been kept, which means that swimmers, sailors, and rowers will be competing in water that is equivalent to raw sewage and contains the KPC super bacteria.⁴

KPC, an antibiotic-resistant bacteria, was originally only found in untreated hospital waste water but has now traveled through the waterways in Rio spreading to beaches and lagoons.⁵ According to the United States Centers for Disease Control and Prevention (CDC) the presence of super bacteria creates an urgent public health threat as it can cause pulmonary, bloodstream, urinary, as well as gastrointestinal infections, and meningitis. The CDC says 50 percent of patients infected with these bacteria die from it.⁶ Scientists say that the severity of the risk posed by the super bacteria depends on individuals' immune systems.⁷

Another concerning finding is that these bacteria are extremely opportunistic; they can infect a person but lie dormant, only attacking later when the person's immune system becomes compromised by an unrelated illness.⁸ According to Valerie Harwood, an expert from the University of South Florida on recreational water contamination and antibiotic-resistant bacteria, *Klebsiella* can also infect other types of bacteria that are in the water.⁹ Infection of other bacteria can subsequently make them antibiotic-resistant as well, making it harder to treat infections because the antibiotics normally used would be ineffective.

The first of the two unpublished studies on the *Klebsiella* took 10 samples from five different beaches (Copacabana, Ipanema, Leblon, Botafogo, and Flamengo), and found that all five beaches tested positive for contamination of the super bacteria. Copacabana beach, where the triathlon and open swimming competitions are scheduled to take place, tested positive for microbes in 10 percent of the samples.¹⁰ One hundred percent of samples taken from Botafogo, one of the beaches on the bay where the sailing and canoeing events will be held, tested positive for the presence of the super bacteria. In samples from Ipanema and Leblon, among the most popular tourist beaches, 50 percent and 60 percent of samples, respectively, tested positive for KPC. From Flamengo beach, where spectators will watch the Olympic sailing competitions, 90 percent of samples tested positive for the super bacteria.¹¹ According to Renata Picao, the lead researcher in the first unpublished study, "these bacteria should not be present in these waters. They should not be present in the sea." Ms. Picao said the contamination of Rio's famous beaches is due to the lack of basic sanitation. The water samples were tested in 2013 and 2014, but since there have been no significant improvements in the sewage treatment, researchers say that today the levels of microbes and super bacteria in the water could be higher.¹²

Guanabara Bay has already been under scrutiny for its pollution. The second unpublished study, by the Oswaldo Cruz Foundation and funded by the Brazilian federal government, found the same super bacteria in Rodrigo de Freitas lagoon and river that flows into the Guanabara Bay. Water from storm drains and the waste from thousands of households and hospitals pour into streams and rivers that empty into the Rodrigo de Freitas lagoon.¹³ Athletes preparing for the Olympic Games are concerned that the debris floating in the Bay could bang against their boats and possibly cling to them. Some athletes are concerned that this will make it hard to have a fair competition because athletes not preparing in a debris filled bay will be at a disadvantage.¹⁴

The State Company for Water and Sewage (*Companhia Estadual de Águas e Esgotos*,

CEDAE), Rio's water utility company, claimed that it has treated the water that was used in the two studies. If that is the case, then it is clear that the water sanitation process currently used by CEDAE does not sufficiently clean the water. In response to the contamination, federal police and prosecutors have launched an investigation into CEDAE to determine if it has committed environmental crimes falsifying records of the volume of treated sewage. CEDAE has responded to allegations by saying that people illegally dumping sewage water into the storm drains was responsible for any super bacteria found in the waterways.¹⁵

In response to concerns about the super bacteria found in Rio's waterways, Mayor Eduardo Paes has said that rowers competing in events in the polluted water will face "no problems" and that he would swim in the water without being afraid for his health.¹⁶ He made this claim despite the fact that 100 percent of the samples from the area he was willing to jump into have tested positive for "powerful microbes".¹⁷ The cleaning up of Rio's waterways was supposed to be one of the legacies of the 2016 Olympic Games, and a year ago Mr. Paes was hailed by the International Olympic Committee (IOC) because of his revolutionary promises to improve water sanitation techniques. However, Mr. Paes has clearly failed to achieve this. Now, instead of leaving a positive legacy, he is the figurehead of one of the biggest failures and embarrassments of the 2016 Olympic Games.

The state environment agency, Inea, responded to the new findings by saying that it has followed the World Health Organization's recommendation for the testing of recreational waters, and that checking for super bacteria is not a part of that test. Inea followed up with a statement that there were not enough studies to make a conclusive argument about the super bacteria and the resulting health outcomes.¹⁸

The threat of super bacteria in Rio is not a new concern. As early as 2010, the Instituto Oswaldo Cruz's Research Laboratory in Hospital Infection found the presence of super bacteria in waterways that had already undergone treatment. And in 2015, the Federal University of Rio de Janeiro announced that it had found the presence of the KPC super bacteria in water samples from Flamengo and Botafogo beaches.¹⁹ In response to the 2015 findings, the State Secretary for the Environment of Rio de Janeiro, André Corrêa, jumped into the Guanabara Bay to prove that the pollution was not as bad as the media was portraying it to be, and to show that the site was still suitable for Olympic competitions. However, Mr. Corrêa chose the spot and timing of his jump

very carefully. According to , the center of the Bay has a crack where seawater flows in during high tide. As the tide rises, fresh sea water pushes the contaminated water aside and makes this spot cleaner than the rest of the Bay. The Secretary scheduled his dive at high tide in order to minimize the risk of coming in contact with the pollution in the Bay.²⁰

With at least 50 percent of the untreated sewage from Rio de Janeiro being dumped into Guanabara Bay, the risk of an epidemic caused by the KPC super bacteria during the Olympics is not impossible.²¹ From a health perspective, athletes and tourists must reevaluate whether, under the threat of contracting KPC, attending the 2016 Summer Olympics is really worth the risk. Attending the event will increase the threat of spreading a whole host of illnesses or disorders—among which include Zika, Hepatitis A, Guillain-Barre syndrome, and blood infections—to their home countries. How many health risks will it take before the International Olympic Committee reconsiders their decision to let Brazil host the 2016 Olympic

By Sigrid Jørgensen,

Research Associate at the Council on Hemispheric Affairs

¹ Rachael Hilderbrand and Jonas Schlotterbeck, “Rio de Janeiro’s Bitter 2016 Olympic Evictions” May 27, 2016, accessed June 13, 2016

<http://www.coha.org/rio-de-janeiros-bitter-2016-olympic-evictions/>

Sigrid Jørgensen, “The Zika Virus in Brazil: Contradictions within the World Health Organization” June 8, 2016, accessed June 13, 2016 <http://www.coha.org/the-zika-virus-in-brazil-contradictions-within-the-world-health-organization/>

² Mauricio Savarese, “Rio mayor’s star rose, and now is falling, with Olympics”, *The News & Observer*, June 13, 2016, accessed June 13, 2016 <http://www.newsobserver.com/news/business/article83392207.html>

³ Brad Brooks, “‘Super bacteria’ found in Rio’s Olympic venues, top beaches” June 13, 2016, accessed June 13, 2016 <http://www.bangkokpost.com/news/sports/1008413/super-bacteria-found-in-rios-olympic-venues-top-beaches>

⁴ Jenny Barchfield, “Water remains dirty at Guanabara Bay”, *Buenos Aires Herald*, June 7, 2016, accessed June 13, 2016 <http://buenosairesherald.com/article/215677/water-remains-dirty-at-guanabara-bay>

⁵ Brad Brooks, “‘Super bacteria’ found in Rio’s Olympic venues, top beaches”, June 13, 2016, accessed June 13, 2016 <http://www.bangkokpost.com/news/sports/1008413/super-bacteria-found-in-rios-olympic-venues-top-beaches>

⁶ Brad Brooks, “Exclusive: Studies find ‘super bacteria’ in Rio’s Olympic venues, top beaches”, *Rueters*, June 11, 2016, accessed June 13, 2016 <http://www.reuters.com/article/us-olympics-rio-superbacteria-exclusive-idUSKCN0YW2E8>

⁷ Brad Brooks, “‘Super bacteria’ found in Rio’s Olympic venues, top beaches” June 13, 2016, accessed June 13, 2016 <http://www.bangkokpost.com/news/sports/1008413/super-bacteria-found-in-rios-olympic-venues-top-beaches>

⁸ Ibid

⁹ Ibid

¹⁰ “Antibiotic-resistant ‘super bacteria’ found in Rio Olympic venues, main beaches – report”, updated June 11, 2016, accessed June 13, 2016 <https://www.rt.com/news/346213-rio-olympic-venues-super-bacteria/>

¹¹ Brad Brooks, “‘Super bacteria’ found in Rio’s Olympic venues, top beaches” June 13, 2016, accessed June 13, 2016 <http://www.bangkokpost.com/news/sports/1008413/super-bacteria-found-in-rios-olympic-venues-top-beaches>

¹² Ibid

¹³ Brad Brooks, “Exclusive: Studies find ‘super bacteria’ in Rio’s Olympic venues, top beaches”, *Rueters*, June 11, 2016, accessed June 13, 2016 <http://www.reuters.com/article/us-olympics-rio-superbacteria-exclusive-idUSKCN0YW2E8>

¹⁴ Brad Brooks, “‘Super bacteria’ found in Rio’s Olympic venues, top beaches”, June 13, 2016, accessed June 13, 2016 <http://www.bangkokpost.com/news/sports/1008413/super-bacteria-found-in-rios-olympic-venues-top-beaches>

¹⁵ Ibid

¹⁶ David Osborne, “Never mind Zika, super bacterias and sewage, Rio Olympics on track to eclipse London 2012 says defiant mayor” June 12, 2016, accessed June 13, 2016 <http://www.independent.co.uk/news/world/americas/never-mind-zika-super-bacterias-and-sewage-rio-olympics-on-track-to-eclipse-london-2012-says-defiant-mayor-a7078146.html>

¹⁷ Will Worley, “Olympic Games 2016: ‘Super Bacteria’ found in waters off Rio where events are planned, studies say” June 11, 2016, accessed June 13, 2016 <http://www.independent.co.uk/news/world/americas/rio-olympics-super-bacteria-found-across-waters-where-games-events-are-planned-studies-say-a7076506.html>

¹⁸ *Maíra Menezes*, “Superbactéria é encontrada em rio que deságua na Praia do Flamengo”, Instituto Oswaldo Cruz, accessed June 13, 2016 <http://www.fiocruz.br/ioc/cgi/cgilua.exe/sys/start.htm?infoid=2253&sid=32>. Translated by Aline Piva

¹⁹ ***Ibid***

²⁰ “Secretário mergulha na Baía de Guanabara em defesa de competições”, *Fantástico*, May 3, 2015, accessed June 13, 2016 <http://g1.globo.com/fantastico/noticia/2015/05/secretario-mergulha-na-baia-de-guanabara-em-defesa-de-competicoes.html> Translated by Desiree Mota

²¹ “Antibiotic-resistant ‘super bacteria’ found in Rio Olympic venues, main beaches – report”, updated June 11, 2016, accessed June 13, 2016 <https://www.rt.com/news/346213-rio-olympic-venues-super-bacteria/>