

[Health](#)

## Climate change increasing threats from Vibrio bacteria: Study

Warming catalyses antimicrobial resistance

By [Meenakshi Sushma](#)

Published: Thursday 14 November 2019



Warmer climatic conditions are giving rise to infectious diseases like malaria, dengue, gastroenteritis, wound infections, septicæmia and cholera, caused by Vibrio bacteria, warned the *Lancet Countdown Report 2019 on Health and Climate Change*.

The annual update was on 42 indicators across five topics:

- Climate change impacts, exposures, and vulnerability
- Adaptation, planning, and resilience for health
- Mitigation actions and health co-benefits
- Economics and finance
- Public and political engagement

The report identified the prevalence of infectious diseases due to climate change among the climate change indicators. As an example of how warmer conditions affect health, it cited how the number of days for the Vibrio bacteria to reproduce and spread has doubled since 1980.

Also, increased sea-surface temperature increased the risk of Vibrio cholerae infections, Rachael Davies, communications consultant with *Lancet* told *Down To Earth*. The climactic conditions also favoured the quick spreading of other pathogens, Davies added.

The report released November 13, 2019, warned that 2018 was second on record for suitable conditions for the transmission of diarrhoeal disease and wound infections from Vibrio (since 2000).

Children were more susceptible to diseases such as diarrhoea and dengue.

Warmer climate also acted as a catalyst in spreading antimicrobial-resistance (AMR). It has already emerged in a malaria-causing bacteria *P falciparum*, which has gained resistance to the first line of treatment — artemisinin-based combination therapies (ACTS). It has been commonly used since 2016.

Frequent flooding and irregular rain can also cause sudden outbreaks of dengue and malaria. There was a strong link between floods — on the rise worldwide — and increases in the rate of infectious diseases.

There is a chance of the resistance gene now transferring to other malaria-causing bacteria — *P vivax*, *P malariae*, and *P ovale*.

“Single bacterial isolate from drug-resistant bacteria is capable of transforming into more than 30 different antimicrobial genes. Most of the antimicrobial resistance genes are linked with mobile genetic elements and they can disseminate rapidly to the other microbial species through horizontal gene transfer,” Bhabatosh Das, an assistant professor at Translational Health Science and Technology Institute in Gurugram, said.

Incidents of *Vibrio* have been linked to air temperatures, consumption practices and water temperatures. Researchers anticipated a relative increase in the species’ numbers due to climate change.

*Vibrio* as a genus found in a wide variety of aquatic and marine habitats. Its species — *Vibrio cholera*, *Vibrio parahaemolyticus*, *Vibrio alginolyticus* and *Vibrio vulnificus* (causing Vibriosis) — could cause food-borne illnesses.

These were gaining resistance to commonly used antibiotics such as ampicillin, cephalothin, erythromycin, kanamycin, and streptomycin. These predominantly contributed to AMR, including multi-drug resistance (MDR), recorded a 2006-12 study in Canada that was published in [September 2018](#).

Bacteria can be found everywhere — in air, water, soil and even food. As part of the natural process, a continuous transfer of chemical nutrients with the ecosystems, “bacteria are pushed to grow, encouraged to mutate and often undergo genetic changes that help them escape the very antibiotics that would have otherwise killed them,” said Jyothi Joshi, Head-South Asia for Center for Disease Dynamics, Economics & Policy.

Warmer temperature induced the development of antibiotic resistance within bacteria by spurring an enzymatic activity inside bacterial cells. This increases bacterial population. Higher temperatures also aid the transmission of resistance genes among bacteria and increase bacterial- animal interactions for nutrients, which allows new resistant strains to propagate, she added.

[स्वास्थ्य से जुड़ी सभी खबरें हिंदी में पढ़ें।](#)

[vibrio Antimicrobial resistance Bacteria Cholera Dengue Malaria Health World](#)



[SUPPORT US](#)

We are a voice to you; you have been a support to us. Together we build journalism that is independent, credible and fearless. You can further help us by making a donation. This will mean a lot for our ability to bring you news, perspectives and analysis from the ground so that we can make change together.

#### Related Stories

- [India has not done much to address antimicrobial resistance: Global report](#)

POST A COMMENT