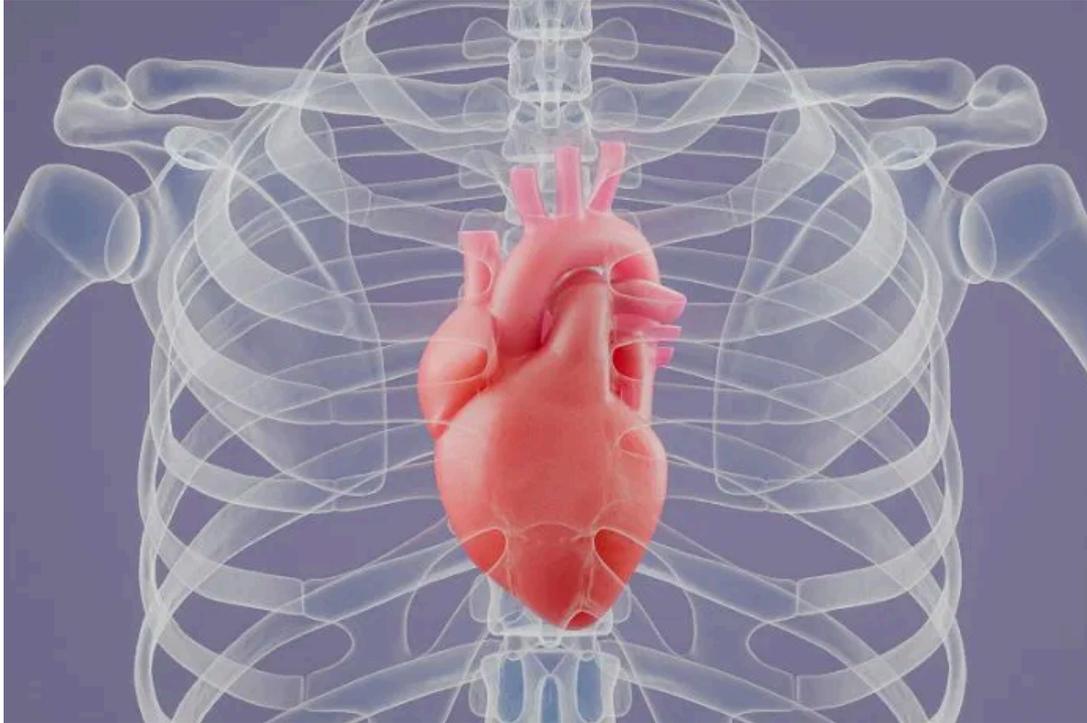


# Why silencing bacteria can cause danger in heart infections

By Knowridge - February 25, 2026



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For many years, scientists believed that stopping bacteria from communicating with each other could help treat infections.

The idea seemed simple: if bacteria cannot “talk,” they cannot organize attacks or form protective communities that make them harder to kill.

However, a new study from the University of Geneva in Switzerland and Nanyang Technological University in Singapore has challenged this long-held belief.

Their research suggests that in certain serious infections, blocking bacterial communication may actually make the disease worse instead of better.

The study focused on infectious endocarditis, a dangerous infection of the inner lining of the heart, especially the heart valves. This condition can lead to severe complications, including heart failure, stroke, and death if not treated promptly.

Infectious endocarditis often occurs when bacteria enter the bloodstream through dental procedures, surgery, or infections elsewhere in the body

and then attach to damaged heart tissue. One of the bacteria commonly responsible is *Enterococcus faecalis*, which normally lives in the human gut but can become harmful when it spreads to other parts of the body.



Bacteria like *Enterococcus faecalis* use a chemical communication system called quorum sensing. Through this system, they release and detect small signal molecules that tell them how many bacteria are nearby. When enough bacteria gather together, they change their behavior as a group.

This coordinated action allows them to form dense communities known as biofilms. Biofilms stick tightly to surfaces, including heart valves, and protect bacteria from antibiotics and the body's immune defenses. Because of this protection, infections involving biofilms are extremely difficult to treat.

For years, scientists have explored drugs that block quorum sensing as a way to weaken bacteria without killing them directly. The hope was that disrupting communication would prevent biofilm formation and make bacteria easier to eliminate. But the new study shows that the situation is more complicated.

The researchers discovered that when *Enterococcus faecalis* loses its ability to communicate, it can actually form even larger and tougher biofilms on heart valves. Instead of slowing down, the bacteria become more aggressive and harder to treat.

In experiments using devices that mimic blood flow and animal models of infection, the team found that the strong flow of blood over heart valves naturally interferes with bacterial communication in the early stages of infection. The moving blood washes away the chemical signals bacteria use to talk to each other.

As the infection develops, bacteria dig deeper into damaged tissue where blood flow is weaker. In this sheltered environment, communication normally turns back on and acts like a control system that limits excessive growth.

However, bacteria that completely lack this communication system do not have this control. They continue to grow unchecked, forming thick biofilms that resist antibiotics and cause more severe disease.

The study also revealed why this happens. Without communication, the bacteria produce fewer enzymes that normally break down proteins and

help regulate growth. At the same time, they change the way they use nutrients from the host's body, allowing them to survive longer and grow more efficiently. These changes lead to infections that are harder to clear.



To understand whether this problem occurs in real patients, the scientists examined bacterial samples from people with infectious endocarditis in the United States and Switzerland.

Surprisingly, nearly half of the samples came from bacteria that could not communicate properly. These patients tended to have bacteria lingering in their bloodstream for longer periods despite receiving antibiotics, suggesting worse outcomes.

The findings show that treatments aimed at blocking bacterial communication may not always be helpful and could even be harmful in certain conditions.

Instead of using a one-size-fits-all approach, doctors and researchers may need to consider when communication helps bacteria and when it limits their growth. This knowledge could lead to more precise therapies that target infections without accidentally strengthening them.

In conclusion, this study highlights how complex bacterial behavior can be and why careful research is essential before developing new treatments. It reminds us that what seems like a logical solution may produce unexpected results inside the human body.

Future therapies for serious heart infections will likely need to be tailored to the specific stage of infection and the behavior of the bacteria involved. By understanding these details, scientists hope to design smarter treatments that improve survival and recovery for patients facing this life-threatening disease.

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For more health information, please see recent studies that [apple juice could benefit your heart health](#), and results showing [yogurt may help lower the death risks in heart disease](#).