

Gonorrhea infections start from exposure to seminal fluid

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Researchers have come a step closer to understanding how gonorrhea infections are transmitted. When *Neisseria gonorrhoeae*, the bacteria responsible for gonorrhea, are exposed to seminal plasma, the liquid part of semen containing secretions from the male genital tract, they can more easily move and start to colonize. The research, led by investigators at Northwestern University in Chicago, appears in *mBio*, the online open-access journal of the American Society for Microbiology.

"Our study illustrates an aspect of biology that was previously unknown," says lead study author Mark Anderson. "If [seminal fluid](#) facilitates motility, it could help transmit gonorrhea from person to person."

Gonorrhea, a [sexually transmitted infection](#), is exclusive to humans and thrives in warm, moist areas of the reproductive tract, including the cervix, uterus, and fallopian tubes in women, and in the urethra in women and men. It is estimated there are more than 100 million new cases of gonorrhea annually worldwide.

"Research characterizing the mechanisms of pathogenesis and transmission of *N. gonorrhoeae* is important for developing new prevention strategies, since antibiotic resistance of the organism is becoming increasingly prevalent," says H. Steven Seifert, another author on the study.

In a series of laboratory experiments, the investigators studied the ability of *N. gonorrhoeae* to move through a synthetic barrier, finding that 24

times as many bacteria could pass through after being exposed to [seminal plasma](#). Exposure to seminal plasma caused hairlike appendages on the bacteria surface, called pili, to move the cells by a process known as twitching motility. This stimulatory effect could be seen even at low concentrations of seminal plasma and beyond the initial influx of seminal fluid.

Additional tests found that exposure to seminal plasma also enhanced the formation of bacterial microcolonies on human epithelial cells (cells that line body cavities), which can also promote the establishment of infection.

Researchers at the University of Cologne in Germany also contributed to the study, which was funded by the National Institutes of Health and DFG, the German Research Foundation.

Provided by American Society for Microbiology

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