

Speaker Abstracts

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Experimental human gonococcal infection: Advances and challenges.

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Introduction: *Neisseria gonorrhoeae* (Ng) is a human-specific pathogen that has co-evolved with us for centuries. Experimental infection of male volunteers with Ng is safe and reproduces the features of naturally acquired gonococcal urethritis. Human studies have defined the natural history of experimental infection, and the controlled human infection model (CHIM) has proved useful for testing the importance of putative gonococcal virulence factors for urethral infection in men. The model also presents opportunities to examine host immune responses that may be exploited or improved in development of gonococcal vaccines.

Challenges: In addition to ethical challenges inherent in all CHIMs, in which individuals are deliberately exposed to microbial pathogens, the gonococcal model faces additional barriers, including stigma regarding the natural route of sexual transmission and the theoretical potential for adverse reproductive consequences of infection.

Approach Being Taken: The human Ng infection model is limited to men to avoid the potential for complications from ascendant infection in women. Risks are explained in detail; participants must pass a test of understanding, and written informed consent is obtained twice: before screening and immediately before inoculation. Bacteria used for inoculation have demonstrated susceptibility to antibiotics used to treat all participants; tests of cure have been negative in 100% of participants enrolled to date.

Conclusions: More than 240 volunteers have been enrolled in studies using this CHIM since the 1990s with no serious adverse events. Experimental gonococcal infection in men is safe, reproducible, and has contributed significantly to our understanding of Ng pathogenesis and vaccine development.

