ESWT and bacteria: A critical review

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Introduction:
ESWT has been implicated in the killing of bacteria. While many datasets suggest it possesses antibacterial properties, some suggest this is not the case. Our institution recently performed a review of, to our knowledge, all research on the subject. We have summarized our findings in a critical review paper, discussing the sources of contradictions in the literature and integrating the available data into general conclusions.

Methods:
Most articles were found in online collections of scholarly work. Through regular meetings spanning approximately one year, we examined the available literature. This culminated in a formal review text.

Results:
We present what is currently known about the importance of the following in the ESWT-bacteria interaction: energy density, pulse number, cavitation, thermal effects, UV light, and DNA augmentation. We also analyze fundamental bacteria research where it is relevant to the bacterial ESWT response.

Discussion:
The main interest of our paper is developing a mechanistic understanding of how SWs kill bacteria. A number of possible mechanisms exist, including the destruction of bacteria by basic mechanical forces, cavitation microjets, localized thermal effects, and SWgenerated free radicals. Another possibility, which receives little recognition in the literature, is the disruption of bacterial biof lms. We describe the current understanding of each possibility, critically examine previous research, and consider practical experimental designs capable of differentiating between the proposed mechanisms.

Conclusion:
While we are fairly certain that SWs induce a bactericidal effect, the mechanism is unclear, and additional research is crucial.