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Pauline van den Driessche* (pvdd@math.uvic.ca). *Global Dynamics of a Cholera Model that Includes Direct and Indirect Transmission.*

The World Health Organization estimates that there are 3m-5m cholera cases per year with 100,000 deaths spread over 40-50 countries. Recent mathematical models of cholera have considered the importance of two pathways of transmission to humans, namely directly from person-to-person and indirectly via the environment (mainly contaminated water). An ordinary differential equation model for cholera dynamics is formulated that includes these two pathways with general incidence, as well as stages of infection and infectivity states of the pathogen. Lyapunov functions are used in the model analysis to show that a basic reproduction number gives a sharp threshold determining whether cholera dies out or becomes endemic. In the absence of recruitment and death, the model is used to determine a final size equation or inequality and simulations illustrate how assumptions on cholera transmission affect the final size of the epidemic.

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