Medical Xpress

Aggressive drug therapy aids superbug evolution

August 3 2011

New research raises troubling concerns about the use of aggressive drug therapies to treat a wide range of diseases such as MRSA, *C. difficile*, malaria, and even cancer.

"The universally accepted strategy of aggressive medication to kill all targeted disease pathogens has the problematic consequence of giving any drug-resistant disease pathogens that are present the greatest possible evolutionary advantage," says Troy Day, one of the paper's co-authors and Canada Research Chair in Mathematical Biology at Queen's.

The researchers note that while the first aim of a drug treatment program should be to make and keep a patient healthy, the patient's immune system also has to be allowed to work.

They suggest several strategies to address the challenge of drug-resistant pathogens including improving the current knowledge base, discovering effective ways for slowing the spread of drug-resistant pathogens from person-to-person, and developing strategies for preventing drug-resistant mutations from occurring in the first place.

Last century's malaria wonder drug, chloroquine, is a perfect example of aggressive medication leading to the growth of drug-resistant pathogens. Since drug-resistant malarial parasites didn't have to compete with parasites that were killed off by an aggressive chloroquine treatment plan, the resistant parasites were given an evolutionary advantage. As a treatment for malaria, chloroquine is now useless across most of Africa.

"As things currently stand, no research exists that can tell us what the optimal drug delivery strategy would be for maintaining treatment effectiveness and mitigating the evolution of resistance," says Dr. Day. "While overwhelming medicinal force may sometimes be required, we need to be clear about when and why this strategy should be chosen since it brings with it some very clear problems with respect to resistance evolution."

Provided by Queen's University

Citation: Aggressive drug therapy aids superbug evolution (2011, August 3) retrieved 5 May 2024 from https://medicalxpress.com/news/2011-08-aggressive-drug-therapy-aids-superbug.html