

# Optimising Antibiotic Treatment Regimens to fight Bacterial Infections

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Conventional antibiotic treatment regimens typical consist of a fixed daily or twice-daily dosage, e.g. take one 500mg tablet per day for 7 days. These regimens were derived from clinical trials performed many years ago and are rarely challenged. Indeed, to test a new treatment regimen can be a slow and costly affair. However, before that is done, there is an important question of what regimens should be tested? This project used data from laboratory experiments, using insects, to build a mathematical model of the infection inside a host. We then used Artificial Intelligence to design optimal treatment regimens, using a range of different objectives, from maximising the probability of eradicating the infection to minimising the total amount of antibiotic or the length of the treatment. However, an additional major challenge with treatments, specifically outside hospitals, is compliance. What is the point of a perfect treatment if people do not follow it?