From the Antibiotic Resistance Acquisition by Bacteria to the Impact of the Resistant Tuberculosis on Society through a Computer Modelling (IbM)

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Since the discovery of penicillin, bacteria have developed mechanisms to avoid its effects and, therefore, survive. Furthermore, during the last decades and because of the overuse of antibiotics, an increasing number of bacterial diseases considered eradicated have managed to proliferate in resistant variants; that is the reason why WHO (World Health Organization) considers bacterial resistances as one of the main concerns for Public Health of this century. Firstly, this article studies the mechanisms of bacteria to acquire resistance; secondly, it analyses the impact on individuals and on society, originated by one of the main diseases with a multi-drug resistant variant to drugs which causes more than 2 million deaths every year: the Multidrug-resistant Tuberculosis (MDR-TB). This impact is analysed using an original computer Individual based Model (IbM) written in NetLogo with the official data of the tuberculosis state in the Ciutat Vella district in Barcelona and in other real cities.

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