On the effectiveness of various strategies to reduce the spread of drug-resistant bacteria in the healthcare network: patient stratification approach

BIOMATH 2024

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We compare a selection of possible intervention strategies to reduce the spread of multidrug-resistant bacteria in a network consisting of healthcare facilities and corresponding communities. The considered model is based on our previous research [1]–[5] and combines intra-healthcare facility pathogen transmission dynamics and inter-healthcare facility transfers of patients, including direct (between healthcare facilities) and indirect (taking into account the time

spent by patients at homes between two subsequent admissions to healthcare facilities) transfers. In the model, we consider three separate patient groups: one containing patients with a single hospital stay and two others reflecting patient susceptibility to colonisation of multidrug-resistant bacteria. We consider facility-level intervention strategies that may be applied to either all or selected patient groups. The simulations, based on German insurance data, suggest that strategies aimed at selected patient groups may significantly reduce the system-wide prevalence and be more cost-effective than strategies aimed at the whole hospital population.

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