

1077-92-2079

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*Efficacy of infection control interventions in reducing the spread of multidrug-resistant organisms in the hospital.*

Multidrug-resistant organisms (MDRO) continue to spread in hospitals globally but, the population-level impact of recommended preventive strategies, and the relative benefit of individual strategies, targeting all MDRO in the hospital setting, is unknown. To explore the dynamics of MDRO transmission in the hospital, we develop a model using a system of ordinary differential equations, extending data from clinical, individual-level studies to quantify the impact of hand hygiene, contact precautions, reducing antimicrobial exposure and screening surveillance cultures in decreasing the prevalence of MDRO colonization and infections. We find that most recommended strategies have substantial effect in decreasing the prevalence of MDRO over time. However, screening for asymptomatic MDRO colonization among patients who are not receiving antimicrobials, is of minimal value in reducing the spread of MDRO and therefore, to reduce costs, screening should be limited to patients receiving antimicrobials. (Received September 21, 2011)