

IS-5: Not Just Either/Or: Discrete and Continuous Models Play Nicely Together in a Model of Hospital Infection

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Differential equations (DE) have a long and storied history in biomedical modeling, and remain a sensible choice in many instances. Likewise, agent-based modeling (ABM) is the tool of choice in a growing number of biomathematical applications. While these two modeling approaches vary wildly in their strengths and implementations, there exist situations in which both can play a significant and interactive role within a single project. We will report on one such enterprise, designed to investigate the effectiveness of proposed efforts to control the spread of antibiotic resistance in hospitals. Emphasis will be on the roles of ABM and DE, the leveraging of their relative strengths, and efforts to mesh the two disparate methods into a single, working entity.