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Title:	A MODEL OF CLOSTRIDIUM DIFFICILE INFECTION: DYNAMIC TRANSMISSION BETWEEN HOSPITALS, LONG-TERM CARE FACILITIES AND COMMUNITIES
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Pdf File:	 View presentation
Content:	<p>OBJECTIVES: The transmission of C difficile infection (CDI) has recently changed, resulting in a five-fold increase in the incidence in the general population and an eight-fold increase among the elderly. We developed a simulation model to examine the dynamic relationship between three major subpopulations of CDI transmission: hospitals, long-term care facilities (LTCF), and communities, to evaluate treatment effectiveness and costs. METHODS: A stochastic agent-tracking meta-population network model of CDI transmission has been developed. A framework for contagion dynamics between the three subpopulations (hospitals, LTCF and communities) was employed. We identified eight health states: susceptible, gastrointestinal exposure, colonized, diseased, clinically resolved colonized, relapsed, cleared, and deceased. Key parameters include: age-specific incidence rates, disease severity, hospital LOS, treatment effectiveness, recurrence rates, mortality rates, and costs. RESULTS: In the general population 5% -20% of adults are estimated to be asymptomatic carriers of CDI but up to 80% of the elderly in LTCF are colonized. Over 50% of cases are associated with hospitals and LTCFs. Growing number of cases have onset in the community. 9% of patients over 65 experience severe episodes compared to 4% for those below 65. Mortality rates for elderly are much higher. Patients over 65 experience almost twice the recurrence rate (38%), compared with younger populations (18% -22%). The rates for a second recurrence are 38% for those 65+ versus 24% below 65. The probability of recurrent CDI increases with the number of recurrences experienced. Recurrences were associated with major increases in hospital LOS and in costs. CONCLUSIONS: Our age-specific model allows to project and to quantify the impact of a CDI outbreak in terms of clinical burden and costs. Using a scenario-based approach, comparisons of current treatments with the novel approach of duodenal infusion (fecal transplant) are carried out.</p>

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