

**1621. US Costs and Outcomes Associated with *Clostridium difficile* Infections: a Systematic Literature Review, Meta-analysis, and Mathematical Model**

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**Background.** Information about the health and economic impact of *C. difficile* infections (CDI) in the US can inform investments in prevention and treatment interventions. The objective was to estimate the morbidity, mortality, and cost burden of CDI in the US using a systematic literature review, meta-analysis and economic model.

**Methods.** We searched MEDLINE, CINAHL, Cochrane Library, NHS Economic Evaluation Database, Web of Science and Scopus for multicenter studies published in

the US from 2000-2014 that evaluated CDI outcomes or costs. Studies were included in the economic analysis if they either measured post-infection costs, post-infection length of stay (LOS), or propensity score-matched CDI patients to non-CDI controls. We also included studies that evaluated CDI-associated mortality with a control group. We created an economic model using TreeAgePro 2014. We used gamma distributions for cost estimates, beta distributions for probabilities, and lognormal distributions for relative risks. The analysis consisted of 1,000 first order simulations and 10,000 second order simulations.

**Results.** 22 studies that evaluated mortality due to CDI were pooled, and CDI was associated with a 2.5-fold increase in mortality compared with other patients (pooled RR = 2.54; 95% CI: 1.89, 3.40). Only 4 low to moderate quality studies evaluated costs of CDI. The mean CDI-attributable cost of the index hospitalization ranged from \$8,426 to \$48,500. The mean costs per CDI after discharge were \$1,592 for outpatient visits and \$14,847 for readmissions. When these were adjusted to 2013 US dollars and included in the economic model, the mean total cost of a CDI was \$32,198 (SD = \$9,798). Of the 3 studies that evaluated LOS using propensity matching, the mean CDI-attributable LOS was 12.3 days. When this excess LOS was multiplied by an average cost per day from a private 3<sup>rd</sup> party payer perspective, CDI cost an average of \$56,663 (SD = \$19,804).

**Conclusion.** Pooled estimates from the current literature suggest that CDI is associated with large health and economic burdens. Yet, most of the studies were of mid-to-low quality and may overestimate the outcomes, as they did not exclude pre-infection LOS and costs. These estimates should be used with caution and high quality studies should be done.

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