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Knowing to design: Costs of and benefits from nosocomial infections for hospitals

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Background: The basic conditions for any process of financial incentives or penalties to favor the investment of hospitals in the prevention of nosocomial infections are accuracy and fairness, because these two conditions have a strong influence on the acceptability and the effectiveness of such a process. Accuracy and fairness mostly refer to the methods used to assess the economic impact of nosocomial infections for hospitals, which concern both the measurement of the prolongation of stay and the estimation of the costs or benefits induced by nosocomial infections.

Objective: We present a framework owing to assess major aspects of the costs and benefits related to the existence of episodes of nosocomial infection for hospitals. This framework is used to compute the costs and benefits of nosocomial infections by *Clostridium difficile* for two hospital structures, to help thinking systems of financial rewards and penalties to reduce nosocomial infections.

Data & Methods: We use the properties of DRG-based payment systems to derive indicators of cost for hospitals, including an estimation of the productivity losses due to a nosocomial infection. The empirical test is based on a multi-state modelling based on Markov processes and bootstrapping aimed at estimating individual prolongation of stay at hospital due to *Clostridium difficile* infections.

Results: We show that the definition of economic indicators of costs or benefits for hospitals is made possible in the context of DRG-based payment systems. We point out potential inefficiencies of the current payment systems that a relevant reward/payment system should overcome. Finally, we show how the statistical methods used in the measurement of the prolongation of the hospital stay due to nosocomial infections pose potential problems in terms of fairness of rewards/penalties systems.

Conclusion: We analyse the existence of productivity gains in the case of deaths as a proof of the incompleteness of the DRG-related payment systems, and discuss the methodological issues associated with the statistical methods used to control for temporality bias.

Biography

Jean-Pierre Marissal completed his PhD in Microeconomics and works as a Health Economist at Catholic Institute of Lille, and the depending hospital structures. He gives lectures on microeconomics at the same academic institution.

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