# Are current evaluation rules in health care optimal? The role of real options

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Existing statistical approaches to research and resource allocation in health care have yet fully to incorporate two notable features which often characterize such evaluations. Firstly, the process of research and decision-making is dynamic in nature, as evidence from a single trial, or from separate trials, accumulates over time. Secondly, this process incurs research and monitoring costs over and above the costs associated with the decision to adopt and use the new technology.
This paper uses a Bayesian sequential sampling framework to solve an economic evaluation model which incorporates these two features. The model yields clear, dynamic, decision rules which are a function of the accumulated sample size and which account also for the costs of carrying out research.
We apply the model to the economic evaluation of a medical device (Drug Eluting Stent) and compare our decision rules with alternative approaches currently adopted. The results show the key role played by irreversibilities within the decision, such as the size of the population to be treated should adoption take place and whether "up front" investment cost are incurred, factors which can be overlooked by decision rules typically applied. We conclude that these rules may lead to the misallocation of resources within the health care system.