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Cost-Effectiveness Analysis of Procalcitonin Comparted to C-Reactive Protein (CRP) in Patients with Exacerbaions of Chronic Obstructive Pulmonary Disease (COPD) in the Intensive Care Unit (ICU) in Medellín - Colombia

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OBJECTIVES

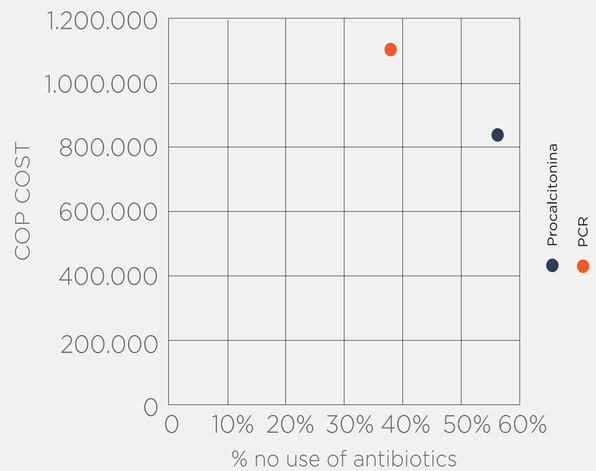
To estimate the cost effectiveness of one of the tests avaliable for bacterial-infections detection in patientes diagnosed with Chronic Obstructive Pulmonary Disease (COPD), and which presents exacerbation of their pathology that requieres attentions in the Intensive Care Unit services.

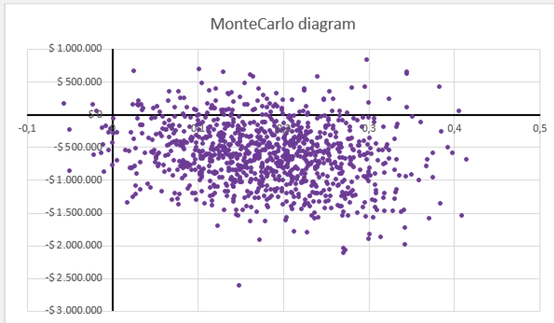
We choose the Procalcitonin test as the intervention, and C-Reactive Protein as the comparator.

METHODS

A literature review was carried out to characterize the correct patient to use antibiotics for each test. Additionally, the patient care process for the resolution of their exacerbation was characterized. Subsequently, the information collected was validated with a clinical expert who also defined the procedures and health resources necessary to carry out each test.

These resources were assessed and included in a decision tree model that evaluates the performance of each test over a 14-day time horizon. The model considers the lenght of stay and the us of empirical and specific antibiotic therapy.





RESULTS

It was found for the base case that there is a saving of $1,590,761 COP (331.4 USD; 1USD= 4800COP) when using the procalcitonin detection technique instead of PCR. These results are 18% less of antibiotic treatment used compared to the CRP test (no use of antibiotics 56% and 38% respectively), which impacts the added cost with a difference in favor of procalcitonin of $286,337. COP (59.6 UDS).

The results of the deterministic sensitivity analysis show that the number of antibiotic days is the only variable that changes the base-case results, and the probabilistic analysis shows that 89% of the iterations is dominant, which supports the base case result.

CONCLUSIONS

Results were obtained in favor of the test with procalcitonin, the test may be superior to CRP in patients with suspicion of sepsis and is associated with a shorter duration of therapy and improved survival, particularly in RCT without high protocol adherence.

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