

# Budget impact analysis of oral treatment with nirmaltrevir+ritonavir for COVID-19 in Argentina

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## INTRODUCTION

- The 2019 Coronavirus disease (COVID-19) is a respiratory illness produced by a new coronavirus identified with the SARS-CoV-2 acronym. On March 11, 2020, the World Health Organization (WHO) declared COVID-19 as a pandemic.
- In Argentina, from March 2020 to January 2023, were confirmed more than 10 million cases of COVID-19, and 130,473 deaths.<sup>1</sup>
- Despite the cases of COVID-19 are decreasing worldwide, the virus continues to circulate and evolve and for that reason antiviral agents may play an important role in reducing the severity of the disease specially in high-risk population.<sup>2,3</sup>
- Worldwide the approved antiviral treatments include nirmaltrevir+ritonavir; molnupiravir, remdesivir and the monoclonal antibody bebtelovimab. In Argentina, except for parenteral remdesivir, none of the options have yet been approved by ANMAT.

## OBJECTIVE

- To estimate the budget impact (BI) of the oral treatment, based on nirmaltrevir+ritonavir, for mild-to-moderate coronavirus disease in adults who are at risk of progression to severe COVID-19 for the whole Argentinean health system.

## METHODS

- The model was developed in Microsoft Excel® by Pfizer Inc and adapted to Argentinean context to evaluate the budget impact of introducing nirmaltrevir+ritonavir in the treatment of adult patients with SARS-CoV-2 presenting with symptoms of mild or moderate disease in an outpatient setting.
- It compares the expected costs of the current treatment environment, without nirmaltrevir+ritonavir, with a future environment, with nirmaltrevir+ritonavir available as a treatment option. The model follows the best practice guidelines for Budget Impact Analysis of the International Society for Pharmacoeconomics and Outcomes Research (ISPOR).<sup>4,5</sup>
- Key parameters were estimated based on Argentinean epidemiological data, published papers and local experts' opinion.
- In this analysis the perspective adopted was the whole Argentinean health system with the Ministry of Health (Moh) as the payer. It was considered a 3 –year time horizon.
- Target population was defined as adults with mild-to-moderate coronavirus disease with risk factors for progression to severe COVID-19 (obesity, diabetes, chronic pulmonary disease, chronic heart disease, chronic renal disease, and transplanted subjects receiving immunosuppressive medication).
- The dose was 300 mg nirmaltrelvir (two 150 mg tablets) plus 100 mg ritonavir (one 100 mg tablet) and the 3 tablets were administered together orally 2 times a day for 5 consecutive days.

Table 1: Target population

Description	Values
Total number of adult Argentinean population ≥18 years <sup>6,7</sup>	33,438,073
Annual COVID-19 incidence (%) <sup>6-9</sup>	10.71%
Prevalence of patients with risk factors (%) <sup>10,11</sup>	45.1%
Symptomatic patients (%)	100%

- The effectiveness of the intervention was defined by the proportion of hospitalizations and mortality avoided. The values of these indicators (hospitalization and fatality rates) were different in patients treated under Standard of Care (SoC) and those treated with nirmaltrevir+ritonavir.

Table 2: Hospitalization and mortality rate

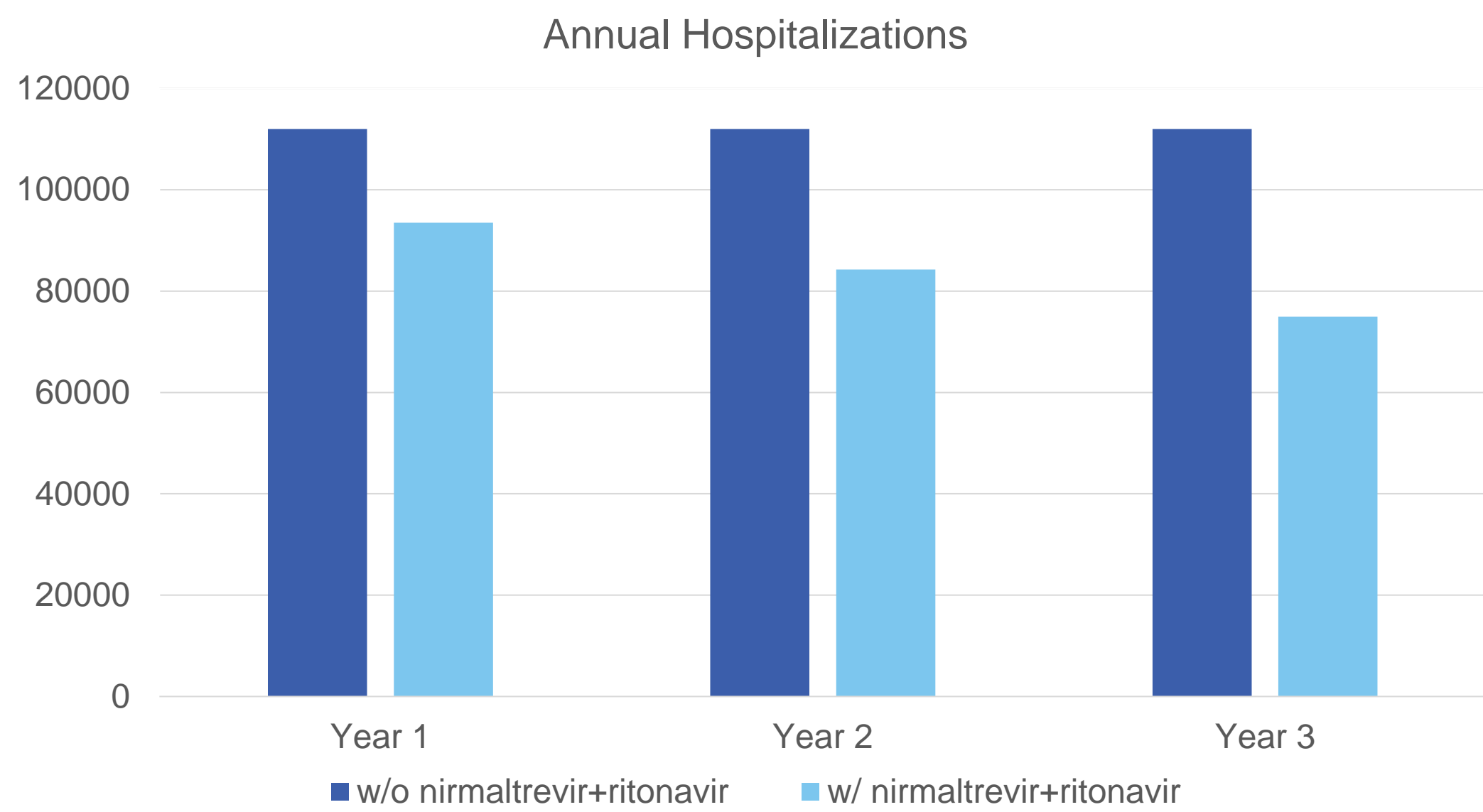
	SoC	nirmatevir+ritonavir
Hospitalization <sup>12</sup>	6.94%	1.21%
Mortality <sup>13</sup>	0.34%	0.06%

- Considering that the probability of death in patients who did not require hospitalization is practically zero given that they have not progressed to severe COVID-19, the differences in the number of deaths between treatments are due to the differences in the proportion of hospitalized patients.
- We used a “Bottom-up” microcosting technique to determine the costs. The cost inputs required by the budget impact model included the treatment acquisition and administration and hospitalization costs.
- The source of costs of the resources of the different health sectors was obtain from 3val, 3eff cost base.<sup>14</sup> This database gather the unit costs of health resources through primary collection of costs from the three subsectors of the Argentinean health system and it is updated periodically. Costs are expressed in USD (exchange rate 1USD=218,03 AR\$, April 2023)

## RESULTS

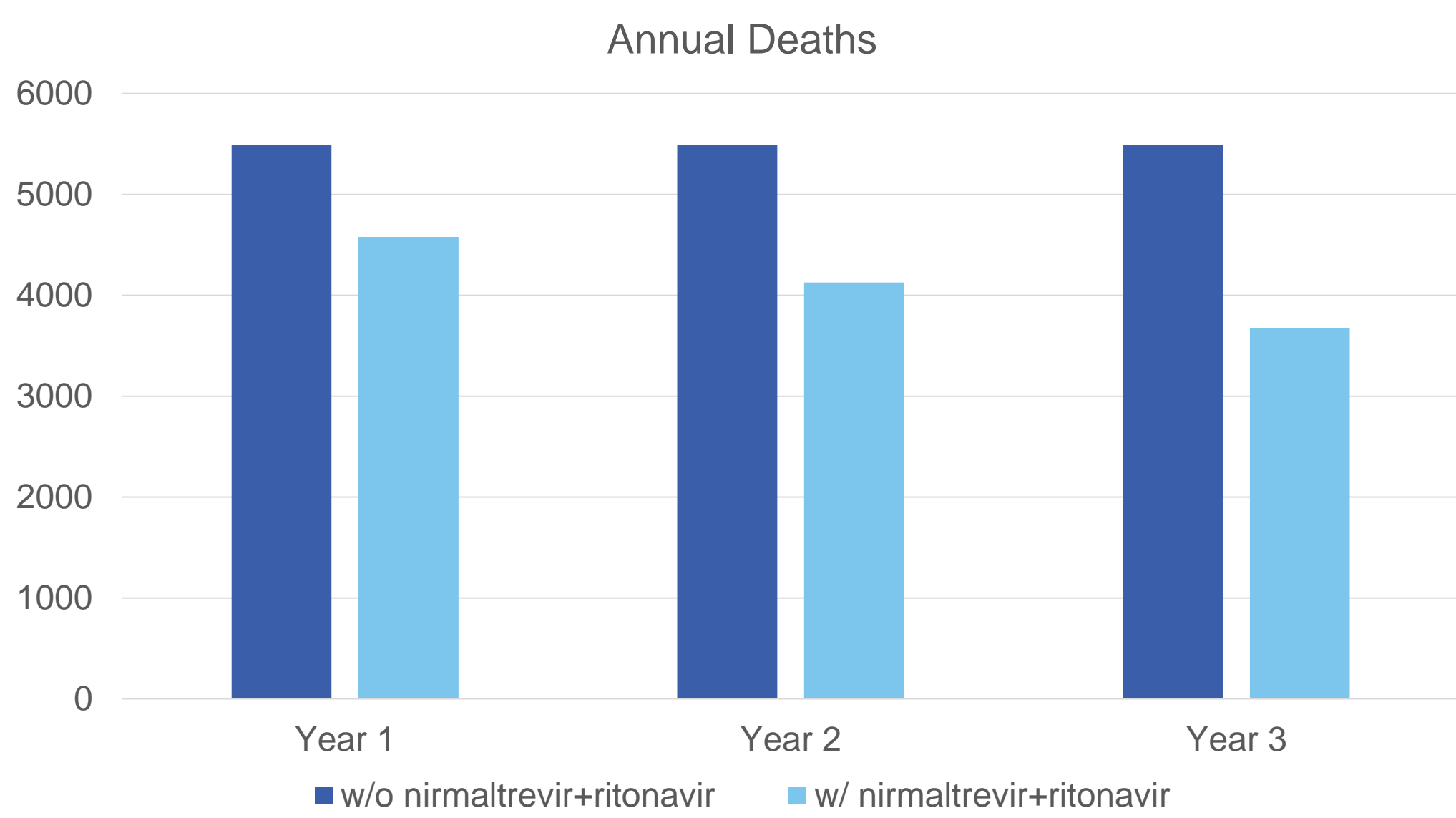
- The reduction in hospitalizations estimated by the model was -16,5%, -24,8% and -33% for each year.

Figure 1: COVID-19 annual hospitalizations



- The reduction in deaths was -906 in the first year, -1359 in the second and -1812 in the third.

Figure 2: COVID-19 annual deaths



- The net budget impact over three years for the inclusion of nirmaltrevir+ritonavir in the Argentinean health system was 78.2 M dollars (year 1), 117.3 M dollars (year 2) and 156.4 M dollars (year 3).

Table 3: Budget impact per averted event

Budget impact (USD)	
Per hospitalization averted	\$4,230.63
Per death averted	\$86,326.26

- The annual incidence of COVID-19 and the acquisition costs were the most influential parameters in the one-way sensitivity analysis.

## CONCLUSIONS

- The incorporation of nirmaltrevir+ritonavir in the Argentinean health system would increase the budgetary impact with significant reduction of hospitalizations and deaths.

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