**COVID-19 Mortality Excess and Cost-Effective Analysis of Different Treatments**

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**Word Count: 365**

**Purpose:** Mexico has experienced one of the worst COVID-19 epidemics worldwide, with high hospitalization and case fatality rates. There is little evidence about treatment guidance to mitigate this burden. We aim to evaluate the cost-effectiveness of different treatments to reduce mortality in covid-19 hospitalized patients in Mexico using a microsimulation model.

**Methods:** We developed a decision-analytic microsimulation model that simulates cohorts of covid-19 hospitalized patients either not intubated or intubated for 50 days. We used this model to evaluate various treatment strategies with evidence on reducing mortality in covid-19 patients in terms of quality-adjusted life years (QALYs) and lifetime healthcare costs in Mexican pesos. We assumed a willingness-to-pay (WTP) threshold of one GDP per capita. We compared three treatment strategies for not intubated hospitalized patients: 1) Remdesivir, 2) Remdesivir and Baricitinib, and 3) no treatment, and two strategies for intubated hospitalized patients: 1) Dexamethasone, 2) no treatment. We used publicly available data for COVID-19 deaths and background age- and sex-specific mortality rates to estimate the COVID-19 specific mortality for Mexico’s population aged 45 years and older using relative survival methods. We quantified and propagated the uncertainty of model parameters through a probabilistic sensitivity analysis (PSA) over a wide range of WTP thresholds.

**Results:** COVID-19 specific mortality rate increases with age ranging from 438 per 100,000 in patients 45-54 years-old to 1,009 per 100,000 in 70+ years-old. Men face higher mortality rates than women, 794 vs. 665 per 100,000, respectively. The estimated mean QALYs and costs for the not intubated cohort were 5.57 and $203,329 under the no-treatment strategy, 6.51 and $271,402 under Remdesivir alone, and 7.32 and $331,172 under Remdesivir and Baricitinib. In terms of the incremental cost-effectiveness ratios (ICER), Remdesivir is a weakly dominated strategy, and Remdesivir with Baricitinib had the highest probability of being cost-effective from WTP thresholds greater than $87,922/QALY. For intubated hospitalized patients, dexamethasone had higher mean QALYs and costs 2.96 and $631,602, espectively, than the no-treatment strategy with 1.52 QALYs and $614,371, respectively. Dexamethasone had the highest probability of being cost-effective from WTP thresholds greater than $14,563/QALY..

**Conclusions:** Treatingcovid-19 hospitalized patients in Mexico is more cost-effective than no treatment. Remdesivir and Baricitinib is a high-value strategy for non-intubated hospitalized patients and Dexamethasone for intubated hospitalized patients.



