

Non-Monetary Benefits of Nirmatrelvir/Ritonavir Treatment for COVID-19: A Global Economic Value Systematic Literature Review

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BACKGROUND

- Coronavirus disease 2019 (COVID-19) has caused more than 7.1 million deaths worldwide since December 2019 and has imposed a substantial global economic burden.^{1,2}
- Although patients generally recover from COVID-19, some develop post-COVID conditions (PCCs).³
- Nirmatrelvir+ritonavir (NMV/r) is an antiviral drug indicated for the treatment of patients with mild to moderate COVID-19 who are at high risk of progressing to severe disease.⁴
- Previously, we conducted an economic systematic literature review (eSLR) to assess the economic value of NMV/r treatment.⁵ However, the study did not assess the non-monetary endpoints included in NMV/r economic models and the subsequent non-monetary outcomes. Further, the impacts of vaccination and PCCs were not accounted for.

OBJECTIVE

- To conduct an updated eSLR and examine the non-monetary outcomes associated with NMV/r, including subgroup effects stratified by vaccination status and PCCs.

METHODS

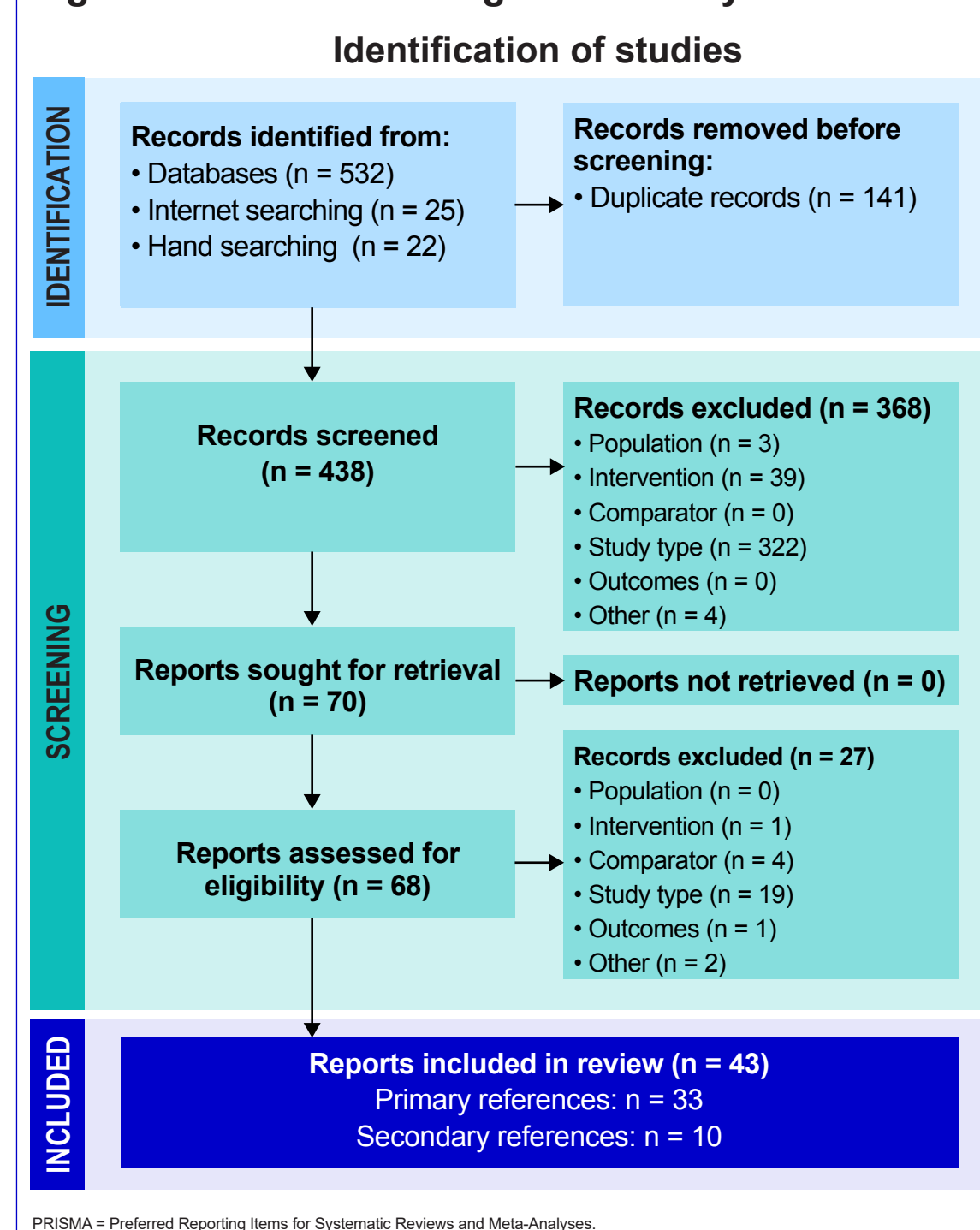
- Embase, PubMed, EconLit, Cochrane Library, and conference and health technology assessment agency websites were systematically searched to identify economic analyses published between January 2022 and October 2025.
- Included studies were economic analyses that evaluated NMV/r in patients aged ≥ 12 years with mild to moderate COVID-19 at high risk for progression to severe COVID-19.
- Identified publications underwent 2 levels of screening by 2 independent researchers, and the Drummond Checklist was used to assess study quality.⁶

RESULTS

Screening Results

- Of the 438 titles/abstracts screened, 70 studies were retrieved for full-text screening (Figure 1). Among the 43 identified economic evaluation publications that met the predefined inclusion criteria, 33 were included in the review. Studies were conducted across the Americas (n=12), Asia (n=8), Europe (n=12), and Africa (n=1).

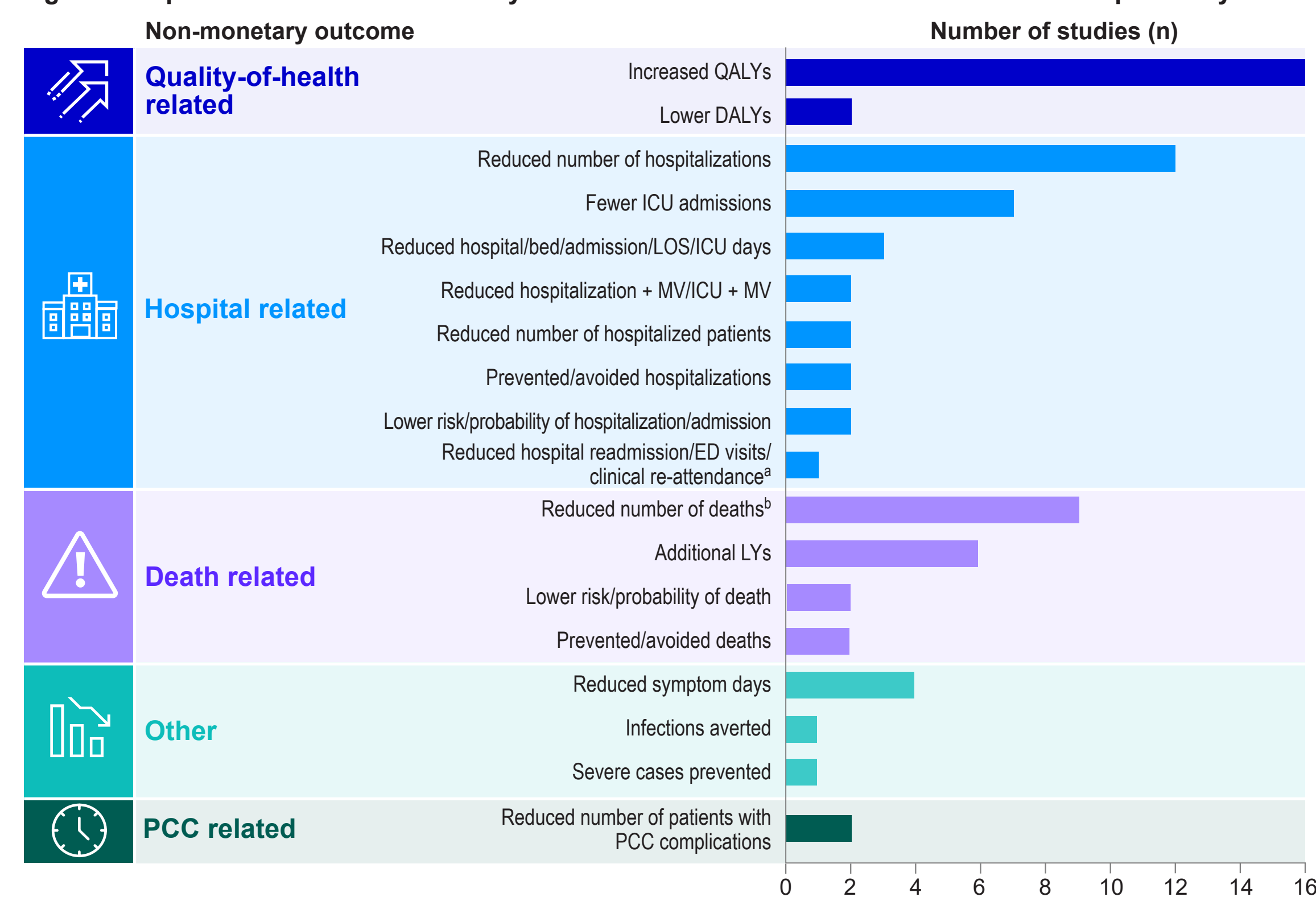
Figure 1. PRISMA Diagram of Study Selection



Non-Monetary Outcomes of NMV/r

- Most studies included cost-utility analyses (n=16) and used a short-term decision tree with a long-term Markov model (n=11); some studies assessed the impact of PCC (n=9) and vaccination status (n=9) on outcomes.
- Several non-monetary endpoints were included in economic models; hospital-related endpoints (n=20), quality-adjusted life-years (QALYs) (n=18), and death-related endpoints (n=18) were the most commonly reported (Figure 2).
- The most frequently reported non-monetary outcomes associated with NMV/r treatment, compared with comparator treatments, were increases in QALYs (n=16), reduced number of hospitalisations (n=12), and reduced number of deaths (n=9).
- One study found that compared with best supportive care, NMV/r treatment of recently vaccinated, non-recently vaccinated, and unvaccinated populations was found to increase incremental QALY gains of up to 0.625.⁷
- Two studies found NMV/r treatment reduces the number of patients with PCCs.^{7,8}

Figure 2. Improvements in Non-Monetary Outcomes Associated With NMV/r Treatment Reported by Studies



DISCUSSION

- There was consistency in the reporting of non-monetary outcomes across studies, providing an evidence base for NMV/r as a treatment beneficial to patient health.
- Some models accounted for PCC, suggesting that COVID-19 sequelae may positively influence the modelled benefits of NMV/r.
- A key study limitation was the limited data on PCC; some outcomes of studies were driven by model assumptions, limiting their accuracy.
- Due to the presence of multiple circulating COVID-19 variants, economic models are required to be consistently updated to ensure COVID-19 treatments remain applicable to the evolving epidemiological landscape.

CONCLUSIONS

- In addition to its monetary benefits,⁵ NMV/r reaffirms gains in QALYs. Recognising that QALYs may not fully capture all dimensions of value, a broader set of non-monetary outcomes was also considered, including reductions in hospitalisations, mortality, and PCCs, further highlighting the overall value of NMV/r.
- This study reveals that NMV/r improves short-term and long-term patient health and clinical outcomes and provides further support for NMV/r as a cost-effective treatment option for patients with mild to moderate COVID-19.

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